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MARKETING | RESEARCH ARTICLE

“Give Me Happiness” or “Take Away My Pain”: Explaining consumer responses to prescription drug advertising

Nithima Sumpradit¹, Richard P. Bagozzi^{2*} and Frank J. Ascione³

Abstract: We examine how consumers react to direct-to-consumer advertising (DTCA) by investigating the role of goal compatibility between motivation to process advertisements and consumer self-concept. Specifically, we examine the interaction between self-regulatory (prevention versus promotion) focus and self-construal orientation (independent versus interdependent) and find that prevention (versus promotion) focused consumers form stronger intentions to speak with physicians and are more likely to discuss an advertised drug, when the ad uses an interdependence self-construal theme, whereas promotion (versus prevention) focused consumers form stronger intentions to speak with physicians and are more likely to discuss an advertised drug, when the ad uses an independent self-construal theme. The above two-way interaction was further found to be governed by attitudes toward DTCA. Under goal compatibility, consumers who had positive or neutral attitudes toward DTCA (versus negative) had stronger (a) intentions to speak with physicians about the advertised drug, (b) stronger intentions to speak with physicians about high cholesterol, (c) greater likelihood of discussing the drug with health professionals, and (d) greater likelihood of requesting a prescription, yet did not differ in perceptions of drug benefits and risks. Hypotheses were tested on a sample of 197 female staff and retirees (aged 40–80 years) at a large university.

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PUBLIC INTEREST STATEMENT

Direct to consumer advertising is a major source of providing information to the public by the manufacturer of a drug product. Although highly regulated and widely discussed, much is still unknown regarding the impact the advertising has on consumer behavior. This paper attempts to add more insight on this issue through a controlled experiment exposing a set of potential users to a mythical drug designed to lower drug cholesterol. Subjects were assessed regarding their goal pre-dispositions (promoting health or preventing harm) and their level of inter-dependence. Overall, our study provides evidence that DTC advertisements can serve as motivational cues to encourage consumers to take action, and the persuasive power of the DTC ads depends not only on characteristics of ads but also characteristics of consumers, such as their attitudes, which in turn affects information processing.



Nithima Sumpradit

Subjects: Behavioural Sciences; Economic, Finance, Business & Industry; Social Sciences

Keywords: direct-to-consumer advertising; self-regulatory theory; promotion focus; prevention focus; independent self-construal; interdependent self-construal

1. Introduction

Direct-to-consumer advertising (DTCA) of prescription drugs has become a major marketing phenomenon in the American healthcare system for over 30 years. From a high in advertising spending of \$5.4 billion in 2006, about \$4.0 billion per year has been spent in the early years of this decade (Pharma Marketing Network, 2013). The growth in the number of DTC ads and the long period of time that Americans have been exposed to DTCA on daily bases intensify the debate about positive and negative effects of promoting prescription drug products on consumers (see Hollon, 1999; Holmer, 1999; Ventola, 2011, for reviews).

Research on consumers' responses to DTCA is limited and has largely emphasized consumers' recognition of and attitudes toward DTCA (e.g. Bell, Kravitz, & Wilkes, 1999; Food and Drug Administration, 1999; Perri & Nelson, 1987; Sumpradit, Fors, & McCormick, 2002). Many studies focused on consumers' perception and retention of risk information (Davis, 2000; Morris & Millstein, 1984; Morris, Ruffner, & Klimberg, 1985; Tucker & Smith, 1987), as well as the effects of risk information characteristics (e.g. the number of risk items and specific degree of risk information) on consumers' attitudes, likelihood of adopting an advertised drug and behavior (Morris et al., 1985; Nikam, 2003; Tucker & Smith, 1987)

Research investigating the effects of persuasive appeals on consumers' attitudes and behavior in the pharmacy area is rare. One of the few studies to examine the persuasive power of DTC ads was conducted by Christensen, Ascione, and Bagozzi (1997). The researchers applied the Elaboration Likelihood Model to understand how consumers' attitudes change as a result of seeing DTCA. The study utilized a $2 \times 2 \times 2$ factorial design (for source credibility, involvement, and argument quality). They found that when less-involved consumers are exposed to ads under lower source credibility, low-risk ads are favored more than high-risk ads. A recent paper by Biegler and Vargas (2013) indicates that the use of non-propositional contents in DTCA, e.g. showing children playing happily on a grass field in an asthma inhaler advertisement, or a photogenic person stating the side effects of a drug, may subconsciously foster unjustified beliefs about safety and efficacy and unduly influence the viewer's choice of therapy. These non-propositional contents pose regulatory dilemmas for the US Federal Drug Administration on how to regulate such content to ensure that consumers can make informed choices (Krinsky, 2013).

Overall, research on the impact of DTCA on consumer decision-making though extensive has been typically descriptive with rare efforts to develop and test theoretical explanations of consumer responses to ads. The limited theoretical frameworks that have been investigated assume a relatively simple model of information processing based on stimulus-response affects, although consumer behavior is often goal-directed (i.e. consumers view products as means to satisfying their desires) (Bagozzi & Dholakia, 1999). Thus, the application of a motivational-based framework seems crucial for understanding how DTC ads induce consumers to initiate, terminate, or persist in specific actions in particular circumstances (Markus & Kitayama, 1991).

2. Study framework

The concept of goal compatibility (Aaker & Lee, 2001) was used to test the motivational effects of DTCA on consumers herein. Goal compatibility refers to the synergistically persuasive power between self-regulation and self-construal orientation.

2.1. Self-regulatory focus

Derived from a hedonic principle (Cofer, 1981), self-regulatory focus theory (Higgins, 1997) assumes that individuals are active decision-makers who self-regulate their behavior in order to achieve goals

that they perceive important via two basic regulatory systems: promotion and prevention foci. People who set positive outcomes as primary goals are said to have a promotion focus, whereas individuals who set the avoidance of negative outcomes as primary goals are said to follow a prevention focus.

Individuals develop their own self-regulatory focus through the development of basic needs, socialization, and in the framing of situations. Firstly, a person's basic needs include nurturance (e.g. need for advancement and achievement) and security (e.g. need for protection, and responsibility). People who value nurturance needs (e.g. need for advancement) more than security needs are said to have a promotion focus, whereas those who value the reverse are said to have a prevention focus. Secondly, a person's socialization history, especially socialization with caregivers during childhood, determines one's self-regulatory focus (Higgins, 1987). People acquire a promotion focus (comparable to the ideal self) when rewards are either given for satisfactory behavior or removed for unsatisfactory behavior. Conversely, individuals acquire a prevention focus (comparable to the ought self) when punishments are either waived for performance of satisfactory behavior (e.g. being responsible in one's duties) or administered for unsatisfactory behavior. Thirdly, gain and loss framing situations can also induce a self-regulatory focus. Higgins proposes that (a) fundamental needs and socialization history significantly affect an individual's chronic self-regulatory focus and (b) both regulatory foci reside in each individual but one focus tends to dominate at any one point in time (Kurman, 2001). However, a chronic self-regulatory focus can temporarily change when individuals are primed by gain- or loss-framing cues. When gain (non-gain) feedback is provided for individuals' successes (failures), a promotion focus will be primed. In contrast, if non-loss (loss) feedback is given for individuals' successes (failures), a prevention focus will be primed.

Research shows that DTCA typically conveys promotion and/or prevention foci (Sumpradit, Ascione, & Bagozzi, 2004). Exposure to promotion-focused ads may induce consumers to operate within a promotion focus response system. Thus, consumers will tend to become more sensitive to the presence or absence of *positive outcomes*. Their decision will tend to be based on strategic means to ensure a "hit" (i.e. presence of rewards) and to prevent "errors of omission" (i.e. absence of rewards), which in turn results in a tendency to engage in "risk-taking" behavior. Successes in achieving rewards or positive outcomes lead to cheerfulness-related emotions (e.g. happy and joyful), whereas failures in achieving rewards or positive outcomes lead to dejection-related emotions (e.g. sad and depressed).

By contrast, exposure to prevention-focused ads may induce consumers to operate within a prevention focus response system. Thus, consumers here will be more sensitive to the presence or absence of *negative outcomes*. For instance, they may better recall prevention-focused information or events. They generally make decisions using "avoidance" (or vigilance) as a strategic means to ensure "correction of rejections" (i.e. absence of mistakes) and avoid "errors of commission" (i.e. presence of mistakes), and therefore, tend to engage in "risk avoidance" behavior. Successes in avoiding mistakes or negative outcomes lead to quiescence-related emotions (e.g. relieved and relaxed), while failures in avoiding mistakes or negative outcomes lead to agitation-related emotions (e.g. tense and stressed) (Higgins, 1997, 1998).

2.2. Self-construal orientation

Self-construal orientation is derived from the cultural construct of individualism and collectivism (Hofstede, 1980; Triandis, 1995). The core of individualism emphasizes personal goals and independence, whereas the core of collectivism focuses on group goals and interdependence. Individualism-collectivism has been typically conceptualized as a single dimension with opposite poles (i.e. high individualism means low collectivism and vice versa) (Hofstede, 1980), but in later years, they have been conceptualized as separate constructs (Markus & Kitayama, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995).

Self-construal orientation is viewed as an individual-level measure of individualism and collectivism (Hofstede, 1980; Markus & Kitayama, 1991; Triandis & Suh, 2002). Based on Markus and Kitayama (1991, p. 226), our study conceives of self-construals as consumers' beliefs about "the relationship between the self and others and, especially, the degree to which they see themselves as *separate* from others or as *connected* with others." Self-construal consists of two distinct orientations: the independent self and the interdependent self. The independent self describes an essentially individualistic orientation, whereas the interdependent self refers to a basically group or collectivistic orientation (Markus & Kitayama, 1991).

Self-construal orientation is shaped by culture, socialization, and developmental psychological processes. Individuals in individualistic cultures (e.g. Europe, North America) feel that it is important to become independent from others, to be self-reliant, and to discover and express one's unique attributes. They value freedom, autonomy, uniqueness, and personal achievement, and base their identity primarily on their own attributes or accomplishments. Although persons with independent self-construals certainly socialize and often become close to others, they still view themselves and others as separate entities. The role of others is generally viewed as sources to verify and affirm the inner core of the self and to stand out from others (Markus & Kitayama, 1991). Conversely, individuals in collective cultures (e.g. East Asian countries) orient their thoughts, feelings, and actions to be meaningful in relation to relevant others, rather than one's own unique thoughts per se. They seek to maintain harmonious relationships, avoid conflicts, and fulfill obligations to others. They view the self and others as overlapping units and seek self-validation from others by viewing them as an integral part of the social environment that they are assimilated into. Women tend to be more interdependent as compared to men who are more independent in self-construal (Cross & Madson, 1997; Watkins, Mortazavi, & Trofimova, 2000). However, one's chronic self-construal orientation is to a certain extent malleable and can temporarily change, when individuals are primed by self-focused or other-focused situational cues (Gardner, Gabriel, & Lee, 1999).

In sum, the independent self tends to be motivated to enhance self-esteem, whereas the interdependent self tends to be more motivated by motives to affiliate with others, to avoid interpersonal conflicts, and to attain collective goals (Markus & Kitayama, 1991). In a marketing context, Han and Shavitt (1994) found that individualistic (versus collectivistic) ads were more compelling for independent consumers, while the reverse was true for interdependent consumers.

2.3. Goal compatibility

While self-regulatory theory and self-construal orientation might be useful separately as predictors of consumer reactions, their combination can advance understanding in consumer behavior even more. A study conducted by Aaker and Lee (2001) provides compelling evidence.

Aaker and Lee viewed the synergistically persuasive power between self-regulation and self-construal orientation in terms of "goal compatibility." Specifically, they suggest that an independent self is compatible with a promotion focus because persons with this orientation focus on attaining self-enhancements. Conversely, the interdependent self is compatible with a prevention focus because persons with this orientation aim at maintaining relationships, avoiding interpersonal conflicts, and fulfilling social obligations.

Goal compatibility has been supported in other studies (Lee, Aaker, & Gardner, 2000; Ohbuchi, Fukushima, & Tedeschi, 1999). Unfortunately, its implications regarding how it affects consumer behavior have been underinvestigated. Although Aaker and Lee (2001) tested the assumption of goal compatibility in an ad context, they primarily focused on immediate psychological effects such as attitudes toward the ad, brand affinity, and recall of information. In our study, we propose that the effects of goal compatibility as induced in ads should include impact on consumer's intention-to-act and the likelihood of action. Also unlike past research, which tested hypotheses on student respondents, we investigated responses of middle-aged to older females and considered a product specifically relevant to them.

2.4. Attitudes to DTCA

DTCA is an obtrusive communication that deals with private issues of an often embarrassing or anxiety provoking nature. Herzenstein, Misra, and Posavac (2004) found that one factor underlying the public's attitude toward DTCA concerns perceptions that ads do not give enough information about (a) risks and negative effects of drugs, (b) benefits and positive effects, plus at the same time, and (c) ads make drugs seem better than they really are. Other research in non-DTCA, but similar, contexts finds that consumer stereotypes and prejudices toward advertising are general characteristics of the public and affect how people process information in the ads (Ghat, Leigh, & Wardlow, 1998). Negative attitudes in particular have been found to interfere with the processing of message content. As a consequence, we hypothesize that attitudes to DTCA will moderate the effects of self-regulatory focus and self-construal on consumer decision-making, intentions to act, and likelihood of action with regard to approaching physicians and other sources of drug information featured in the stimulus ads. Specifically, we expect a two-way interaction for regulatory focus and self-construal to occur for consumers with a positive/neutral attitude toward DTCA but not for consumers with a negative attitude. Consumers with positive/neutral (versus negative) attitudes are expected to generate more support arguments and fewer counter arguments and source derogations (e.g. Batra & Ray, 1986; Wright, 1973, 1980).

3. Objectives

The general purpose of this study is to understand the causal relationships between motivational themes (i.e. goal compatibility) and consumers' reactions to DTCA, as regulated by DTCA attitudes. The study has two specific objectives. The first is to investigate the effects of goal compatibility in DTC ads on consumers' perceptions, attitudes, intentions, and likelihood of action. Specifically, we predict that promotion-focused ads with independent themes (as opposed to interdependent themes) and prevention-focused ads with interdependent themes (as opposed to independent themes) will better motivate consumers to positively react volitionally and behaviorally to persuasive appeals, but only for those consumers who are favorable/neutral (versus unfavorable) toward DTCA. The second objective is to determine the effects of self-regulatory focus (one of the motivational themes) on consumers' risk information retention and emotional responses to the ads. Specifically, we propose that prevention-focused ads will induce greater recall of risk information than promotion-focused ads because they primarily focus on avoiding negative outcomes.

4. Methods

Hypotheses were tested in a 2 (independence versus interdependence) \times 2 (promotion versus prevention) \times 2 (positive/neutral versus negative DTCA attitude) factorial design. The specific materials, procedures, measures are described below.

4.1. Intervention

We decided to focus on ads that discussed the treatment of hyperlipidemia because a national effort exists to make consumers better aware of the need to control lipid levels in order to prevent future cardiovascular complications (e.g. stroke, heart attack). We prepared different versions of these ads to operationalize the manipulations. Mock ads for the brand, Travacor, were used in the study to prevent confounding influences due to participants' reactions toward existing ads/brands, and to circumvent contaminating effects due to ongoing promotional campaigns of real brands during the experimental time period. The mock ads consisted of three features: motivational themes, benefit information, and risk information.

Motivational themes were manipulated in both graphic and written forms. Ads promoting the ideas of health aspirations and achievement were used to convey a promotion focus, whereas ads featuring health prevention of problems were used to convey a prevention focus. Likewise, ads focusing on personal goals were used to enhance the independent self construal, while those emphasizing the importance of self in relation to others (collective goal) were used to enhance the interdependent self-construal. The descriptions of motivational themes are presented in Table 1.

Table 1. Manipulation of motivational themes

Ad layouts	Independence-self	Interdependence-self
<i>Promotion focus</i>		
Picture	A happy, smiling woman	A happy, smiling couple
Headline	Controlling high cholesterol could help me fulfill my life plans	Controlling high cholesterol could help us fulfill our life plans
Subhead	Thanks to Travacor, I will achieve my dreams	Thanks to Travacor, we will achieve our dreams
Main text	“I’ve got plans—big plans—for the future. I love to read and keep active. I also want to travel and experience the most out of life. But not long ago, I found out that my cholesterol was much too high. Because there are so many fun things I still want to do and I will not give them up, I started controlling my cholesterol. Diet and exercise alone are not enough to lower my cholesterol. So, I asked my doctor about adding Travacor so that I can fulfill my future hopes and dreams”	“We’ve got plans—big plans—for the future. We want to grow old together, travel and experience the most out of life. But not long ago, I found out that my cholesterol was much too high. Because there are so many fun things we still want to do and we will not give them up, I started controlling my cholesterol. Not only for myself, but for my partner and for us. We work together on diet and exercise, but our efforts haven’t been enough to lower my cholesterol. So, I asked my doctor about adding Travacor so that we can fulfill our future hopes and dreams”
<i>Prevention focus</i>		
Picture	A relaxed, yet slightly frowning woman	A relaxed, yet slightly frowning couple
Headline	High cholesterol could put my life at risk	High cholesterol could separate us
Subhead	Thanks to Travacor, I can live safely and feel worry free	Thanks to Travacor, we can live together and feel worry free
Main text	“Over the years, I was like many other people. I spent most of my time on work and other obligations. But not long ago, I found out that my cholesterol was much too high. My goals in life suddenly changed. I needed to take responsibility for lowering my cholesterol and preventing medical problems from happening to me. I tried to control my cholesterol with diet and exercise. That wasn’t enough, though. So I asked my doctor about adding Travacor to prevent serious health problems like a heart attack or stroke from happening to me”	“Over the years, my partner and I have always taken care of each other. We want to prevent medical problems from happening to us. But not long ago, I found out that my cholesterol was much too high. I needed to take responsibility for lowering my cholesterol and preventing medical problems from happening to me. Not only for myself, but for my partner and for us. We work together on diet and exercise, but our efforts haven’t been enough. So I asked my doctor about adding Travacor to prevent serious health problems like a heart attack or stroke from separating us”

All mock ads contained similar benefit statements, which were adapted from actual ads for an anti-hyperlipidemia drug (simvastatin). The benefit statement reads as follows:

Travacor is an effective prescription drug for lowering cholesterol. Along with diet and exercise, Travacor can significantly lower total cholesterol. Just one tablet taken once a day can help people with high cholesterol and heart disease to live a longer, healthier life.

Unlike benefit information, risk information was constructed in a fictitious way to avoid confounding effects due to participants’ existing knowledge that might influence risk information recall. The risk information was adapted from a study conducted by Davis (2000) and actual risk statements from non-cholesterol-lowering prescription drugs. The risk information reads as follows:

Important information: Travacor is well tolerated but not for everyone, including people with kidney problems, women who are pregnant or nursing or may become pregnant, and anyone who is allergic to any ingredients of Travacor. Mild side effects such as dizziness, tingling, constipation, and nausea may occur. In rare cases, serious side effects such as fluid retention or swelling, shortness of breath, and blurry vision may occur without warning. Tell your doctor right away if you experience any of these symptoms. Your doctor may do blood tests to check for kidney problems. To avoid serious side effects, discuss with your doctor any medication or food you should avoid while on Travacor.

4.2. Measured factor: DTCA Attitude

Respondents’ general DTCA attitudes were measured by asking them to respond to the query, “In general, what are your feelings about advertising of prescription drugs to consumers?” Responses were recorded on seven-point scale ranging from -3 (extremely unfavorable) to +3 (extremely favorable), with neutral, neither unfavorable nor favorable as the midpoint.

4.3. Participants

The target audience was middle-aged adults who would be receptive to ads promoting the use of drugs to manage high cholesterol levels. According to national guidelines (National Cholesterol Education Program), middle age is an important risk factor. While we had access to a list of university employees through our benefit office, we did not have access to their medical conditions. Thus, we used age as criteria and focused on identifying individuals over age 40.

Gender was also a selection criterion because women are more likely than men to be actively involved in healthcare (Moser, 1997; Tu & Hargraves, 2003), to use health services and prescription drugs (Berkowitz, 1996; Center on an Aging Society, 2002; Gove, 1984; Hibbard & Pope, 1983; Miller & Cafasso, 1992), and to engage in decision-making about healthcare for themselves and their family members (Bendall-Lyon & Powers, 2002; Berkowitz, 1996). In addition, women are most likely to be targeted for DTCA (Bell, Kravitz, & Wilkes, 2000; Shah, Holmes, & Desselle, 2002; Woloshin, Schwartz, Tremmel, & Welch, 2001). Age is a selection criterion because it is positively related to the likelihood of the chronic condition and the need for prescription drugs (American Heart Association, 2003; Center on an Aging Society, 2002; Helmick, Lawrence, Pollard, Lloyd, & Heyse, 1995; Slaughter, 2002). Subjects aged 40 years and older were selected because the incidence of high cholesterol dramatically increases in this age range (American Heart Association, 2003), and consumers about age 40 or over tend to have greater health concerns than their younger counterparts (Solomon, 1996).

Based on these key criteria, a random sample of 200 eligible female university staff or retirees aged 40 years or older at a large research university participated in the study. The sample selected for the study was university staff members and retirees because they are perceived as being a natural target for this type of advertising and also face cost constraints in their utilization of healthcare services (Kellogg, 2001). However, this study excluded health professionals or practitioners because they generally have different DTCA attitudes compared to the general public (Paul, Handlin, & D'Auria Stanton, 2002), and did not include faculty members because they might be familiar with aspects of the study. An invitation letter was sent via first-class mail to each potential participant. The letter provided information about the study rationale and importance, the benefits to participants should they decide to participate in the study (a \$20 bookstore gift certificate), survey procedures, session schedules, and researchers' contact information. Reminder follow-up postcards were mailed to non-respondents approximately one to two weeks after the letter. The response rate was 17% (i.e. 200 out of 1,202 responded). Three cases were eliminated due to extreme pre-decisional distortion in either a positive or negative manner (e.g. Bhat, Leigh, & Wardlow, 1998; Russo, Meloy, & Medvec, 1998).

4.4. Data collection procedure

Participants were randomly assigned to view one of four mock ads and then completed a questionnaire. The session began with greeting participants and introduction of the study purposes and procedures as well as a survey package (consisting of an informed consent, stimuli and questionnaire, and a gift receipt). To prevent researcher bias, the folders contained no marks identifying experimental conditions and were randomly distributed. Participants were instructed to read the informed consent carefully and to ask any questions before signing their names. Then, they were instructed that they were going to review a prototype of an ad for a cholesterol-lowering drug and were told to refrain from going back to see the advertisement once they started working at the survey questions. After finishing the questionnaire, participants received a copy of their informed consent, a gift card for \$20, and debriefing material.

4.5. Tests of intervention effects (manipulation check)

Interventions of self-regulatory focus and self-construal orientation were assessed with four items (modified from Aaker & Lee, 2001). An inquiry for promotion-focused and prevention-focused intervention is: "while you were reading the Travacor ad, please describe the extent to which you thought primarily (a) about being more able to do favorite or fun activities, and (b) about preventing harm

due to high cholesterol,” respectively. For the assessment of the independence-oriented and interdependence-oriented interventions, participants were asked to respond to the queries: “while you were reading the Travacor ad, please describe the extent to which you thought primarily (a) about yourself, and (b) about you and your partner/family,” respectively. The responses for each item were recorded on a five-point scale from 1 (not at all) to 5 (a lot).

4.6. Dependent variables

Six dependent variables were used to measure the effects of DTC ads on consumers.

Intention-to-act was measured by three items: “As a result of seeing the Travacor ad, would you intend to (a) talk with your physician about Travacor, (b) talk with your physician about treating high cholesterol, and (c) look for more information about Travacor from sources other than your physician.” The responses to each query were recorded on a five-point scale from 1 (no, definitely not) to 5 (yes, definitely).

Likelihood-of-action was assessed by these measures: “How likely would you be to (a) discuss Travacor with your doctor, (b) ask your doctor to prescribe Travacor for you, (c) request a Travacor sample from your doctor, and (d) look for more information about Travacor from the following sources—an 800 number, brand website, other Internet sources, nurses, pharmacists, and reference books?” The responses to each query were recorded on seven-point scale ranging from -3 (very unlikely) to +3 (very likely).

Perceptions of risks of taking Travacor are defined as a consumer’s belief about uncertain consequences of a negative or unpleasant nature from use of the product (Dowling & Staelin, 1994; Solomon, 1996). It was measured with the query: “What do you think of the overall risks of side effects of taking Travacor?” The responses to each item were recorded on five-point scale ranging from 1 (not at all risky) to 5 (extremely risky).

Perceptions of benefits of taking Travacor in this study were operationalized as consumer’s beliefs of the efficacy of the drug to enhance positive or pleasant consequences from the product use and/or to reduce risk or seriousness of impact due to high cholesterol (Hirschman & Holbrook, 1982; Strecher & Rosenstock, 1997). It was measured with the query: “What do you think of the overall benefits of taking Travacor?” The responses were recorded on five-point scale ranging from 1 (not at all beneficial) to 5 (extremely beneficial).

Risk information recall was assessed using an unaided recall question: “What do you remember about the risks of taking Travacor (e.g. side effects, precautions, or warnings about use)? (Please specify all risk information that you can recall).”

Based on self-regulatory focus theory, emotional responses were measured in terms of the presence or absence of positive or negative outcomes (Higgins, 1997). Other types of emotions (e.g. fear or worry, affection, anger or hostility, and disgust) were also recorded (Frijda, 1986; Izard, 1977). Emotional responses were measured with the query: “After you read the Travacor ad, please describe the extent to which you felt each of the following emotions.” Ten emotional items were listed: happy, relief, sad, guilty, ashamed, stress, frustrated, love, fear, and disgust. The responses to each item were recorded on a five-point scale ranging from 1 (not at all) to 5 (a lot).

Additionally, a thought-listing technique was used to obtain qualitative information regarding participants’ thoughts and feelings while viewing the mock advertisement. This approach is widely used in marketing research (Batra & Ray, 1986; Wright, 1980). It was conducted immediately after participants finished viewing the ad. Participants were asked to respond to the query: “In the next three minutes, please write down all thoughts and feelings or anything else that came to your mind as you read the Travacor ad. You can use words or phrases. Do not worry about grammar, and complete sentences are not necessary.” The thoughts and feelings from this technique were categorized

into three groups: counterarguments (thoughts or feelings that are against the use of the product), support arguments (thoughts or feelings that are in favor of the use of the product), and source derogations (thoughts or feelings regarding distrust or skepticism of the ad or advertisers) (Wright, 1973, 1980).

4.7. Background and covariate variables

Because this study investigates middle-aged to elderly adults and because research (summarized below) indicates that many individual differences and situational variables might affect responses, we included a number of control variables as covariates.

4.7.1. Chronic self-construal orientation

Chronic self-construal orientation was a measure of participants' general senses of an independent self as well as an interdependent self. It was included in the study as a possible covariate because it could affect how individuals process the independence- and interdependence-oriented appeals presented in the mock ads. The development of items was based on Triandis's notion of individualism and collectivism (Triandis & Suh, 2002). Triandis (1995) and Triandis and Gelfand (1998) suggest that both individualism and collectivism can be subdivided into two dimensions: vertical and horizontal. For individualism (or the independent self), vertical individualism (VI) focuses on competition to acquire status, while horizontal individualism emphasizes self-uniqueness and self-reliance and with little or no interest in becoming distinguished or having high status. For collectivism (or the interdependent self), vertical collectivism (VC) focuses on obligations or willingness to sacrifice personal goals for the sake of in-group goals, while horizontal collectivism (HC) simply emphasizes a sense of similarity or seeing oneself as being similar to others.

The chronic independent self was assessed in a horizontal (rather than vertical) dimension based on our belief that decision-making in a healthcare context (e.g. about treatment choices and compliance) is generally related to a sense of self-reliance (Makoul, 1998), autonomy (Benbassat, Pilpel, & Tidhar, 1998), and perceived control (Makoul, 1998) (as opposed to a sense of competition in the manner of a VI). Conversely, the chronic interdependent self was assessed in both horizontal and vertical dimensions. The choice of measures was based on the assumption that HC indicates a sense of companionship with family or loved ones, while VC indicates a sense of obligation and duty (which relates to a prevention focus) (Aaker & Lee, 2001; Markus & Kitayama, 1991). Chronic self-construal orientation was measured with 12 items adapted from scales by Triandis and Gelfand (1998) and Oyserman et al. (2002). The (horizontal) independent self was measured with four items, and the interdependent self was measured with eight items (see Table 2). Responses to each item were recorded with seven-point Likert scale ranging from -3 (strongly disagree) to +3 (strongly agree).

4.7.2. Chronic self-regulatory focus

Chronic self-regulatory focus was a measure of participants' general self-regulatory focus characteristics. It was included in the study as a possible covariate in the analysis because it could affect how individuals process the self-regulatory focus themes presented in the mock ads. Chronic self-regulatory focus was measured with the Regulatory Focus Questionnaire (RFQ) (Higgins et al., 2000). The RFQ consists of 11 items to assess individuals' subjective histories of success and failure in promotion and prevention self-regulation (Table 3). Responses to each item were recorded on five-point scale ranging from 1 ("never or seldom" or "never true or certainly false") to 5 ("very often or always" or "very often true or certainly true").

4.7.3. Perception of personal health status

Perceptions of personal health status were measured with consumer's subjective views of their own health. It was included in the study because it may affect participants' healthcare behavior, and we are studying middle age to elderly people. People who report having poor or fair health status are less likely to have sought health information and seen a physician in the past year (Tu & Hargraves,

Table 2. Summary of measures for chronic self-construal orientation

Independent self	Interdependent self
<i>Horizontal independent self^a</i>	<i>Horizontal interdependent self^b</i>
<ul style="list-style-type: none"> • Though I may have something in common with others, my personal attributes are what make me who I am • To know who I really am, you must examine my achievements and accomplishments* • It is better for me to follow my own ideas than to follow those of anyone else • I enjoy being unique and different from others 	<ul style="list-style-type: none"> • My happiness depends very much on the happiness of my partner (family or other loved ones) • My close relationships with my partner (family or other loved ones) are important to a sense of what kind of person I am • To know who I really am, you must see me with my partner (family or other loved ones) and understand who s/he is • It is important for me to maintain harmony within my partner (family or other loved ones)
	<i>Vertical interdependent self^c</i>
	<ul style="list-style-type: none"> • I will sacrifice my self-interest for the benefit of my partner (family or other loved ones) • I believe that relationships with my partner (family or other loved ones) should be based on duty before pleasure • It is important for me to respect decisions made by my partner (family or other loved ones)** • It is important for me to be responsible and take care of my partner (family or other loved ones), even when I have to sacrifice what I want

^aOne item (*) was removed. Cronbach's α increased from 0.52 to 0.65.

^bCronbach's α was equal to 0.75.

^cOne item (**) was removed. Cronbach's α increased from 0.65 to 0.70.

2003). Perception of personal health status was measured by asking: "In general, how would you rate your health?" The responses were recorded on five-point scale ranging from very poor to excellent.

4.7.4. Perception of knowledge regarding cholesterol-lowering drugs

The perception of knowledge regarding cholesterol-lowering drugs reflects people's self-evaluation of their understanding of factual and interpretative information about the drugs (Finnegan & Viswanath, 1997). This variable was included in this study because perceived knowledge regarding prescription drugs may influence patterns of information-seeking behavior. Specifically, individuals who perceive themselves as healthy and knowledgeable about prescription drugs tend to seek information from physicians (rather than other sources), while people who score low on self-perceived knowledge tend to seek more information from ads (Morris, Tarbak, & Olins, 1992). Perception of cholesterol-lowering prescription drug knowledge was measured with the query: "How would you rate your knowledge about cholesterol-lowering prescription drugs?" The responses were recorded on seven-point scale ranging from -3 (very poor) to +3 (very good).

4.7.5. Socio-demographic factors

Socio-demographic factors including age, educational level, race, marital status, and household income were recorded. Individuals who neither seek health information nor have seen a physician in the past year tend to have lower income, have less education, disproportionately include men, be older, and be minorities (Tu & Hargraves, 2003). The questions for socio-demographic data (i.e. age, education, marital status, race, and household income) were adapted from the FDA survey (Food and Drug Administration, 1999).

Table 3. Summary of the regulatory focus

Promotion focus items ^a	Prevention focus items ^b
<ul style="list-style-type: none"> • Compared to most people, are you typically unable to get what you want out of life?* • How often have you accomplished things that got you “psyched” to work even harder? • Do you often do well at different things that you try? • When it comes to achieving things that are important to me, I find that I don’t perform as well as I ideally would like to do • I feel like I have made progress toward being successful in my life • I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them 	<ul style="list-style-type: none"> • Growing up, did you ever “cross the line” by doing things that your parents would not tolerate? • Did you get on your parents’ nerves often when you were growing up? • How often did you obey rules and regulations that were established by your parents? • Growing up, did you ever act in ways that your parents thought were objectionable? • Not being careful enough has gotten me into trouble at times

^aOne item (*) was removed. Cronbach’s α increased from 0.61 to 0.65.

^bCronbach’s α was equal to 0.77.

4.7.6. Medical condition and medication use

The participants’ self-reports of their medical condition were used to assess their diagnosed chronic health conditions and current medication uses. It was included in the study because individuals who have chronic conditions or are currently taking medications may feel more involved in processing DTCA information (Petty & Cacioppo, 1986), and are likely to engage in information-seeking behavior and to discuss their illness and treatment choices with their physician more than those who do not have the condition or do not take medication (Tu & Hargraves, 2003). Medical conditions and medication uses were measured with the query: “Please indicate if you have any of the conditions listed below and whether you are presently taking medication for it. Please mark ‘X’ in all the boxes that apply.” Ten medical conditions were listed: allergies, asthma, anxiety disorder, depression, diabetes, heart disease, high blood pressure, high cholesterol, kidney problems, and liver problems. Additionally, an “other” category was included. High cholesterol was included because it was a targeted medical condition in the study. Anxiety disorder and depression were included because these psychological disorders could influence responses. The other conditions were included because they were associated with fictitious risk information shown in the Travacor ads. The responses for each medical condition were recorded on four categories: “(a) I don’t have this condition, (b) I have this condition and I’m taking prescription drug(s) for it, (c) I have this condition and I am taking non-prescription drugs (e.g. OTC drugs or herbal products) for it, and (d) I have this condition but I haven’t taken anything for it.”

4.7.7. Relationship to healthcare plans

Participants were asked the type of health plan in which they were enrolled and how satisfied they were with it. Their satisfaction was a measure of a participant’s overall evaluation of how the health plan meets their needs. It was included in this study because dissatisfied customers tend to shop or switch to new health plans or providers (Bendall-Lyon & Powers, 2002). Satisfaction with the health plan was measured with the query: “Overall, how satisfied are you with your health plan?” Responses to each item were recorded on seven-point scale ranging from -3 (extremely unsatisfied) to +3 (extremely satisfied).

4.7.8. Satisfaction with the physician

Satisfaction with the physician reflects whether patient consumers are satisfied with their relationship with their physician and implies whether the physician could deliver medical care that would

meet their needs (Roter & Hall, 1997). Bell, Wilkes, and Kravitz (1999) found that in situations where an individual's request for a prescription was denied, individuals who reported lower satisfaction with their physicians tended to feel disappointed, tried to persuade their doctor to write a prescription, or sought the prescription elsewhere, and even terminated their relationship with their physician. Satisfaction with the physician was measured with the query: "Overall, how satisfied are you with your doctor?" The responses to each item were recorded on seven-point scale ranging from -3 (extremely unsatisfied) to +3 (extremely satisfied).

4.8. Analysis plan

For research objective one, the effects of goal compatibility between self-regulatory focus and self-construal orientation, under favorable/neutral versus unfavorable DTCA attitudes were examined using ANOVA. Three-way interactions between self-regulatory focus, self-construal orientation, and consumer attitudes toward DTCA were examined using an omnibus *F* test and a focus test (the simple main effect analysis, which may be considered as a pair-wise contrast analysis that compares the effect of one independent variable at a particular level of another independent variable) (Olejnik & Hess, 1997; Rosenthal & Rosnow, 1985). For research objective two, the effects of the self-regulatory orientation on risk information recall were analyzed using independent *t*-tests. A *p*-value, 0.05 was considered as statistically significant.

5. Results

5.1. Equivalence of DTCA attitude groups

There were no statistically significant differences in the average age (53.1 versus 54.8 years old), marital status, and household income between the positive/neutral DTCA attitude group and the negative DTCA attitude group. However, the negative DTCA attitude group had greater numbers of highly educated individuals than the positive/neutral DTCA attitude group ($\chi^2 = 14.23, p < 0.01$). Other than slight differences in race, there were no significant differences in socio-demographic information among participants in the four experimental conditions for both groups.

5.1.1. Manipulation check

5.1.1.1. Self-regulatory focus intervention. In the positive/neutral DTCA attitude group, promotion-focused ads successfully produced promotion-focused thoughts. Participants who saw a promotion-focused ad had higher scores in promotion-focused thoughts than those who saw a prevention-focused ad (mean score = 3.5 versus 2.2, $p < 0.001$). However, there were no statistically significant differences in prevention-focused thoughts between participants who saw a prevention-focused ad and those who saw a promotion-focused ad (mean score = 3.9 versus 3.8, $p > 0.05$). In the negative DTCA group, neither the promotion- nor the prevention-focused ads induced different promotion- and prevention-focused thoughts, respectively.

5.1.1.2. Self-construal orientation intervention. In the positive/neutral DTCA attitude group, the self-construal orientation intervention was successful. For the independence-oriented intervention, participants who saw an independence-oriented ad thought about themselves more than those who saw an interdependence-oriented ad (mean score = 3.6 versus 3.2, $p > 0.05$). Along the same lines, for the independence-oriented intervention, individuals who saw an interdependence-oriented ad thought about their partner/family members more than those who saw an independence-oriented ad (mean score = 3.6 versus 2.9, $p < 0.05$). In the negative DTCA attitude group, none of independence- and interdependence-oriented interventions was successful in inducing independence- and interdependence-oriented thoughts (mean score = 3.0 versus 3.0, $p > 0.05$ and mean score = 2.4 versus 2.3, $p > 0.05$, respectively). Table 4 summarizes the results for manipulation check.

5.1.2. Effects of goal compatibility

The results show that ads with goal compatibility (versus incompatibility) increase (a) intentions to speak with physicians about the advertised drug, (b) intentions to speak with physicians about high

Table 4. Manipulation check results

Manipulation check	Positive/neutral DTCA attitude (N = 95)					Negative DTCA attitude (N = 95)				
	Mean (Standard deviation)		ANCOVA ^b			Mean (Standard deviation)		ANCOVA ^b		
	Promotion focus intervention	Prevention focus intervention	DF	F value	p value	Promotion focus intervention	Prevention focus intervention	DF	F value	p value
<i>Self-regulatory focus^a</i>										
Promotion focus score	3.45 (1.26)	2.22 (1.22)	1, 86	17.84	0.00	2.18 (1.25)	1.98 (1.13)	1, 95	0.82	0.37
Prevention focus score	3.77 (1.20)	3.89 (0.95)	1, 86	0.58	0.45	3.16 (1.16)	3.30 (1.07)	1, 95	0.03	0.85
<i>Self-construal orientation^a</i>										
Independence score	3.61 (1.17)	3.20 (1.17)	1, 86	3.72	0.06	2.96 (1.34)	3.00 (1.22)	1, 95	0.00	1.00
Interdependence score	2.93 (1.42)	3.59 (1.19)	1, 86	4.73	0.03	2.34 (1.27)	2.43 (1.27)	1, 95	0.08	0.77

^aScale measuring promotion thoughts, prevention thoughts, independence thoughts, and interdependence thoughts (1 = not at all, 5 = a lot).

^bControlling for chronic self-regulatory focus, chronic self-construal orientation, and general attitudes toward DTCA.

cholesterol, (c) likelihood of discussing the drug with health professionals (i.e. physician, nurse, and pharmacist), and (d) likelihood of requesting a prescription for the advertised drug. However, the ads with goal compatibility (versus incompatibility) did not significantly influence (a) perception of drug's benefits and (b) perception of the drug's risks. Importantly, overall profile plots of interactions showed that participants with positive/neutral DTCA attitudes reacted to the ads in the expected direction, whereas those with negative DTCA attitudes failed to respond in the expected direction (see below). Tables 5–7 present the means of the dependent variables in the four treatment conditions.

Table 5. The mean values of intentions to talk with physician in the four treatment groups (scale range 1–5)

	Positive/neutral DTCA attitude		Negative DTCA attitude	
	Independence	Interdependence	Independence	Interdependence
<i>1. Intention to talk about the drug</i>				
Promotion focus	3.37	2.90	1.76	2.53
Prevention focus	2.45	3.61	1.92	2.16
<i>2. Intention to talk about high cholesterol</i>				
Promotion focus	3.92	3.23	2.59	2.99
Prevention focus	3.50	3.88	2.71	2.61

Table 6. The mean values of likelihood of action in the four treatment groups (scale range –3 to +3)

	Positive/neutral DTCA attitude		Negative DTCA attitude	
	Independence	Interdependence	Independence	Interdependence
<i>1. Likelihood of discussing the drug with physician</i>				
Promotion focus	2.01	1.72	1.03	1.41
Prevention focus	1.23	1.91	0.87	0.72
<i>2. Likelihood of requesting the drug</i>				
Promotion focus	1.73	0.56	–0.60	–1.04
Prevention focus	0.01	0.81	–0.55	–0.85
<i>3. Likelihood of seeking information from nurses</i>				
Promotion focus	1.46	0.73	0.10	0.64
Prevention focus	0.14	1.17	0.52	0.59

Table 7. The mean values of perception of drug's benefits in the four treatment groups (scale range 1–5)

	Positive/neutral DTCA attitude		Negative DTCA attitude	
	Independence	Interdependence	Independence	Interdependence
Promotion focus	3.87	3.61	3.35	3.29
Prevention focus	3.49	3.97	3.38	3.10

5.1.2.1. Intention to speak with physicians about the advertised drug. In the positive/neutral DTCA attitude group, after controlling for participants' general DTCA attitudes, the results showed support for the effects of goal compatibility ($F_{1,90} = 10.67, p < 0.01$), as hypothesized. Under the independence-oriented intervention, a promotion-focused ad was better than a prevention-focused ad in motivating individuals to speak with their physician about the advertised drug, as hypothesized (mean score = 3.37 versus 2.45) ($F_{1,90} = 6.51, p < 0.05$). The reverse pattern was true for the interdependence-oriented condition, as forecast (mean score = 2.9 versus 3.61) ($F_{1,90} = 4.20, p < 0.05$). In the prevention-focused intervention, an interdependence-oriented ad was better than an independence-oriented ad in motivating individuals to speak with their physician about the drug, as predicted (mean score = 3.61 versus 2.45) ($F_{1,90} = 10.59, p < 0.01$). For the negative DTCA attitude group, although the omnibus F -test did not support the goal compatibility effects ($F_{1,97} = 2.29, p > 0.05$), the simple main effect analyses indicated a statistically significant interaction between self-regulatory focus and self-construal orientation, where the directions of the interaction were opposite to what we expected. Under the promotion-focused intervention, an interdependence-oriented ad was better than an independence-oriented ad in motivating consumers to speak with their physician about the advertised drug (mean score = 2.53 versus 1.76) ($F_{1,97} = 9.95, p < 0.01$). The interactions are displayed in Figure 1.

5.1.2.2. Intention to speak with physician about high cholesterol. After controlling for general DTCA attitudes, the results showed a statistically significant interaction between self-regulatory focus and self-construal orientation on participants' intention to speak with their physician about high cholesterol in the positive/neutral DTCA attitude group ($F_{1,90} = 5.02, p < 0.05$), as predicted. Under the promotion-focused condition, the independence-oriented ad was better than the interdependence-oriented ad in motivating individuals to speak with their physician about high cholesterol (mean score = 3.92 versus 3.23) ($F_{1,90} = 4.24, p < 0.05$). Under the interdependence-oriented intervention (see Figure 2), a prevention-focused ad was better than a promotion focus in motivating participants to speak with their physician about high cholesterol (mean score = 3.88 versus 3.23) ($F_{1,90} = 3.91, p < 0.05$). In the negative DTCA attitude group, no effects of goal compatibility on intention were found ($F_{1,97} = 0.88, p > 0.05$), as expected.

5.1.2.3. Likelihood of discussing the drug with physician. After controlling for general DTCA attitude, the analyses revealed a statistically significant interaction ($F_{1,90} = 4.04, p < 0.05$) in the positive/neutral DTCA attitude group, as predicted. Under the independence-oriented intervention

Figure 1. Profile plots on the intention to talk with physician about advertised drug.

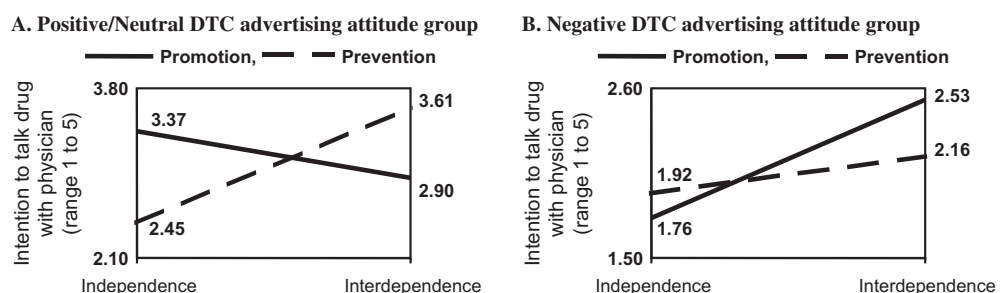


Figure 2. Profile plots on the intention to talk with physician about high cholesterol.

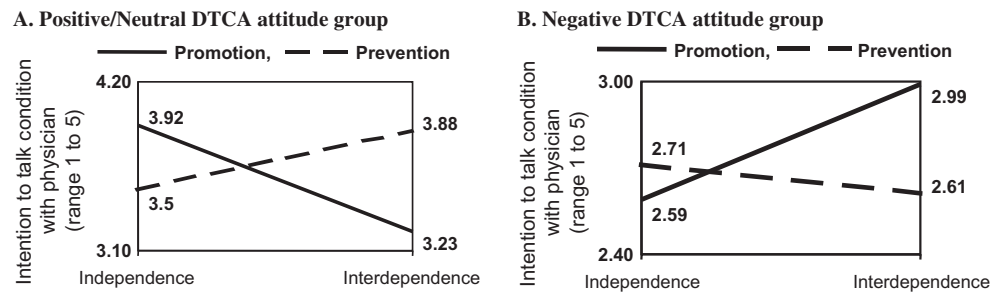
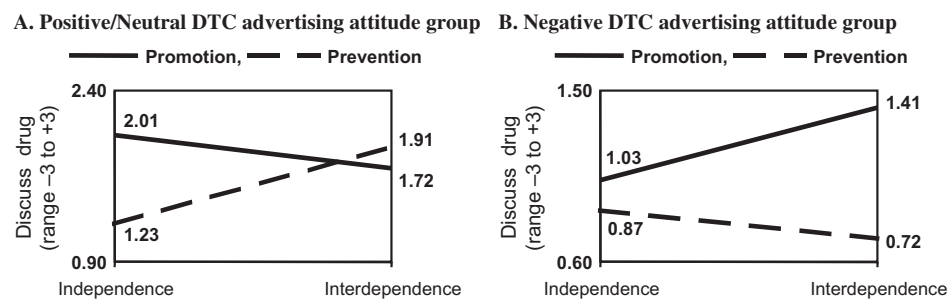


Figure 3. Profile plots on likelihood of discussing the drug with physician.



(see Figure 3), a promotion-focused ad was better than a prevention-focused ad in increasing the likelihood of discussing the drug with their physician (mean score = 2.01 versus 1.23) ($F_{1,79} = 5.07$, $p < 0.05$). In the negative DTCA attitude group, the interaction was not significant $F_{1,72} = 0.69$, $p > 0.05$, as forecast.

5.1.2.4. Likelihood of requesting a prescription. After controlling for six potential covariates (i.e. general attitudes toward DTCA, age, education, income, perception of health status, satisfaction with physician, and personal prevention focus), an ANCOVA revealed a statistically significant interaction between self-regulatory focus and self-construal orientation on the likelihood of requesting a prescription from a physician ($F_{1,68} = 5.01$, $p < 0.05$), as hypothesized. Under the independence-oriented intervention, a promotion-focused ad was better than a prevention-focused ad in increasing the likelihood of requesting a prescription from a physician (mean score = 1.37 versus 0.01) ($F_{1,68} = 6.82$, $p < 0.05$) for the positive/neutral DTCA attitude group (see Figure 4). In the negative DTCA attitude group, the analyses showed that there were no statistically significant interaction effects on the likelihood of requesting a prescription for the advertised drug ($F_{1,62} = 0.01$, $p > 0.05$), as expected.

5.1.2.5. Likelihood of seeking information from a nurse. After controlling for age, education, and the perception of health status, the results showed a statistically significant interaction between self-regulatory focus and self-construal orientation on the likelihood of seeking information from a nurse

Figure 4. Profile plots on likelihood of requesting a prescription.

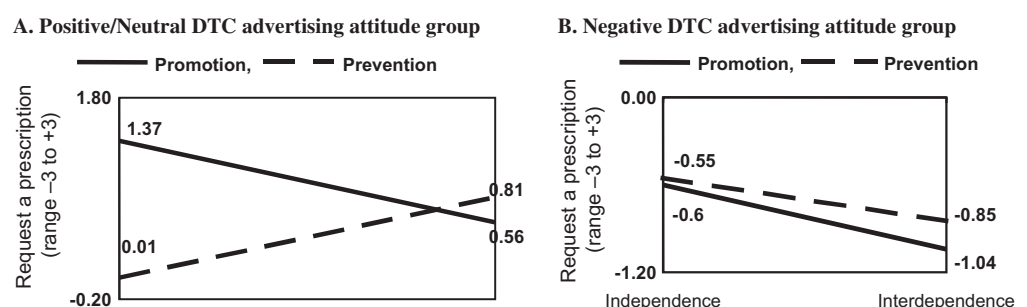
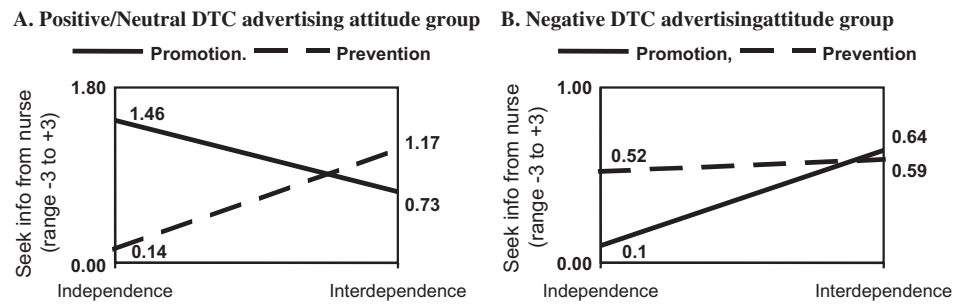


Figure 5. Profile plots on the likelihood of seeking information from nurse.



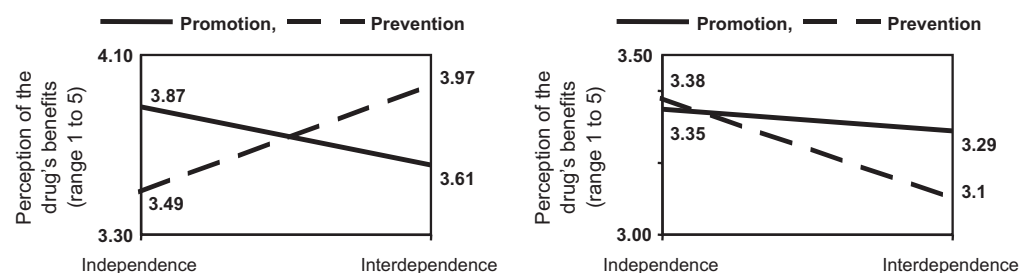
($F_{1,77} = 5.43, p < 0.05$) in the positive/neutral DTCA attitude group, as forecast. Under the independence-oriented intervention, a promotion-focused ad was better than a prevention-focused ad in influencing the likelihood of seeking information from a nurse (mean score = 1.46 versus 0.14) ($F_{1,77} = 5.81, p < 0.05$). Additionally, under the prevention-focused condition, a marginally significant interaction was found, i.e. an interdependence-oriented ad (as opposed to an independence-oriented ad) had greater influence on the likelihood of seeking information from a nurse (mean score = 0.14 versus 1.17) ($F_{1,77} = 3.66, p < 0.05$) (Figure 5). In the negative DTCA attitude group, no statistically significant interactions were found for the likelihood of seeking information from a nurse ($F_{1,64} = 0.32, p > 0.05$), as predicted.

5.1.2.6. Perception of drug's benefit. After controlling for general DTCA attitude, ANCOVA indicated a statistically significant interaction between self-regulatory focus and self-construal orientation on the perception of the drug's benefits for the positive/neutral DTCA attitude group ($F_{1,90} = 4.87, p < 0.05$), as hypothesized. Additionally, when education and the perception of health status were included as additional covariates, the interaction effects improved ($F_{1,88} = 5.35, p < 0.05$). Under the prevention-focused intervention, the interdependence-oriented ad was better than the independence-oriented ad in increasing the participant's perception of the drug's benefits (mean score = 3.97 versus 3.49) ($F_{1,88} = 4.39, p < 0.05$) (see Figure 6). Conversely, in the negative DTCA attitude group, despite controlling for general DTCA attitude, education, and the perception of health status, no statistically significant interactions resulted ($F_{1,88} = 0.40, p > 0.05$).

5.1.3. Effects of self-regulatory focus

5.1.3.1. Effects on risk information recall. Regardless of their general DTCA attitudes, participants who saw the promotion-focused ads performed better than those who saw the prevention-focused ads in recalling overall risk information (mean score = 4.19 versus 3.11, $t_{93,0.05} = -3.12, p < 0.01$ for the positive/neutral DTCA attitude; and mean score = 4.59 versus 3.85, $t_{100,0.05} = -2.03, p < 0.05$ for the negative DTCA attitude). Moreover, the promotion-focused ads induce better recall of serious side effects for participants in the positive/neutral DTCA attitude group (mean score = 1.52 versus 1.11, $t_{93,0.05} = -2.39, p < 0.05$) and better recall of precautions/warnings (mean score = 1.00 versus 0.57, $t_{93,0.05} = -2.14, p < 0.05$), whereas in the negative DTCA attitude group, participants had better recall of minor side effects (mean score = 1.82 versus 1.35, $t_{100,0.05} = -2.11, p < 0.05$). There were no differences in recalling incorrect risk information in the positive/neutral DTCA attitude group (mean

Figure 6. Profile plots on the perception of the drug's benefits.



score = 0.50 versus 0.55, $t_{90, 0.05} = 0.34, p > 0.05$) and in the negative DTCA attitude group (mean score = 0.31 versus 0.47, $t_{86, 0.05} = 1.10, p > 0.05$).

5.1.3.2. Emotional responses to the ad. In the positive/neutral DTCA attitude group, participants who were exposed to promotion-focused ads tended to have more positive emotional responses to the ads than those who saw prevention-focused ads (mean score = 2.75 versus 2.31, $t_{92, 0.05} = 2.43, p < 0.05$). However, a similar difference was not found for negative emotional responses between participants who saw prevention-focused ads and those who saw promotion-focused ads (mean score = 1.47 versus 1.38, $t_{91, 0.05} = 0.85, p > 0.05$). In the negative DTCA attitude group, the promotion-focused ads did not significantly elicit more positive emotional responses than prevention-focused ads (mean score = 1.80 versus 1.65, $t_{99, 0.05} = 1.11, p > 0.05$), and the prevention-focused ads did not elicit more negative emotional responses than the promotion-focused ads (mean score = 1.64 versus 1.86, $t_{98, 0.05} = 1.46, p > 0.05$).

In sum, the results support the interaction effects between self-regulatory focus and self-construal orientation (e.g. the effects on intention to speak with a physician and likelihood of discussing the drug with a physician), for participants who had positive/neutral DTCA attitudes but not for participants who had negative DTCA attitudes. The effects of self-regulatory focus on risk information recall were contrary to our predictions, i.e. promotion- rather than prevention-focused ads were better in eliciting the recall of risk information. This trend was true in both the positive/neutral and the negative DTCA attitude groups.

5.2. Exploratory analysis: thought-listing insights

5.2.1. Effects of goal compatibility

The opposite patterns of the effects of goal compatibility between participants who had positive/neutral DTCA attitudes and those who had negative DTCA attitudes might be explained by differences in individuals' internal states (e.g. their general DTCA attitudes) and external advertising information (i.e. the messages in the DTC ads). Wright (1980) and Petty and Cacioppo (1979) suggested that a persuasive message can be either accepted or rejected based on an individual's existing attitudes toward the message. The idea is that acceptance of the message occurs when the new or external message is consistent with or enhances one's existing attitudes. Resistance of the message occurs when the message does not conform to an individual's existing attitudes (Wright, 1980). Thus, it is possible that when participants had positive/neutral attitudes toward DTCA, they accepted advertising information they had seen because they felt that the external (i.e. advertising) information conformed to their internal beliefs. Conversely, when participants had negative attitudes toward DTCA, they rejected advertising information they had seen because they felt that the external (advertising) information was against their internal beliefs.

Thus, we hypothesized, based on the concept of advertising acceptance-resistance, that participants in the positive/neutral DTCA attitude group should produce spontaneous cognitive responses that tend to contain (a) more support arguments, (b) fewer counterarguments, and (c) fewer source derogations than those in the negative DTCA attitude group. In testing this explanation for the findings, the cognitive responses of each participant (obtained from the thought-listing data) were analyzed using a modified version of Wright's (1973) criteria. The responses were coded in terms of the presence or absence of counterarguments (i.e. thoughts against the idea, or use, of the product or challenging argument accuracy in the ad), support arguments (i.e. thoughts in favor of the idea, or use, of the product or reaffirming argument validity in the ad), and source derogations (i.e. thoughts expressing distrust, skepticism, or derogations of the advertisement or advertisers). Two trained, independent judges analyzed the data. The inter-rater reliability (Cronbach's α) for each argument was 0.80, 0.81, and 0.86, respectively. The results supported the hypotheses. Compared to those with negative DTCA attitudes, participants who had positive/neutral DTCA attitudes tended to generate more support arguments (i.e. were more accepting) ($\chi^2 = 4.73, p < 0.05$), make fewer

counterarguments (i.e. were less resistant) ($\chi^2 = 19.55, p < 0.01$), and have fewer source derogations (i.e. were less skeptical) ($\chi^2 = 10.87, p < 0.01$).

5.2.2. *Effects on risk information recall*

Promotion-focused ads (as opposed to prevention-focused ads) elicited better recall of risk information. To see if these findings varied by DTCA attitudes, we studied the profile plots of the two-way interactions between self-regulatory focus and self-construal orientation on risk information recall. The results showed that there were no interaction effects between self-regulatory focus and self-construal orientation on risk information recall, and the findings confirmed the results reported above.

The participants' better recall of risk information in response to promotion-focused ads compared to the recall of risk information in response to prevention-focused ads might be a function of (a) the different strategic personal strategies involved in solving problems (a promotion focus or a prevention focus), (b) the role of attention, and (c) positive emotions on cognitive function. Due to the limitation of available data, exploratory analyses were conducted to examine the role of attention and the role of positive emotions as presented below.

Types of arguments (i.e. counterarguments, support arguments, and source of derogations) were used as proxy measures for participants' levels of attention. We speculate that if the advertisement induces an individual to think positively about the product, the consumer should be more likely to pay attention to product information, and therefore might recall product information (including risk information) better than individuals who think negatively about the product. Thus, we hypothesized that promotion-focused ads might generate more support arguments, fewer counterarguments, and fewer source derogations than prevention-focused ads. The results for the analyses of the thought-listing data supported this explanation. We found that participants who were exposed to a promotion-focused ad tended to report more support arguments than those who were exposed to a prevention-focused ad ($\chi^2 = 5.21, p < 0.05$), but there were no differences in the amount of counterarguments ($\chi^2 = 0.29, p > 0.05$) and source derogations ($\chi^2 = 0.00, p > 0.05$) between the promotion- and the prevention-focused intervention groups. In other words, since promotion-focused ads (as opposed to prevention-focused ads) induce participants to think positively about the product, this suggests that they paid greater attention to the ad. Thus, participants who were exposed to promotion-focused ads recalled more risk information than those who saw the prevention-focused ads.

6. Discussion

6.1. *The moderating role of general DTCA attitude on persuasion*

One explanation for the different responses between individuals who had positive/neutral DTCA attitudes versus those who had negative DTCA attitudes is the discrepancy between individuals' internal beliefs and the characteristics of the external message. The results from the analyses of the thought-listing data supported this explanation. Specifically, we found that while reading the ad, participants in the positive/neutral DTCA attitude group tended to generate more thoughts in favor of using the products or to agree with the ad messages (support arguments), compared to those in the negative DTCA attitude group. People in the positive/neutral attitude group (versus the negative) were also less likely to generate thoughts against using the product (counterarguments), or to express distrust or skepticism about DTCA (source derogations).

Extrapolating from these findings, we might explain the effects as follows. Compared to the ads containing weak (i.e. incompatible) persuasive messages (i.e. the promotion-interdependence ad and the prevention-independence ad), the ads that contained strong persuasive information (i.e. the promotion-independence ad and the prevention-interdependence ad) probably caused greater discrepancy between the advertising message and general DTCA attitudes in the negative attitude group. When a strong persuasive message is given to participants with positive/neutral DTCA

attitudes, the discrepancy should appear to be smaller because of congruence between message and attitudes. In other words, the strong persuasive messages are more likely to be accepted in the positive/neutral DTCA attitude group, whereas the same messages are more likely to be rejected (or resisted) in the negative attitude group. Likewise, for the weak persuasive message, participants with negative DTCA attitudes should feel less resistant to this kind of message because it produces less discrepancy between advertising information and their personal attitudes. Conversely, the weak persuasive message should be less favorable (or accepted) for participants who have positive/neutral DTCA attitudes because it reaffirms their existing opinions to a lesser degree.

6.2. Effects of self-regulatory focus on risk information recall

Contrary to our prediction, the results showed that participants with a promotion focus recalled risk information significantly better than those with a prevention focus. We speculate on a reason for this as a function of mood management. Based on a hedonistic premise (i.e. seek pleasure and avoid pain), mood management theory (Zillman, 2000) states that individuals tend to arrange their environment so that good mood (commonly pleasure) is maximized or maintained, and bad mood (commonly pain) is diminished or alleviated. That is, people might approach negative information (e.g. risk information) only up to a certain point, and if they feel that they already have lots of negative feelings, they might avoid approaching additional negative stimuli. In our study, promotion-focused participants are in a positive-feeling state, and have plenty of room to absorb the somewhat less pleasant risk information; persons with a prevention focus, on the other hand, have already been thinking of negative events, and hence might be depleted in some way when they come to the end of the ad which presents the risk information. As a result, prevention-focused participants might not tolerate focusing on risk information and therefore had a lower rate of risk information recall (comparing to promotion-focused participants).

Additionally, research on gender differences found with mood management (Zillman, 2000) appears to support this explanatory idea. It has been demonstrated that women tend to comply with mood management predictions (e.g. avoid negative stimuli under stress condition), whereas men tended to fail to select messages in line with the theory. Specifically, a field study was conducted by Anderson, Collins, Schmitt, and Jacobvitz (1996), about TV choices between men and women when under stressed conditions. They found that stressed women watched more game shows and variety programs, whereas stressed men preferred violent action programs. In our study context, all participants were women; those who were exposed to prevention-focused ads might have gotten a sense of negative feelings and not focused on risk information; therefore, they should have been less likely to recall risk information (comparing to promotion-focused participants).

6.3. Effects of self-regulatory focus on emotional responses to the ad

6.3.1. Effects on positive emotion

The finding about the greater intensity of positive emotional responses in the promotion-focused condition (versus a prevention-focused condition) is consistent with studies conducted by Idson, Liberman, and Higgins (2000) and Brockner and Higgins (2001). These researchers found that the intensity of positive emotions emanating from a promotion focus (cheerfulness) is greater than the intensity of positive emotions originating from a prevention focus (quiescence). Thus, it is possible that promotion-focused ads elicit a sense of aspiration (i.e. emphasizing that lowering cholesterol can help one maintain their future plans). Fulfilling this aspiration is something that most individuals are likely to value and prefer. The expectation that their wants would be fulfilled by their efforts may magnify the intensity of positive (cheerful) emotions. Conversely, prevention-focused ads encourage a sense of duty (i.e. emphasizing that lowering cholesterol is a responsible action that should be done for one's health). Fulfilling a duty is something that most individuals believe that they have to (or ought to) do, and not something one prefers to do, per se. Thus, the expectation that the advertised drug can assist one to fulfill duties might lead to less-intense positive emotional experiences than under expectations of fulfilling aspirations (Brockner & Higgins, 2001).

6.3.2. *Effects on negative emotion*

The results showed that the prevention-focused ads did not elicit negative emotions to a significantly greater degree than the promotion-focused ads. This finding fails to confirm previous research, which indicates that negative experiences in a prevention-focused condition are more intense than those in a promotion-focused condition (Brockner & Higgins, 2001; Idson et al., 2000; Leung & Lam, 2003; Thaler, 1980). Our findings may be explained as a function of “message framing” effects (i.e. positively versus negatively framed messages) (Brockner & Higgins, 2001). Specifically, we suspect that the positively framed messages in prevention-focused ads (e.g. “Thanks to Travacor, I (we) can live safely and feel worry free”) may generate reassuring feelings, while the negatively framed messages in the prevention-focused ads (e.g. “High cholesterol could put my life at risk” or “High cholesterol could separate us”) likely generate disconcerting emotional thoughts. As a result, the mixed-framed messages in the prevention-focused ads may be less disturbing or threatening than the ads with the negatively framed message alone. The use of the mixed (positively and negatively)-framed message in the prevention-focused ads is necessary because it minimizes the tendency of “boomerang” shifts in attitudes away from strong threatening messages in the prevention-focused ads, especially for individuals who lack the ability to cope with strongly negative appeals (Harris, 1994; Leventhal, 1970; Leventhal & Watts, 1966; Wood, 2000).

6.4. *Alternative methodological explanations*

Five of five primary hypotheses and five of six secondary hypotheses were confirmed in this study. It is possible that the unsupported hypothesis was due to methodological reasons such as intervention or risk information effects. We discuss these below.

6.4.1. *Intervention effects*

In experimental designs, manipulation checks, while not universally obtained, provide self-report evidence that intervention effects (manipulation checks) worked (Cozby, 1997). Our manipulation checks showed that only the promotion, independence, and interdependence conditions worked, and the prevention-focused intervention failed to produce differences in manipulation checks. The failure of the prevention-focused intervention may be due to two factors: the choice of product and the operationalization of “prevention focus” in this study. First, the choice of a cholesterol-lowering prescription drug for this study might have introduced a bias toward a prevention focus in and of itself. More specifically, high cholesterol is a well-known risk factor leading to coronary heart disease, which is the leading cause of death in the US population (McKenney, 2001). Thus, through public health campaigns over the past decade, people may be conditioned to think of cholesterol-lowering drugs as means to prevent serious health problems, rather than as means to help them achieve their positive goals (such as increased health). Second, the failure of the prevention-focused intervention may be due to ambiguous operationalizations. A prevention focus can be operationalized into two ways: through a concern about safety and/or through a sense of obligation (Higgins, 1997). Similar to Aaker and Lee (2001), we stressed the safety aspect of a prevention focus. It is possible that the prevention focus intervention may have been more effective had we also stressed the participants’ sense of obligation.

6.4.2. *The effects of risk information*

Advertisers in general try to make their brands stand out from competing brands (Batra, Myers, & Aaker, 1995). In attempts to increase brand affinity, they typically design ads to contain positive arguments regarding the product (one-sided ads) or incorporate both positive arguments and negative arguments (two-sided ads) of the brand to increase the credibility of the message or of the message endorser, and thereby induce favorable attitudes (Etgar & Goodwin, 1982). However, the persuasive power of two-sided ads depends on the characteristics of negative arguments (Pechmann, 1992) and audiences (Hovland, Lumsdaine & Sheffield, 1949). For example, two-sided ads prove to be more effective than one-sided ads when the negative arguments (a) are relatively unimportant, but not trivial, to consumers, (b) are correlated with a positive attribute (e.g. more expensive but higher quality), and (c) are new or unknown to consumers (Pechmann, 1992). Consumers who are highly educated and who are initially opposed to the claims tend to prefer two-sided messages to

one-sided messages (Bettinghaus, 1980; Hovland et al., 1949). Otherwise, in general, one-sided ads increase consumers' purchase intention better than two-sided ads (Bettinghaus, 1980; Hovland et al., 1949).

Consistent with advertising research, DTCA studies find that, compared to one-sided ads (DTC ads without risk information), two-sided ads (DTC ads with risk information) increase perceptions of credibility (Morris, Brinberg, & Plimpton, 1984), but decrease judged favorability of advertised drugs (Morris et al., 1985) and reduce intentions to purchase these drugs (Davis, 2000). Thus, it is likely that risk information dilutes the persuasive power of motivational themes (Davis, 2000). Our findings may not reflect genuine effects of the motivational themes alone, per se, but rather indicate net effects of the motivational themes and risk information.

7. Limitations

As with most studies, we should point out shortcomings with our research. The major shortcomings concern: generalizability, establishing causality, and measurement processes.

7.1. Generalizability

Generalizability of this study is limited in four aspects. First, the sample in this study (university female staff members and retirees aged 40 years or older) may limit the generalizability of the results. Men were excluded as well as younger individuals who suffer from familial hypercholesterolemia. Education and income variation was likely minimized because of the target population chosen. It is possible that a broader selection criterion that included those groups would show a wider variation in goal compatibility and affect the results.

Second, the study was designed to minimize external distractions in the ad exposure conditions (Wells, 1993), and therefore, our research setting is not a naturalistic one similar to everyday viewings of ads. Additionally, our study used a "forced exposure" design where participants were instructed to read the ad thoroughly. In naturalistic settings, some individuals may not see the ad, whereas others may see the same ad several times, read only parts of it, and so forth. In addition, we did not study the wide range of ad characteristics which affect an individual's response use such as variations in colors and background scenes. Such variation may have created a more divergent stimulus, especially toward the prevention or risk adverse responses of the sample.

Third, mock ads in our study included risk information which may dilute the effectiveness of motivational themes. Thus, our data may not represent pure effects of goal compatibility, but instead may indicate net effects of the interactions of motivational themes with risk information. However, because the inclusion of risk information in DTCA is mandated by the FDA, our study represents a realistic portrayal in this regard.

Fourth, this study focused only on print media and may not generalize to TV or other media. In TV media, a motivational theme can be conveyed through more prominent visual and audio cues, and the pace and the sequence of the cues are more under the control of the advertiser.

7.2. Establishing causality

A second broad limitation of our study relates to the issue of internal validity (Rosenthal & Rosnow, 1991; Trochim, 2001). Two possible threats to internal validity identified in this study are the intervention and the diffusion of treatment.

The effects of interventions are measured through a series of questions designed to determine that any outcomes found are likely due to the stimulus (Rosenthal & Rosnow, 1991). We found that the prevention-focused intervention did not effectively induce prevention-focused thoughts in self-reported manipulation checks. As we argued earlier, the choice of product, a cholesterol-lowering drug with extensive public education, and focus on safety as opposed to obligation aspects of prevention, may account for this.

Diffusion of treatment (Trochim, 2001) may occur because prospective participants might have heard or learned about the study from other participants who already attended a survey session. However, the degree of jeopardy caused by the diffusion of treatment depends on the types of information shared. If participants shared general information, such as the length of the questionnaire, the diffusion of treatment might not lead to serious problems. If they shared important information (e.g. recall of risk information exercise), diffusion of treatment could affect the results. The diffusion of treatment would be worse if participants guessed the study hypotheses. However, based on our observations, it is unlikely that the threat of diffusion of treatments had a major impact on our study because people had little opportunity to meet and speak with other participants before or after administration of the study, as they lived in different areas and worked in different organizations for the most part.

7.3. Measurement issues

The measurement issues involve reliability and validity (Trochim, 2001). In this study, reliability was tested using Cronbach's α , in which the value of 0.70 or higher is generally considered acceptable (Nunnally, 1978). Overall, Cronbach's α for the study measures was 0.70 or higher, except for the measures of promotion focus and independent self which had reliabilities of 0.65 each. The lower reliability for the measures of promotion focus is probably due to the fact that our sample had greater variation in background characteristics compared to the undergraduate sample utilized to develop the Regulatory Focus scale (Higgins et al., 2000). The lower reliability for the independent self score is probably due to the selection of the independent self items. We selected items for the independent self scale from two different scales: one developed by Triandis and Gelfand (1998) and one developed by Oyserman et al. (2002). The combination of items, albeit similar as judged by an expert panel in this study, produced a somewhat less reliable scale than the two constituents. Overall, although the reliabilities of the measures of promotion focus and independent self are somewhat lower than desired, they are judged to be at acceptable levels for empirical research of the type conducted herein.

The major concern regarding the validity of measures is our inability to precisely determine the effects of DTC ads on actual consumer behavior. Specifically, the study used intention to act and likelihood of action as proxy measures for actual consumer behavior. In DTCA research, very few studies (cf. Perri & Dickson, 1988; Weissman et al., 2003) have measured the effects of DTC ads on actual consumer behavior. Unfortunately, these previous studies were limited in the sense of not manipulating specific advertising appeals, and therefore, their results provide little information on the effects of ad exposure on actual behavior. Thus, while our study provides a greater level of understanding as to which advertising appeals motivate consumers, it has unknown validity in predicting actual behavior of consumers. Nevertheless, to the extent that the decision-making and behavioral expectations we did measure are meaningful, we would argue that our study provides perhaps the most valid and useful findings to date concerning DTCA.

8. Conclusions

This study had two objectives: to investigate the persuasive effects of self-regulatory focus and self-construal orientation and to examine the effects of self-regulatory focus on consumers' ability to recall of risk information and their emotional responses to ads. For the first objective, the findings supported the effects of goal compatibility. Goal compatibility affected both intentions to speak with physicians about the drug and likelihood of contacting physicians in this regard. Importantly, this occurred for those receptive or mental to advertising in general but not for those with a priori negative attitudes toward advertising. For the second objective, the results regarding the effects of self-regulatory focus on risk information recall showed trends in a direction opposite to what we expected. We found that participants who had negative DTCA attitudes appeared to be motivated by goal-incompatible ads more than by goal-compatible ads. Overall, our study provides evidence that DTC advertisements can serve as motivational cues to encourage consumers to take action, and the persuasive power of the DTC ads depends not only on characteristics of ads but also characteristics of consumers, such as their attitudes, which in turn affects information processing.

8.1. Implication for public policy makers

Our research indicates that when the same factual information is accompanied by different types of motivational themes, consumers exposed to dissimilar themes react to ads differently. Thus, besides being concerned about the quality of drug information, the public policy makers or FDA might need to consider whether the motivational themes in DTC ads lead consumers to take improper actions about medication use.

8.2. Implication for health professionals

Our findings support the fact that a DTC ad is a cue-to-action and motivates consumers to interact more frequently with health professionals about their disease and its treatment. Thus, such health professionals as doctors, nurse practitioners, and pharmacists might take this as an opportunity to supplement personal advice and clarify misunderstanding of consumers about the diseases and the advertised drugs to patients. They should regard patients' inquiries as an opportunity to establish, maintain, or enhance their relationships with their patients. Roter and Hall (1992, 1997) suggest that good doctor-patient relationships increase patients' satisfaction in medical care, and improve patients' health outcomes.

8.3. Implications for pharmaceutical manufacturers

Our analyses showed that participants who had negative attitudes toward DTCA tended to react to motivational (goal compatibility) messages in the opposite direction to what theory (or marketers) might suggest. Those persons with negative attitudes might have latent animosity toward pharmaceutical manufacturers and be skeptical about DTC ad claims that are primarily designed only to sell them something. Batra et al. (1995) suggest that segmentation can target only one promotion program for a single subgroup, or marketers can develop different programs for each subgroup. More research is needed investigating why people have negative attitudes and how to gain their trust.

8.4. Implications for consumers

Although consumers may be skeptical about DTC ads, they generally still prefer to receive information (Perri & Dickson, 1988; Perri & Nelson, 1987; Williams & Hensel, 1995) to reduce uncertainty created by their illnesses and by being better informed about possible courses of action (Mishel, 1981; Mishel & Bradden, 1988). Our study showed that participants who have positive/neutral attitudes toward DTCA tended to respond positively to goal-compatible ads (as predicted). Thus, they might be more vulnerable to advertising than others and perhaps give overly positive evaluation advertised drugs. Furthermore, we found an increase in the likelihood of seeking information and the likelihood of requesting the drug from physicians as a result of exposure to DTC ads. The increase in likelihood to seek additional information is a consequence of the positive influence of DTC ads, but the increase in the likelihood to request the advertised drug will in general also be a function of the interaction with a doctor.

8.5. Implications for researchers

Research on the impact of DTCA in consumer decision-making is relatively extensive but often has not included the testing of a theoretical model to explain the individual's response to ads. The lack of a theoretical framework could hinder the progress of future research. The combined framework of self-regulatory focus theory and self-construal orientation used in this study has proven useful in shedding new light on why consumers react in a certain way as a result of seeing DTC advertisements. Another interesting implication is our finding that consumers' general attitudes toward DTCA seem to have a moderating effect on their reactions to ads. Equally intriguing is the finding of opposite response patterns between those individuals with positive/neutral attitudes toward DTCA compared those who expressed negative attitudes. Future research is needed to determine the exact mechanisms involved here. This project was funded through internal sources available to the University of Michigan College of Pharmacy's graduate program. none

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