

THAT DRUG TREATS WHAT?  
THE EFFECT OF EMOTIONAL TONE AND NARRATIVE STYLE ON THE  
MEMORY LINK BETWEEN BRAND NAME AND MEDICAL CONDITION  
TREATED IN DIRECT-TO-CONSUMER PHARMACEUTICAL ADVERTISING

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Master of Arts

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By  
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The undersigned, appointed by the Dean of the Graduate School, have examined the thesis entitled

THAT DRUG TREATS WHAT? THE EFFECT OF EMOTIONAL TONE AND NARRATIVE STYLE ON THE MEMORY LINK BETWEEN BRAND NAME AND MEDICAL CONDITION TREATED IN DIRECT-TO-CONSUMER PHARMACEUTICAL ADVERTISING

Presented by Jennifer Malle

A candidate for the degree of Master of Arts

And hereby certify that in their opinion it is worthy of acceptance

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## DEDICATION

To my Mom and Dad. Thank you for being a support system for me during this journey. I could not have done this and came out alive without your love and constant (constant!) encouragement. You've both been examples to me of how hard work and dedication pays off. You've guided me in the right direction and trusted my judgment. I only hope I can be half as good at parenting and raising children as you two are. You are both best friends as much as parents to me and I will always cherish our relationship.

To my sister, Katie. Thank you for keeping me sane and reminding me to have fun. You're my best friend and I have faith that you will accomplish all your dreams.

To my brother, Jim. Thank you for keeping me young. You're a constant reminder to cherish youth and live for the moment.

To my Grandma, you are one of the smartest ladies I know. In a time when women were rarely educated, you went on to receive a Master's degree. You've taught me to follow my dreams and never give up on them. I look forward to reading your book.

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Paul, thank you for your encouragement to get involved with research. You accepted me into the PRIME Lab when I didn't even know what research meant. Thank you for keeping me calm during hectic times when I thought I could never finish this thesis.

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Dr. Paul Bolls, Thesis Supervisor

ABSTRACT

This study examined how emotional tone and narrative style in direct-to-consumer (DTC) pharmaceutical advertising affect the memory link between the brand name advertised and the medical condition treated. For this study, emotional tone was defined as either positive or coactive (containing both positive and negative aspects) and narrative style was operationalized by two levels, high or low presence of narrative style.

The design was a 2 (emotional tone) x 2 (narrative style) x 3 (advertisement) within-subjects repeated-measures experiment. Participants viewed 12 direct-to-consumer pharmaceutical advertisements. A multiple choice recognition test and open-ended cued-recall test were administered to measure memory.

Memory, both recognition and cued recall, were tested by submitting the data to a repeated-measures Analysis of Variance (ANOVA). Findings suggest that narrative style has a stronger effect on coactive advertisements than positive advertisements. However, that impact is negative, meaning that when narrative style is used, recognition for coactive ads is decreased.



## CHAPTER 1: INTRODUCTION

The purpose of this study is to reveal how emotional tone and narrative style in direct-to-consumer (DTC) pharmaceutical advertising affect the memory link between the brand name advertised and the medical condition treated. DTC advertising is growing rapidly and this indicates certain implications for pharmaceutical companies, healthcare providers and patients. It is important to understand how advertising features, such as emotional tone and narrative style, can help or hinder the memory process related to linking the medical condition with the brand name. In all DTC advertising, the brand name is not directly related to the disease or medical problem. For example, cholesterol is treated with a prescription drug called Lipitor and sleep dysfunction is treated with AmbienCR, a prescription sleeping drug. These brand names do not correspond with the medical condition they are used for, so this study is intended to assist health providers, pharmaceutical companies and patients in effectively linking their prescription drug name with the medical condition it treats. The reason these brand names do not correspond to medical condition is because the Food and Drug Administration (FDA) prohibits pharmaceutical companies from using brand names that are semantically similar to the medical condition the drug is intended to treat.

DTC pharmaceutical advertising began in 1985, but spending increased dramatically in 1997 when the FDA relaxed its regulations, removing certain requirements (Baukus, 2004; DeLorme, Huh, & Reid, 2006). Advertising spending for prescription drugs was \$1.07 billion in 1996 and increased to \$3.27 billion in 2003

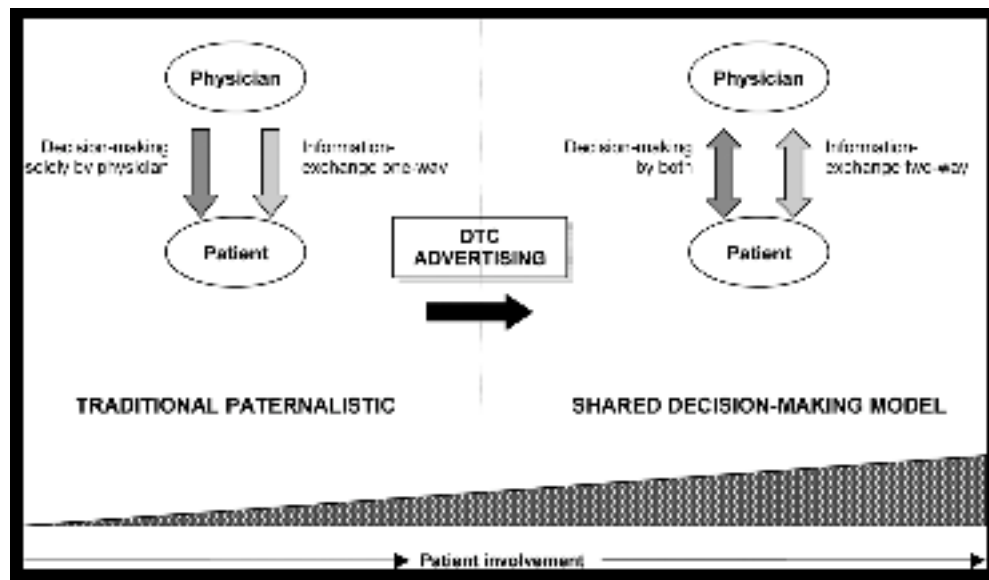
(Blankenhorn and Lipson, 2002; Bittar, 2004). Surprisingly, spending surpassed product categories such as movies and fast food (“Drug Spending Soars to Record Levels,” 2004). Although it seems as if advertisers focus only on consumers through advertising, physician-based advertising still accounts for nearly 85% of the marketing budget. Prescription drugs are a high involvement product, and advertisers hope that by stressing their specific brand name, consumers will believe that the branded drug is safer and more effective than its generic counterpart (Baukus, 2004).

There are opponents and proponents for the DTC pharmaceutical advertising debate. Critics feel that it is undesirable and invasive (Baukus, 2004). Consumers are inundated with these advertisements that feature somewhat private and personal medical issues. It can be uncomfortable to watch a commercial describing the symptoms of an overactive bladder. It is also said that these advertisements interfere with the physician’s role to determine drug regimen (Baukus, 2004). It is possible that once a patient sees a commercial for a certain drug, they could be fixated on that drug even when their physician thinks it may not be the best choice. Critics also argue that DTC advertising accounts for rising prescription drug costs (Baukus, 2004; Lexchin and Mintzes 2002; DeLorme et al., 2006). One of my personal criticisms of DTC advertising is that it causes hypochondria in healthy patients. Consumers see an advertisement that asks, “Are you tired when you wake up? Are you ever sad or lonely?” Of course everyone feels sad, lonely and tired at times. We do not necessarily need an antidepressant though.

On the other hand, supporters feel that patients are more involved with their health and health care issues (DeLorme et al., 2006). With consumers taking a proactive role in their healthcare, diseases could be detected earlier. Patients can gain knowledge

about certain diseases and learn what they can do to stay healthy. In the past, healthcare providers told patients what medicine to take and they took it, a one-way information exchange. With the advent of DTC advertising, patients play a more active role and there is two-way communication between the provider and patient. This shift in physician-patient communication is shown in Figure 1.

FIGURE 1  
 REPRESENTATION OF THE IMPACT OF DTC ADVERTISING ON THE  
 SHIFT IN PHYSICIAN-PATIENT COMMUNICATION (DESHPANDE, MENON,  
 PERRI, & ZINKHAN, 2004).



Research shows that consumers have favorable opinions towards direct-to-consumer advertising because it gives them power over their healthcare decisions and increases knowledge (Deshpande, Menon, Perri, & Zinkhan, 2004). However, consumer opinions of DTC advertising vary depending on what type of patient the person is. Those in poor health find these advertisements more helpful than those in good health. Females found DTC advertisements to be more useful in healthcare decision-making than men

(Deshpande et al., 2004). Consumers place a great deal of importance on the delivery of risk information (Deshpande et al., 2004). However, according to a content analysis of DTC pharmaceutical advertising, these advertisements have been shown to give consumers more time to process the benefit information while going through the risk information faster (Kaphingst, Daltroy, Dejong, & Rudd, 2004). According to Deshpande et al. (2004), increased participation in healthcare decision-making also leads to patients following their drug regimen more closely.

DTC advertising is a controversial topic in the world of mass communications. Understanding how to make these advertisements more effective is important to our field. Although research in this area is new and some aspects have yet to be studied, scholars are becoming more interested as the legality of DTC advertising is constantly being questioned. It is important to think of society at large; if DTC advertising is going to be legal, the long-term effects must be taken into consideration. If consumers are going to be informed about available prescription drugs, they should be *fully* and *properly* informed. Patients need to understand which drug brand is for treating which illness so they are not consuming doctors' time with incorrect prescription needs. It is important to study this topic in healthcare communication so that information about health can be more effectively communicated to the public.

This study has very practical implications. All pharmaceutical drugs brand names have little or no relation and this can have an adverse health affect for consumers. A recent report from the United States Pharmacopeia found that drug name mix-ups have more than doubled since 2004 (Graedon, J & Graedon, T., 2008). The United States Pharmacopeia (USP) is the official agency for all prescription drugs, over-the-counter

medicines, and dietary supplements manufactured and sold in the United States. USP sets the standards for quality of these products. Some examples of common mix-ups include: Cerebyz (an anticonvulsant) and Celebrex (an anti-inflammatory); Zyrtec (an antihistamine) and Zantac (an ulcer medication); Sarafem (an antidepressant) and Serophene (a fertility drug) (Friedman, R., 2003). The news story tells how one child was given Zyprexa, a schizophrenia drug, instead of the antihistamine Zyrtec (Graedon, J & Graedon, T., 2008).

There has been a substantial increase in advertising for direct-to-consumer pharmaceutical drugs; yet there has been little empirical research on this topic. Applying the theory of Limited Capacity Model of Motivated Mediated Message Processing, this study will advance knowledge concerning how individuals process these advertising messages. We will be able to see how two different advertising features, emotional tone and narrative style, affect people's cognitive processing of the advertisement. It is significant to understand if certain features are more effective than others and how advertisers can use this to make their messages more effective.

To test how narrative style and emotional tone affect the cognitive process, participants (N=40) were asked to watch twelve DTC advertisements, each being high or low for narrative style and positive or coactive (containing both positive and negative aspects) emotional tone. Following this, participants completed cued recall and recognition tests. Participants were recruited from a large Midwestern university.

## CHAPTER 2: LITERATURE REVIEW

The field of direct-to-consumer pharmaceutical advertising research, although relatively new, is growing. Research has covered various topics such as the third person effect examined in adults (DeLorme, Huh & Reid, 2006), the effect of prior knowledge of the drug (Huh & Langteau, 2007), and media usage and how it affects attitudes of DTC advertising (Lee, Salmon & Paek, 2007).

Although researchers have not studied the interaction between emotional tone and narrative style in DTC advertising, there is an abundance of literature on each variable independently. Studies examining narrative style have commonly found that narratives increase memory (Lang, Sias, Chantrill, Burek, 1995; Graesser, 1981). Researchers have found that because narratives are such an integral part of the human thought process (Sarbin, 1986), the use of narrative style will be easier for individuals to process and increase memory (Thorson, 1989).

There has been extensive research on how emotional tone affects the cognitive processing of advertising messages. There is mounting evidence that negative emotional tone is an effective means of advertising (Dillard & Nabi, 2006; Garoff-Eaton et al., 2006; Kensinger, 2007; Lang & Dhillon & Dong, 1995). The use of emotional tone has been studied using various stimuli, including political and healthcare advertising.

Although these variables, narrative style and emotional tone, have been studied independently of each other, this study seeks to understand how they interact with each other. This important area of research will hopefully fill the void and potentially educate

pharmaceutical companies and healthcare providers on how to create effective healthcare messages. An experiment that systematically examines these variables is crucial to studying its effects on cognitive processing.

### ***The Limited Capacity Model of Motivated Mediated Message Processing***

The foundation of this study is the Limited Capacity Model of Motivated Mediated Message Processing (LC4MP). This theory has been applied to numerous studies examining how individuals cognitively and emotionally process messages and how certain message features can affect this processing. Through the theoretical framework, this study looks at two specific advertising features, emotional tone and narrative style. Using this theory, researchers can better learn how individuals process information from receiving the message to the retrieval stage. Embracing this model can allow communicators to structure messages in a more effective way and enable researchers to see the message's effect on the audience (Lang, 2000).

Lang's (2000) LC4MP, in short, states that individuals have limited resources to allocate to processing messages. There are three subprocesses: encoding, storage and retrieval. Lang and Basil (1998) compared the idea of limited resources to shopping in order for individuals to better understand the concept:

When you go shopping, you have a certain amount of money in your wallet – this is your total resource pool. When you buy something (equivalent to processing a media message), the item has a price. That price is the resources required (to process the message). When you offer the salesperson some amount of money, the money you offer is equivalent to the resources allocated. Hopefully, after offering this money, there was still some money

left in your wallet – the money left in your wallet is your remaining resources. The difference between the price (resources required) and the sum offered (resources allocated) is your change, or your available resources.

Encoding is the first step in the process and is characterized by short term or working memory. When a message is encoded, a mental representation is stored in the brain. Recognition tests are an indication of how well a message was encoded in memory. Storage occurs when new information is linked with older information that has already been encoded (memories). The more this occurs (linking old and new information), the better that information is stored. Storage is measured through a cued recall test. Retrieval is the process of recovering a stored association of the whole message or part of the message. Retrieval is measured through a free recall test.

There are five important assumptions that are presented in this theoretical framework (Lang, 2006). First, human beings are constantly processing information. Our brain is continually processing information, followed by mental representations of the information being stored in our memory. That information is later retrieved and exported at some point in time (Lang, 2000). Individuals have limited cognitive resources to process messages. Our brain is capable of taking in a certain number of messages before cognitive overload occurs (Lang, 2000). Secondly, people have two systems of motivation, the appetitive system and the aversive system. In the appetitive system individuals approach the information whereas in the aversive system individuals avoid the information. Third, media is present through various sensory channels including sight, hearing, touch, and different formats (audio, text, etc.) Fourth, human behavior is a dynamic process that is continuous and ever changing from moment to moment. Lastly,



individuals receive the response in their brain before they consciously react to it. Changes in the message will elicit changes in the human processing system, such as increased arousal or attention. This assumption makes researchers think of media in terms of motivationally relevant content and how this changes the traditional scope of media.

The Limited Capacity Model suggests that orienting responses, which are typical after a camera cut or change in voiceover in a visual message, can improve the cognitive response to the message. According to Lang, Zhou, Schwartz, Bolls, & Potter (2000), cuts and edits in televised messages increase arousal and attention. According to Graham (1979), this response can be elicited by novel stimuli or signal stimuli. Her article describes that novel stimuli is not necessarily something new in general, but something new to the message, such as a person walking into a room or a change in music. An example of signal stimuli is someone saying your name; it is a signal stimuli because all individuals would react to his or her name being called whereas novel stimuli is different from person to person (Lang, 2006). Orienting response is not specifically studied in this thesis but is important to the Limited Capacity Model.

Cognitive resources can be allocated either through controlled processing or automatic processing (Lang, 2006). The controlled process is when people consciously encode information. It is the “Oh, that’s interesting. I want to pay attention to that,” response. On the other hand, automatic processing is the response to novel or signal stimuli, which is encoded unconsciously (Lang, 2000).

Lang (2006) posits that human being’s cognitive resources are continually and simultaneously being used for encoding, storage and retrieval. Since a main assumption of this theoretical framework is human beings as limited capacity information processors,

individuals have only a certain amount of resources to allocate to each subprocess until cognitive overload occurs. When this happens, one or more of the subprocesses will suffer because of the limited amount of resources. Using certain advertising features has the potential to cause cognitive overload, decreasing memory. This study will observe the effect of narrative style and emotional tone in DTC advertising on two processes of memory, encoding and storage.

### ***Memory Processing***

There are several theories and models that can be used to better understand memory. This section will look at the models relevant to this topic such as the Spreading Activation Theory and a more in depth look at the memory aspect of Annie Lang's LC4MP. Both theories have a strong application to the research question in this thesis: How do emotional tone and narrative style in direct-to-consumer (DTC) pharmaceutical advertising affect the memory link between the brand name advertised and the medical condition treated?

For the purpose of this study, memory will be looked at as a complex network of nodes and the links that connect those nodes (Roskos-Ewoldsen, 2004; Collins & Loftus, 1975; Anderson & Pirolli, 1984). Collins & Quillian (1969) first proposed this integrated memory network, the Spreading Activation Theory, which is highly valuable to this thesis. This theory posits that memory is essentially an activation of two or more nodes (see Fig. 2). When the nodes intersect, the memory connection is established (Collins & Quillian, 1969). Nodes can be explained as different concepts, for example medicine,

prescription, arthritis, and drug are all concepts. These concepts are closely related showing how complicated this model can be. According to Spreading Activation Theory, some links between nodes are more essential to the meaning of the concept than others (Collins & Quillian, 1969).

Anderson (1983) did research using the Spreading Activation Theory. He explains that nodes (which he terms “cognitive units”) form an interrelated network, and retrieving information from memory is performed by “spreading activation throughout the network” (p. 1). One study showed that participants who studied the phrase “Marty laughed at the clowns,” and were then given the foil “Marty liked the animal trainer” had a more difficult time verifying whether they had seen the foil statement because the two statements were similarly linked in their memory (Reder & Anderson, 1980).

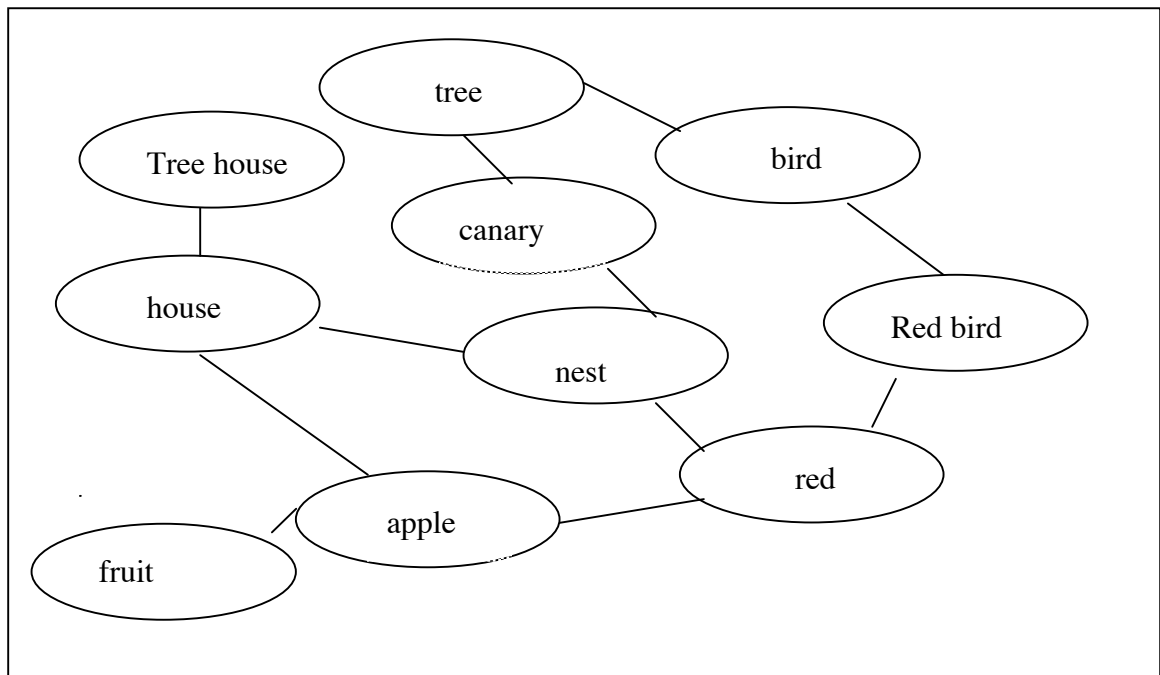
The Spread Activation Model has been widely used in cognitive psychology (Cameron, 1993; Shrum, 2002; Anderson & Pirolli, 1984). In his study on involvement, Cameron described Spread Activation as

a network of memory pathways described by physiologists as ensembles of neurons. Recall and recognition memory occur when these ensembles of interconnected neurons are activated by a stimulus or by each other. ... Memory is a function of both the process of establishing the network and the activation potential or energy level afforded to the network either by motivation or recurrent use of the network, called rehearsal effect (p. 855).

Because of this model of links and nodes, one would assume that pharmaceutical marketers would want the brand name of their drug to be similar to what the drug intends to treat so that when one is mentioned (say the medical condition) the other is easily recalled. However, according to the United States Food and Drug Administration naming

a drug is not as easy as it seems. The FDA “won't allow names that imply medical claims, suggest a use for which a drug isn't approved, or promise more than they can deliver” (fda.gov). The brand name of the drug cannot be semantically related to the medical condition it treats.

FIGURE 2: SPREADING ACTIVATION THEORY OF MEMORY:  
SIMPLIFIED NETWORK MODEL OF NODES AND LINKS



The Spreading Activation Model of Memory has been applied to David Roskos-Ewoldsen’s Attitude Accessibility Theory (2002). He describes the theory of memory as “a highly integrated network of concepts, attributes, and beliefs” (p. 40). The memory model has many *nodes* where small bits of information are stored and are connected by *associative pathways*. These pathways make it possible for information to spread from node to node and become better connected. Nodes are either active or inactive and can be activated by exposure to something that relates to one of the bits of information. Certain

pathways can also be stronger and these lead to higher levels of accessing an attitude. (Roskos-Ewoldsen, 2004).

Annie Lang has done research in the field of memory. Lang's work (2000, 2006) posits that there are three subprocesses to memory: encoding, storage, and retrieval. These subprocesses were briefly described in the previous section and will be expanded upon here. According to Lang (2006) these processes occur constantly, simultaneously, and continuously. Encoding is simply "getting the message out of the environment and into a person's brain" (p. 47). This is the first step in the process and is characterized by short term or working memory. When a message is encoded, a mental representation is stored in the brain. However, this representation is not an exact replica of the original information that is encoded. It only contains a portion of the information presented in the original message. Because messages that are not encoded are lost, understanding how to design messages so that pertinent information gets stored is important. Recognition tests are an indication of how well information is encoded into memory.

Storage describes the process of memory in regards to associations. New information is linked with older information that has already been encoded (memories). The more this process occurs (linking old and new information), the better that information is stored. During the encoding process, mental representations of the message are stored in our brain. There is an associative network used in the LC4MP model similar to the Spreading Activation Theory (Lang, 2000). According to Lang (2000), "associative network models conceptualize individual memories as being connected to other related memories by associations (or links)" (p. 49). Some bits of information are stored better in the memory. In other words, every item that is stored

does not receive equal space in the storage. Recall tests are an indication of how well information is stored into memory.

Last in the process, retrieval is the process of recovering a stored association of the whole message or part of the message. The more links and the stronger the associations affects how easily accessible the memory is (Lang, 2000). Resources, which are limited, can be used in variation amongst the three stages involved in message processing. (2000).

Memory can be described as implicit or explicit. Implicit memory is the unconscious collection, or remembering, of the information. Explicit memory, which will be studied in this thesis, is an individual's conscious and intentional collection of information (Christianson, 1992). Recognition and recall are tested for in explicit memory studies. In advertising research, explicit memory tests are a common way of measuring the effects of the advertisement. Recognition tests are an indicator of how well information is encoded in memory. In recognition tests, participants are shown an object, audio bite, or a brand name and asked if they can link that information with other information. For example, participants would be shown a brand name, like Lunesta and then asked to identify which risk statement was made in the Lunesta ads. Participants have multiple options, including foils, risk statements that are false. Unlike recognition, recall tests have little to no cues to help jog the participant's memory. Recall tests are an indicator of how well information is stored in memory. One example of a cued-recall test, utilized in this thesis, might show a still shot or 3 second clip from one of the advertisements shown to participants in the first part of the study. Then participants are asked to write down everything they remember from the ad. Participants recall and write

down anything that they can remember. Both forms of explicit memory, recognition and cued-recall, will be implemented in this study.

### ***The Use of Emotional Tone in Advertising***

Emotional tone is a persuasive mechanism used in various types of advertising including political ads, public service announcements, and healthcare communication. In this study, emotional tone was conceptualized as emotional content that evokes a response from the viewer as positive, negative or coactive (containing both positive and negative elements). There were only two completely negative advertisements found in the direct-to-consumer pharmaceutical advertisements that were viewed. This is most likely because the drug companies want to include some positive emotional element in the message; this positive aspect usually shows how the medicine works or the patient's positive outcome from using the prescription drug. Because only two negative advertisements were found, they were impractical to study. Only positive and coactive (containing both positive and negative tones) emotionally toned advertisements were examined. In this study it is important to note that emotional tone is the tone of the advertisement and not necessarily how it makes the viewer feel.

Because this study is examining emotional tone, it is essential to note Cacioppo and Berntson's (2000) work. They suggest that emotion is driven by two separate and distinct motivational systems, the appetitive and aversive system. Depending on the stimuli, information can activate each system in four different ways. First, reciprocally is when one system is active and the other is not. Second is coactively, meaning both are

active. Third, both systems are inactive. And last, the systems are working in a coupled manner and there is no relationship between the two. (Berntson & Cacioppo, 2000). In a positive environment, it is said that the appetitive system is activated whereas in a negative environment, the aversive system activates. The aversive system triggers our mind's survival instinct, and according to Lang (2006), it only takes low levels of negativity for the aversive system to occur. There are no negative advertising stimuli used in this study, but some advertisements contain both positive and negative emotion, causing the aversive system to be activated. When the aversive system is activated, more resources go into encoding the message because the negative information triggers the individual's attention (Lang, 2006).

There has been extensive research on how emotional tone affects the cognitive processing of advertising messages. There is mounting evidence that negative emotional tone is an effective means of advertising (Dillard & Nabi, 2006; Garoff-Eaton et al., 2006; Kensinger, 2007; Lang & Dhillon & Dong, 1995). The use of emotional tone has been studied using various stimuli. In a study on anti-smoking public service announcements (Biener, Ji, Gilpin, & Albers, 2004), messages containing negative emotional tone had better recall rates by the youth participants. In other related study by Biener, McCallum-Keeler and Nyman (2001), adults were asked to study anti-tobacco advertisements directed at the youth market. Adults also had higher recall rates for those advertisements that the panel previously coded as having a negative emotional tone (Biener et al., 2001) Lang, Dillion, and Dong (1995) also found that participants better recalled emotionally arousing messages.



One study (Garoff-Eaton et al., 2006) found that negative emotional images were remembered with more detail. The study looked at whether emotional content or neutral content is more effective at memory retrieval. It always seems that people tend to remember negative events, experiences, emotions, and messages. This article supports the hypothesis that participants who were given images of negative and neutral content better remembered the negative content in recognition tests.

Besides focusing on details of emotional images as Garoff-Eaton et al. (2006) did, political advertisements have been examined and recognition data shows that more detailed information is remembered from the negative political advertisements (Sabato, 1981; Bradley, Angelini, Lee, 2007). Negative advertisements catch the viewer's attention more than positive advertisements (Sabato, 1981) and are better remembered (Lang, 1991). Lang, Park, Sanders-Jackson, Wilson, and Wang (2007) reiterated these findings in their study in which positive and negative messages were shown to participants. The results showed positive messages caused cognitive overload in participants before negative messages did, in both arousing and calm advertisements (Lang et al., 2007).

For the purposes of this thesis, strictly negative emotional messages will not be studied. Coactive advertisements (containing both positive and negative aspects) will be studied along with positive advertisements. Because pharmaceutical companies are trying to sell a product, they tend to stay away from completely negative advertisements.

## *Narrative Style and Transportation Theory*

Narratives can be an effective way to communicate healthcare information. They can convey the message to the audience by immersing the viewer in a story told by the main character. Narratives are a pleasurable experience for the consumer and are usually presented as entertainment. The story that the character is telling is integrated, causal, and presented in a chronological sequence, inviting the consumer to come along for a journey with the product or service.

Narratives have a beginning (usually containing a problem or conflict), middle (the peak or climax) and end (the resolution). They are usually chronological and presented in a causal manner (Lang, Sias, Chantrill, & Burek, 1995). Because narrative style integrates actions of the character with implications that the audience is able to see, it is easier for the consumer to follow along and relate with the character (Green, 2006). Graesser (1981) found that college students read narrative texts twice as fast as expository text. One would conclude that memory of the narrative text would be lower because the students read through it so quickly. However, the results showed the participant's memory of the narrative text was twice as high than the expository text. From that point on, researchers continued to conduct empirical research supporting the hypothesis that narrative style is cognitively processed more easily than non-narrative style.

Transportation theory is the theoretical framework behind narrative style messages. Transportation is the main mental mechanism of the narrative style (Green, 2004). Green and Brock (2000) define transportation into the narrative as the integration

of attention, imagery, and feelings, while focused on story events. Green (2004) discussed that viewers may unconsciously disregard attitudes and beliefs that they thought to be true when in the transported world and actively associate the character's views with their own. Those who are transported into a narrative world are cognitively and emotionally immersed in the story, making narrative style an effective advertising feature to implement especially in healthcare advertising.

Green (2004) describes three ways that readers are affected by transportation. First, transporting into the narrative world can create relationships with the character. Individuals are more likely to relate to sympathetic characters. Individuals can better identify with characters and view them as role models. Especially in healthcare messages, emotional responses with the character are seen (Green & Brook, 2000). In Green's study on breast cancer narratives, it was found that narratives motivated action and changed behavior. Although motivating the audience is important in the majority of advertising, this finding is especially profound when it comes to motivating an audience to take control of their health. Second, when the audience is transported into the narrative, there is a reduction in counterarguments. Because readers and viewers are immersed in the story being told, their ability to make counterarguments is reduced because they are mentally involved in the story being told. Creating a counterargument would interrupt the flow of the story and hinder the positive experience. This makes using narratives an effective way to convey healthcare message because the audience does not second-guess the product, or drug in this case. Third, narrative style increased perceived realism. When individuals are transported, the text or story the author is telling seems more like real life. People tend to generalize from a story because it is hard to argue against what happened

to someone (Green, 2004). According to Green, Brock, and Kaufman (2004), transportation also allows the individual to escape reality and enter a new world where there are no insecurities or fears.

In Green's study (2004), participants were given a story to read about being homosexual and returning to a fraternity reunion. The story showed how the guests at the party were homophobic. Before reading the story, the two groups of participants were instructed to either relax and think about the story or to pay more attention to grammar and spelling, discouraging transportation. The results showed that this was not successful in affecting participant's transportation. There didn't seem to be a difference between the two groups who received the different manipulations. Prior knowledge led to an increase in transportation. Transportation was shown to be associated with a greater perception of realism and reducing counterarguments.

Lang et al. (1995) illustrated that video narrative was related to arousal, in turn affecting memory. For this study, I will be looking at video narrative style, so this article is highly relevant. The messages were divided into three groups: low, medium, and high narrative content. The results showed that video narrative led to an increase in the resources allocated to a message. The increase in resources resulted in an increase in memory, regardless of whether the message was calm or arousing.

Because narratives are central to human communication, they are easier to understand. According to Lang et al. (1995), audio narrative style message require more resources to process than non-narrative style messages. The results to her study showed that because more resources were allocated for narrative style messages, memory was increased. On the other hand, it was shown that video narrative allocated fewer resources

to the message but still increased memory. Previous research has also supported that narrative style increases memory (Lang, 1995).

The foundation of this thesis is the Limited Capacity Model of Motivated Mediated Message Processing. This theory has been applied to numerous studies examining how individuals cognitively and emotionally process messages and how certain message features can affect this processing. Through the theoretical framework, this thesis looks at two specific advertising features, emotional tone and narrative style. In particular, this thesis addresses the following research question:

RQ: How do emotional tone and narrative style affect the memory link between brand name and illness treated in direct-to-consumer pharmaceutical advertising?

Previous research shows that narrative style will increase memory as well as low levels of negativity in advertisements. Studies examining narrative style have commonly found that narratives increase memory (Lang, Sias, Chantrill, Burek, 1995; Graesser, 1981). Researchers have found that because narratives are such an integral part of the human thought process (Sarbin, 1986), the use of narrative style will be easier for individuals to process and increase memory (Thorson, 1989). There has also been extensive research on how emotional tone affects the cognitive processing of advertising messages. There is mounting evidence that negative emotional tone is an effective means of advertising (Dillard & Nabi, 2006; Garoff-Eaton et al., 2006; Kensinger, 2007; Lang & Dhillon & Dong, 1995). The use of emotional tone has been studied using various stimuli, including political and healthcare advertising.

Based on Lang's (2006) theory of Limited Capacity Model of Motivated Mediated Message Processing, the participants in this study are expected to more effectively encode coactive messages because the low levels of negativity will activate the aversive system. When activated, individuals are motivated to pay attention because they think the information they are receiving is vital. Since more resources are being allocated to encoding the message, it is expected that recognition, an indicator of encoding, will be high for these coactive advertisements. Thus, this study posits that:

H1: There will be a narrative style and emotional tone interaction such that the positive effect of narrative style on recognition will be stronger for co-active compared to positive toned ads.

Because the aversive system will most likely be activated during coactive advertisements, more resources will be allocated to encoding these coactive messages leaving fewer resources to be used for storage, causing cued-recall to suffer for coactive advertisements. Thus, this study posits that:

H2: There will be a narrative style and emotional tone interaction such that the positive effect of narrative style on cued recall will be stronger for positive toned compared to co-active toned ads.

## CHAPTER 3: METHODOLOGY

### EXPERIMENTAL DESIGN

The design of this experiment was a 2 (emotional tone) x 2 (narrative style) x 3 (advertisement) within-subjects repeated-measures experiment. Emotional tone had two levels, positive and coactive (containing both positive and negative emotional tone). Narrative style was operationalized by two levels, high or low presence of narrative style. Participants were shown twelve 60-second prescription drug advertisements. The advertisements were a combination of emotional tone and narrative style. Three advertisements were positive emotional tone and high narrative style, three ads were positive emotional tone and low narrative style, three ads were coactive emotional tone and high narrative style, and three ads were coactive emotional tone and low narrative style (see Figure 4). The order of the advertisements were randomized using MediaLab software. Following each ad, participants were asked if they have previously seen this ad to eliminate any effects of prior knowledge. Following that, the participants watched a distracter clip of a common sitcom before moving on to the recognition test. After the recognition test, another distracter clip was shown and then participants completed the cued recall test.

## INDEPENDENT VARIABLES

*EMOTIONAL TONE:* Emotional tone is a persuasive mechanism used in various types of advertising including political ads, public service announcements, and healthcare communication. In this study, emotional tone was operationalized as emotional content that evokes a response from the viewer as positive, negative or coactive (containing both positive and negative elements). This study did not contain any negative advertisement because none could be found in the pool of pharmaceutical advertisements. For the purposes of this study, emotional tone was categorized as positive emotional tone or coactive (containing both positive and negative emotional tone). Emotional tone was manipulated based on pre-testing a pool of 36 DTC ads. Participants in the pretest (N=30) included 15 people from the 50-55-year old age group and 15 people from the 70-75-year-old age group. The pre-test participants were randomly assigned to rate advertisements based on either how pleasant they felt or on how unpleasant they felt. The mean difference was then calculated for each advertisement. Pretest results are available in Appendix A.

*NARRATIVE STYLE:* Narratives have a beginning (usually containing a problem or conflict), middle (the peak or climax) and end (the resolution). They are usually chronological and presented in a causal manner (Lang, Sias, Chantrill, Burek, 1995). In this study, narrative style was operationalized by two levels, high or low presence of narrative style. The 36 pharmaceutical advertisements were coded by two undergraduate students for narrative style (see Appendix B for code sheet). The researcher trained the coders prior to coding the advertisements. Together the researcher and coders went



through four of the advertisements and discussed the presence of narrative style. The criteria was that they followed a chronological storyline, focused on one character as opposed to a variety of characters, and the visuals also followed the chronological story that was being told in the message. Intercoder reliability was calculated at .67 using Holsti's formula and yielded the manipulations for the two degrees of narrative style. The coding results are available in Appendix C.

#### DEPENDENT VARIABLES

*CUED-RECALL:* Cued-recall is an indicator of the information being stored into long-term memory. Participants were shown a still camera shot from each of the advertisements used in the study. Each still shot was displayed for 10 seconds. These images were carefully chosen to not give away any information that could be linked to the brand name or condition treated. On the same screen as the image, participants were asked to name the brand name of the drug and the medical condition treated, as well as any other information that they remembered about the advertisement. The cued-recall test was presented to participants by Media Lab in a random order. The still images used for the cued-recall test are available in Appendix E.

*RECOGNITION:* Recognition is an indicator of how well information is encoded into short-term memory. To test recognition, participants were instructed to answer multiple-choice questions relating to the different pharmaceutical brands and corresponding medical conditions in the advertisements that they viewed. Participants were then presented with a brand name, such as Lunesta and asked to select which

medical condition the drug is used to treat amongst four choices. An example question is: “You previously viewed an advertisement on Avodart. Which of the following medical conditions does Avodart treat? A) Heartburn B) Enlarged prostate (the correct answer) C) Depression D) Clogged arteries” Brand name, as opposed to the condition treated, was chosen for the recognition test because in real life, this seems to be the way patients have trouble linking the two together. They remember the brand name but have trouble linking it to the correct medical condition. The recognition test was presented to participants using Media Lab. The questions were randomized for each participant. The questions used for the recognition test are available in Appendix D.

#### STIMULUS DERIVATION

The stimuli used in this study were twelve direct-to-consumer pharmaceutical drug advertisements that were viewed in the first part of the experiment. Advertisements were chosen from a pool of 56 and then narrowed down by the research team. Advertisements that included a call-to-action such as a free trial or informative literature were eliminated. Ads for drugs that were not in pill form (e.g. creams, shots, patches, etc.) were not used for this study. Once the ads were narrowed down, they were pretested for emotional tone. Participants in the pretest (N=30) rated each advertisement based on its pleasantness or unpleasantness on a nine-point continuous scale. Based on the pretest results, the ads that contained the strongest manipulation of emotional tone were used for the final study (see Figure 3). Advertisements were categorized as positive or coercive (rating both positive and negative).

FIGURE 3:  
MEAN SCORES FOR PLEASANTNESS AND UNPLEASANTNESS

Positive ads	Pleasant Mean	Unpleasant Mean	Difference
1. Vytorin 042	6.03	3.25	2.78
2. Singulair 010	6.27	3.76	2.51
3. Fosamax Plus D 111	5.45	3.29	2.16
4. Nexium 060	5.98	3.85	2.13
5. Ambien 071	5.37	3.49	1.88
6. Aricept 030	5.30	3.79	1.52
Co-active ads			
1. Cymbalta 120	4.85	4.56	.29
2. Avodart 041	5.11	4.73	.38
3. Plavix 112	5.02	4.28	.75
4. Cialis 071	5.53	4.72	.81
5. Enablex 112	5.73	4.88	.85
6. Rozerem 071	5.41	4.55	.86

Because DTC advertisements are meant to sell a product, there were only positive and coactive advertisements, none that were completely negative. Two undergraduate students coded advertisements for narrative style. The researcher trained the coders on how narrative style was used in this study and how to appropriately code. The researcher and coders talked through several advertisements before beginning the coding process. This narrowed down the direct-to-consumer advertisements to twelve ads to be used for the experiment. Three advertisements were positive emotional tone and high narrative style, three ads were positive emotional tone and low narrative style, three ads were coactive emotional tone and high narrative style, and three ads were coactive emotional tone and low narrative style. This is illustrated in Figure 4.

FIGURE 4: GRAPHICAL REPRESENTATION OF ADVERTISEMENTS SHOWN

<p>Three Advertisements Positive Emotional Tone High Narrative Style <i>Ambien CR</i> <i>Aricept</i> <i>Nexium</i></p>	<p>Three Advertisements Coactive Emotional Tone High Narrative Style <i>Avodart</i> <i>Plavix</i> <i>Rozerem</i></p>
<p>Three Advertisements Positive Emotional Tone Low Narrative Style <i>Fosomax Plus D</i> <i>Singulair</i> <i>Vytorin</i></p>	<p>Three Advertisements Coactive Emotional Tone Low Narrative Style <i>Cialis</i> <i>Cymbalta</i> <i>Enablex</i></p>

The order of the advertisements was randomized using MediaLab software. Each advertisement was 60 seconds long. A list of the advertisements used is available in Appendix F.

#### PROCEDURE

The participants were welcomed by the researcher and asked to sign and date an informed consent form (see Appendix G). The researcher also explained the consent process to each participant and made sure there were no questions. Participants were instructed to fill out of short survey asking how familiar they were with a variety of medical conditions, including conditions that were used in the study as well as conditions that were not. In addition, it asks how familiar participants are with the medical treatments of those conditions. A copy of this survey can be found in Appendix H. The

subject was orally given instructions for the experiment, which was also displayed on the screen. Participants viewed the advertising messages on Dell laptops equipped with MediaLab software and headphones. After viewing each advertisement participants were asked if they have previously seen this ad to control for prior knowledge effects in the data. Participants then viewed a 3-4 minute distracter video clip and continued on to the cued recall test. After that, another distracter video was shown and the participant continued on to the recognition test. Once the experiment was completed, the participant was debriefed about the study. Any questions were answered and the researcher offered a copy of the consent form. Participants were thanked and dismissed. A copy of the experiment's protocol can be found in Appendix I.

#### PARTICIPANTS

Participants (N=40) were recruited from several large Midwestern university classrooms. All participants were between 18-25 years old. By using college-age students, we eliminated some effects of prior knowledge of the prescription drugs because many of the drugs used in this study are targeted to older adults. An approved recruitment script was used and research participation credit was offered for those who participated. A copy of the script can be found in Appendix J.

## CHAPTER 4: RESULTS

### HYPOTHESIS 1

The first hypothesis predicted that there would be a narrative style and emotional tone interaction such that the positive effect of narrative style on recognition between drug brand and medical condition would be stronger for co-active advertisements compared to positive toned advertisements. Encoding was measured by a 12-question multiple-choice recognition test (Appendix D). Scores were submitted to a 2 (emotion) x 2 (narrative) x 3 (advertisement) repeated-measures Analysis of Variance (ANOVA). Data from 50 participants was submitted for analysis. Data from 10 participants was lost due to equipment error.

There was a significant main effect for narrative ( $F(1,39)=8.273$ ,  $p<.006$ ,  $\eta_p^2 = .175$ ). The main effect shows that, contrary to what was predicted in this hypothesis, recognition, the ability to link the drug brand with the medical condition, was higher for advertisements using low levels of narrative style ( $M = .696$ ,  $SD = .037$ ) than advertisements using high levels of narrative style ( $M = .579$ ,  $SD = .039$ ). There was no significant main effect for emotional tone.

In addition to the main effect, there was a significant narrative by emotion interaction ( $F(1,39)=3.809$ ,  $p<.058$ ,  $\eta_p^2 = .089$ ). The interaction shows that narrative style had a larger impact on memory for coactive advertisements than it did for positive advertisements. This interaction is displayed in Figure 5. Recognition scores for coactive advertisements were significantly lower when narrative style was used in the ads.

Recognition was improved for coactive ads when advertisements did not use narrative style. In addition, the element of narrative style had little effect on positive advertisements. Ads using narrative style and coactive emotional tone were predicted to have the best recognition results, however the data shows that these two variables together received the lowest scores, while non-narrative coactive advertisements has the highest recognition scores. Means for the percentage correct of recognition data are displayed in Table 1.

Hypothesis one was partially supported. The recognition data shows that narrative style, in fact, did have a larger impact on coactive advertisements than positive advertisements. However, the impact was negative because the introduction of narrative style actually lowered recognition.

FIGURE 5:  
NARRATIVE BY EMOTION INTERACTION

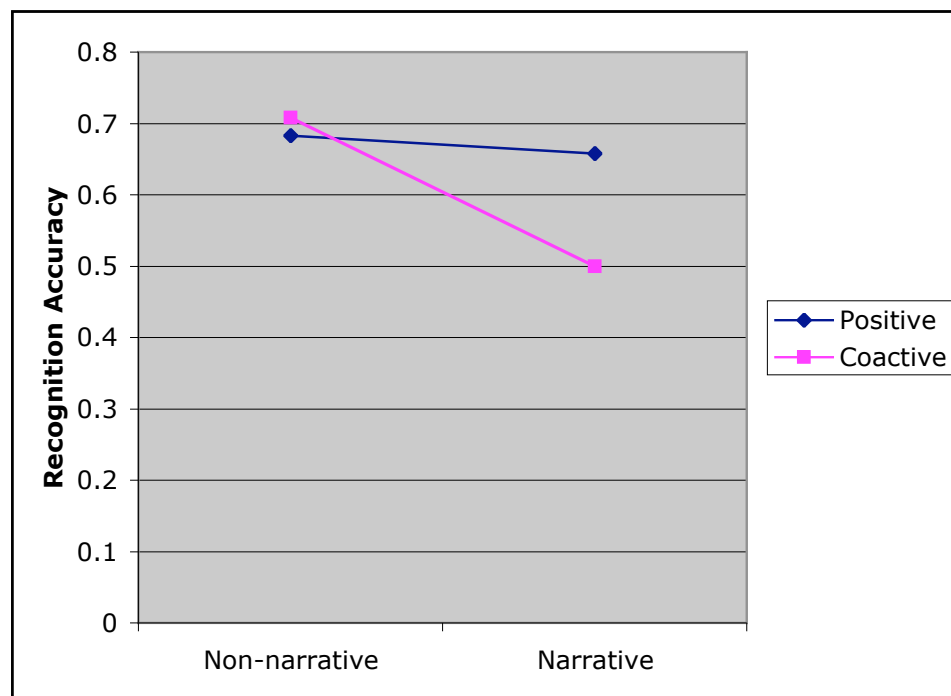


TABLE 1: RECOGNITION TEST PERCENTAGE CORRECT

Emotional Tone	<u>Non-Narrative</u>		<u>Narrative</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Coactive	.708	.052	.500	.058
Positive	.683	.046	.658	.044

## HYPOTHESIS 2

Hypothesis two predicted that there would be a narrative style and emotional tone interaction such that the positive effect of narrative style on cued recall would be stronger for positive toned compared to co-active toned ads. Storage was measured through a cued recall test where participants were presented with a still image from an advertisement that they had previously viewed (Appendix E). The image stayed on the computer screen for 10 seconds, after which the participants were instructed to write out the brand name of the drug, the medical condition that it treats, as well as anything else they remember from the advertisement.

Responses were then measured according to the number of correct mentions of specific information and whether the information remembered was drug relevant or drug irrelevant. Drug relevant information was the brand name of the drug, the medical condition it is used to treat, and any other information pertaining to how the drug works, risks, and benefits. If a participant remembered the brand name, and that the drug works for up to four hours, these items were coded as drug relevant and that participant received



a score of 2 for remembering two drug relevant items. Drug irrelevant information was content that related to the advertisement itself but not the drug. For instance, if a participant recalled that a lady was wearing a red dress, there was couple was on a boat, and that Sally Field was the spokesperson, those items were coded as drug irrelevant and that participant received a score of 3. Data was then examined more closely to see whether participants recalled the medical condition or brand name in an effort to better understand what specific pieces of drug relevant information were better remembered.

Scores were submitted to a 2 (narrative style) x 2 (emotional tone) x 3 (advertisement) repeated-measures ANOVA. Cued-recall data from 40 participants were analyzed. Recall scores were so low that the data suffered from a floor effect. The mean averages for recall of the medical condition ranged from .03 to .20, while the mean averages for recall of the drug brand name were even lower, ranging from .00 to .08. Hypothesis two was not supported.

## CHAPTER 5: DISCUSSION

The purpose of this thesis was to shed light on the relationship, if any, between the use of narrative style and emotional tone in direct-to-consumer pharmaceutical advertisements and the viewers' ability to link the brand name of the drug with the medical condition it treats. The foundation of this study was Annie Lang's Limited Capacity Model of Mediated Motivated Message Processing. Memory was measured by two performance tests: first, a cued-recall test to indicate how well participants stored the information in the advertisements, followed by a recognition test to examine how well the messages were encoded.

The results of this study indicate that narrative style had a stronger effect on memory for coactive advertisements than it did for positive advertisements. Recognition scores for coactive advertisements were significantly lower when narrative style was introduced in the ads. Scores were improved for coactive ads when advertisements did not use narrative style. In addition, the element of narrative style had little effect on positive advertisements. Ads using narrative style and coactive emotional tone were predicted to have the best recognition results, however the data shows that these two variables together received the lowest scores, while non-narrative coactive advertisements has the highest recognition scores.

Cued-recall data suffered a floor effect and was extremely lower than the recognition data. Based on the theoretical framework of the LC4MP, this finding indicates that

individuals are not storing the information being presented, brand name of the drug and the corresponding medical condition, as they are to encode the information.

Based on the recognition data, there was a main effect for narrative; however the effect was in the opposite direction that was predicted. Recognition was higher for advertisements using low levels of narrative style than advertisements using high levels of narrative style. These results are in complete opposition to the bulk of previous narrative research, which states that narratives are generally better remembered because humans can relate to narratives more easily. Since the use of narratives in pharmaceutical advertising has not been researched previously, this could mean that DTC ads need to implement narratives in a different or better way. It is possible that the use of narratives about serious diseases such as Alzheimer's and Osteoporosis could frighten the audience and activate the aversive system. The aversive system, when activated, causes individuals to pay particular attention to the message because it involves important information pertaining to survival. However, if the consumer considers the narrative to be very unpleasant, they could ultimately avoid the information because they find it overly threatening. There were no strictly negative advertising stimuli used in this study, but some advertisements contained both positive and negative emotional tone, most likely causing the aversive system to be activated. When the aversive system is activated, more resources go into encoding the message because the negative information triggers the individual's attention at first but then they could possibly be avoiding the information after that, affecting the brain's ability to store the information. This could possibly explain why recognition scores surpassed recall scores.

To further understand the data, a paired-samples *t* test was run to test the four means of recognition accuracy against each other. The *t* test yielded a significant difference between the narrative/coactive condition and the narrative/positive condition,  $t(39) = 2.346, p < .05$ , such that the recognition in the narrative/coactive condition ( $M = .500, SD = .058$ ) was significantly lower than the narrative/positive condition ( $M = .658, SD = .044$ ). The narrative/coactive condition was also significantly different from the other three conditions. A chart illustrating the recognition accuracy for all four conditions is displayed in Figure 6. The mean differences between the four conditions are listed in Table 2. Based on this, it is verified that the low recognition scores for the narrative/coactive combination were the driving force behind the narrative style x emotional tone interaction discussed in the results chapter.

FIGURE 6: RECOGNITION ACCURACY

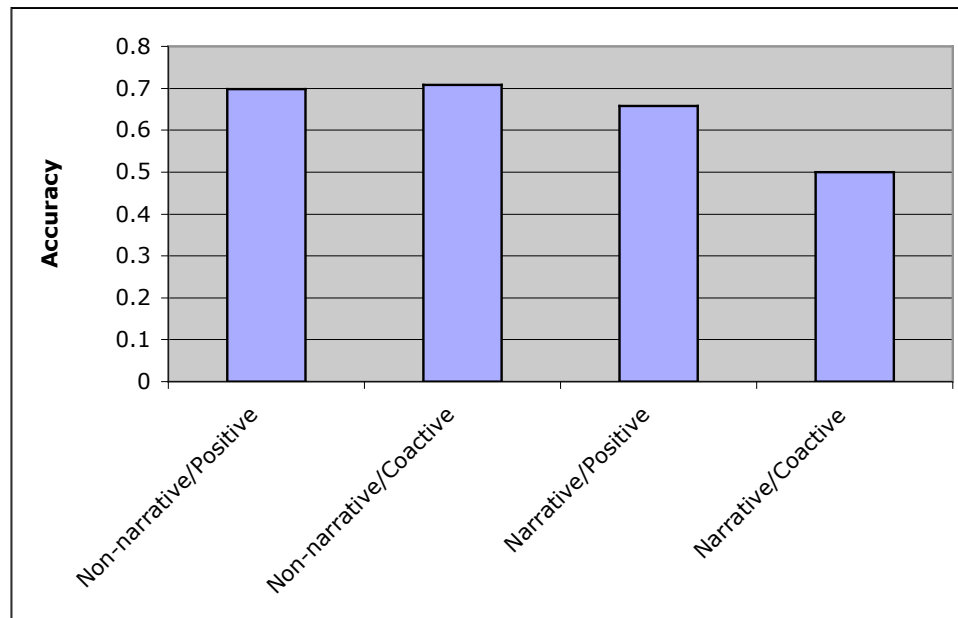


TABLE 2: RESULTS OF PAIRED SAMPLE T-TEST

	<i>t</i>	<i>df</i>	<i>Sig (2-tailed)</i>
Narrative/Coactive + Narrative/Positive	2.346	39	.024
Narrative/Coactive + Non-narrative/Coactive	2.806	39	.008
Narrative/Coactive + Non-narrative/Positive	2.959	39	.005

Unfortunately, cued-recall results exhibited floor effects where participants struggled with identifying information from the advertisements based on the images that they were presented with. The memory scores were so low that no significant relationship could be obtained from the data. The mean averages for recall of the medical condition ranged from .03 to .20, while the mean averages for recall of the drug brand name were even lower, ranging from .00 to .08. This shows a slight increase in participant’s memory of the medical conditions over the brand name itself. Perhaps, this is because the brand names are more difficult to remember and the FDA prohibits pharmaceutical companies from using brand names that are semantically similar to the medical condition. Speaking in terms of the Spreading Activation Theory, using brand names that are semantically similar could be the important link between the two nodes, brand name and medical condition. In light of these findings, the FDA may be interested in changing or lessening its regulations if it means that consumers and health care providers would be able to better connect the brand name of the drug with the medical condition it treats.

These findings have both practical and theoretical implications. Practically, these results suggest that advertising professionals have a lot to learn in the realm of DTC advertising. It is far more complex than most people understand. The effects size of the

interaction found in this study accounted for nine percent. In the advertising industry, an increase of that percentage can be important. If you advertisement can be nine percent more effective because the ad did not use narrative style, as this study suggests, that can account for a significant increase in sales. This also applies to the medical world. If drug name mix-ups can be decreased by nine percent that can eliminate a lot of resulting health problems, some even serious.

Although most research on narrative style shows that narratives increase memory, this was not the case in the current study. Memory scores were extremely low in this study, and the use of narrative style did not boost memory. Participant's cued-recall results showed that they were not storing the information and this could be due to the fact that these particular diseases did not affect the participants used in this study. Undergraduate students, the sample used for this study, do not have a vested interest in diseases such as growing prostate and clogged arteries. This might lead one to believe that the young age of research participants may have had an affect on the data.

However, another study conducted in the Missouri School of Journalism's PRIME (Psychological Research on Information and Media Effects) Lab also showed that memory in participants aged 50-55 and 70-75 yielded similar results, even though this is the age group that is most affected by these ailments. Participants were given recognition and cued-recall tests to examine whether risk and benefit statements could be remembered, and memory scores in this study were also low especially for coactive advertisements (Norris, Bailey, Malle & Bolls, 2007), which is consistent with what was found in this study. Both the 50-55 and 70-75 year-olds had very similar recall and recognition scores. This indicates that age is possibly not a necessary factor in

remembering DTC healthcare information. Even if someone is in the age group that health problems such as growing prostate can occur, if the disease does not directly affect that person or someone close to them, they may not take the cognitive effort to encode or store the information.

This study brings an important question to light: Is direct-to-consumer pharmaceutical advertising necessary? DTC advertising is a relatively new phenomenon in the field of healthcare communications. The FDA relaxed its regulations in 1997 causing an influx of prescription drug television commercials directed at the consumer. Previously, this information was conveyed directly to the physician, who would then inform patients of relevant drug treatments available to them. Recent studies conducted at the Missouri School of Journalism (Norris, et al., 2007) as well as this thesis have shown that individuals are remembering minimal information from these pharmaceutical advertisements. This information gives more ammunition to DTC advertising's opponents because if people are not recalling this information, then the question must be asked: why are they continuing to spend millions of dollars on DTC advertising therefore increasing the cost of healthcare and prescription drugs? It would seem that if consumers are affected by a disease or want more information on a drug, they would proactively seek out that information themselves and not wait around for a commercial.

Although there is much opposition to DTC advertising, it doesn't seem to be a fading trend. Since this method of relaying healthcare information is here to stay, an emphasis must be put on how to more effectively create DTC advertisements so that consumers will better remember the information or at least remember enough of the message to seek out additional information. Surprisingly, consumers are not the only

people experiencing difficulty linking the brand name of the drug with the medical condition; even physicians and pharmacists are having trouble remembering important drug relevant information. A recent report from the United States Pharmacopeia, the official agency for prescription drugs and over-the-counter medicines, found that drug name mix-ups have more than doubled since 2004 (Graedon, J & Graedon, T., 2008). These mix-ups can have harmful and sometimes devastating effects. One news story reported how one child was given Zyprexa, a schizophrenia drug, instead of the antihistamine Zyrtec (Graedon, J & Graedon, T., 2008).

The data presents not only practical implications, but important theoretical implications as well. This study assists in furthering theory and adds to the knowledge of how humans cognitively process advertising messages. LC4MP states that individuals have limited resources to allocate to processing messages. It is clear through the data that the relationship between narrative style, emotional tone and memory is not perfectly connected. Lang's theory would predict that the use of high levels of narrative style, since humans easily relate to messages presented in a narrative format, and coactive emotional tone would allow consumers to more effectively encode and store the information they receive. Through this thesis it is not shown that these two variables will increase patients ability to link the drug brand name with the medical condition it treats. However, this study was strictly focused on the two variables studied and was conceivably too narrow. There are dozens of other factors that can affect memory in direct-to-consumer pharmaceutical advertising, such as age, socioeconomic status, previous health issues, motivations, and prior knowledge. In a perfect research world we could test every applicable variable; however, for the purposes of this study, the researcher wanted to be



more specific in examining any possible underlying factors that could affect this memory link.

There are several limitations that should be brought to light. As with any experiment, the unnatural condition of the laboratory is inferior to the more naturalistic setting of the participants' own living room where they would be likely watching television commercials. However, conducting a laboratory experiment was the most valid approach to testing the variables in this study. In real life, viewers are not required to recall information from commercials immediately after viewing them so in an effort to make this study emulate real life, the researcher implemented distracter videos prior to each memory test. The use of undergraduate students in this study could have been a possible limitation. Since the participants' ages ranged from 18-23 years old, perhaps they were not as motivated to pay attention to the messages as someone who has been affected by the diseases used in this experiment. The intercoder reliability for narrative style was low and Holsti's does not account for chance. This study was also limited because emotional tone was pretested on individuals aged 50-55 and 70-75. This age group may have a different measure of pleasantness and unpleasantness compared to the college-aged sample used in this study.

There are obviously many avenues of DTC advertising that have been unexplored and this thesis can be expanded upon in many different directions. A follow-up experiment could study whether participants better remember information from DTC ads of prescription drugs with names that are semantically similar versus drug names that are unrelated to see if there is a difference in memory between the two. This could perhaps prompt the FDA to revisit its current policy on naming prescription drugs. Another

avenue of research is to use participants that have suffered from the advertised disease and see how their memory differs from participants who have a family history of the certain disease and those who have not come in contact with the disease at all. How would these three groups with different medical backgrounds compare? The Limited Capacity Model of Motivated Mediated Message Processing suggests that memory could be increased through motivation and relevance, meaning that those who have suffered through a disease or have a family history of that disease may remember the message information better. Finally, another direction for further research is to better understand how to use narratives in DTC advertising. The findings of this study go against most of the prior research on narrative style so further research on narratives could help advertising professionals understand the way to most effectively communicate this information through television commercials.

It would be beneficial to study narratives by measuring heart rate and secondary task reaction time to better understand resource allocation during pharmaceutical advertisements. If narratives increase resource allocation but memory is still down, then advertisers are possibly using narratives in a way that is interfering with memory, rather than increasing it. After reviewing the results, I analyzed the twelve advertisements to get a closer look at how narratives were used. What I noticed was that the narratives used in the advertisements were not related to the disease. For example, the Nexium advertisement for heartburn followed one man while he talked about the medicine. However, the whole commercial he was working in his tool shed, which doesn't have anything to do with heartburn. This could be why narratives did not increase memory in the case of pharmaceutical advertisements. If the use of narrative style in this type of

advertisements incorporated the disease, maybe viewers would be able to better remember important product information.

In conclusion, direct-to-consumer pharmaceutical advertising is becoming more widespread and playing a larger role in consumers' healthcare decisions than ever before. Consumers are taking a more proactive role in their health and DTC ads, if done properly, can assist in these important decisions. Since DTC advertising is here to stay, it is imperative to fully understand how to convey the information effectively to the patient. While testing memory in general is important, this study tests for very specific variables making it critical to the mass media research field. This thesis expands on previous research in the field of memory, specifically how narratives and emotional tone can affect patients and consumers ability to link the brand name of the drug with the appropriate medical condition; however, as with any study, further research is needed. As one of the first glimpses into the relationship between narratives, emotional tone and memory, this thesis will provide a foundation for future exploration on how to effectively communicate information in DTC pharmaceutical advertising.

## APPENDIX A

<b>Positive ads</b>	<b>Pleasant Mean</b>	<b>Unpleasant Mean</b>	<b>Difference</b>
7. Lunesta 020	6.24	3.12	3.12
8. Vytorin 042	6.03	3.25	2.78
9. Singulair 010	6.27	3.76	2.51
10. Boniva 121	5.94	3.70	2.24
11. Fosamax Plus D 111	5.45	3.29	2.16
12. Nexium 060	5.98	3.85	2.13
13. Ambien 071	5.37	3.49	1.88
14. Enbrel 112	5.73	3.88	1.85
15. Lunesta 043	5.69	3.85	1.83
16. Zelnorm 033	5.96	4.24	1.72
17. Flomax 111	5.62	3.97	1.65
18. Boniva 051	5.70	4.12	1.58
19. Aricept 030	5.30	3.79	1.52
<b>Co-active ads</b>			
7. Detrol LA 071	5.45	5.45	0
8. Avodart 102	4.84	4.86	.02
9. Cialis 041	4.99	5.02	.03
10. Cialis 032	5.13	4.98	.15
11. Lipitor 101	4.54	4.72	.18
12. Cymbalta 120	4.85	4.56	.29
13. Detrol LA 050	5.68	5.33	.35
14. Avodart 041	5.11	4.73	.38
15. Levitra 101	5.26	4.84	.41
16. Plavix 112	5.02	4.28	.75
17. Cialis 071	5.53	4.72	.81
18. Enablex 112	5.73	4.88	.85
19. Rozerem 071	5.41	4.55	.86

## APPENDIX B

### CODING SHEET

Your name \_\_\_\_\_

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

A narrative is defined as having BOTH of the following criteria:

- 1) most events and characters are connected, and
- 2) there is an identifiable structure or time sequence that is bounded by space and time.

For example, if a person is recounting an event (e.g., discomfort, diagnosis, talking with others) in temporal order (generally, in the order the event occurred in time), and if the recounting involved at least one person (self, doctor, family member, etc.), then you should code the clip as a narrative.

To what extent do you think this clip is a narrative?

Not at all A lot

. . . . .

Rate each video clip on each of the following:

How much does the person in the clip describe positive emotions (e.g., happy, proud, etc.)?

Not at all A lot

. . . . .

How much does the person in the clip describe negative emotions (e.g., fear, sadness, etc.)?

Not at all A lot

. . . . .

## APPENDIX C

### *Narrative Style Coding Results*

	Coder 1 Narrative	Coder 2 Narrative
Ambien090	5	4
<b>Aricept030</b>	6	5
<b>Avodart041</b>	6	6
<b>Ambian071</b>	6	6
Avodart102	4	4
Boniva051	6	5
Boniva121	5	5
Cialis032	5	5
Cialis 041	5	5
<b>Cialis 071</b>	1	1
<b>Cymbalta120</b>	2	2
DetrolLa050	5	5
DetrolLa071	5	5
<b>Enablex010</b>	3	2
Flomax111	2	2
Enbrel112	2	2
<b>Fosomax111</b>	2	1
Lantus 022	1	1
Lipitor050	5	5
Levitra101	3	3
Lipitor101	4	3
Lipitor073	6	3
Lunesta010	5	4
Lunesta020	2	2
Lunesta043	2	2
Lunesta051	2	3
<b>Nexium060</b>	6	6
Plavix012	6	6
<b>Rozerem071</b>	6	6
<b>Plavix112</b>	6	6
<b>Singulair010</b>	1	1
<b>Vytorin042</b>	2	1
Zetia022	6	5
Zetia012	5	6
Zelnorm032	2	2
Zelmorm033	2	2
<b>High Narrative Style</b>	<b>Low Narrative Style</b>	

## APPENDIX D

### *Recognition Test (shown in random order during the study)*

You previously viewed an advertisement on Avodart. Which of the following medical conditions does Avodart treat?

- A) Heartburn
- B) **Enlarged prostate**
- C) Depression
- D) Acute Coronary Syndrome (Clogged arteries)

You previously viewed an advertisement on Aricept. Which of the following medical conditions does Aricept treat?

- A) Osteoporosis
- B) Sleep apnea
- C) Depression
- D) **Alzheimer**

You previously viewed an advertisement on AmbienCR. Which of the following medical conditions does AmbienCR treat?

- A) Heartburn
- B) Erectile Dysfunction
- C) **Insomnia**
- D) Allergies

You previously viewed an advertisement on Cialis. Which of the following medical conditions does Cialis treat?

- A) Heartburn
- B) Enlarged prostate
- C) Bladder control
- D) **Erectile Dysfunction**

You previously viewed an advertisement on Cymbalta. Which of the following medical conditions does Cymbalta treat?

- A) Anxiety
- B) Osteoporosis
- C) **Depression**
- D) High cholesterol

You previously viewed an advertisement on Enablex. Which of the following medical conditions does Enablex treat?

- A) Restless leg syndrome
- B) Acid Reflux

- C) Bladder control**
- D) Erectile Dysfunction

You previously viewed an advertisement on Fosomax. Which of the following medical conditions does Fosomax treat?

- A) Osteoporosis**
- B) Arthritis
- C) Bladder control
- D) Allergies

You previously viewed an advertisement on Nexium. Which of the following medical conditions does Nexium treat?

- A) Heartburn
- B) High cholesterol
- C) Diabetes
- D) Acid Reflux**

You previously viewed an advertisement on Rozerem. Which of the following medical conditions does Rozerem treat?

- A) Erectile dysfunction
- B) Diabetes
- C) Insomnia**
- D) Acute Coronary Syndrome (Clogged arteries)

You previously viewed an advertisement on Plavix. Which of the following medical conditions does Plavix treat?

- A) Heartburn
- B) Acid reflux
- C) Arthritis
- D) Acute Coronary Syndrome (Clogged arteries)**

You previously viewed an advertisement on Singulair. Which of the following medical conditions does Singulair treat?

- A) Allergies**
- B) Enlarged prostate
- C) Bladder control
- D) Sleep disorder

You previously viewed an advertisement on Vytorin. Which of the following medical conditions does Vytorin treat?

- A) Sleep apnea
- B) Anxiety
- C) High cholesterol**
- D) Acute Coronary Syndrome (Clogged arteries)



APPENDIX E

*Still images used in the cued recall test*

AMBIENC R



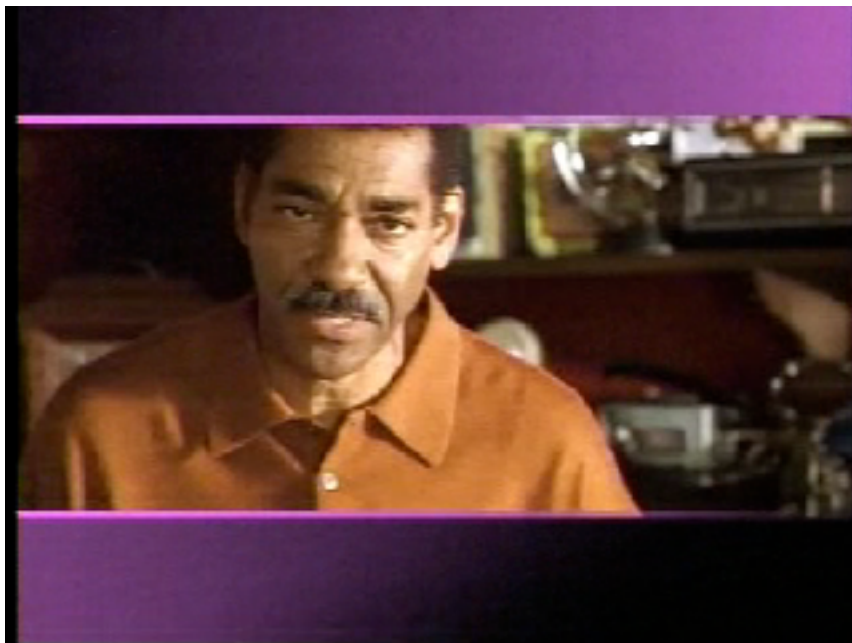
ARICEPT



AVODART



NEXIUM



PLAVIX



ROZEREM



CIALIS



CYMBALTA



FOSAMAX PLUS D



ENABLEX



SINGULAIR



VYTORIN



## APPENDIX F

*Advertisements used in this study appeared in random order*

### High Narrative Style

AmbienCR (071) (+)  
Aricept (030) (+)  
Avodart (041) (-)  
Nexium (060) (+)  
Plavix (112) (-)  
Rozerem (071) (-)

### Low Narrative Style

Cialis (071) (-)  
Cymbalta (120) (-)  
Fosamax Plus D (111) (+)  
Enablex (112) (-)  
Singulair (010) (+)  
Vytorin (042) (+)

(+) Positive Emotional Tone

(-) Coative Emotional Tone

## APPENDIX G

### University of Missouri School of Journalism

You are being asked to participate in a research study. The purpose of this study is to better understand how people process direct-to-consumer pharmaceutical advertisements. During this study, you will view twelve 60-second advertisements and answer a series of questions related to the ads. This study will take approximately 1 hour and all information you provide will be kept confidential.

Your participation in this study is voluntary and you have the right to withdraw at any time, with no penalty at all. For participation in this experiment, you may receive credit towards your class requirements for one of your Journalism classes. If you have questions or concerns about the study, you may ask the researcher at any time or contact the Institutional Review Board, 483 McReynolds, University of Missouri, Columbia, MO 65211 or by phone at (573) 882-8595.

I have read and understand the above statement. I voluntarily agree to participate in this study.

---

(Participant's signature)

---

(Date)



## APPENDIX H

PRE-STUDY SURVEY

# \_\_\_\_\_

How familiar are you with the medical condition **insomnia**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **insomnia**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Alzheimer's**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Alzheimer's**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **enlarged prostate**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **enlarged prostate**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Restless Leg Syndrome**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Restless Leg Syndrome**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **acid reflux**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **acid reflux**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **diabetes**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **diabetes**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Acute Coronary Syndrome (clogged arteries)**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Acute Coronary Syndrome (clogged arteries)**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **erectile dysfunction**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **erectile dysfunction**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **depression**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **depression**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Osteoporosis**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Osteoporosis**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Rheumatoid Arthritis**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Rheumatoid Arthritis**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **overactive bladder**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **overactive bladder**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **Irritable Bowel Syndrome**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **Irritable Bowel Syndrome**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **allergies**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **allergies**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar are you with the medical condition **high cholesterol**?

Not at all 1 2 3 4 5 6 7 Very Familiar

How familiar you are with medicines used to treat **high cholesterol**?

Not at all 1 2 3 4 5 6 7 Very Familiar

## APPENDIX I

### EXPERIMENT PROTOCOL

There are **three** Media Lab files for this experiment. The first file is the study containing the twelve advertisements, followed by the recognition and recall tests.

1. Turn on laptops
2. Log into laptops (the password is **brains#1**)
3. Start the Media Lab application found on the desktop.
4. When the participant arrives, welcome them and ask them to sign the consent form. After they sign the form, file it in the appropriate folder labeled **completed consent forms** and ask the participant if they have any initial questions.
5. In the Media Lab application, go to “**Run**” and click on “**Select and run an experiment**”
6. Select the folder named “**DTC Study Malle**” This is the file with the twelve advertisements that the participant will view.
7. Enter the **Subject ID** (the condition number will always be 0)
8. Explain to the participant that in this portion of the study they will be viewing twelve 60-second direct-to-consumer pharmaceutical advertisements. Following each advertisement they will be asked a couple of questions asking how the advertisement made them feel. These instructions will also be on the screen for them to read. Instruct them that when they are ready to click “continue” to view the advertisements.
9. When the participant is finished, repeat Step 5 but this time run “**Malle Recognition.**”
10. Enter the **Subject ID** (the condition number will always be 0)
11. Inform participants that this is the second portion of the study and they will be asked questions concerning the advertisements they just saw. Also, let them know that there will be a short video clip of a common sitcom prior to this part.
12. When the participant is finished, repeat Step 5 but this time run “**Malle Recall.**”
13. Enter the **Subject ID** (the condition number will always be 0)
14. Inform participants that this is the third and final portion of the study and they will be asked questions concerning the advertisements they just saw. Also, let them know that there will be a short video clip of a common sitcom prior to this part as well.
15. After the participant completes all three experiments, answer questions they may have, offer them a copy of the consent form, and say “**Thank you!**”

## APPENDIX J

### RECRUITMENT SCRIPT

Hello! My name is Jennifer Malle. I'm a graduate student here at the Journalism School. I am asking for your help with my thesis. I need participants to complete a study being conducted in the PRIME Lab in the Journalism School at 178 Gannett Hall. The purpose of this study is to learn more about how people process direct-to-consumer pharmaceutical advertising. The study will take about an hour of your time. It involves watching twelve 60-second pharmaceutical advertisements and answering a series of questions related to the ads. In exchange for your participation, you will be fulfilling the research-participation requirement in this class. If you do not participate, there will be other opportunities to fill this requirement without participating in research. I am going to pass around a sign up sheet. Please write your name, email and phone number next to the day and time you would like to participate. I will email or call you with a confirmation of the day and time you are scheduled. Please let me know if you have any questions. Thanks.

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## VITA

Jennifer Ann Malle was born in St. Louis, Missouri. She attended high school at Nerinx Hall in Webster Groves. After that, Jennifer moved to Columbia, Missouri to pursue a degree in Journalism at the University of Missouri – Columbia. She was Vice President of Programs and Events for the Advertising Club and a Journalism Peer Advisor during Summer Welcome. She had the opportunity to work with local clients including Massage Envy, Wilson’s Total Fitness, and the Columbia Public Works Department. When Jennifer discovered the wonderful world of research at the Psychological Research on Information and Media Effects (PRIME) Lab, she decided to pursue a Master’s degree. The Missouri School of Journalism has provided Jennifer with a well-rounded degree and a foot in the door to the advertising industry.