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## EFFECTS OF IMAGE CONGRUENCY ON PERSUASIVENESS AND RECALL IN DIRECT-TO-CONSUMER PRESCRIPTION DRUG ADVERTISING

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EFFECTS OF IMAGE CONGRUENCY ON PERSUASIVENESS AND RECALL  
IN DIRECT-TO-CONSUMER PRESCRIPTION DRUG ADVERTISING

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THESIS

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A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Arts in the  
College of Communications and Information Studies  
at the University of Kentucky

By

Kristen Marie Kiernicki

Lexington, Kentucky

Director: Dr. Donald Helme, Associate Professor of Communication

Lexington, Kentucky

2012

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## ABSTRACT OF THESIS

### EFFECTS OF IMAGE CONGRUENCY ON PERSUASIVENESS AND RECALL IN DIRECT-TO-CONSUMER PRESCRIPTION DRUG ADVERTISING

Although direct-to-consumer (DTC) prescription drug advertising is regulated by the U.S. Food and Drug Administration, content analyses (Baird-Harris, 2009; Frosch, Krueger, Hornik, Cronholm, & Berg, 2007; Kaphingst, DeJong, Rudd, & Daltroy, 2004; Wilkes, Bell, & Kravitz, 2000) and other studies (Davis, 2000, 2007) have suggested that advertisers may not disclose drug risks to the same extent that they describe drug benefits. This study builds on previous studies by Baird-Harris and Smith and Shaffer (2000) and aims to test the relationship between image congruency in televised DTC advertisements, recall of risks and benefits, and perceived ad persuasiveness. Advertisements for Nexium, Advair, and Lunesta were shown to college students in either their original (i.e., image incongruent) or modified (i.e., image neutral) form. In general, risks were easier to recall with image neutral advertisements (which were considered to be less persuasive), although results were not statistically significant. Gender had a significant interaction effect, suggesting that males and females process risks differently depending on images in a DTC advertisement. Despite its lack of significant findings, this study explores an underdeveloped area of research and provides a model for future studies.

**KEYWORDS:** Direct-to-Consumer Advertising, Fair Balance, Image Congruency, Elaboration Likelihood Model, Drug Risks

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May 18, 2012

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*This work is dedicated to all of the people who have profoundly influenced my academic career (in no particular order): John Pollock, Donald Helme, Paul D'Angelo, Nancy Harrington, Bobi Ivanov, Jacob Farbman, and my parents, Patti and Kirk Kiernicki*

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## **Chapter One: Introduction**

In recent years, direct-to-consumer (DTC) advertisements for prescription drugs have become ubiquitous. Between 1996 and 2005, total spending on DTC advertising increased 330% (Donohue, Cevalco, & Rosenthal, 2007). In 2004, the average American saw approximately 40 minutes of DTC advertisements each week; in contrast, Americans spend, on average, only 15 minutes speaking with a primary-care physician in an entire year (Brownfield, Bernhardt, Phan, Williams, & Parker, 2004).

However, DTC advertising is surrounded by controversy. Supporters argue that DTC ads educate the public by exposing them to health conditions and empowering them to seek additional health information. Additionally, proponents say that DTC advertising does not lead to inappropriate use of the advertised drugs because patients still need a physician prescription to get these drugs. Conversely, opponents of DTC advertising contend that advertisements encourage patients to ask doctors for newer, higher-priced drugs, some of which may be inappropriate or inferior to existing treatments. Also, DTC advertising can harm the physician-patient relationship because patients may question physician authority (Kaiser Family Foundation, 2001). DTC advertising may also oversimplify complex information, thus misleading an American public with generally low health literacy (Baird-Harris, 2009; Kaphingst & DeJong, 2004). Wilkes, Bell, and Kravitz (2000) agreed with these sentiments: "It is contradictory to have a category of drugs called 'prescription,' made available through those

with specialized training, yet allow those same drugs to be marketed to persons who lack that specialized knowledge” (p. 114).

DTC advertising has the potential to influence both patient and physician decision making. A 2010 study by AARP showed that 78% of Americans over age 18 recalled encountering televised DTC ads for prescription drugs, and of those who eventually asked a physician for a specific drug, 68% received either a prescription or a free sample (Brown, 2010). These statistics illustrate a movement toward increasing patient responsibility for prescription medication, and it is certainly plausible that televised DTC ads are a driving force behind this trend. Thus, evaluating advertisements and their effects on people is important.

The way the information in a DTC ad is presented may change consumers’ perceptions and knowledge of the drug. Others (e.g., Baird-Harris, 2009) have shown that images shown during presentation of risks (i.e., drug side effects and contraindications) are often incongruent with voiceovers; that is, while the voice track says one thing, the pictures say another. The potential effects of this incongruency, though, have yet to be studied. This study will attempt to determine whether incongruent imagery affects recall of risks and benefits and perceived persuasiveness of an advertisement. To do so, advertisements will be manipulated to contain either incongruent or neutral images during presentation of risks, and differences between two groups of undergraduate students will be examined.

## **Direct-to-Consumer Advertising**

Currently, the United States and New Zealand are the only countries that allow DTC advertising for prescription drugs. And U.S. pharmaceutical companies are becoming more aggressive with their DTC efforts: in 2009, in the midst of an economic recession, pharmaceutical companies spent \$4.3 billion on DTC advertising efforts, a figure that more than doubled 1999 numbers (Kaiser Family Foundation, 2010).

According to Bradley and Zito (1997), there are three categories of DTC advertising. First, health-seeking advertisements educate the public about a health problem and encourage them to seek physician assistance without necessarily naming a specific product or treatment method. Second, reminder advertisements give minimal information about a drug but do not mention the drug's use, effectiveness, or safety. Third, product-specific advertisements focus on a drug by name, describe its use(s), and discuss its effectiveness and safety. Most DTC advertisements are product-specific advertisements; for this reason, most research on DTC advertising has focused on this type of ad. In keeping with DTC advertising research, this study will use product-specific advertisements as well.

As previously mentioned, an inherent conflict exists with DTC advertising. Although it can help to educate the public by providing information on health conditions and treatment, its true purpose may be to simply help companies promote their products. In order to maintain a balance between these two competing interests, the U.S. Food and Drug Administration has set forth

regulations for DTC advertising. Whether these regulations serve the better interest of the public health, though, is up for debate.

### **A “Fair Balance”?**

Regulations for prescription drug advertisements are included in the Federal Food, Drug, and Cosmetic Act. These requirements attempt to ensure that DTC advertisements are not false or misleading and that a “fair balance” exists between disclosure of risks and benefits (FDA, 2009).

DTC advertisements must include information about drug effectiveness, side effects, and contraindications; this information is often referred to as a “brief summary.” Because space for information varies depending on advertising channel, different requirements exist for print and broadcast DTC advertising. Print DTC ads must include the brief summary, often containing information directly from the product’s labeling. However, fitting an entire brief summary into a time-limited broadcast DTC advertisement would be difficult. For this reason, the FDA only requires that major risks be disclosed in these advertisements; this requirement is known as the “major statement.” Additionally, sponsors of broadcast DTC advertisements must also make an “adequate provision” to allow for the dissemination of additional materials in conjunction with the broadcast advertisement. The adequate provision requirement forces DTC advertisers to direct consumers to at least one of four sources: a toll-free telephone number, Internet web site, specific print advertisement (e.g. “See our ad in *Ladies’ Home Journal*.”), or physician or pharmacist (FDA, 2009).

However, Davis (2000) noted some flaws with FDA regulations. He argued that advertisers can satisfy the FDA's requirements without fully disclosing drug side effects: "Advertisers must present a balance of drug benefits and risks (side effects). *They are, however, under no compulsion to report all of [sic] side effects or to even report all major side effects*" (p. 351; italics original). So, many broadcast DTC advertisements often contain what Davis called "incomplete risk statements." Davis said that in order for fair balance to be satisfied, consumers must fully understand the likelihood of suffering side effects and be able to make an educated decision when considering the context of anticipated drug benefits. However, previous content analytic research has suggested that full comprehension of drug risks and benefits may be difficult for consumers.

Indeed, several researchers have conducted content analyses of direct-to-consumer advertising. In general, results suggest that although both benefits and risks are often mentioned, they are often communicated differently. These differences may influence consumer comprehension.

### **Language Use and Presentation of Information in DTC Advertising**

**Use of text.** In a 2000 content analysis of televised DTC ads, Wilkes et al. noted that headings and subheadings usually related to benefits of the drug, but side effects were often buried in the advertisement narrative. Kaphingst et al. (2004) found that advertisements satisfied adequate provision because they provided references to other sources of information, but this information was almost exclusively presented in text. Eighty-three percent of advertisements also

contained some text that the authors judged difficult to read, although the hard-to-read text usually discussed supplemental information (e.g., generic drug name) rather than specific risks and benefits. Overall, textual elements of broadcast DTC advertisements generally favor benefit information over risk information.

**Risk-benefit language use.** In general, research suggests that advertisements use more complex language when discussing risks than when discussing benefits. Day (2006) argued that “information can be physically present yet functionally absent” (p. 9), implying that even though viewers of DTC advertisements may receive information, they may not always be able to interpret and use it. Day found that in a sample of DTC advertisements, information on benefits was given at a 6th grade reading level but information on risks was given at a 9th grade reading level.

Also, Day (2006) showed that when study participants were asked to report benefits and side effects after viewing three DTC advertisements (Paxil, Nasonex, and Orthotricyclen), they were 80% correct when listing benefits but only 20% correct when listing risks. Day did recognize, though, that the advertisements used in the experiment contained more side effects than benefits, so differences in recall could have been affected by information overload. Still, Day’s findings suggest that viewers of DTC advertisements may not be able to comprehend risks and benefits equally. Similarly, Kaphingst, Rudd, DeJong, and Daltroy (2005) found that after exposure to three different DTC advertisements, 50 low-literacy adults were able to recall benefit information more easily than risk

information. These findings suggest that comprehending and recalling risks and benefits may depend on complexity of language and individual literacy levels.

**Pacing and timing of voice track.** Kaphingst et al. (2004) also found imbalances between presentations of risks and benefits in pacing. On average, benefit facts were presented at a rate of 0.54 facts per second, whereas risk facts were presented at a rate of 0.78 facts per second.

Additionally, Frosch et al. (2007) and Wilkes et al. (2000) both found that side effects were generally presented in the latter half of an advertisement, but the final statement of an ad usually listed a benefit; thus, recall of risks may be difficult because of primacy and recency effects (see Miller & Campbell, 1959).

Given these reported issues, this study first hypothesizes that when timing and pacing are considered in combination with the use of text and language choice, it is likely that:

**H1:** *Participants will recall benefit information more easily than risk information.*

### **The Elaboration Likelihood Model**

Petty and Cacioppo's (1986) elaboration likelihood model (ELM) proposes that there are two routes for message processing: central and peripheral. In the central route, a person thoroughly and thoughtfully considers a message; in contrast, those taking the peripheral route rely on simple cues in the persuasion context. To process information centrally, persons require both motivation and ability.

Ability to comprehend risks and benefits on an equal level, though, may be compromised because of some tactics used by DTC advertisers. This concept is demonstrated by the previously stated arguments that risks are presented more quickly (Kaphingst et al., 2004), with more complex language (Day, 2006), and sandwiched between (Kaphingst et al., 2004; Wilkes et al., 2000) benefits. Difficulty in recalling risks (as in Kaphingst et al., 2005) may be illustrative of a lack of ability to process and comprehend. Even if motivation is high to process a message centrally, lack of ability can inhibit doing so.

When people do not have the ability to process information thoroughly, the ELM suggests that they are more likely to rely on peripheral cues for information. One example of a peripheral cue would be imagery, but in DTC advertising, imagery may not always be accurate.

### **Use of Images in DTC Advertising**

Images in DTC advertising can play a powerful role in developing consumers' perceptions of drugs. According to Wilkes et al. (2000), "Powerful yet subtle product claims can be made visually. When DTC advertising misleads, it often does so through visual persuasion" (p. 124).

Findings from Cline and Young's (2004) content analysis of print DTC advertisements supported the idea that visual images may be misleading. For example, Cline and Young found that in 93.1% of advertisements for arthritis, advertisements showed active people engaged in physical activity. Given the nature of arthritis, these advertisements clearly only visually emphasize the benefits of the advertised drugs. However, Cline and Young's study used only

print ads; because print ads only allow for one static image, it makes sense that advertisers would choose an image that enforces the benefits rather than negatives of a drug. Still, the following question arises: Does using only a positive image to represent all information about a drug satisfy fair balance?

Although Cline and Young's (2004) analysis used print ads, similar results have been found in content analyses of broadcast ads. In Kaphingst et al.'s (2004) study, only positive or neutral images were shown in DTC ads, even when side effects of drugs were being discussed. Similarly, Baird-Harris (2009) found that 95.3% of the images accompanying drug benefit information were congruent with the information being discussed. In contrast, only 11.8% of images presented during risk information disclosure matched the voice track and/or superscript/subscript text. Kaphingst and DeJong (2004) made a logical assertion about voice track-image incongruency: "An ad with contradictory visual and audio messages that minimize risk information compared with benefit information fails to provide fair balance" (p. 146).

Most likely, these images contribute to a lack of ability to thoroughly process information; if they differ from audio information, then they may serve as a distraction. This idea was reflected in a study involving vividness congruency by Smith and Shaffer (2000). Smith and Shaffer found that message processing can be reduced by adding vivid but incongruent images to a message. Their study did not use pictures; rather, it used "vivid imagery," or language that provided a readily-accessible image (e.g., a "foaming martyr"). The authors echoed an argument by Frey and Eagly (1993) by suggesting that:

...vivid presentations may elicit high amounts of elaborate imagery that may be tangential or even irrelevant to the message itself. By occupying the individual's working memory with information that is irrelevant to the message, a vivid message would make it more difficult for the individual to process and remember the message arguments. Thus, vivid elements can reduce the ability to process a message—that is, if the images and thoughts brought to mind are irrelevant. (p. 770)

So, Smith and Shaffer's (2000) study showed that people had a more difficult time processing the message's arguments when presented with language that could potentially evoke irrelevant vivid images. But, according to Kaphingst et al.'s (2004) content analysis, DTC advertisers go one step further—instead of using language that may bring irrelevant images to mind, they only provide irrelevant images to accompany advertising language when talking about side effects. If Smith and Shaffer's findings can be applied to DTC advertising, then people would likely have a difficult time processing side effects when presented with incongruent images.

If advertisements contained congruent—or at least neutral—images during presentation of risks, it is likely that the message in the voice track will be easier to process. DTC advertisers are unlikely to show images during risks that are completely congruent—a possible example might entail showing a person vomiting when talking about nausea. However, it is possible for them to use neutral images; for example, a “talking head” (i.e., static visual of actor speaking) or screen with drug name may be appropriate. Given Smith and Shaffer's (2000) findings, this study also posits that:

**H2:** *Participant will have more difficulty recalling risks when advertising images presented are incongruent as compared to neutral.*

## **Persuasion in DTC Advertisements**

**AIDA Model.** On a macro level, DTC advertisements relate to hierarchical advertising theories. In general, several past models have been used to describe persuasiveness in advertising. The first, and foundational, among them was Strong's (1925) AIDA model. The AIDA model encompasses four stages—attention, interest, desire, and action—each of which forms the acronym AIDA. AIDA is an early hierarchical model of steps that occur when a person interacts with an advertisement. First, the advertisement must gain the consumer's attention by introducing the product. Then, the advertisement must interest the consumer by explaining features, pros, and cons. After the consumer becomes interested, the next step involves invoking desire for the product. The final stage, action, refers to the “buying” of the marketing product. Subsequent models (AIDAS, CAB, and TIERA) have their foundations in AIDA.

Like all advertisements, DTC ads relate to AIDA (Strong, 1925). The three kinds of DTC ads defined by Bradley and Zito (1997) fit distinctly into AIDA. Both “reminder” and “health-seeking” advertisements satisfy the attention component, while “product-specific” advertisements satisfy interest and action by describing the specific drug and telling people to ask their doctors about the product. Ideally, these advertisements also attempt to evoke desire for the drug by presenting it in a pleasing manner. Logically, DTC advertisers incorporate elements from hierarchical models, such as AIDA.

**Elaboration Likelihood Model.** When breaking down DTC advertisements, it becomes apparent that the individual characteristics (e.g.,

voice track, images, text) relate to the elaboration likelihood model (ELM; Petty & Cacioppo, 1986). To revisit the ELM, people rely on peripheral cues to process messages when they lack either motivation or ability to process them centrally. With DTC advertising, central processing may be difficult, particularly with risk information. Thus, peripheral cues such as images may not only be the primary source of information but also the main factor behind persuasion. If images downplay the risks of a drug but emphasize its benefits, it is possible that people will hold a more favorable attitude toward that drug (logically, people will hold a favorable attitude toward a product when benefits outweigh risks). While others have examined images in DTC advertisements through content analyses, no one has looked at image congruency's effect on persuasiveness. However, it is reasonable to hypothesize that manipulation of images could also affect advertisement persuasiveness. Because incongruent images during audio presentation of risks most likely emphasize benefits over risks, it is hypothesized that:

**H3:** *Participants will find advertisements with incongruent images during presentation of risks to be more persuasive than those containing neutral images.*

### **Study Rationale**

Many of studies previously cited in this paper did not employ a specific theory to guide their work (see e.g., Kaphingst et al., 2004; Wilkes et al., 2000) because they were exploratory content analyses. However, some theories may be useful when examining image use in DTC advertising. Cline and Young

(2004) mainly used social learning theory (Bandura, 1977) when analyzing modeling in DTC images. However, both Cline and Young and Smith and Shaffer (2000) discussed the use of dual process models, such as the ELM (Petty & Cacioppo, 1986) and the heuristic-systematic model (HSM; Chaiken, Liberman, & Eagly, 1989). Baird-Harris (2009) approached her study using semiotics analysis (Gall, Gall, & Borg, 2003). The previously stated hypotheses are based on the ELM, as it relates to ability to process information thoroughly.

### **Health Literacy Implications**

Health literacy, defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Institute of Medicine, 2004), is important to consider when examining portrayals of risks and benefits in televised DTC advertisements. Ratzan and Parker (2006) found that people with basic or below basic health literacy were more likely to get health information from television than print. Baird-Harris (2009) argued that people with low health literacy may rely more on images to understand health information when language is too complex. This overreliance on images presents a problem because, as previously mentioned literature suggests, television DTC advertising may be especially difficult to comprehend because it sometimes combines language with incongruent images (Baird-Harris, 2009; Kaphingst et al., 2004). So, those people who have the hardest time comprehending health information in general are attempting to do so using broadcast advertisements which can be considered more complex than print given the greater amount of stimuli. For this

reason, examining the effects of incongruent images in television DTC advertisements has clear health literacy implications.

### **Gap in the Literature**

Even with Baird-Harris's (2009) study, literature addressing image congruency and fair balance in televised DTC advertising is lacking. The use of content analysis when examining fair balance in DTC advertising is common; however, Davis and Meader (2009) argued that content analysis alone is insufficient.

However, Davis and Meader's (2009) study only used audio or textual advertisements; that is, no television advertisements were used. Yet, according to Frosch et al. (2007):

...television advertising now comprises most of the consumer-directed prescription pharmaceutical marketing expenditures. Previous research has examined print ads, but unlike print ads, television ads combine visual imagery, music, and spoken words to create complex stories that may provide more information and appeal to a wider range of consumer emotions. (p. 7)

Clearly, more attention needs to be paid to televised DTC advertisements.

Although many studies have shown that DTC advertisements may not have fair balance (see e.g., Baird-Harris, 2009; Cline & Young, 2004; Kaphingst et al., 2004), they do not take into consideration the viewer's understanding of the integration between visual and verbal elements. Baird-Harris recognized that her study did not test for viewer comprehension of advertisements but rather just showed that risk and benefit messages in televised DTC advertisements lacked functional equivalence. Said Davis and Meader (2009): "We believe an evaluation of fair balance should not only include an analysis of what is in the ad

but additionally should reflect how consumers *interpret* the ad....consumer response and interpretation take precedence over a literal analysis or examination of an advertisement's content" (p. 58; italics original). This study will attempt to address this gap in the literature by testing consumer recall in relation to incongruent images presented during drug risks as well as examining perceived ad persuasiveness. In this way, it follows the recommendations set forth by both Baird-Harris and Davis and Meader.

Despite the points made by Davis and Meader (2009), a content analysis still needed to be conducted to help select appropriate advertisements for the experiment. This analysis attempted to replicate those done by others (e.g., Baird-Harris, 2009), although it also included the element of persuasiveness. Doing such a study could help guarantee that the original versions of the advertisements were indeed image incongruent, and also help to try to control for other factors between the ads used, such as persuasiveness. This content analysis, known as "Study One" is covered in Chapters Two through Five. The subsequent experiment, known as "Study Two" is covered in Chapters Six and Seven with an overall discussion in Chapter Eight.

## Chapter Two: Study One Background

A content analysis (known as “Study One”) was conducted to examine advertisements for the 15 most prescribed drugs that were advertised on television. Several constructs were coded, including source characteristics, image congruency, and persuasiveness as related to Strong’s (1925) AIDA model.

### Hypotheses and Research Questions

Based on the information presented in the literature review in Chapter Two, benefits and risks are usually conveyed differently in DTC advertisements. The use of text, as described by Wilkes et al. (2000) and Kaphingst et al. (2004) led to the formation of the following hypothesis (distinguished from experimental study hypotheses by initials “CA” for “Content Analysis”):

**CA H1:** *Advertisement text will contain more benefit information than risk information.*

This hypothesis also raises the following questions about text congruency (see operationalization on page 21):

**CA RQ1:** *Are there varying degrees of text congruency in presentation of risks and benefits?*

**CA RQ2:** *Do differences in text congruency for risks and benefits affect advertisement persuasiveness?*

Similarly, is it likely that findings about packing of risks and benefits in voice track would mirror those in the study by Kaphingst et al.’s (2004):

**CA H2:** *Risk information will be presented more quickly than benefit*

*information.*

To review, both Wilkes et al. (2000) and Frosch et al. (2007) found that benefits tend to be presented during the first part of an advertisement while risks are presented in the second half. For this reason, the following hypothesis was formed:

**CA H3:** *Benefit information will be presented before risk information.*

Little research has examined voiceover, narrator gender, and resulting advertisement persuasiveness. But, change in voice from benefits to risks may also affect persuasiveness. Because this area has not been explored, the following research question was posed:

**CA RQ3:** *Do differences in voice tracks affect advertisement persuasiveness?*

Evidence presented by several studies (e.g., Baird-Harris, 2009; Kaphingst & DeJong, 2004) suggests that an incongruency exists with images used during presentation of risks. Thus, one can expect that:

**CA H4:** *Images presented during benefit information will be congruent with the voice track, but images presented during risk information will be incongruent with the voice track.*

As suggested in the literature review (as well as by researchers such as Kaphingst and DeJong (2004)), a corollary hypothesis exists expecting that using incongruent images may lead to more persuasive advertisements, as risks may be minimized:

**CA H5:** *Advertisements will be perceived as more persuasive when images presented during risks are incongruent.*

## **Chapter Four: Content Analysis Methods**

### **Selection and Sampling**

Drugs included in this phase of the study consisted of the 15 most frequently prescribed drugs in 2010 (“Pharmaceutical Sales 2010”, 2011; see Appendix A) that were advertised on television (actual rankings for the 15 drugs were 1-40, but some drugs, such as OxyContin, are frequently prescribed but not advertised on television). These criteria identified the following drugs, all of which were used in this preliminary analysis: Abilify, Advair, Aricept, Celebrex, Crestor, Cymbalta, Lipitor, Lunesta, Lyrica, Nasonex, Nexium, Plavix, Seroquel, Spiriva, and Viagra (for treatment conditions, see Appendix B). To gather the ads for these drugs, a 10% sample of all television mentions for these drugs was pulled from a search of broadcast channels (ABC, NBC, CBS, FOX, and CW) for the calendar year 2010.

### **Advertisement Analysis**

The sample of 51 ads was double-coded for image congruency during presentation of risks, number of risks and benefits presented, length of risk and benefit presentation voiceover, superscript/subscript text, part of ad where risks and benefits were presented, drug spokespeople, source credibility and similarity, target audience, and persuasiveness (see Appendix D for the DTC Ad Coding Protocol). A second coder was used for reliability purposes. All advertisements were double-coded and coders achieved sufficient intercoder reliability (Cohen’s kappas ranged from .75 to 1.00, with seven variables receiving scores of 1.00), except for source experience (kappa= .619) and source

likeability ( $\kappa = .673$ ), which approached an acceptable level of intercoder reliability. Coding disagreements were resolved through discussion between the two coders.

### **Advertisement Definitions**

For this analysis, we coded for visual and voice track consistency as related to risks and benefits (see Appendix C for coding definitions). Definitions were loosely based on Baird-Harris (2009):

**Benefits.** Benefits were defined as anything discussing the drug use and its effectiveness in reducing symptoms for its applicable condition. Additionally, any advantages listed over other medications or testimonials from actors or other spokespeople were considered presentation of benefits.

**Risks.** Risks were defined as any negative effects associated with the drug, including side effects, contraindications (i.e., conditions which make a treatment unadvisable), warnings, drug interactions, and mentions of instances in which one should seek medical attention if taking the drug.

**Target audience.** For target audience, we coded for gender and age most likely to be affected by the health condition and thus be potential consumers for the drug. This information was used when coding for lifestyle and demographic similarity.

**Voice track.** Voice track included any words spoken during the advertisement and included both actor testimonials and narration of risks and benefits. The voiceover content was verified using closed captioning transcripts.

We coded for presentations of benefits and risks in the voiceover track. However, some information in the voice track did not discuss risks or benefits. General information about the drug not relating to risks or benefits including drug name, drug class, or discussion of the health condition it treats (e.g., incidence and prevalence) was not included in the coding, nor were any promotional messages, such as “Lipitor is produced by Pfizer.”

**Primary visual.** The primary visual was the on-screen image, including “visual images of actors, animals, or landscapes; animation; a screen that contains all text or text that appears over an abstract, out-of focus or blank background” (Baird-Harris, 2009, p. 8).

**Text.** Text can be presented a few different ways in DTC advertising. However, all kinds of text were coded simultaneously. The first kind, superscript, was any larger text on the screen that was superimposed on top of the image. This included anything other than drug name or the name of the company that produces the drug (both of these are often represented using logos). In comparison, subscript text was anything placed at the bottom of the screen (either on top of the image or on a colored bar). Subscript was usually presented in small text and looked similar to subtitles.

**Congruency.** Similar to Baird-Harris (2009), consistency between voice track, on-screen text, and visual was examined. Baird-Harris chose to code for all three of these variables at the same time, separating each second of the advertisement. However, the current analysis considers advertisements more

holistically; text congruency and image congruency were measured simultaneously the “benefits” and “risks” segments of the ads.

***Text congruency.*** Due to space issues, a great deal of information was only presented in voiceover, but we compared on-screen text with voiceover content. Degree of text congruency was measured based on whether or not risk and benefit information presented in on-screen text was also present in the voice track. The number of risks or benefits in the voice track was counted, as were risks and benefits in on-screen text. The number of times new information (i.e., not in voice track) was presented in text was noted for both risks and benefits. Then, the number of “unique” risks or benefits presented in text was divided by the overall number of risks or benefits to determine a “text congruency” percentage.

***Image congruency.*** Congruency referred to the agreement between visual and voiceover. Voice track and visuals were deemed congruent if they represented the ideas expressed in the voice track. For example, if an advertisement discussed risks and side-effects of a drug while showing a person being active or living symptom-free, that part of the advertisement was coded as incongruent. A visual with a blank or out-of-focus background with drug name and text was considered neutral. Similarly, if actors were shown with smiling faces during presentation of risks, that part of the advertisement was considered incongruent. A visual with a blank or out-of-focus background with drug name and text was considered neutral, as were any “talking heads” (i.e., single shot of actor talking). Thus, image congruency was coded as follows: (1) congruent (i.e.,

positive when discussing benefits, negative when discussing risks); (2) neutral; or (-1) incongruent (i.e., negative when discussing benefits, positive when discussing risks).

### **Persuasiveness Definitions**

We coded for source characteristics and elements related to Strong's (1925) AIDA model (See Appendix C for coding definitions).

**Risk-to-benefit ratio.** For each advertisement, risks and benefits were counted and a ratio was calculated. Percent of advertisement time spent discussing risks or benefits was calculated as well.

**Source characteristics.** For each actor, we coded for role, trustworthiness, expertise, dynamism, celebrity status, attractiveness, and demographic and lifestyle similarity to target audience. Outside of roles, sources with high levels of these characteristics are often perceived to be more persuasive (O'Keefe, 2002; Salmon & Atkin, 2003; Stiff & Mongeau, 2003).

**Actor role.** For role, actors (i.e., characters in the advertisement) could be placed into one of three roles: *primary*, *secondary*, or *background*. Primary and secondary actors either gave testimonials or were the focal point in a primary visual at some point during the advertisement.

**Trustworthiness.** Based on the dimensions from Salmon and Atkin (2003), characters that seem like they are generally honest, telling the truth, or have little to gain by telling or showing others their experiences were coded as trustworthy.

**Expertise.** Borrowing from Salmon and Atkin (2003), expertise was considered based upon training and experience. High training refers to any character appearing to have specialized knowledge, such as a doctor or pharmacist. Sources were considered to have experience when they had taken the drug (or acted as if they had).

**Dynamism.** Dynamism, or sociability, was judged based on Bowers's (1965) speaking styles. Sources were considered dynamic or sociable when they exhibited an "extroverted" speaking style, defined as using highly fluent and rapid speech, few vocalized pauses, and appropriate vocal emphasis.

**Celebrity status.** We coded for celebrity status by categorizing sources as either a recognizable celebrity figure or voice or not (yes-no for celebrity presence).

**Likeability.** While we coded for general perceptions of likeability ("likeable," "not likeable," and "unsure"), we also looked at *demographic* and *lifestyle* similarity (assessed as a similar lifestyle portrayal) as aspects of likeability. Although not an exact proxy for attitudinal similarity, lifestyle similarity can be used as a quasi-proxy as it comprises one possible dimension of attitudinal similarity. While not a perfect indicator of attitudinal similarity, gauging this dimension via visual coding of DTC ads is not feasible as attitude and personal beliefs of characters cannot be reliably determined given the limited information about characters' thoughts presented in the DTC advertisements.

**Advertisement persuasiveness.** To measure advertisement persuasiveness, we looked at Strong's (1925) AIDA model, which has long

provided the foundation for other persuasiveness measures in advertising.

Although the AIDA model is somewhat simplistic and produced little variation in results (it is reasonable that product-specific advertisements would not merely satisfy attention, but promote interest, desire, and action), it was chosen because of the double-coding in this study. Because we used two coders, we needed to use a measure of persuasiveness with which we could assess reliability; ratings on a scale would have likely differed. We operationalized the constructs as follows:

- *Attention* (cognitive stage activity): Introduce a (new) product or new use of an existing product (not focus on its use features, just generates attention or buzz for it without talking about how it works; a teaser)
- *Interest* (affective stage activity): Does it explain the features of the product and/or its use, application, benefits, and consequences (risks)?
- *Desire* (affective stage activity): Does the ad attempt to create positive attitudes, disposition towards the product, desire, liking, preference?
- *Action* (behavioral stage activity): Does the ad have a call to action, asking the consumer to buy the product, or to ask a doctor about it?

### **Persuasiveness Scoring**

Because one hypothesis (CA H5) and two research questions (CA RQ2, CA RQ3) required an objective measure of ad persuasiveness, a composite

score was created. First, a composite score for the primary actor was calculated based on presence or absence (1= present; 0.5= unsure, 0= absent) for each of the following source characteristics: trustworthiness, expertise, experience, sociability, celebrity status, likability, demographic similarity, and lifestyle similarity. All of these characteristics were summed for all primary or secondary actors in the ad and the total was divided by number of primary or secondary actors. Additionally, presence or absence of AIDA components was factored into persuasiveness, as was number of risks and benefits (shown to affect persuasiveness in a 2007 study by Davis) and percent of time spent presenting risks. The resulting formula was used to determine persuasiveness

$$\text{Persuasiveness} = \text{Source credibility} + \text{number of AIDA components} - \text{risks/benefits} - (\text{seconds spent on risks} / \text{time of ad in seconds})$$

Although this formula does not give equal weight to all components, it does take all components into consideration. Furthermore, the formula is not being used to predict persuasiveness but rather as a comparison across advertisements.

## Chapter Four: Study One Results

### Advertisement Elements

The search of broadcast channels (ABC, NBC, CBS, FOX, and CW) for the calendar year 2010 yielded 8,231 mentions of the prescription drugs under consideration on television programs; of these, a random number generator selected a ten percent sample. Most times, the drug mentions selected appeared in an advertisement, although occasionally the hit was a mention on a television program or news story (this problem was most evident with Viagra). In such cases, the next hit that was an advertisement was sampled. This search of 823 occurrences resulted in 51 unique advertisements across the 15 drugs examined. Lipitor and Lyrica had the highest number of unique ads with five each; in contrast, the random draw only returned one Celebrex ad airing during 2010. These 51 advertisements were used for the analysis.

Advertisements ranged in length from 29 seconds to 90 seconds, with a mean time of 62.02 seconds. The most common advertisement length was 60 seconds (28 advertisements), with 33 advertisements lasting between 54 and 61 seconds. Seroquel ads had the longest average run time with 90 seconds for two ads, while Nasonex had the shortest advertisements at 29 and 30 seconds, respectively.

Advertisements presented an average of 17.49 risks (16.06 in voice track, 2.71 in text) and 4.59 benefits (4.14 in voice track, 2.41 in text); however, the “voice track” and “in text” categories were not mutually exclusive, as it was common for a risk or benefit to be mentioned both in the voice track and in on-

screen text. All advertisements contained both risks and benefits, except those for Viagra, which named no specific benefits. For all drugs but Viagra, a risk-to-benefit ratio was calculated; values ranged from 0.67 (Nasonex) to 35 (Cymbalta) with a mean of 6.67. Cymbalta was found to be an outlier, and when excluded from the data, risk-to-benefit ratios ranged from 0.67 to 11.77 (Lunesta) with a mean of 4.03. Because both Cymbalta and Viagra were outliers in terms of mention of benefits, they were excluded from the persuasiveness composite analysis. However, the advertisements for these drugs were still kept in analyses for all descriptive variables and only excluded from those tests which involved a persuasiveness or risk-to-benefit score. Persuasiveness composite scores ranged from -27.6 to 7.73, with a mean score of 1.38.

### **Actor Characteristics**

The average number of actors per advertisement was 3.78, with 0.90 primary, 0.96 secondary, and 1.88 background actors. Cymbalta ads had the highest mean number of actors with 9.75, but these ads did not contain any primary actors; instead, they had several actors with equal prominence, all of whom were coded as “secondary.” Following Cymbalta, Aricept had an average of 6.5 actors per advertisement while also having a primary actor. Plavix, Nasonex, Nexium, and Lipitor all had the lowest average number of actors per ad (n= 2). Altogether, the 51 advertisements contained 193 actors (46 primary, 49 secondary, and 93 background).

Of the actors who had all source characteristics coded, most were trustworthy (72.5%), likeable (90.2%), sociable (86.3%), and attitudinally (90.2%)

and demographically (90.2%) similar. (Attitude and demographics of target audience were defined by the typical group to use the drug; for example, Viagra had a target audience of men over 50 as determined by both coders.) No actors were considered untrustworthy or unlikeable; rather, in some cases, these characteristics were unclear (missing percentages). Most actors also had experience taking the drug (74.5%), and they usually were not celebrities (96.1%; the only celebrity in sample was Antonio Banderas in two Nasonex ads). The average actor composite score, which considers all characteristics and calculates a possible value between 0 to 8, for all advertisements was 5.41.

### **Use of Text**

The first content analysis hypothesis, which suggested that more benefits would be presented in advertisement text, was not confirmed. On average, 2.71 ( $SD= 3.21$ ) risks were presented in text in comparison to 2.41 benefits ( $SD= 2.51$ ). Although this difference was significant ( $t(50)= 7.55$ ;  $p < .01$ ), it was in the opposite direction expected.

Regarding text congruency and CA RQ1, significant mean differences were found between presentation of risks and presentation of benefits ( $p < .01$ ). With risk information, only 13.31% of voice track information was presented in text; conversely, 46.1% of voice track benefit information was present in text. So, even though advertisement text contained more risk information than benefit information, there was greater consistency in text with benefits, possibly suggesting a greater emphasis on benefits through repetition.

To answer CA RQ2, only text congruency for risks was significantly related to advertisement persuasiveness (Pearson's  $r = -0.664$ ;  $p < .01$ ). Thus, advertisements were more persuasive when text congruency (i.e., information in both voice track and on-screen text) for risk information was low. This association was not true for benefit text congruency.

### **Pace, Timing, and Type of Voice Track**

Content analysis hypothesis two, which suggested that risks would be presented more quickly than benefits, was confirmed in the expected direction. Advertisements presented risks at an average rate of 0.64 risks per second; benefits were presented at a rate of 0.34 risks per second. This difference was statistically significant ( $t(50) = 15.18$ ;  $p < .01$ ). Because this variable was considered when creating the persuasiveness composite score, we did not compare voice track rate to persuasion.

Regarding hypothesis three, benefits were presented before risks in all 47 advertisements containing both risks and benefits. Thus, this hypothesis was confirmed in the expected direction. There was no variability in order, so no comparison to ad persuasiveness was appropriate. Additionally, 21 of the 47 advertisements presented benefits both before *and* after risks. Although no significant differences in persuasiveness were seen between ads presenting benefits in one or two segments, this finding still relates to potential primacy-recency effects (Miller & Campbell, 1959), which may influence ad recall.

Most advertisements (82.4%) used the same voice for both risks and benefits. Primary narrators (i.e., people who do not appear on camera) were

more likely to be male (60.2%). Advertisements using a male narrator instead of a female were significantly more persuasive ( $t(50) = 40.53$ ;  $p < .01$ ), but there were no significant differences in persuasiveness between the ads that had different voices for risks and benefits and those that did not. These findings address CA RQ3.

### **Image Congruency**

Images were more likely to be incongruent during presentation of risks than during presentation of benefits. As previously described in the methods section, congruent, neutral, and incongruent images received scores of 1, 0, and -1, respectively. Thus, any mean score below zero represents image incongruency while any score above zero represents image congruency. Overall, a significant ( $t(50) = 4.54$ ;  $p < .01$ ) difference existed between mean image congruency for risks (-0.71) and benefits (0.45). Because the mean image congruency score for risks was below zero and the mean image congruency score for benefits was above zero, we can confirm CA H4. Risk information is likely to be presented with incongruent images, while benefit information is likely to be presented with neutral or congruent images. However, neither image congruency score was significantly related to advertisement persuasiveness. Thus, CA H5 cannot be confirmed.

## **Chapter Five: Study One Discussion**

Although the main variables examined in this study, images and persuasiveness, were not found to be related, the study still produced several findings of interests. Three of the five content analysis hypotheses (risks presented faster, benefits before risks, images incongruent for risks) were confirmed, and tests of another hypothesis (more benefits than risks in text) showed significant findings in a direction opposite from the one expected. Altogether, these findings show that risks and benefits are indeed presented differently in DTC advertisements.

### **Congruency and Persuasiveness**

Findings about text congruency suggest that even though advertisement text contains more risks than benefits, more repetition exists with benefits; in turn, consumers have a greater chance of receiving and internalizing this information over risks. However, all text was coded the same way, and it is possible that coding for text size may change these results. A future study may want to consider text prominence in the advertisement and weight text congruency accordingly. As expected, risks in the voice track were presented more quickly than benefits.

Interestingly, ad persuasiveness differed depending on gender of voice track narrator, with advertisements narrated by males considered to be more persuasive. Relative uniformity existed with regard to advertisement structure (benefits before risks); although this finding aligned with CA H3, insufficient variability existed to examine differences in persuasiveness.

Findings on image congruency confirmed those by Baird-Harris (2009), who showed that images during presentation of risks tended to be inconsistent with voice track, while images shown during presentation of benefits tended to be consistent. When examined in conjunction with the findings on presentation of risks and benefits, it is possible that image congruency may play a role in processing according to models like the ELM (Petty & Cacioppo, 1986). Ability to comprehend risks may be compromised due to a fast presentation in voice track and lack of repetition in text, so people may be more likely to rely on peripheral cues like images.

### **Limitations and Future Implications**

Testing the effects of these incongruent images on recall and comprehension of risks and benefits has yet to be done; thus, a clear avenue exists for further study. First, study one served as an introduction to a second study. In the second study, advertisements were manipulated to contain either incongruent or neutral imagery during presentation of risks and participants will be tested on recall of risks and benefits and asked about perceived persuasiveness of the advertisements. The findings from study two hopefully provide another, more standardized way of assessing persuasiveness than this content analysis, since persuasiveness coding was fairly simple and only used two researchers.

Both this analysis and study two can help to determine whether DTC advertisers are satisfying criteria of fair balance. The findings from this content analysis indeed show that risks and benefits are presented differently, despite

the regulations stating they must be given equal prominence. The future study will take these findings one step further.

Even though this study has the potential to provide new insight into DTC prescription drug advertising, it is not without potential limitations. First, coding for presence or absence of persuasiveness characteristics may be too simplistic; persuasion in advertising likely falls along a continuum. Regarding source characteristics, the variable of attractiveness, although possibly influential in advertisement persuasiveness, was excluded because the two coders (one male, one female) failed to achieve reliability in early coding stages. Additionally, using only two coders to evaluate persuasiveness may be insufficient to draw significant conclusions—future studies should examine ad persuasiveness with a larger sample size. But, because this study is the first of its kind, we can draw inferences from its findings about persuasiveness.

Regarding imagery, this study is simultaneously more sophisticated and more simplistic than others. Baird-Harris's (2009) study, for example, separately coded for each *second* of an advertisement with regard to imagery. In contrast, imagery in this study was only coded for two segments of the advertisement—once during benefit presentation and again during risk presentation. The approach to this content analysis, although related to Baird-Harris's, significantly differs from other studies. Adding persuasiveness brought several variables into the coding protocol, particularly with source characteristics. Arguably, persuasion is a product of the entire advertisement and cannot be measured for

each individual second. For this reason, this study looked at the advertisements holistically using Strong's (1925) AIDA components.

Although this study is somewhat exploratory, its coding protocol is innovative. Few studies outside of Baird-Harris (2009) have looked at incongruent imagery in televised DTC advertisements, and none have added persuasiveness elements to the equation. For this reason, this study is not only contributory to the field of communication, but opens doors for future research as well.

Should this analysis and study two show fair balance criteria to be largely unsatisfied, health literacy concerns may arise. Without proper portrayal of risks and benefits, patients may be unable to evaluate whether certain medications are right for them. As such, potential revisions to fair balance regulations and adaptations of ads for lower health-literate populations may be necessary. Because of the importance DTC advertising has for prescription drug decision making (see e.g., AARP, 2010), satisfying fair balance becomes not only a legal concern, but also a safety and ethical one. If advertisers are not following these guidelines, then consumers may be on the wrong decision-making path before they step inside a physician's office. Deconstructing these advertisements, then, not only contributes to the study of communication but also addresses a potential public health concern as well.

Logically, looking at the effects of different types of DTC advertising is the next step. This content analysis ensured that the advertisements chosen for the next phase of this study did contain incongruent imagery during presentation of

risks. Additionally, examining the persuasiveness elements (e.g., source characteristics, AIDA components) across advertisements attempted to control for some factors that could influence information processing. In this way, this content analysis provided the foundation for the larger experiment, study two.

## Chapter Six: Study Two Methods

Before experimenting with advertisement manipulation, a small pilot study was necessary. This study was run to gather information about the conditions treated by the drugs. These results were used to determine which drugs were both most relevant and least stigmatized for the population of undergraduate students, the sample for study two. Advertisements for drugs satisfying these criteria were coded for perceived persuasiveness and image congruency. This analysis led to final selection of advertisements for the experiment; ads left in their original (i.e., image incongruent) form were shown to a control group, and ads manipulated to contain neutral imagery were shown to an experimental group. Differences in recall and perceived ad persuasiveness were examined.

### Participants and Recruiting

Participants were 387 undergraduates at the University of Kentucky. They were recruited through UK's SONA system (online subject recruitment) and received partial course credit for their participation in this IRB approved study. Participants ranged in age from 18-51 ( $M= 20.06$ ;  $SD= 3.573$ ), and were primarily White ( $n= 323$ ; 85.3%), followed by African-American ( $n=36$ ; 9.6%). Two hundred nineteen (56.6%) of the participants were female.

Although differences in comprehension of drug risks and image congruency may be most extreme among populations with low health literacy, starting with a relatively well-educated population may control for some variation in literacy and health literacy. Additionally, because risk information contains complex language, college students should be best equipped to understand the

majority of risk information. According to Kaphingst and DeJong (2004), college-level reading ability is necessary to comprehend the average brief summary. If college students can understand the risk information when it stands alone (or, at least have similar levels of ability to do so), then this study can somewhat isolate image congruency as an independent variable relating to risk information comprehension.

In addition, because of their high education level, college students are likely able to critically evaluate advertisement information better than the general public. Using this demographic to compare image congruency, then, makes sense, as analytical skills are likely to be somewhat equal between the comparison groups.

### **Advertisement Selection**

As previously mentioned, advertisements were selected based study one and the pilot study looking at condition stigma and relevance. The stigma and relevance study helped to choose appropriate drugs and conditions for the college-aged sample, and the content analysis helped to choose which advertisements were used for the chosen drugs.

**Stigma and relevance study.** In order to control for attention, advertisements selected must be relevant to college students. Additionally, it is important to eliminate drug advertisements for any potentially stigmatizing conditions (see Davis, 2007) because the sample may be unwilling to associate themselves with the condition and thus “tune out” the advertisement.

To determine drug relevance and stigmatization, a small pilot study was run with a convenience sample of 42 undergraduates. Students rated the health conditions in the drug sample, which included the following: depression, asthma (also used as a proxy for other breathing conditions), high cholesterol, schizophrenia, insomnia, fibromyalgia, seasonal allergies, acid reflux, and erectile dysfunction. Each condition was rated on two bipolar, six-point semantic differential items (*no stigma to very strong stigma; not relevant to very relevant*) (See Appendix E). Then, the mean for condition stigma was subtracted from the mean for condition relevance. This formula combined stigma and relevance to determine conditions best suited for a study with the undergraduate population.

Based on these conditions, the three most appropriate conditions were asthma, insomnia, and seasonal allergies. Insomnia and allergies each only had one drug in the sample, Lunesta and Nasonex, respectively. However, multiple drugs in the sample treated asthma, COPD, or other breathing problems. Advair was selected because it was the most often prescribed drug for that condition (fourth most prescribed overall in 2010).

**Content analysis.** Study One (described in detail in Chapters Two through Five) helped identify the individual advertisements for each drug (three total; one for each drug). Because multiple advertisements aired for each drug, decisions needed to be made about which ad to include. Together, the three drugs had nine unique advertisements out of the sample of 51 (Advair 4, Lunesta 3, Nasonex 2). We chose the ad with the highest persuasiveness score in an attempt to control for persuasiveness across messages.

Persuasiveness scores ranged from 14.28 to 15.87 for Advair, 7.25 to 10.85 for Lunesta, and 13.81 to 14.80 for Nasonex (higher scores represent more persuasive advertisements; see Appendices G and H). Ideally, the composite scores for the three ads selected would match; however, it is difficult to compare advertisements between drugs. Actors in the Lunesta ads, for example, lacked dynamism and sociability because they were sleeping, which caused lower source credibility scores. Additionally, the Nasonex ads had a bumblebee voiced by Antonio Banderas, who was the only celebrity present in the sample; although the bumblebee got additional credibility because of celebrity status, it scored low in the similarity categories. Thus, the best use of the composite scores was to identify the most persuasive advertisement for each drug, since the study's focus is to compare differences within the same ads (e.g., incongruent-image Advair versus neutral-image Advair) and not across different ads (e.g., incongruent-image Advair versus incongruent-image Nasonex). Indeed, having some diversity across advertisements increases the generalizability of this study's findings because advertisement elements are unlikely to be consistent across brands and drugs.

Also, all ads contained congruent imagery during presentation of benefits, but incongruent imagery during presentation of risks. In this way, the advertisements satisfied criteria set by Baird-Harris (2009).

### **Message Manipulation**

Because the original advertisements selected contained incongruent imagery during the presentation of risks, they were defined as the comparison

condition. For the experimental condition, images during the presentation of risks were removed and replaced with a neutral image of the drug name taken from another frame in the advertisement (to control for quality and consistency). Study of images congruent with risk information was not pursued for several reasons. First, filming new congruent images would be too difficult and impractical; it would likely create discontinuity in the advertisements because actors and setting would be impossible to replicate exactly. Additionally, creating congruency between presentation of risks and images depicting side effects would probably decrease message persuasiveness; for example, a pharmaceutical company would likely not agree to show an image of someone experiencing a stroke, even if that was an increased risk of taking the drug. For this reason, incongruent images were replaced with neutral, rather than so-called “congruent” ones.

No message checks for image congruency were necessary because the content analysis portion of the study had already determined the ads to contain incongruent images during the presentation of risks. As O’Keefe (2003) argued, message checks are unnecessary when manipulating intrinsic properties of a message; regardless of participants’ perceptions, the images from the neutral and incongruent conditions differed. The message check cannot check the adequacy of the manipulation—either images are the same or they are not.

Also, conducting a message check with the sample (i.e., asking when risks are presented and if images were incongruent during that time) would have been difficult because participants would have to remember specific side effect information in order to participate. Additionally, a message check on image

congruency would have drawn attention to the variable of interest and possibly decreased validity.

## **Procedure**

This study took place in a lab with students watching the advertisements and completing all survey measures on computers. In an effort to create a natural viewing environment, the advertisements were embedded during natural commercial breaks in a ten-minute segment of ABC's *Modern Family*. This show was chosen because for the 2010-2011 season, *Modern Family* was the top-rated scripted show on broadcast television (sixth overall behind sports, news programs, and reality shows) among the 18-49 demographic and averaged approximately 6.4 million viewers per week (Gorman, 2011). Of shows recorded on DVR, *Modern Family* also ranked first in 2010-2011. Because 2010 encompassed both the 2009-2010 and 2010-2011 viewing seasons, figures for the 2009-2010 season were also gathered. Although the series was in its first season, it still ranked 21<sup>st</sup> overall and was the sixth most popular situation comedy (Andreeva, 2010). A ten-minute segment was chosen for practical reasons; including a full half-hour episode of the show would not only have contributed to long study time but also would have contributed to potential participant fatigue. (A 2007 study by Helme, Donohew, Baier, and Zittleman used similar logic.)

In addition to watching the DTC ads, participants also watched original commercials from the selected broadcast. The original advertisements were included in an attempt to increase ecological validity. The ten-minute segment

was broken in half by a commercial break containing five commercials (DTC ad, original ad, original ad, original ad, same DTC ad), resulting in total viewing time of around 13 minutes.

Before watching the advertisements, participants were asked for demographic information and general knowledge of prescription drugs (see Appendix I). In an attempt to control for the motivation element of ELM's central processing route, participants were told to pay close attention to the drug advertisements and that they would be tested following the completion of program and commercial viewing. Controlling for motivation attempted to negate any potential priming effects from the drug knowledge scale.

Participants were randomly assigned to a condition of either risk-image incongruency (comparison, using unmodified advertisements) or risk-image neutrality (experimental, using modified advertisements) for each of the three drugs, creating six conditions (original Advair, modified Advair, original Lunesta, modified Lunesta, original Nasonex, modified Nasonex).

Immediately after watching the program and commercials, students were asked to complete a computerized post-test survey measuring recall of risks and benefits and message persuasiveness (see Appendix J). All experimental protocols and instruments were approved by the IRB at the University of Kentucky before study administration.

### **Experiment Measures**

**Baseline.** As previously mentioned, participants completed a short survey before viewing the advertisements and program. Basic demographic information

such as age, gender, and race/ethnicity was collected to gain insight about the sample. Cacioppo, Petty, and Kao's (1984) 18-item short-version of the "Need for Cognition" scale was also given, as well as a measure for knowledge of product class adapted from Lichtenstein, Netermeyer, and Burton (1990). The Lichtenstein et al. measure included four items using seven-point Likert-type scales (strongly disagree-strongly agree; not very knowledgeable- very knowledgeable); one example of an adapted item was "I have a clear idea about which drug characteristics are really important ones in providing me with maximum usage satisfaction" (strongly disagree- strongly agree). (The entire baseline measure is available in Appendix I.)

**Post-test.** After viewing the advertisements and program, participants were surveyed on benefit and risk recall, general perceptions of product knowledge, and overall advertisement perceived persuasiveness.

Recall of risks and benefits was cued and based off of measures developed by Cameron (1994), who asked participants whether specific phrases occurred in a print advertisement or story. Although Cameron's measures were used with print, the logic can also extend to broadcast advertisements. To keep the focus on congruent or incongruent imagery, the phrases used in the questions did not appear in superscript or subscript text. For Advair and Lunesta, whose advertisements were roughly 60 seconds long, two questions for risks and two questions for benefits were asked. Because Nasonex's advertisements were only 30 seconds long, only one question each was asked for risks and benefits.

Prior to answering risk and benefit questions, participants were asked to identify drug name and health condition from the advertisements.

Although free recall may have been a more appropriate measure of recall of risks and benefits, multiple choice questions (like the 1994 Cameron study) were used because of the number of participants. Coding 387 participant responses would have been tedious; also, because multiple benefits and risks (sometimes as high as 20) were presented, we did not expect participants to remember all of the information mentioned in the advertisements. Correct answers to multiple choice questions, then, were used as a proxy for recall.

Measures of perceived product knowledge were adapted from Smith and Park (1992); the scale contained four items (e.g., “If I had to ask my doctor for this drug today, I would need to gather very little information in order to make a wise decision.”) on a seven-point Likert-type scale (*strongly disagree* to *strongly agree*).

Brand interest was adapted from Machiet, Allen, and Madden (1993), who used four items (e.g., “I’m a little curious about [*drug name*].”) on a seven-point Likert-type scale (*strongly disagree* to *strongly agree*). Brand interest can serve as a proxy for purchase intention in this study because, as previously mentioned, our participants do not have the ability to prescribe medication. Instead, the action step in the advertisements tells people to ask their doctor about a drug; thus, the advertisement’s purpose is to stimulate brand interest.

However, having a more direct measure of “purchase intention” is necessary it is a clearer indicator of the effectiveness of the message’s action

step. For this reason, two items were selected from a purchase intention scale developed by Dodds, Monroe, and Grewal (1991) and adapted for prescription drugs by changing the phrase “purchasing” to “asking for”: “If I was suffering from [*condition*], the likelihood of me asking for [*drug name*] is...” and “If I was suffering from [*condition*], my willingness to take [*drug name*] is...” Both items were scored on a seven-point Likert-type scale (*very low* to *very high*). (The entire post-test instrument is available in Appendix J.)

## Chapter Seven: Study Two Results

### Sample Demographics

As previously mentioned, the experiment's sample consisted of 387 undergraduate students, most of whom were female ( $n= 219$ ; 56.6%) and White ( $n=323$ ; 85.3%). Participants ranged in age from 18-51 with an average age of 20.06 ( $SD= 3.57$ ); 95.1% of the sample was age 25 or younger. After data cleaning, distribution among the three drugs was relatively even, with 128 participants viewing advertisements for Advair (64 original; 64 modified), 129 participants viewing advertisements for Lunesta (64 original; 65 modified), and 130 participants viewing advertisements for Nasonex (64 original; 66 modified). No significant differences in gender, race, or age existed between the six conditions.

In general, participants exhibited a relatively high need for cognition ( $M= 59.56$ ;  $SD= 10.59$ ; range= 22-85); the possible range was 18 to 90 with higher scores representing a greater need for cognition. Males were shown to have a higher need for cognition ( $M= 61.71$ ;  $SD= 9.58$ ) than females ( $M= 57.90$ ;  $SD= 11.05$ ); this difference was significant ( $F(1, 385)= 3.91$ ;  $p < .05$ ).

Participants also had a low-to-medium familiarity with the drug in their given advertisement ( $M= 1.28$  on scale of 1-3;  $SD=.60$ ), as 304 participants (78.8%) had never taken the drug and did not know anyone who had, whereas 13.7% ( $n= 53$ ) knew a friend or family member who had taken the drug and the 7.5% ( $n=29$ ) currently were taking or had taken the drug in the past. Most participants did not experience any symptoms ( $n=246$ ; 63.6%) or did not

experience symptoms severe enough to take medication ( $n= 108$ ; 27.9%) for the condition treated by the drug in their condition ( $M= 1.46$  on scale of 1-4;  $SD=.67$ ). No significant differences in need for cognition, familiarity, or symptom experiences existed between the six conditions.

Most participants ( $n= 384$ ; 99.2%) were able to recall the drug shown in the advertisements and the condition for which that drug treats ( $n=381$ ; 98.4%). There was little variation across drug and congruency condition.

Data regarding hypotheses were analyzed through various methods, including t-tests and ANOVAs. The experiment had a 3 x 2 design (three drugs; two congruency conditions), creating six overall groups.

### **Benefit and Risk Recall**

#### *Hypothesis 1 Not confirmed*

Findings regarding recall of risks and benefits were inconclusive. Overall, participants recalled an average of .92 benefits and .88 risks; therefore there were no significant differences in recall of risks and benefits ( $F(1, 385)= .70$ ,  $p=.41$ ) between congruency conditions. An analysis of variance showed that no significant differences existed between recall of risks and benefits with respect to Advair; however, significant differences did exist with Lunesta and Nasonex. These differences, though, were in opposite directions than the expected hypotheses. (See Appendix J for the answers to specific questions.)

**Advair.** On average, participants were able to provide .88 correct answers (of 2;  $SD= .72$ ) for recall questions about benefits and .90 correct answers (of 2;

$SD=.80$ ) for risks. There were no significant differences in recall for this drug ( $F(1,126)= .03$ ;  $p= .86$ ).

**Lunesta.** Those participants who saw advertisements for Lunesta were able to provide an average of 1.05 correct answers (of 2;  $SD=.25$ ) for recall questions about benefits and 1.32 (of 2;  $SD=.64$ ) for risks. This difference was significant ( $F(1,127)= 19.76$ ;  $p< .01$ ); however, it was in the opposite direction of the expected hypothesis.

**Nasonex.** Participants who saw advertisements for Nasonex were able to recall an average of .83 (of 1;  $SD=.38$ ) benefits in multiple choice questions, but only .38 (of 1;  $SD=.49$ ) risks. This difference was significant ( $F(1,128)= 81.81$ ;  $p< .01$ ) and in the direction expected.

Even though findings regarding Nasonex supported Hypothesis 1, the hypothesis was not confirmed for Advair or Lunesta. These findings suggest that differences exist with individual messages that influence recall of benefits versus risks.

### **Risk Recall and Image Congruency**

#### *Hypothesis 2 Not confirmed*

Overall, an analysis of variance showed that participants recalled an average of .84 (of 2;  $SD=.05$ ) risks in the incongruent (i.e., original) condition and .89 (of 2;  $SD=.05$ ) risks in the neutral (i.e., modified) condition. This difference were not significant ( $F(2, 384)= .69$ ;  $p=.41$ )

**Advair.** A one-tailed independent sample t-test revealed no statistically significant differences ( $t(127)= 1.57$  ;  $p=.06$ ) in risk recall for the two conditions.

In the incongruent condition, participants recalled an average of .87 (of 2;  $SD=.83$ ) risks whereas participants in the neutral condition recalled .96 (of 2;  $SD=.77$ ) risks.

**Lunesta.** Similarly, a one-tailed independent sample t-test showed no significant differences existed in risk recall for the two Lunesta conditions ( $t(128)=.09$ ;  $p=.47$ ). Participants recalled an average of 1.29 (of 2;  $SD=.63$ ) risks in the incongruent condition and 1.35 (of 2;  $SD=.65$ ) risks in the neutral condition.

**Nasonex.** In both Nasonex conditions, participants recalled .38 (of 1; both  $SD=.49$ ) risks; thus, no difference existed in recall depending on image condition.

**Other covariates.** Despite the lack of significant differences by congruency condition, two covariates were found to be significant.

**Need for cognition.** Not surprisingly, need for cognition was shown to covary with number of correct risks recognized ( $F(1, 385)= 5.28$ ;  $p < .05$ ;  $\eta_p^2 = .01$ ). This finding is expected, as people with high need for cognition may be more likely to pay attention to the advertisements and thus internalize and recall more risks, regardless of image congruency condition.

**Drug advertisement.** Type of drug advertisement (i.e., Advair, Lunesta, or Nasonex) was also shown to covary with correct risks recalled ( $F(2, 384)= 55.38$ ;  $p < .01$ ,  $\eta_p^2 = .23$ ). This finding points to a difference in advertisements selected; however, it may also be the result of the fact that the Nasonex post-test assessment only asked participants to recall one risk, while Lunesta and Advair asked questions about two risks.

**Interactions.** A three-way interaction was found between drug, congruency condition, and gender ( $F(1, 385) = 3.30$ ;  $p < .05$ ,  $\eta_p^2 = .02$ ). No other significant interactions were found.

**Gender and Advair.** As expected, subjects were less likely to recall risks in the incongruent ( $M = .67$  of 2;  $SD = .11$ ) than neutral ( $M = .97$  of 2;  $SD = .120$ ) conditions, but this finding only applied to females; this difference was statistically significant ( $t(64) = 3.36$ ;  $p < .01$ ;  $\eta^2 = .15$ ). This finding is in line with the rationale behind H2.

However, males were actually more likely to recall risks in the incongruent ( $M = 1.08$  of 2;  $SD = .12$ ) than neutral ( $M = .95$  of 2;  $SD = .11$ ) conditions; this difference, though, was not statistically significant with a one-tailed t-test ( $t(62) = 1.579$ ;  $p = .06$ ).

**Gender and Lunesta.** Similar to the Advair results, females were less likely to recall risks in the incongruent ( $M = 1.21$  of 2;  $SD = .11$ ) than neutral ( $M = 1.45$  of 2,  $SD = .11$ ) image conditions ( $t(71) = 2.90$ ,  $p < .01$ ,  $\eta^2 = .11$ ). In contrast, males produced the opposite results (incongruent  $M = 1.36$  of 2;  $SD = .13$ ; neutral  $M = 1.20$  of 2;  $SD = .12$ ), but this difference was not statistically significant ( $t(55) = 1.60$ ,  $p = .06$ ).

**Gender and Nasonex.** Nasonex differed from Advair and Lunesta in that differences in recall females and males were in the opposite directions. With Nasonex, females had worse recall ( $M = .34$  of 1;  $SD = .11$ ) in the neutral condition than in the incongruent condition ( $M = .45$  of 1;  $SD = .10$ ) although this difference was insignificant. Unlike with Advair and Lunesta, men had worse

recall in the incongruent ( $M = .28$  of 1;  $SD = .13$ ) to the neutral ( $M = .48$  of 1;  $SD = .13$ ), and this difference was statistically significant ( $t(49) = 2.094$ ;  $p < .05$ ;  $\eta^2 = .08$ ).

### **Persuasiveness and Image Congruency**

#### *Hypothesis 3 Not confirmed*

No significant results were found regarding persuasiveness (brand interest and “purchase” intention) or advertisement knowledge, but some results were in the expected direction.

**Perceived product knowledge.** Results show that the mean knowledge score (scale of 1 to 7; higher scores represent greater knowledge) was higher in the neutral groups ( $M = 3.50$ ;  $SD = 1.17$ ) than the incongruent groups ( $M = 3.40$ ;  $SD = 1.32$ ), although these differences were insignificant. For Advair, participants had an average score of 2.90 ( $SD = 1.35$ ) in the incongruent condition but 3.03 ( $SD = 1.06$ ) in the neutral condition. For Lunesta, participants also had scores of 3.44 ( $SD = 1.11$ ) in the incongruent condition but 3.55 ( $SD = 1.06$ ) in the neutral condition. Finally, for Nasonex participants rated knowledge at 3.86 ( $SD = 1.32$ ), for the incongruent condition and 3.89 ( $SD = 1.22$ ) for the neutral condition. Thus, knowledge scores were higher for all drugs in the neutral condition but these differences were not significant.

**Product knowledge and drug.** ANOVAs revealed that ad knowledge in post-test did differ depending on drug ( $F(2, 384) = 20.45$ ;  $p < .01$ ,  $\eta_p^2 = .10$ ), again suggesting that differences existed among the messages in the advertisements.

**Brand interest.** As expected, means for brand interest were higher for the incongruent groups ( $M= 3.50$ ;  $SD= 1.31$ ) than the neutral groups ( $M= 3.38$ ;  $SD= 1.27$ ); however, we cannot conclude that incongruent advertisements were more persuasive in this regard because overall these differences were not significant ( $t(385)= .74$ ;  $p = .39$ ). This pattern did hold true, though, for Advair (incongruent  $M= 3.42$ ,  $SD= 1.44$ ; neutral  $M= 3.12$ ,  $SD= 1.26$ ) and Nasonex (incongruent  $M= 3.58$ ,  $SD= 1.26$ ; neutral  $M = 3.52$ ,  $SD= 1.27$ ), although this difference was only statistically significant for Advair ( $t(125)= 4.19$ ;  $p <.01$ ;  $\eta^2 =.12$ ; Nasonex  $t(128)= .85$ ;  $p= .20$ ). Lunesta, however, did not display this pattern (incongruent  $M = 3.46$ ,  $SD= 1.24$ ; neutral  $M= 3.49$ ,  $SD= 1.25$ ) but their means were not statistically different ( $t(126)= -.42$ ;  $p= .66$ ).

**Brand interest and product class knowledge.** Knowledge of product class (scale of 1 to 7; higher scores represent greater product knowledge; adapted from Lichtenstein, Netermeyer, & Burton (1990)) had a significant relationship with brand interest ( $F(1, 385)= 7.82$ ;  $p < .01$ ;  $\eta_p^2 =.02$ ). Perhaps those who are interested in prescription drugs in general pay more attention to advertisements and thus gain greater knowledge on product class.

**Purchase intention.** Results regarding likelihood of asking a doctor about a drug, referred to as “purchase intention” (scale of 1 to 7; higher score means more likely to ask a doctor about drug) showed that means were slightly lower for the neutral groups ( $M= 4.19$ ,  $SD= 1.50$ ) than the incongruent groups ( $M= 4.26$ ;  $SD= 1.36$ ); although in the expected direction, these means were not significantly different ( $t(385)= .484$ ;  $p= .487$ ). This pattern was true for Lunesta (incongruent

$M= 4.27$ ,  $SD= 1.45$ ; neutral  $M= 3.98$ ,  $SD= 1.64$ ) and Nasonex (incongruent  $M=4.27$ ,  $SD= 1.31$ ; neutral  $M= 4.05$ ,  $SD= 1.55$ ) but not Advair (incongruent  $M= 4.24$ ,  $SD= 1.35$ ; neutral  $M= 4.54$ ,  $SD= 1.22$ ). All of these differences were statistically significant (Lunesta  $t(126)= 3.87$ ;  $p < .01$ ;  $\eta^2 = .11$ ; Nasonex  $t(128)= 2.96$ ;  $p < .01$ ;  $\eta^2 = .06$ ; Advair  $t(125)= -3.98$ ;  $p < .01$ ;  $\eta^2 = .11$ ), although the lack of consistency in direction makes drawing conclusions difficult.

## **Chapter Eight: Discussion**

Although this study's hypotheses were not fully confirmed, results were often in expected directions, and some interesting relationships between variables emerged. Additionally, differences between drug advertisement (regardless of image congruency) were shown to be significant with all three hypotheses; these clear message differences are the main limitation of this study and will receive further discussion. However, the study does open up a few avenues for discussion.

### **Recall**

Despite findings by Day (2006), no statistically significant mean differences were found in benefit and risk recall when all drugs and conditions were considered together. However, statistically significant differences were shown for both Lunesta and Nasonex individually. These differences, though, were in opposite directions: with Nasonex, participants had greater recall of benefits, but with Lunesta, participants had greater recall of risks. According to the content analysis (see Chapter Three), though, Lunesta gave far greater prominence to risks in the chosen advertisement by spending 25 of 60 seconds listing 19 risks in the voice track, whereas Nasonex spent five of 30 seconds listing five risks (these drugs were at polar ends of the risk-to-benefit range in the content analysis results; see p.26) Additionally, some of the side effects of Lunesta (e.g., hallucinations, fatal throat swelling) are more severe than those of Nasonex (e.g., sore throat, headache). Thus, Lunesta's longer list of severe side

effects and longer time spent on risks may have caught the viewer's attention more than Nasonex's shorter, less severe list of risks.

In addition to the differences in risks, Nasonex lists more concrete benefits in both voice track and on-screen text, such as relieving congestion, runny nose, and sneezing. Conversely, Lunesta lists benefits that are vaguer: "get the restful sleep you need" and that it "keys into receptors that support sleep, setting [a person's] sleep process in motion". The idea of "receptors" may also be unfamiliar to viewers, which could impact recall after viewing the advertisement.

Regarding H2, which addressed the effect of image incongruency, means in risk recall were higher (or the same, as in the case of Nasonex) for those participants viewing neutral advertisements than those viewing incongruent ones; however, these differences were not significant, so no conclusions can be drawn. But, a few relationships were found regarding drug advertised, need for cognition, and gender.

Like with H1, significant differences were shown in risk recall across the three drugs. However, this finding may be relatively meaningless, as participants were only asked to recall one risk with Nasonex, but two with Advair and Lunesta. Thus, because it was impossible for the number of risks recalled to go above 1 in the Nasonex groups, it is difficult to make generalizations across drugs.

A three-way interaction was shown between drug, congruency condition, and gender, suggesting that gender plays a role in recalling risks and benefits. Females were significantly better in recall when presented with neutral images

with Advair and Lunesta. Although means suggested that females viewing the neutral Nasonex advertisement had worse recall, the difference was not statistically significant. So, we can conclude that females are better in recalling risks when incongruent images are eliminated, at least for two of the three drugs. As previously mentioned, the Nasonex advertisement was considerably shorter both in advertisement length and time spent on risks, so perhaps these other factors affected recall.

Men, however, showed almost the reverse pattern: means in risk recall were higher for the incongruent conditions than the neutral conditions for Advair and Lunesta, but the differences were not significant. For Nasonex, though, means were significantly higher when the inconsistent imagery was removed. So, the hypothesis held true for that drug.

The findings for H2, then, because they were not consistent or significant across all groups, can be considered inconclusive. However, for the gender-drug-congruency conditions that did have significant results, mean differences were in the expected direction and supported H2.

Perhaps some of the receiver-based differences in gender and risk recall dealt with the genders of the actors used in the advertisements. For Advair, the content analysis (see Chapter Three) determined that the primary actor in the advertisement was a White elderly (defined as over 65) male and the narrator was also male. Conversely, with Lunesta, both the primary and secondary actors were female, and the advertisement used a female voiceover. Advair chose to

use males while Lunesta used females, yet both showed an increase in recall for females in the neutral conditions, but not males.

The content analysis showed Nasonex differed from Lunesta and Advair in three ways: (1) it contained main actors of both genders; (2) it contained an animated character (the bumblebee); and (3) the bumblebee had a celebrity voice (Antonio Banderas; although he may not have been recognized, the name was clearly male). Perhaps these differences can explain why results for Nasonex were reversed from Advair and Lunesta (men had greater recall with neutral ads; females had worse recall but the difference was not significant). Additionally, the celebrity involved was male; a female celebrity may have produced the opposite result, based on the content analysis's finding that male voiceovers were more persuasive than those that were female.

The receiver-based differences in risk recall with gender, though, have implications for future drug advertising. Although the advertisements used in this study were chosen for their gender neutrality, these findings suggest that different strategies may be necessary when targeting males and females. A further study exploring this topic with gender-specific (e.g., Viagra) drugs may give more insight into this area.

### **Persuasiveness**

Persuasiveness was measured in three areas (perceived product knowledge, brand interest, and "purchase" intention), but no overall conclusions can be drawn from findings.

With product knowledge, means were higher for the neutral groups than for the incongruent groups, showing a pattern of increased recall when incongruent images were removed. However, because these differences were not significant, we cannot say that knowledge scores were higher when incongruent imagery was removed. In addition, drug advertised was shown to covary with perceived product knowledge, so lack of significant findings with product knowledge and congruency may be due to inconsistency across advertisements for different drugs.

As expected, the Advair advertisement with incongruent imagery was shown to stimulate greater brand interest than the neutral imagery, suggesting that incongruent images make advertisements more persuasive. Although this pattern was evident in mean calculations for Nasonex, the difference was not statistically significant. Lunesta showed an opposite, albeit non-significant pattern, but again, this finding may be related to the greater emphasis on and severity of risks. So, while H3 held true for Advair, it did not for the other two groups, and thus cannot be fully confirmed.

No clear conclusions can be drawn from “purchase” intention (i.e., intention to ask doctor about a drug). Although means were higher for the incongruent groups than the neutral groups (suggesting greater persuasiveness with incongruent imagery), the differences were not significant. Differences between drugs advertised were significant, again showing a difference in messages, but the directions were not consistent. Drug familiarity was shown to

covary with purchase intention; this finding is logical as people who have already “purchased” a drug or know someone who has may be more likely to do it again.

### **Limitations and Future Implications**

Like all research, this study has limitations. As previously mentioned, clear message differences existed depending on drug advertised. For this reason, generalizing results across drugs was difficult. This study’s goal, though, was to explore potential issues with fair balance, which does apply to all DTC prescription drugs. Although hypotheses could not be confirmed with the drugs used, perhaps better future matching of advertisements could produce significant findings. Advertisements for this study, though, were chosen as systematically and carefully as possible given the research materials available.

Also, participants may have already seen the advertisements, because even though data were collected in February and March of 2012, the advertisements had all aired in 2010 and may be in recent memory. Even if participants had never seen the specific advertisements used, it is likely that they may have seen another advertisement for the drugs used in the experiment. The baseline pretest instrument only asked about knowledge of drug class, so prior knowledge about specific drugs was not controlled for. Creating original broadcast advertisements (similar to a 2007 study by Davis, who did so in print) could control for this potential problem.

Additionally, the drugs chosen for the advertisements were intentionally gender-neutral, although findings about gender suggest that future research should examine differences in cognitive processing for males and females. For

this reason, another study may want to look at drugs for conditions that only affect one gender.

Even though the instrument was based on one used by Cameron (1994), it still had limitations. A limited number of questions about risks and benefits (two each for Lunesta and Advair, one each for Nasonex) were asked. A greater expansion of the instrument (i.e., adding more questions) may have produced more significant findings, particularly because some of this study's findings were in the expected direction. Also, the researcher chose which risks and benefits were included in the post-test instrument, and there is no way to know if these risks or benefits were representative of all in the advertisement (i.e., whether one benefit or risk is easier to remember over another). Lastly, the multiple-choice nature of these questions used cued-recall. Free recall may be more accurate in determining what specific risks and benefits participants remembered.

Some limitations also exist with the sample used. College students may be more likely to have higher health literacy (based on rationale from studies such as Kaphingst & DeJong, 2004), but their age may make them less susceptible to health conditions that require prescription drugs as treatment. A pilot study attempted to control for relevance, but in general, prescription drugs as a whole may not be relevant to this age group. This issue may be most evident in the persuasiveness findings, as college students may lack motivation necessary to create brand interest and purchase intention.

This study has its merits in that it is the first of its kind and uses novel methods. No studies so far have attempted to manipulate images in broadcast

DTC advertisements to check for risks and recall. Also, even though the use of a piecemeal instrument (for which reliability and validity information is unavailable) can be a limitation, the testing instruments used in this study can provide a foundation for later studies. However, the instrument used in this study has room for expansion. The operationalization of “neutral” used could be altered as well; for example, talking heads could be used instead of a static screenshot of drug logo. Findings regarding gender and message differences in drugs advertised suggest that another study should use different drugs. But, hopefully this study can serve as a model for those wishing to continue this field of research.

At this time, no clear conclusions can be drawn regarding fair balance and image congruency, but findings show that some sort of relationship may exist. This study, although lacking clear significant findings, opens the door for future research, even if it suggests that image congruency does not have as great of an effect as expected. This area certainly calls for further exploration (possibly with different operationalization), as DTC advertising can have clear health implications for any countries allowing such practice.

**Appendix A  
Top Drugs for 2010 by Sales**

(Taken from <http://www.drugs.com/top200.html>)

Italicized drugs advertised on television and used in analysis

<b>Rank</b>	<b>Drug</b>	<b>Current Manufacturer</b>	<b>Total Sales (\$000)</b>	<b>% change from 2009</b>
1	<i>Nexium</i>	<i>AstraZeneca Pharmaceuticals</i>	5,276,153	4.9%
2	<i>Lipitor</i>	<i>Pfizer</i>	5,272,576	-2.3%
3	<i>Plavix</i>	<i>Bristol-Myers Squibb Company</i>	4,675,483	10.2%
4	<i>Advair Diskus</i>	<i>GlaxoSmithKline</i>	3,655,206	-1.0%
5	OxyContin	Purdue Pharma	3,554,751	13.1%
6	<i>Abilify</i>	<i>Bristol-Myers Squibb Company</i>	3,514,265	12.7%
7	<i>Singulair</i>	<i>Merck &amp; Co.</i>	3,324,909	8.9%
8	<i>Seroquel</i>	<i>AstraZeneca Pharmaceuticals</i>	3,222,055	2.4%
9	<i>Crestor</i>	<i>AstraZeneca Pharmaceuticals</i>	2,922,687	27.0%
10	<i>Cymbalta</i>	<i>Eli Lilly and Company</i>	2,638,536	7.6%
11	Actos	Takeda Pharmaceuticals North America	2,631,930	4.2%
12	Lexapro	Forest Pharmaceuticals	2,483,391	4.6%
13	Zyprexa	Eli Lilly and Company	2,036,092	7.7%
14	<i>Spiriva</i>	<i>Boehringer Ingelheim Pharmaceuticals</i>	1,593,593	19.3%
15	Lantus	Sanofi-Aventis	1,525,697	0.3%
16	<i>Aricept</i>	<i>Eisai Corporation</i>	1,522,517	13.3%
17	<i>Lyrica</i>	<i>Pfizer</i>	1,478,158	-0.1%
18	Diovan	Novartis Corporation	1,443,539	7.0%
19	Effexor XR	Wyeth	1,431,042	-40.1%
20	Concerta	Ortho-McNeil-Janssen Pharmaceuticals,	1,407,962	16.9%
21	Levaquin	Janssen Pharmaceuticals	1,355,350	-0.6%
22	<i>Celebrex</i>	<i>Pfizer</i>	1,349,833	-6.9%
23	Diovan HCT	Novartis Corporation	1,314,507	3.7%
24	Januvia	Merck & Co.	1,294,408	13.0%
25	Suboxone	Reckitt Benckiser Pharmaceuticals	1,164,872	26.6%
26	NovoLog	Novo Nordisk	1,101,447	20.6%

27	<i>Viagra</i>	<i>Pfizer</i>	1,028,769	5.5%
28	Atripla	Gilead Sciences	1,028,753	-6.5%
29	Tricor	Abbott Laboratories	1,015,682	-17.2%
30	Provigil	Cephalon	999,975	6.7%
31	Zetia	Schering-Plough	985,823	-4.3%
32	Geodon oral	Pfizer	959,057	8.7%
33	Vytorin	Merck & Co.	953,625	-16.3%
34	Ambien CR	Sanofi-Aventis	951,108	-2.5%
35	<i>Lunesta</i>	<i>Sepracor (renamed Sunovion Pharmaceuticals)</i>	948,621	17.6%
36	Lidoderm	Endo Pharmaceuticals	934,418	-1.1%
37	Lantus SoloSTAR	Sanofi-Aventis	933,589	50.5%
38	Vyvanse	Shire US	931,421	40.9%
39	Aciphex	Eisai Corporation	915,796	-8.8%
40	<i>Nasonex</i>	<i>Schering-Plough</i>	886,446	-1.9%

## Appendix B Drug Treatment Conditions

(Taken from <http://www.drugs.com/top200.html>)

<b>Drug</b>	<b>Condition</b>
Nexium	Gastroesophageal reflux disease
Lipitor	High cholesterol
Plavix	Prevent blood clots (after heart attack or stroke)
Advair Diskus	Asthma and chronic obstructive pulmonary disease (COPD)
Abilify	Clinical depression
Singular	Asthma and COPD
Seroquel	Schizophrenia
Crestor	High cholesterol
Cymbalta	Clinical depression
Spiriva	Asthma and COPD
Aricept	Dementia
Lyrica	Fibromyalgia
Celebrex	Arthritis
Viagra	Erectile dysfunction
Lunesta	Insomnia
Nasonex	Seasonal allergies

## Appendix C Content Analysis Coding Definitions

### Advertisement Definitions

#### Benefits

- Discusses drug use or effectiveness
- Advantages listed over other medications
- Testimonials (positive) from other actors or spokespeople

#### Risks

- Negative effects associated with drug
- Side effects
- Contraindications (conditions that make a treatment inadvisable)
- Warnings
- Drug interactions
- Instances when one should seek medical attention if taking the drug

#### Target audience

- Gender and age most likely to be affected by health condition
- Age: 18-39; 40-64; 65+; Age irrelevant
- Ex: Viagra applies to males 40-64 and 65+

#### Voice track

- Any words spoke during advertisement
- Includes actor testimonials and narration of risks and benefits
- DOES NOT INCLUDE: general information about condition or promotional messages (i.e., "Lipitor is produced by Pfizer.")
- \*\*verified using transcripts

#### Primary visual

- On screen image

#### Superscript

- Any text superimposed on top of the image
- DOES NOT INCLUDE: drug name, name of company producing drug, logos  
Superscript was any text on the screen that was superimposed on top of the image

#### Subscript

- Placed on a colored bar on the bottom of the screen
- Usually presented in small text and similar to subtitles

#### Text Congruency

- Regarding superscript and subscript: congruent if on-screen text used words also used in the voiceover (excluding prepositions and articles)
- Measured by number of unique (in text but not voice track) benefits and risks presented

#### Image Congruency

- Agreement between visual or text and voiceover
- Represent ideas expressed in the voice track
- Ex: if an advertisement discussed risks and side-effects of a drug while showing a person being active or living symptom-free, that part of the advertisement was coded as incongruent
- Visual with a blank or out-of-focus background with drug name and text considered neutral
- “Talking heads” (i.e., single shot of actor talking) are neutral
- Coding protocol:
  - (1) congruent (i.e., positive when discussing benefits, negative when discussing risks);
  - (2) neutral; or
  - (3) incongruent (i.e., negative when discussing benefits, positive when discussing risks).

#### Persuasiveness Definitions

##### Risk-to-benefit ratio

- Risks divided by benefits

##### Source characteristics:

##### Role

- *Primary*: the character is either the main or primary speaker, or in the case of multiple speakers the individual who spoke first, or a character with a non-speaking role who was prominently featured in the advertisement (e.g., a vignette of his or her daily life is portrayed)
- *Secondary*: the character may be a major supporting character who spoke after primary or a just a supporting speaking role, or a non-speaking character who is featured in the ad (e.g., a vignette of their daily life is portrayed) but is second to a primary speaking actor
- *Background*: non-speaking and non-focal roles
- \*\* Primary and secondary actors either give testimonials or were the focal point in a primary visual at some point during the advertisement.

##### Trustworthiness

- Character
- Apparent sincerity (telling truth)
- Lack of self-interest (little to gain by telling or showing others experience)

### Expertise

- Specialized training
- Extensive knowledge of disease or drug
- Ex: Doctor, pharmacist

### Experience

- Have taken drug (or act as if they have)

### Dynamism

- Sociable; shown interacting with others in a positive way
- “Extroverted” speaking style: fluent and rapid speech, few vocalized pauses, and appropriate vocal emphasis

### Celebrity

- Recognizable celebrity figure/voice

### Likability

- Researcher’s subjective opinion

### Demographic similarity

- Compared to demographics for target audience for drug

### Lifestyle similarity

- Similar lifestyle portrayal (same activities as target audience)

### Persuasiveness:

- Strong’s (1925) AIDA model (presence/absence)  
*Attention* (cognitive stage activity): Introduce a (new) product or new use of an existing product (not focus on its use features, just generates attention or buzz for it without talking about how it works - a teaser. Product introduction without generating comprehension or providing specific product information).

*Interest* (affective stage activity): Does it explain the features of the product and/or its use, application, benefits, and consequences (risks)?

*Desire* (affective stage activity): Does the ad attempt to create positive attitudes, disposition towards the product, desire, liking, preference?

*Action* (behavioral stage activity): Does the ad have a call to action, asking person to buy the product, or ask doctor about it?\*

\*Because AIDA (Strong, 1925) is usually used in marketing, the action activity generally refers to purchase. However, DTC advertising is unique in that the target market lacks the autonomy to get the product without going through an

intermediary. So, although the action of asking a doctor about a drug could fall under the interest category, it was placed in the action category because it is the closest patients can come to getting the drugs themselves.

**Appendix D**  
**Content Analysis Coding Scheme**

Drug name: \_\_\_\_\_

Ad number: \_\_\_\_\_

**GENERAL ATTRIBUTES**

Product Specific? (i.e., not reminder)

1 = Yes

2 = No

\*\*if no, do not continue with rest of coding

Length of Ad: \_\_\_\_\_

Target Audience

Age: 1 = young adult (18-39)

2 = middle age (40-64)

3 = older age (65+)

4 = age irrelevant

5 = unsure

Gender:

1 = Male

2 = Female

3 = Neutral

Number of different people present in ad: \_\_\_\_\_

Each actor coded as primary, secondary (co-principle). The following is repeated for each primary/secondary actor. Background actors are only coded for race, gender, and age.

Primary or Secondary Actor # (visual presenter):

Animated:

1 = Yes

2 = No

Speaking role:

1 = Yes

2 = No

Gender:

1 = Male

2 = Female

3 = Both

Race:

1 = White

2 = African American

- 3 = Hispanic/ Latino
- 4 = Asian/Pacific Islander
- 5 = Other
- 6 = Multi-racial

Age:

- 1 = child (under 18)
- 2 = young adult (18-39)
- 3 = middle age (40-64)
- 4 = older age (65+)
- 5 = unsure

Trustworthiness:

- 1 = Trustworthy
- 0.5 = Unsure
- 0 = Untrustworthy

Expertise:

- 1 = Expert on product/condition
- 0.5 = Unsure
- 0 = Not an expert on product/condition

Expertise:

- 1 = Has taken drug
- 0.5 = Unsure
- 0 = Has not taken drug

Sociability (or Dynamism):

- 1 = Dynamic or Charismatic Person
- 0.5 = Unsure
- 0 = Not Dynamic or Charismatic Person

Celebrity Status:

- 1 = Celebrity (if so, list name)
- 0 = Not a celebrity

Likability:

- 1 = Likeable
- 0.5 = Unsure
- 0 = Unlikeable

Demographic similarity (to target audience):

- 1 = Yes
- 0.5 = Unsure
- 0 = No

Attitude/Lifestyle similarity (to target audience):

- 1 = Yes
- 0.5 = Unsure
- 0 = No

(For background actors appearing (check all that apply):)

Gender:

- 1 = Male
- 2 = Female

3 = Both

Race:

1 = White

2 = African American

3 = Hispanic/ Latino

4 = Asian/Pacific Islander

5 = Other

6 = Multi-racial

Age:

1 = child (under 18)

2 = young adult (18-39)

3 = middle age (40-64)

4 = older age (65+)

Voice-over Actor/Actress (does not visually appear):

Gender:

1 = Male

2 = Female

3 = Both

Same Voice for Risks and Benefits?

1 = Yes

0 = No

Persuasiveness of Ad:

1. **Attention (cognitive stage activity):** Introduce a (new) product or new use of an existing product (not focus on its use features, just generates attention or buzz for it without talking about how it works - a teaser. Stated differently you can have a product introduction without generating comprehension or providing specific product information)

1 = Yes

2 = No

2. **Interest (affective stage activity):** Does it explain the features of the product and/or its use, application, benefits, and consequences (risks)

1 = Yes

2 = No

3. **Desire (affective stage activity):** Does the ad attempt to create positive attitudes, disposition towards the product, desire, liking, preference

1 = Yes

2 = No

4. **Action (behavioral stage activity):** Does the ad have a call to action, asking you to buy the product, asking you to ask your doctor for it (Not

asking the doctor to explain it as that would go in comprehension but to prescribe it)

1 = Yes

2 = No

### **RISK SPECIFIC**

Length of Time Spent on Risks: \_\_\_\_\_  
(exact times for start and stop)

Number of Risks Presented in Voice Track: \_\_\_\_\_

Number of Risk Presented in Superscript/Subscript: \_\_\_\_\_

Unique Risks Presented in Superscript/Subscript (i.e., not in voice track)

1 = Yes

2 = No

**Text Congruency:** Number of unique risks presented in superscript/subscript:

\_\_\_\_\_

### **Image Congruency:**

1 = incongruent (positive when discussing risks)

2 = neutral

3 = congruent (negative when discussing risks)

### **BENEFIT SPECIFIC**

Length of Time Spent on Benefits: \_\_\_\_\_  
(exact time start and stop)

Number of Benefits Presented in Voice Track: \_\_\_\_\_

Number of Benefits Presented in Superscript/Subscript: \_\_\_\_\_

Unique Benefits Presented in Superscript/Subscript (i.e., not in voice track)

1 = Yes

2 = No

**Text Congruency:** Number of unique benefits presented in superscript/subscript: \_\_\_\_\_

### **Image Congruency:**

1 = incongruent (negative when discussing benefits)

2 = neutral

3 = congruent (positive when discussing benefits)

**Appendix E**  
**Stigma and Relevance Study Instrument**

**Health Conditions Survey**

Please mark the place you think best represents the stigma of each condition. Stigma can be defined as “a mark of disgrace or infamy; a stain or reproach, as on one’s reputation.”

Depression

No Stigma \_\_\_\_\_ Very Strong Stigma

Asthma/other breathing problems

No Stigma \_\_\_\_\_ Very Strong Stigma

High Cholesterol

No Stigma \_\_\_\_\_ Very Strong Stigma

Schizophrenia

No Stigma \_\_\_\_\_ Very Strong Stigma

Insomnia (inability to fall asleep)

No Stigma \_\_\_\_\_ Very Strong Stigma

Fibromyalgia (nerve pain)

No Stigma \_\_\_\_\_ Very Strong Stigma

Seasonal Allergies

No Stigma \_\_\_\_\_ Very Strong Stigma

Acid Reflux

No Stigma \_\_\_\_\_ Very Strong Stigma

Erectile Dysfunction

No Stigma \_\_\_\_\_ Very Strong Stigma

Now, please rate how relevant these conditions are for college students. (Would college students be likely to suffer from these conditions?)

Depression

No Stigma \_\_\_\_\_ Very Strong Stigma

Asthma/other breathing problems

Not relevant \_\_\_\_\_ Very relevant

High Cholesterol

Not relevant \_\_\_\_\_ Very relevant

Schizophrenia

Not relevant \_\_\_\_\_ Very relevant

Insomnia (inability to fall asleep)

Not relevant \_\_\_\_\_ Very relevant

Fibromyalgia (nerve pain)

Not relevant \_\_\_\_\_ Very relevant

Seasonal Allergies

Not relevant \_\_\_\_\_ Very relevant

Acid Reflux

Not relevant \_\_\_\_\_ Very relevant

Erectile Dysfunction

Not relevant \_\_\_\_\_ Very relevant

**Appendix F**  
**Stigma and Relevance Study Results**

<b>Condition</b>	<b>Stigma Mean</b>	<b>Stigma Standard Deviation</b>	<b>Relevance Mean</b>	<b>Relevance Standard Deviation</b>	<b>Relevance – Stigma</b>
Depression	4.0488	1.20315	4.3250	1.32795	0.2762
<b>Asthma</b>	<b>1.8293</b>	<b>1.30197</b>	<b>3.1750</b>	<b>1.48302</b>	<b>1.3457</b>
Cholesterol	2.7073	1.47044	2.9250	1.32795	0.2177
Schizophrenia	4.9268	1.53932	2.7000	1.39963	-2.2268
<b>Insomnia</b>	<b>2.6250</b>	<b>1.29471</b>	<b>4.8750</b>	<b>1.38096</b>	<b>2.2500</b>
Fibromyalgia	2.2927	1.36462	2.6500	1.12204	0.3273
<b>Allergies</b>	<b>1.5854</b>	<b>0.89375</b>	<b>4.6750</b>	<b>1.47435</b>	<b>3.0896</b>
Acid Reflux	2.3902	1.30150	3.3250	1.14102	0.9348
Erectile Dysfunction	5.2195	1.42324	2.5250	1.58499	0.16175

**Bolded:** Three most relevant/least stigmatized conditions; most appropriate for college-age sample

## Appendix G Composite Scores for Ad Persuasiveness

**Source credibility** = *trustworthiness + expertise + experience + sociability + celebrity + likability + demographic similarity + lifestyle similarity*

For all but attractiveness:

2 = present

1 = unsure

0 = not present

For attractiveness:

2 = attractive

1 = average

0 = unattractive

**Persuasiveness** =  $(\sum \text{source credibility} / \# \text{ primary or secondary actors}) + \text{number of AIDA components} - (\# \text{ risks} / \# \text{ ben}) - (\text{seconds spent on risks} / \text{seconds of ad})$

Where:

# risks = risks in voice track + risks in text

# ben = benefits in voice track + benefits in text

**Appendix H  
Composite Score Calculations**

<b>Ad</b>	<b><math>\Sigma</math>source cred</b>	<b># actors</b>	<b>#AIDA</b>	<b>#risks</b>	<b>#ben</b>	<b>risk time</b>	<b>ad time</b>	<b>Score</b>
Advair 1	52	4	3	9	6	13	60	14.283
Advair 2	13	1	3	9	12	16	60	14.983
Advair 3	13	1	3	9	9	17	61	14.721
<b>Advair 4</b>	<b>14</b>	<b>1</b>	<b>3</b>	<b>9</b>	<b>10</b>	<b>14</b>	<b>60</b>	<b>15.867</b>
<b>Lunesta 1</b>	<b>12</b>	<b>1</b>	<b>3</b>	<b>22</b>	<b>6</b>	<b>26</b>	<b>54</b>	<b>10.852</b>
Lunesta 2	10	1	3	21	4	30	60	7.250
Lunesta 3	22	2	3	21	5	30	58	9.283
<b>Nasonex 1</b>	<b>25</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>10</b>	<b>6</b>	<b>30</b>	<b>14.800</b>
Nasonex 2	23	2	3	5	9	4	30	13.811

**Bolded:** Three most persuasive advertisements for each drug

**Appendix I**  
**Pre-test Instrument**

**Age:** \_\_\_\_\_

**Gender:**

- Male
- Female

**Race/Ethnicity:**

- White
- African American
- Hispanic/ Latino
- Asian/Pacific Islander
- Multi-racial
- Other/ No answer

1. I have a lot of knowledge about how to select the best drug for a given condition  
Strongly disagree    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    Strongly agree
2. I have a clear idea about which drug characteristics are really important in providing me with maximum symptom relief and satisfaction.  
Strongly disagree    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    Strongly agree
3. I do not have a clear idea about which drug characteristics are really important in providing me with maximum symptom relief and satisfaction. (r)  
Strongly disagree    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    Strongly agree
4. Please rate your level of knowledge of prescription drugs.  
Not knowledgeable    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    Very knowledgeable

Instructions: For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below: 1 = extremely uncharacteristic; 2 = somewhat uncharacteristic; 3 = uncertain; 4 = somewhat characteristic; 5 = extremely characteristic.

1. I would prefer complex to simple problems.  
1       2       3       4       5
2. I like to have the responsibility of handling a situation that requires a lot of thinking.  
1       2       3       4       5
3. Thinking is not my idea of fun.  
1       2       3       4       5

4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities?

1      2      3      4      5

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.

1      2      3      4      5

6. I find satisfaction in deliberating hard and for long hours.

1      2      3      4      5

7. I only think as hard as I have to.

1      2      3      4      5

8. I prefer to think about small, daily projects to long-term ones?

1      2      3      4      5

9. I like tasks that require little thought once I've learned them?

1      2      3      4      5

10. The idea of relying on thought to make my way to the top appeals to me.

1      2      3      4      5

11. I really enjoy a task that involves coming up with new solutions to problems.

1      2      3      4      5

12. Learning new ways to think doesn't excite me very much?

1      2      3      4      5

13. I prefer my life to be filled with puzzles that I must solve.

1      2      3      4      5

14. The notion of thinking abstractly is appealing to me.

1      2      3      4      5

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

1      2      3      4      5

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort?

1      2      3      4      5

17. It's enough for me that something gets the job done; I don't care how or why it works?

1      2      3      4      5

18. I usually end up deliberating about issues even when they do not affect me personally.

1      2      3      4      5

**Appendix J**  
**Post-test Instrument**

(correct answers in bold)

Advair

1. Which of the following drugs did you see in an advertisement?
  - a) Singulair
  - b) **Advair**
  - c) Spiriva
  - d) Flovent
  
2. Advair treats:
  - a) depression
  - b) insomnia
  - c) allergies
  - d) **asthma**
  
3. One benefit of using Advair is that:
  - a) **it contains two medicines in one**
  - b) can be taken more than twice per day
  - c) clears allergies related to asthma
  - d) it is specially designed for older adults
  
4. Another benefit of using Advair is:
  - a) increases energy
  - b) **can get first prescription free**
  - c) the corticosteroids increase muscle mass
  - d) decreases risk of pneumonia
  
5. A drawback of Advair is that it can:
  - a) **increase chances of osteoporosis**
  - b) can cause insomnia
  - c) increase heart rate
  - d) causes halitosis
  
6. One risk associated with Advair is:
  - a) it can cause more colds
  - b) it **can cause eye problems**
  - c) it can cause bloody noses
  - d) it decrease sperm count
  
7. I feel very knowledgeable about Advair.  

Strongly Disagree    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
Strongly agree
  
8. If a friend asked me about Advair, I could give them advice about whether or not to take it.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

9. If I had to ask my doctor for Advair today, I would need to gather very little information in order to make a wise decision.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

10. I feel very confident about my ability to tell the difference in quality among different drugs for asthma and COPD.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

11. If I was suffering from asthma or COPD, the likelihood of me asking a doctor for Advair would be...

Very low \_\_\_\_\_ Very high \_\_\_\_\_

12. If I was suffering from asthma or COPD, my willingness to take Advair would be...

Very low \_\_\_\_\_ Very high \_\_\_\_\_

13. I am intrigued by Advair.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

14. I'd like to know more about Advair.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

15. Learning more about Advair would be useless. (r)

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

16. I'm a little curious about Advair.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

Lunesta

Answer the questions according to the information presented in the advertisements.

1. Which of the following drugs did you see in an advertisement?

- a) Ambien
  - b) Sonata
  - c) **Lunesta**
  - d) Silenor
2. Lunesta treats:
- a) depression
  - b) **insomnia**
  - c) allergies
  - d) asthma
3. One benefit of Lunesta is that it:
- a) **helps you get the restful sleep you need**
  - b) clears up colds to help you sleep comfortably
  - c) fixes problems with sleepwalking
  - d) makes you feel happier
4. One benefit of Lunesta is that it:
- a) cures restless leg syndrome so you can sleep
  - b) helps you sleep for at least 6 hours
  - c) is available without a prescription
  - d) **has a free 7 night trial**
5. One drawback of Lunesta is that:
- a) **may worsen depression in patients with depression**
  - b) causes dry-mouth
  - c) can lower immune system
  - d) can make you sleep for 12 hours or more
6. When taking Lunesta:
- a) you might gain weight
  - b) you might lose weight
  - c) **your throat or tongue might swell**
  - d) your muscles might feel sore
7. I feel very knowledgeable about Lunesta.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
8. If a friend asked me about Lunesta, I could give them advice about whether or not to take it.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
9. If I had to ask my doctor for Lunesta today, I would need to gather very little information in order to make a wise decision.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

10. I feel very confident about my ability to tell the difference in quality among different drugs for insomnia.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

11. If I was suffering from insomnia, the likelihood of me asking a doctor for Lunesta would be...

Very low \_\_\_\_\_ Very high \_\_\_\_\_

12. If I was suffering from insomnia, my willingness to take Lunesta would be...

Very low \_\_\_\_\_ Very high \_\_\_\_\_

13. I am intrigued by Lunesta.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

14. I'd like to know more about Lunesta.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

15. Learning more about Lunesta would be useless. (r)

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

16. I'm a little curious about Lunesta.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

Nasonex

1. Which of the following drugs did you see in an advertisement?

- a) Allegra
- b) Zyrtec
- c) Claritin
- d) **Nasonex**

2. Nasonex treats

- a) depression
- b) insomnia
- c) **allergies**
- d) asthma

3. A benefit of Nasonex is that it:
- a) **relieves both indoor and outdoor allergies**
  - b) relieves sinus headaches
  - c) available without a prescription
  - d) comes in dissolving tablet form
4. A risk of using Nasonex is:
- a) blurred vision
  - b) **increased chance of viral infection**
  - c) increased heart rate
  - d) drowsiness
5. I feel very knowledgeable about Nasonex.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
6. If a friend asked me about Nasonex, I could give them advice about whether or not to take it.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
7. If I had to ask my doctor for Nasonex today, I would need to gather very little information in order to make a wise decision.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
8. I feel very confident about my ability to tell the difference in quality among different drugs for seasonal allergies.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_
9. If I was suffering from seasonal allergies, the likelihood of me asking a doctor for Nasonex would be...
- Very low \_\_\_\_\_ Very high
10. If I was suffering from seasonal allergies, my willingness to take Nasonex would be...
- Very low \_\_\_\_\_ Very high
11. I am intrigued by Nasonex.
- Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

12. I'd like to know more about Nasonex.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

13. Learning more about Nasonex would be useless. (r)

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

14. I'm a little curious about Nasonex.

Strongly Disagree \_\_\_\_\_  
Strongly agree \_\_\_\_\_

## References

- Andreeva, N. (2010). "Full series rankings for the 2009-2010 season". Retrieved on October 10, 2011 from <http://www.deadline.com/2010/05/full-series-rankings-for-the-2009-10-broadcast-season/>.
- Baird-Harris, K. (2009). *Fair balance? An analysis of the functional equivalence of risk and benefit information in prescription drug direct-to-consumer television advertisements*. (Unpublished doctoral dissertation). University of North Texas, Denton, TX.
- Bandura, A. (1977). *Social learning theory*. New York: General Learning Press.
- Bowers, J.W. (1965). The influence of delivery on attitudes toward concepts and speakers. *Speech Monographs*, 32, 154-158.
- Bradley, L.R., & Zito, J.M. (1997). Direct-to-consumer prescription drug advertising. *Medical Care*, 35(1), 86-92.
- Brown, H. (2010, November). "Direct-to-consumer advertising of prescription drugs: Exposure and response." *AARP Research & Strategic Analysis Report*. Retrieved on October 1, 2011 from <http://www.aarp.org/health/drugs-supplements/info-11-2010/prescription-drug-advertising-10.html>.
- Brownfield, E.D., Bernhardt, J.M., Phan, J.L., Williams, M.V., & Parker, R.M. (2004). Direct-to-consumer drug advertisements on network television: An exploration of quantity, frequency, and placement. *Journal of Health Communication*, 9(6), 491-497.
- Cacioppo, J.T., Petty, R.E., & Kao, C.F. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, 48, 306-307.
- Chaiken, S., Liberman, A., & Eagly, A.H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In J.S. Uleman & J.A. Bargh (Eds.), *Unintended thought* (pp. 212-252). New York: Guilford.
- Cline, R.J.W., & Young, H.N. (2004). Marketing drugs, marketing health care relationships: A content analysis of visual cues in direct-to-consumer prescription drug advertising. *Health Communication*, 16(2), 131-157.
- Davis, J.J. (2000). Riskier than we think? The relationship between risk statement completeness and perceptions of direct to consumer advertised prescription drugs. *Journal of Health Communication*, 5, 349-369.

- Davis, J. (2007). The effect of qualifying language on perceptions of drug appeal, drug experience, and estimates of side-effect incidence in DTC advertising. *Journal of Health Communication, 12*, 607-622.
- Davis, J.J., & Meader, A. (2009). Beyond content analysis: Assessing fair balance in DTC pharmaceutical advertising. *Journal of Medical Marketing, 9*(1), 57-66.
- Day, R.S. (2006). *Comprehension of prescription drug information: Overview of a research program*. Proceedings of the American Association for Artificial Intelligence, Argumentation for Consumer Healthcare. Retrieved April 22, 2011 from <http://www.aaai.org/Papers/Symposia/Spring/2006/SS-06-01/SS06-01-005.pdf>.
- Detweiler, J.B., Bedell, B.T., Salovey, P., Pronin, E., & Rothman, A.J. (1999). Message framing and sunscreen use: Gain-framed messages motivate beachgoers. *Health Psychology, 18*(2), 189-196.
- Donohue, J.M., Cevasco, M., & Rosenthal, M.B. (2007). A decade of direct-to-consumer advertising of prescription drugs. *The New England Journal of Medicine, 357*(7), 673-681.
- Food and Drug Administration. (2009). Guidelines for industry: Consumer-directed broadcast advertisements. Retrieved on April 22, 2011 from <http://www.fda.gov/RegulatoryInformation/Guidances/ucm125039.htm>.
- Frosch, D.L., Krueger, P.M., Hornik, R.C., Cronholm, P.F., & Barg, F.K. (2007). Creating demand for prescription drugs: A content analysis of television direct-to-consumer advertising. *Annals of Family Medicine, 5*(1), 6-13.
- Gall, M.D., Gall, J.P., & Borg, W.R. (2003). *Educational research: An introduction*. Boston: Allyn and Bacon.
- Gorman, B. (2011). "2010-2011 season broadcast primetime show 18-49 ratings averages". Retrieved on October 10, 2011 from <http://tvbythenumbers.zap2it.com/2011/06/01/2010-11-season-broadcast-primetime-show-18-49-ratings-averages/94402/comment-page-2/#comments>.
- Institute of Medicine (2004). *Health literacy: A prescription to end confusion*. National Academies: Washington, D.C.
- Helme, D.W., Donohew, R.L., Baier, M., & Zittleman, L. (2007). A classroom-administered simulation of a television campaign on adolescent smoking: Testing an activation model of information exposure. *Journal of Health Communication, 12*(4), 399-415.

- Kaphingst, K.A., & DeJong, W. (2004). The educational potential of direct-to-consumer prescription drug advertising. *Health Affairs*, 23(4), 143-150.
- Kaphingst, K.A., DeJong, W., Rudd, R.E., & Daltroy, L.H. (2004). A content analysis of direct-to-consumer television prescription drug advertisements. *Journal of Health Communication*, 9, 515-528.
- Kaphingst, K.A., Rudd, R.E., DeJong, W., & Daltroy, L.H. (2005). Comprehension of information in three direct-to-consumer television prescription drug advertisements among adults with limited literacy. *Journal of Health Communication*, 10, 609-619.
- Lichtenstein, D.R., Netermeyer, R.D., & Burton, S. (1990). Distinguishing coupon proneness from value consciousness: An acquisition-transaction utility theory perspective. *Journal of Marketing*, 54(July), 54-67.
- Machleit, K.A., Allen, C.T., & Madden, T.J. (1993). The mature brand and brand interest: An alternative consequence of ad-evoked affect. *Journal of Marketing*, 57(October), 72-82.
- Miller, N., & Campbell, D.T. (1959). Recency and primacy in persuasion as a function of the timing of speeches and measurements. *The Journal of Abnormal and Social Psychology*, 59(1), 1-9.
- O'Keefe, D.J. (2002). *Persuasion theory & research*. Thousand Oaks, CA: Sage.
- O'Keefe, D.J. (2003). Message properties, mediating states, and manipulation checks: Claims, evidence, and data analysis in experimental persuasive message effects research. *Communication Theory*, 13(3), 251-274.
- Petty, R.E., & Cacioppo, J.T. (1986). The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology*, 19, 123- 205.
- "Pharmaceutical Sales 2010." (2011). Retrieved on September 26, 2011 from <http://www.drugs.com/top200.html>.
- Salmon, C., & Atkin, C. (2003). Media campaigns for health promotion. In Dorsey, A., Miller, K., Parrot, R., Thompson, T. (eds.), *Handbook of Health Communication*, (pp. 449-472). Hillsdale, NJ :Lawrence Erlbaum.
- Smith, D.C., & Park, C.W. (1992). The effects of brand extensions on market share and advertising efficiency. *Journal of Marketing Research*, 29(August), 296-315.

- Smith, S.M., & Shaffer, D.R. (2000). Vividness can undermine or enhance message processing: The moderating role of vividness congruency. *Personality and Social Psychology Bulletin*, 26(7), 769-779.
- Stiff, J.B., & Mongeau, P.A. (2003). *Persuasive communication* (2<sup>nd</sup> ed.). New York: Guilford Press.
- Strong, E.K. (1925). Theories of selling. *Journal of Applied Psychology*, 9(1), 75-86.
- Wilkes, M.S., Bell, R.A., & Kravitz, R.L. (2000). Direct-to-consumer prescription drug advertising: Trends, impact, and implications. *Health Affairs*, 19(2), 110-128.

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