

**KNOWLEDGE TRANSFER AND RHETORIC: THE INFLUENCE
OF RHETORICAL FIGURES ON CONSUMER LEARNING**

by

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A Dissertation submitted to the Faculty of Graduate Studies of

The University of Manitoba

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Of

Doctor of Philosophy

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ABSTRACT

Understanding how consumers use existing knowledge to learn about new products is important for consumer researchers, marketing managers and public policy makers. One stream of research to examine this learning process is literature on analogical knowledge transfer. Researchers in this stream have begun to explore the use of analogies (in simile form) in product ads to help explain new products to consumers. An analogy is similar to a metaphor, which has been studied extensively as a rhetorical figure, in an advertising context. The research on analogical knowledge transfer, however, has not incorporated many of the findings on metaphors. This research seeks to explore what impact the use of rhetorical figures in advertising has on consumer learning.

Four experiments demonstrate that consumer learning about a new product is affected by the presence of a rhetorical figure (either a simile or a metaphor) in an ad. Consumers were significantly more likely to make an invalid inference after exposure to an ad with a simile or a metaphor in the headline versus an ad with a declarative statement in the headline, but only when the ad included a headline and no other text. The degree of artfulness of the rhetorical figure was found to influence the occurrence of the invalid inference. Level of involvement with processing the message, however, was not found to have a significant moderating effect on the knowledge transfer process. This research examined differences between novices and experts in terms of analogical processing and found no evidence of the superiority of experts in this regard. This dissertation concludes with a discussion of the theoretical and managerial implications of this research as well as the limitations and directions for future research.

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CHAPTER ONE

INTRODUCTION

NATURE OF THE RESEARCH PROBLEM

Recently, researchers in marketing have begun to investigate the processes of internal knowledge transfer that consumers engage in when learning about a new, unfamiliar product. This stream of research promises to expand our understanding of how consumers use existing knowledge to help them learn about unfamiliar products as well as ways in which this learning process can be influenced. The dominant theory driving this stream of research is analogical reasoning (Gentner 1983), which holds that we learn about new products much in the same way as we solve analogies. In applying and testing this theory in marketing, consumer researchers have often employed analogies in the headlines or copy of advertisements used as experimental stimuli (Roehm and Sternthal 2001; Gregan-Paxton and Moreau 2003). The use of an analogy in an ad has been found to influence the way consumers learn about the products being advertised. In spite of this explicit use of analogy, consumer researchers have largely failed to acknowledge the fact that an analogy is a rhetorical figure and thus have neglected to incorporate findings from the literature on rhetorical figures and persuasive communication.

This research seeks to answer the following question, “What influence does the use of rhetorical figures in marketing communication have on consumer learning?” Specifically, the impact on consumer learning will be examined from the perspective of internal knowledge transfer and the validity of the inferences consumers draw after exposure to a persuasive communication containing a rhetorical figure; the persuasive

impact of the communication; and the confidence with which inference are held. This research will include an investigation of the moderating impact of involvement with processing the persuasive communication and consumers' level of expertise.

SCOPE OF THIS RESEARCH

To date, the testing of knowledge transfer theories in consumer research has largely been limited to hi-tech consumer electronics, such as cell phones, personal digital assistants (PDAs), software and digital cameras. One goal of this proposed research is to expand the scope of studies on knowledge transfer to a different context: the health care industry, specifically prescription drugs. Prescription drugs represent a different category of products than consumer electronics on many levels. First, consumers cannot directly buy prescription drugs; they must first see a physician to obtain a prescription for a specific drug and then have a pharmacist fill the prescription. Second, prescription drugs, while relatively simple to consume, are incredibly complex in terms of interactions with other medications and/or lifestyles. Specialized knowledge is required to fully understand pharmaceuticals. Third, prescription drugs have a direct and potentially powerful impact on consumers' health and well being. Fourth, prescription drugs have a far reaching impact on public policy and society in general. Governments, as well as many not-for-profit organizations such as the American Association of Retired Persons in the United States (AARP 2003), are becoming increasingly interested in the rising costs of prescription drugs.

Health care professionals used to be the sole targets of advertising for prescription drugs; however, in recent years pharmaceutical companies have begun actively targeting

consumers with advertisements promoting these products. Direct-to-consumer (DTC) advertising by pharmaceutical companies represents a departure from the traditional dissemination of drug-related knowledge, in which health care providers and pharmacists were the only ones actively targeted, the result being that knowledge in many cases is no longer first filtered and synthesized by health care providers before being passed on to patients.

In 1985 the U.S. Food and Drug Administration (FDA) ruled that DTC advertisements for prescription drugs would be permitted so long as the ads targeted to consumers met the same restrictions as those targeted at health care professionals, which meant the ads had to contain a fair balance of benefit and risk and include a brief summary of risk information. Ads broadcast on television could make a major statement of risk in either audio or audio and video format instead of the brief summary of risk. Sponsors of broadcast ads also had to make “adequate provisions” that viewers of the ads had easy access to full prescribing information. In 1997, the FDA issued a guidance effectively loosening the “adequate provision” requirement for broadcast ads by allowing the advertising sponsors to meet the requirement through the inclusion of a toll-free phone number that viewers could call and request to have the full labelling information either read to them or mailed to them in a timely manner (DHHS 1999). As a result, pharmaceutical DTC advertising in the U.S. has proliferated in the past ten years (AARP 2004; Smith 1998). While Canada imposes much stricter regulations (Therapeutic Products Programme 1999) than the U.S., cable television and satellite dishes have nonetheless resulted in Canadian consumers also being exposed to U.S. DTC ads for pharmaceuticals (Mintzes et al. 2002).

Proponents of this growing trend argue that the advertisements serve to better inform patients about treatments they might otherwise never have known about (Bonaccorso and Sturchio 2002) as well as increasing prescription compliance (Peyrot et al. 1998). Opponents argue that the advertisements have a medicalising effect on normal human conditions, potentially causing otherwise healthy patients to request specific medical treatments from their physicians (Mintzes 2002).

Proponents of DTC advertising point to the positive educational impact of the advertisements, which often encourage consumers to make an appointment with their physicians to learn more about the drug being advertised (Calfee 2002). Even though pharmaceutical companies are controlled by regulatory agencies, their advertisements should not be treated as unbiased sources of educational information. An advertisement is a persuasion attempt by a pharmaceutical company with the ultimate goal of influencing the beliefs, attitudes, decisions, or actions of consumers (Friestad and Wright 1994). In addition, many consumers are misinformed as to the regulation of DTC advertising for prescription drugs.

A survey of US consumers found that the majority of respondents were under the false impression that DTC ads for prescription drugs had to pass stringent conditions before the US government would permit them to be released (Wilkes, Bell and Kravitz 2000). Among the beliefs held by survey respondents were: the ads have to be submitted to the government for prior approval; only “completely safe” drugs can be advertised; advertising drugs with serious side-effects is banned; and only “extremely effective” drugs can be marketed directly to consumers. None of these beliefs is true (Wilkes et al. 2000). A more recent survey of consumers in the US suggests that consumers hold rather

negative attitudes toward DTC ads (Friedman and Gould 2007). Over half (53%) of the consumers surveyed indicated that they did not like seeing ads directed to consumers for prescription drugs.

Opponents of DTC advertising cite the limited benefits offered by many of the advertised drugs, stating that they often represent minimal improvements over current treatments (Lexchin and Mintzes 2002) and therefore offer little real benefit to consumers. In addition, some opponents go so far as to suggest that the resultant visits to the physician to discuss a new treatment may even be a waste of time and money (Coney 2002). A recent study on the content of DTC ads suggests that visuals in the ads have the potential to transform consumers' perceptions of physicians' offices from those of sanctuary into those of commercial venues (Handlin 2006).

Prescription drug advertising is part of a growing consumer empowerment trend in the health care industry. As a result, the patient-caregiver relationship in the U.S. is shifting from one characterized by paternalism to one characterized by consumerism (Beisecker and Beisecker 1993). A paternalistic patient-physician relationship is one characterized by trust, obligation, and a beneficent physician in a position of power over the patient (Beisecker and Beisecker 1993). In contrast, a consumerist patient-physician relationship is characterized by mistrust, an emphasis on rights, and accountability. The implicit assumption behind the consumer movement in health care is that by empowering patients to demand their rights as consumers, and not be content to remain silent partners accepting whatever health care professionals tell them, the level of service provided, and the health status of consumers, will improve (Herzlinger 2004). Consumers are no longer

passive parties to health care delivery; they raise their voices, challenge caregivers, and often demand a say in clinical decisions (Johnson and Ramaprasad 2000).

Many studies on patient involvement in clinical decision-making agree on the beneficial nature of involving patients in decision-making (Hibbard 2003). Some studies, however, caution that more research is needed to explore whether the relationship between increased patient involvement and increased health status is in fact causal or whether it is merely correlational (Hack et al. 2005).

In addition to the benefits of increased patient involvement, there are also potentially negative aspects that deserve attention. Clinicians may find themselves with increased work and increased frustration as a result of patients challenging their clinical authority with a piece of “evidence” obtained from an advertisement (Johnson and Ramaprasad 2000; Wilkes et al. 2000). If clinicians do not fully understand the reasoning process by which consumers make inferences based on newfound knowledge, and the possible biases involved, they are likely to interpret the patient’s actions as irrational and perhaps dismiss their concerns. Patients may also become increasingly insistent on obtaining a specific pharmaceutical brand for which they saw advertisements or researched on the World Wide Web (Johnson and Ramaprasad 2000; Lexchin and Mintzes 2002). Such promotional material aimed at consumers encourages them to “talk to your doctor” to see “if Drug XYZ is right for you”, which has the effect of encouraging patients to be more demanding of their health care professionals. In itself, this may not necessarily be a negative outcome, but nonetheless deserves attention due to the possible negative side effects of increased prescribing behaviour for heavily advertised drugs (Mintzes et al. 2002), as well as prescribing therapeutic drug treatments

at the insistence of patients when the merits of such therapy are not clearly present (Mintzes 2002).

The growing consumerism movement in health care, the availability of medical information on the Internet and increasing numbers of DTC ads for prescription drugs have led to the current situation where it is not only health care professionals that can affect patient outcomes and clinical decisions, but also patients (consumers) themselves as well as the marketers of health care products. How promotional messages are constructed in DTC ads for prescription drugs will likely affect how consumers learn about these new products. Due to the paucity of studies investigating learning after exposure to DTC ads for prescription drugs, little is known on how different messages will affect the knowledge transfer process. What is known, however, is that very few consumers possess the specialized knowledge required to comprehend prescription drugs and, as such, must be considered novices in this context.

DTC advertising for prescription drugs is becoming an increasingly important topic in the marketing literature. Recently, the *Journal of Public Policy and Marketing* devoted most of an issue to the topic (Cohen 2002). Many articles tend to focus on the public policy implications (Coney 2002; Lexchin and Mintzes 2002; Roth 1996) while others have examined the return-on-investment of pharmaceutical advertising (Narayanan, Desiraju and Chintagunta 2004) as well as the effectiveness of DTC drug advertising (Menon et al. 2004). A few researchers have begun to address the effects of DTC advertising on consumer behaviour, including the effect on patient-physician relationships (Huh and Langteau 2007; Menon et al. 2003), consumer awareness and processing of warnings in promotional messages (Kavadas, Katsanis and LeBel 2007;

Morris, Mazis and Brinberg 1989), as well as the impact of DTC advertising on physician prescribing behaviour (Peyrot et al. 1998) and consumers' perceptions of the prevalence of medical conditions (Park and Grow 2007).

What is missing from the literature is a focus on the fundamental learning processes involved when consumers are exposed to promotional messages for sophisticated pharmaceutical products. There is still very little known on how the persuasion and learning processes differ for consumers exposed to messages for health care products. Most studies of consumer behaviour have employed general consumer products, such as electronics, computers, and personal care products. Prescription drugs differ from these products on many important aspects, including the potential impact on a consumer's health and well being in terms of side effects, improper use, or interactions with other drugs. Given the potential impact of prescription drugs it is vitally important that research on consumer behaviour be extended to test the applicability and validity of existing theory in this context.

ORGANIZATION OF THE DOCUMENT

This document contains eight chapters. The first chapter introduced the nature of the research problem and the scope of the research. The second chapter presents a review of the relevant literature upon which the research draws, while the third chapter presents the hypotheses and the theory on which they are based on. The fourth chapter discusses Study 1 which investigated the impact that simile and metaphor have on consumers' knowledge transfer and persuasion in addition to the validity of consumers' inferences made after exposure to an analogical comparison, either a simile or a metaphor. The fifth

chapter discusses Study 2, which investigated the impact of varying the degree of artfulness of analogical comparisons on consumers' knowledge transfer and the validity of consumers' inferences, in addition to the confidence with which consumers have in their inferences after exposure to an analogical comparison. The sixth chapter discusses Study 3, in which the impact of level of involvement and different medical conditions on consumers' knowledge transfer and validity of consumers' inferences was investigated. The seventh chapter discusses Study 4 which investigated the influence of level of expertise on consumers' knowledge transfer. Finally, Chapter Eight concludes with a general discussion of the findings of this research, the theoretical and managerial implications of this dissertation, as well as the limitations of this dissertation and avenues for future research.

CHAPTER TWO

KNOWLEDGE TRANSFER AND RHETORIC

The purpose of this chapter is to introduce the major bodies of work upon which this dissertation builds. The main literatures drawn on include: consumer learning, analogical knowledge transfer, and rhetoric in persuasive communication. First, a general overview of the theories of consumer learning will be presented, followed by a detailed discussion of theories of internal knowledge transfer, including structure mapping theory and the Consumer Learning by Analogy model. Finally, the use of rhetorical figures in persuasive communication with consumers will be discussed.

CONSUMER LEARNING: KNOWLEDGE TRANSFER PROCESSES

I. Consumer Learning

How consumers learn about new products is of central importance to both marketing managers and marketing academics alike. For managers, understanding how consumers learn about their products can influence promotional campaigns, product literature, and ultimately product positioning. For academics, consumer learning impacts many concepts in consumer behaviour research. Acquiring knowledge about new or unfamiliar products, in addition to existing knowledge bases, may affect consumer processes such as depth and extent of information processing (Alba and Hutchinson 1987) as well as the valence and strength of product evaluations (Rao and Monroe 1989; Hoch and Deighton 1989). Consumer learning is also an integral component of sophisticated choice models (Lilien, Moorthy and Kotler 1992). Although learning

remains a largely implicit component of much research on consumer behaviour (Hutchinson and Alba 1991), there are some elements that have received direct attention over the past years. Research has explicitly tackled the issue of expertise (Alba and Chattopadhyay 1986) and its multiple dimensions (Alba and Hutchinson 1987), as well the link between prior knowledge and information search (Brucks 1985; Ratchford 2001) and the distinction between self-assessed knowledge and objective knowledge (Alba and Hutchinson 2000; Brucks 1985; Park, Mothersbaugh and Feick 1994; Flynn and Goldsmith 1999). Additionally, studies have also examined the actual processes of learning, including experiential learning (Hoch and Deighton 1989), goal-oriented learning (Huffman and Houston 1993) as well as the effects of level of involvement (Celsi and Olson 1988) and situational determinants on learning (Hutchinson and Alba 1991).

II. Cognitive Knowledge Transfer

One area of consumer learning that has recently received attention is the process by which consumers transfer existing, stored knowledge about a familiar product or situation to generate inferences and subsequently to learn about a new or unfamiliar product or situation (Gregan-Paxton et al. 2002; Gregan-Paxton and Moreau 2003; Moreau, Lehmann and Markman 2001; Moreau, Markman and Lehmann 2001). Research on how consumers learn by drawing on their existing knowledge is founded on theories of reasoning developed by cognitive psychologists (Gentner and Gentner 1983; Gentner 1989; Markman and Gentner 2001; Vosniadou 1989). Reasoning can be broadly defined as “the process of drawing conclusions” (Leighton 2004) and is important to understand,

as it is reasoning that allows “the human cognitive system to go beyond the information readily available in the environment” (Markman and Gentner 2001). It is through the process of reasoning that consumers are able to integrate existing or background knowledge with new information to make inferences about a new product or situation. These inferences create new knowledge to fill in gaps in understanding and result in consumer learning (Holyoak, Gentner and Kokinov 2001).

One mechanism used to explain the process of knowledge transfer is analogy. Knowledge transfer by analogy is a process involving the detection of similarities between two situations or objects, also referred to as domains. The following terminology is used in explaining the process of analogical knowledge transfer:

Familiar object or Base Domain (B) → Unfamiliar object or Target Domain (A)

The underlying process in analogical knowledge transfer is the determination of how the target domain, A, is similar to the base domain, B. Similarities between domains are classified into two groups: attributes and relations. An attribute is an independent property or component of an object (Gregan-Paxton and Roedder John 1997). For example, a four-cylinder engine and unleaded gasoline are attributes of a car. A relation is an interconnected system of properties or components that defines the relationship between attributes (Gregan-Paxton and Roedder John 1997). The relation between the attributes of a car is the following: the car uses unleaded gasoline to fuel the four-cylinder engine. A relation establishes the link between attributes. An analogical comparison is one that focuses on the common relations between the base and target domains and not the common attributes. For example, “A Volvo is like a security blanket for your morning commute” is an analogical comparison. The focus of the comparison is the common

underlying relations between a Volvo and a security blanket, not whether they share common attributes. A consumer interpreting the Volvo analogy would not likely conclude that a Volvo is soft to the touch, but would likely conclude that a Volvo makes you feel safe when you drive it, comforts you when you face the stress of commuting, etc. The two domains (the target and the base) in an analogical comparison may share some attributes, but the focus is on the shared relations (Gentner and Gentner 1983). In contrast, a comparison that focuses on common attributes is considered a literal similarity comparison, for example “A Volvo is like a Saab”. The comparison is on the shared attribute of being a Swedish brand and does not necessarily involve any common relational structure.

When a person engages in analogical reasoning, it is the explanatory system of relations from a familiar domain (the base) that is used to make sense of the unfamiliar domain (the target), not attributes. Analogical learning proceeds via structure-mapping processes, which involve the alignment and subsequent mapping between structural conceptual representations (Gentner 2003). Mapping relations is an important cognitive phenomenon because it highlights common relational structures rather than common object attributes. Transferring relations as opposed to attributes has been shown to promote learning (Gentner 2003) as well as be more diagnostic of product benefits in a consumer setting (Gregan-Paxton and Roedder John 1997).

In general, there are three steps in the process of internal knowledge transfer (Gentner 1989; Vosniadou 1989; Holyoak et al. 2001):

1. Accessing the base domain;
2. Mapping the relational structure;
3. Transferring knowledge and drawing inferences about the target.

Access

When encountering a new product or situation, individuals first search their memory to access existing knowledge bases that they think will help them to understand the new product. Accessing an appropriate and useful base domain can be a difficult task and is thought to be a function of easily accessible similarity between the target and the base domains (Vosniadou 1989). Vosniadou (1989) uses the term “salient similarity” to describe the easily accessible similarity between a target domain and an identified base domain. In experts, salient similarities are more likely to be relations, given high level of familiarity with the target and base domains. In contrast, for individuals who are much less familiar with the domains, the most easily accessible, or salient, similarities are more likely to be attributes. Perceiving similar attributes might lead an individual to discover similar relations, which were less easily accessible than similar attributes. Whether they are attributes or relations, salient similarities are the first step in leading an individual to discover the common underlying relational structure between the target and the base domain. For example, when exposed to a digital camera for the first time, an individual searches his or her memory to access a base domain to serve as a source analog. Noticing that the digital camera has a USB port (an attribute or surface similarity) might cause the individual to access a personal computer as a base domain, and subsequently transfer the

relational explanatory structure of digitizing information from computers to the digital camera.

Rather than retrieving a base domain on their own (known as a productive analogy), individuals might instead be presented with an instructional analogy in which the base domain is already specified. To interpret the analogy, however, individuals must still access their existing knowledge on the given base domain to discover the common underlying relational structure between the target and the base. For example, rather than noticing on his or her own that the digital camera is like a computer, a consumer might be explicitly told that a digital camera is like a personal computer. It is then up to the individual to access his or her knowledge of computers and determine the common relations between digital cameras and computers.

Mapping, Transfer and Inferences

Once the base domain is accessed, the individual must then map the explanatory system from the base to the target in a manner that seems justified by the target. In the digital camera analogy, it might seem reasonable to the individual that the digital camera could also digitize information in a similar way as a personal computer by receiving input, coding all the bits of information input into ones and zeros, and storing the information input as a digital file for later retrieval. If the target example seems to justify the explanatory system, then the individual generates inferences about the target based on the explanatory knowledge transferred from the base.

One of the most influential theories used to model analogical learning is structure mapping theory, first proposed by Gentner (1983). Structure mapping theory is a theory

of reasoning that models analogy and literal similarity comparison processes in perceptual and conceptual tasks (Markman and Gentner 2001). Building on Gentner's (1983) structure mapping theory, Gregan-Paxton and Roedder John (1997) proposed a model of Consumer Learning by Analogy (CLA). The CLA model presents two types of knowledge transfer: schema-based transfer and similarity-to-exemplar transfer. When consumers perceive two domains to be similar primarily in terms of relations, they engage in schema-based transfer, earlier referred to as analogical transfer. When consumers perceive primarily common attributes between two domains they engage in similarity-to-exemplar transfer.

An integral component of the CLA model is the impact of level of expertise on the type of knowledge transfer employed by consumers. Gregan-Paxton and Roedder John (1997) posit that the ability to perceive common relations is a function of expertise. The main difference between expert and novice knowledge transfer lies in the ability to distinguish when it is appropriate to create attribute mappings between domains and when it is appropriate to create relational mappings. Novices, due to their lack of experience with the particular product class, do not have well-developed knowledge structures and lack the rich schemas that experts possess. As a result, they are not able to detect common relations, and therefore engage in more unrestricted transfer of knowledge using the similarity-to-exemplar logic. Roehm and Strenthal (2001) found that expertise moderates the persuasiveness of an analogy; a requisite degree of product expertise was required to map structural relations.

Earlier research on consumer expertise also examined the link between relational-based inferences (the result of analogical transfer) and a requisite level of product

category knowledge. Alba and Hutchinson (1987) suggest that experts, unlike novices, should be able to question the validity of similarity-based reasoning, in essence questioning the likelihood that common relations actually exist between two products that may only share common attributes or surface similarities. Gregan-Paxton and Roedder John's (1997) proposition that experts are more likely to make relational-based inferences than novices is of particular relevance to the context of complex products, such as consumer electronics and pharmaceuticals. Although consumers may have armed themselves with a plethora of information, when it comes to complex products, they are arguably novices as compared to professionals in the field. This is not meant to imply that consumers are unable to make informed decisions, only that they are likely to exhibit novice-type reasoning processes when it comes to complex products. In the end, experts and novices may in fact draw the same inferences, but inferences made by novices are more likely to be arrived at in a heuristic manner, with the validity of the inferences being more a function of chance than inferences made by experts, who tend to be more analytic when making inferences about new products (Alba and Hutchinson 1987).

When an individual is presented with a simple, instructive analogy to understand a complex concept, there is a tendency for the individual to restrict his or her understanding of the new concept to only those aspects explained by the analogical mapping process (Spiro et al. 1989). Going back to the Volvo and safety blanket analogy, there is the possibility that the consumer learning about Volvo cars will restrict his or her understanding of Volvos to the safety and comfort benefits that were mapped as part of the analogical reasoning process and will not consider other aspects of a Volvo, including the fact that it is also fast and fun to drive.

ANALOGIES AND PERSUASION: RHETORICAL FIGURES

From a knowledge transfer perspective, analogies used in product appeals have been found to be powerful tools in persuading consumers of an advertised product's benefits (Roehm and Sternthal 2001). Analogies in this stream of research have often taken the simile form of "A is like B". An analogy and a simile are both related to the linguistic device of metaphor. A metaphor is an implied comparison of the form "A is B". Analogy, simile and metaphor all involve a comparison between two dissimilar objects, such that aspects from one object are transferred to the second object (Sopory and Dillard 2002).

Metaphor, and by extension simile and analogy, is a type of persuasive device, and is considered a figure of speech, or rhetorical figure. Rhetoric, as defined by Corbett (1971), is the art of persuasion. Rhetorical figures are linguistic devices used to help communicate effectively and persuade an audience by rendering "thoughts vividly concrete" (Corbett 1971, p.425).

A rhetorical figure is defined as an artful deviation (Corbett 1971). An artful deviation is a statement that deviates from a reader's expectations, but is not perceived to be an error (either typographic or grammatical) or to be nonsensical. This departure from expectations may catch a reader's attention and increase the reader's interest in the ad (McQuarrie and Mick 1996). Not surprisingly, the use of rhetorical figures is pervasive in marketing communication. In an analysis of over 2000 ad headlines, Leigh (1994) found that over 74% of the headlines contained at least one rhetorical figure. The figures included puns, such as, "Our frequent fliers can frequent other fliers" from British Airways; irony, such as "We make it tough for kids" from Fabriclock film for jeans; and

metaphor, such as the following headline from a Tilt-Wheel ad, “If people had adjustable bodies, they wouldn’t need Tilt-Wheel.”

Because rhetorical figures deviate from expectations, they result in a certain degree of incongruity that needs to be resolved (McQuarrie and Mick 1996). For example, a consumer reading the headline “We make it tough for kids” from the Fabriclock ad must recognize that the sponsor of the ad is not saying that they wish to make life tough for kids, as the literal interpretation of the statement might suggest, but rather that the company’s product will render fabric resistant (i.e. tough) to the wear and tear kids are likely to subject it to. Resolving the incongruity between the literal, or expected, interpretation of the statement and what the message is really saying may be pleasurable for many readers (McQuarrie and Mick 1996) much in the same way solving a puzzle can be pleasurable.

The most common theoretical explanation forwarded by consumer researchers to explain why rhetorical figures influence the persuasiveness of a message is that of increased elaboration (McQuarrie and Mick 1996, 1999, 2003; Mothersbaugh, Huhmann, Franke 2002; Ahluwalia and Burnkrant 2004). This theoretical explanation is based on the assumption that rhetorical figures invite elaboration because they are artful deviations, which represent a swerve from expectations, and require additional resources to resolve. According to McQuarrie and Mick (2003), this increased elaboration, in comparison to messages without rhetorical figures, creates multiple cognitive pathways back to the originating message and increases the probability of message recall. The increased elaboration should also foster a pleasurable experience in terms of resolving the incongruity created by the figure’s artful deviation, and thereby improve the consumer’s

attitude toward the ad. The ultimate result is greater persuasive impact for messages containing rhetorical figures.

To address the lack of a systematic approach to analysing rhetorical figures in consumer research, McQuarrie and Mick (1996) developed a sophisticated classifying framework. The framework classifies the various types of rhetorical figures according to three dimensions: the degree of figuration, the figurative mode, and the rhetorical operation. The first dimension, degree of figuration, simply refers to whether the text is figurative or non-figurative (such as a declarative statement). The second dimension, figurative mode, distinguishes between two types of figures: schemes and tropes. Schemes are figures that exhibit excessive regularity, such as rhyme and alliteration. Tropes, on the other hand, are figures that exhibit irregularity. Examples of tropes include rhetorical questions, metaphors and puns. The third dimension refers to the specific rhetorical operations, which may be simple or complex, used to construct schemes or tropes. Repetition and reversal are the simple and complex operations used to construct schemes, for example alliteration and antithesis, respectively. Substitution and destabilization are the simple and complex operations used to construct tropes. A rhetorical question is an example of substitution, while a metaphor is an example of destabilization.

McQuarrie and Mick (1996) posited that the use of a rhetorical figure in an ad would motivate consumers to read the entire ad headline and copy. In a natural setting, where consumers are not forcibly exposed to ads as in an experiment, consumers should allocate a greater amount of attention to messages with rhetorical figures than otherwise. Rhetorical figures should therefore be effective persuasive devices for marketers, as long

as consumers have the ability and motivation to engage in increased message elaboration. In testing the dimensions of their framework, McQuarrie and Mick (1996) found that rhetorical figures were rated as more clever and artful than literal, or declarative, statements.

Mothersbaugh et al. (2002) investigated the influence of different types of rhetorical figures on message persuasiveness, specifically examining the extent and focus of consumers' processing. Rather than a forced exposure setting, the authors employed Starch "Read Most" readership scores of actual ads appearing in various magazines to test their hypotheses. Starch readership scores are used as proxies for message elaboration. They found that ads with rhetorical figures encouraged greater processing than those without, and that tropes resulted in greater processing than schemes. Their findings support the hypothesis that tropes, due to their greater deviance from expectations and irregularity (or undercoding), engender more focused processing by consumers in their attempt to resolve the ambiguity created by the deviation and successfully decode the figure. Consumers focus on the message rather than the stylistic components of the ad because it will be more helpful in decoding the figure.

In summary, analogies have been found to be effective at persuading consumers of a product's benefits as well as at effectively communicating complex concepts with novices. Examining analogies as both a powerful tool for knowledge transfer and a powerful persuasive device will increase our understanding of an important process of learning.

CHAPTER THREE

THEORY AND HYPOTHESES

Studies to date on the usage of rhetorical figures in marketing messages have generally supported the hypothesis that rhetorical figures invite greater elaboration and thus result in greater persuasive impact. What most studies have failed to investigate, however, is what impact the use of rhetorical figures in marketing messages has on consumer learning, specifically knowledge creation. Similarly, studies on analogical knowledge transfer have generally not recognized the figurative nature of analogical comparisons and the resultant impact on knowledge acquisition. Neither area has investigated consumers in the health care industry. The following sections present the key theories from both internal knowledge transfer and rhetorical analysis literatures, as well as research on involvement, that will be drawn on to formulate the hypotheses for this dissertation. Hypotheses will be formally presented at the end of each section.

ANALOGY AND KNOWLEDGE TRANSFER

Few studies on analogical reasoning have explicitly addressed the fact that an analogy is a type of rhetorical figure (see Roehm and Sternthal 2001 for an exception). Corbett (1971) refers to simile and metaphor as types of analogical tropes. He distinguishes between a simile and a metaphor by the nature of the comparison that they make. A simile is an explicit comparison that takes the form “X is like Y”. A metaphor, on the other hand, is an implied comparison, for example “My job is a jail.” This metaphor is not meant to be interpreted literally, but rather figuratively, in that the person

feels their job is like a jail. The metaphor therefore implies the simile “My job is like a jail”. Most studies on knowledge transfer in consumer research have employed the simile form of analogy. Studies in cognitive psychology have investigated the simile form or the explicit, technical analogy form of “X is to M as Y is to N”. This fundamental form of analogy underlies both simile and metaphor. In the previous example, the fundamental analogy underlying both the simile and metaphor is “my job is to me as a jail is to an inmate.”

Metaphors (and similes) are created by the rhetorical operation of destabilization (McQuarrie and Mick 1996). Tropes of destabilization invite multiple possible meanings, and as such unsettle the recipient of the figure until he or she is able to resolve the indeterminacy created by the destabilization and successfully decode its meaning. Analogies operate by means of conceptual similarity between two seemingly disparate domains that are not expected to be associated with one another (McQuarrie and Mick 1996). Returning to the previously used Volvo analogy, consumers would not normally expect to see Volvo cars compared to security blankets, but in the analogy both terms are associated with the concept of safety. Tropes of destabilization represent the most artfully deviant class of rhetorical figures. In addition to metaphor, pun, irony and paradox are examples of destabilization tropes. Due to the increased deviation and incongruity, destabilization tropes require more additional resources to process than other types of rhetorical figures, and impact the persuasiveness of a message to a greater extent (McQuarrie and Mick 1996; Mothersbaugh et al. 2002).

Recent studies in consumer research have found that the use of an analogy in the headline of an ad can influence the way in which consumers learn about a new product.

Moreau, Markman and Lehmann (2001), Gregan-Paxton et al. (2002), and Gregan-Paxton and Moreau (2003) found that when consumers were exposed to a message for a new product containing an analogy, they were more likely to engage in analogical knowledge transfer than consumers exposed to a message without an analogy. As discussed in the previous chapter, an analogy of this manner is referred to as an instructive analogy. Consumers must still identify the common relations and create the mappings between the two domains to successfully transfer knowledge, but studies have shown that providing consumers with an instructive analogy significantly enhances their chances of doing so. Instructive analogies may be one method of addressing the discrepancy between experts and novices posited by the Consumer Learning by Analogy Model (Gregan-Paxton and Roedder John 1997).

Roehm and Sternthal (2001) come the closest to bridging the gap between research on rhetorical figures and research on internal knowledge transfer. These authors examined the persuasiveness of analogies in messages, specifically the increased positive elaborations over non-figurative messages. Their results suggest that an analogy is an effective persuasive device only when message recipients have the ability to map relations from the base in order to understand the benefits of the target, and when recipients allocate the resources required to complete the mapping. Expertise with the base domain increased the comprehension and persuasiveness of the analogy, as did a positive mood and training in how to process an analogy.

Studies of instructive analogies and metaphors in a consumer context rarely include accompanying text in the experimental stimuli. Generally the stimuli consist of a product information sheet or an ad with a headline (simile or metaphor), an image and no

other information. This serves the purpose of being able to attribute any inferences generated to the consumer's interpretation of the analogy. Actual print ads, however, often contain at minimum a brief paragraph of ad copy that explains the headline and provides additional information. This paragraph of ad copy provides the intended meaning of the simile or metaphor and serves to ensure that consumers who read the copy do not need to rely on their own interpretation of the simile or metaphor but can confirm or disconfirm their interpretation based on the additional information in the ad. Phillips and McQuarrie (2002) refer to this use of literal words to explain a rhetorical figure as "anchoring". The explanatory ad copy serves to solidify, or "anchor" in place, the meaning of the figure and helps to ensure that consumers comprehend the intended message.

I. Simile versus Metaphor

Few studies of internal knowledge transfer have studied the ability of metaphors to encourage consumers to engage in analogical reasoning and relational transfer. Novel metaphors, those that have not been conventionalized in language, have been found to be processed in much the same manner as similes, and engender the same process of analogical knowledge transfer (Gentner et al. 2001). Research in the field of communications suggests that Gentner's structure mapping theory (Gentner 1983) can be used to explain comprehension of metaphors (Sopory and Dillard 2002). This same research suggests that simile can be considered as evoking very similar cognitive processing as that induced by metaphor (Sopory and Dillard 2002).

The simile form of analogy, in turn, has not been studied as a type of rhetorical figure. If findings from the knowledge transfer literature and the literature on rhetorical figures are to be merged, the impact of both forms of analogy at encouraging analogical knowledge transfer and at persuading consumers must be studied. Analogical knowledge transfer implies that consumers focus on common relations between objects and do not focus on common attributes. The simile form of analogy has been found to increase the likelihood of consumers transferring relations and decrease the likelihood of consumers transferring attributes. If metaphor results in similar knowledge transfer as simile, then metaphor should also focus consumers on common relations and not on common attributes. Both forms of analogy should, in turn, be more likely to encourage the transfer of relations than a declarative (i.e. literal) statement as well as less likely to transfer attributes than a declarative statement.

As mentioned previously, most research studying analogical transfer has focused on the ability of the analogy itself, in the absence of any other text, to elicit the detection and transfer of common relations, as well as a focus away from any common attributes. If the analogy is accompanied by a brief paragraph of text (i.e. ad copy) that explains the intended meaning of the analogy, consumers do not have to interpret the analogy on their own to transfer the appropriate relations. Simply reading the text could be enough to activate the process of analogical knowledge transfer. If this is the case, providing consumers with a declarative (i.e. literal) statement as an ad headline along with a paragraph of ad copy could be as effective at encouraging consumers to transfer relations as providing consumers with an analogical comparison, either a simile or a metaphor, as an ad headline. The inclusion of the paragraph of ad copy would in effect render the

analogy no more effective than a declarative statement in terms of encouraging the transfer of relations and discouraging the transfer of attributes.

The present research therefore proposes the following hypotheses:

H1: *The likelihood of a consumer transferring relations will not be significantly different if the consumer is exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.*

H2: *A consumer will be more likely to transfer relations when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring relations.*

H3: *The likelihood of a consumer transferring attributes will not be significantly different if the consumer is exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.*

H4: *A consumer will be less likely to transfer attributes when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring attributes.*

As discussed earlier, rhetorical figures, including metaphor, have been found to result in greater elaboration than declarative statements (McQuarrie and Mick 1996,

1999, 2003; Mothersbaugh et al. 2002; Ahluwalia and Burnkrant 2004). Rhetorical figures have also been found to be more persuasive than declarative statements. Although Roehm and Sternthal (2001) examined the persuasiveness of simile in terms of brand evaluations, generally the simile form has not been examined from a persuasion perspective. If simile and metaphor result in similar cognitive processes, both should have similar effects in terms of persuasiveness and message elaboration. The inclusion of a paragraph of ad copy in addition to a headline is again expected to attenuate the effectiveness of analogical comparisons over declarative statements. The paragraph of copy would provide consumers with the intended interpretation of the headline and activate analogical processing. The increased persuasion and elaboration would not be the result of the incongruity or artful deviance of the analogy, but rather the increased comprehension of the analogy, as evidenced by the transfer of relations, as a result of reading the ad copy. The following hypotheses are therefore forwarded:

H5: A consumer will not be significantly more or less persuaded when exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.

H6: A consumer will be more persuaded when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant differences.

H7: *A consumer will not engage in significantly more or less elaboration when exposed to a simile versus a metaphor in either the headline only condition, or the headline plus copy condition.*

H8: *A consumer will engage in more elaboration when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant differences.*

II. Inferences: Validity

The ultimate result of internal knowledge transfer is the generation of inferences about the unfamiliar object or situation based on the relational similarities to the familiar object. In the case of an ad containing an analogical comparison, the relational similarities are implied by the comparison, but not explicitly stated in the ad message. The consumer must therefore go beyond what is explicitly stated in an ad and generate inferences on his or her own related to the new product and how it functions. The validity or correctness of the consumer's inferences may be a function of whether the consumer actually comprehended the analogy in addition to the indirectness of the claim.

Johar (1995) examined the propensity for consumers to generate invalid inferences as a result of exposure to an ad containing an incomplete-comparison claim. The incomplete-comparison implied an invalid inference. The inferences were termed invalid because they were factually unfounded. Johar (1995) defines an incomplete-

comparison claim as one that uses comparison for effect but does not state a referent, requiring consumers to generate inferences on their own to complete the comparison. For example, an ad that claims “This brand is better” but does not mention the other brands being compared to or even the attribute the comparison is being made on is employing an incomplete-comparison claim. The invalid inference implied by “This brand is better” is the inference that the advertised brand is better than all other brands.

An incomplete-comparison is an indirect claim because it implies a comparison, but it does not explicitly or directly compare a base brand with a target brand. McQuarrie and Phillips (2005) argue that metaphors represent indirect claims because they make claims about products in a figurative way rather than an explicit, literal way. Ad claims made in the form of metaphors are implied comparisons and are expected to be interpreted figuratively due to their rhetorical nature. For example, an ad for a household cleaning product that includes the claim “Product X is a grenade on dirt” is indirect because it does not literally mean that Product X is a grenade, but rather leaves it up to the consumer to decode the metaphor and infer that Product X has the same qualities in terms of household cleaning that a grenade has in terms of destruction of matter. McQuarrie and Phillips (2005) found that when consumers were presented with an indirect claim in the form of a metaphor, they were more receptive to multiple inferences about the advertised brand than consumers presented with a literal statement. Their findings were heightened by the fact that many of these additional inferences were factually unfounded (i.e. invalid) and would be considered misleading if stated explicitly in an ad.

Including a paragraph of ad copy in addition to a headline that is either a simile or metaphor could serve to correct any invalid inferences by providing consumers with the intended interpretation of the headline, essentially placing limits on consumers' inferences to those provided in the copy. The ad copy makes the indirect claim of a metaphor explicit, thereby reducing the ambiguity created by the simile or metaphor.

In addition to the work by consumer researchers pointing to the propensity for consumers to make invalid or misleading inferences as a result of indirect claims, research on the use of analogy in education has focused on the occurrence of analogy-induced misconceptions. Spiro et al. (1989) studied the use of simplifying analogies in the training of medical students, for example "a failing heart is like a deflated balloon." Analogies are powerful tools in explaining complex medical concepts to neophyte students, but can hinder further study of a topic by restricting the student's understanding to the properties of the base domain or source of the analogy (Spiro et al. 1989). Spiro et al. (1989) suggest that analogy-induced misconceptions are the result of the mapping and transfer of properties from a source, or base domain onto a target domain. They cite a common error of exporting a characteristic from the base domain that has no analog in the target. Based on the extant literature, the following hypothesis is forwarded:

H9: A consumer will be more likely to generate an invalid inference when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of making an invalid inference.

III. Artful Deviance

To be effective at encouraging elaboration, a rhetorical figure must create incongruity and stimulate interest in the recipient at resolving the incongruity. As mentioned previously, this is achieved through a rhetorical figure's artful deviance. Figures judged more artful and clever have been shown to result in greater message elaboration (McQuarrie and Mick 1996; Mothersbaugh et al. 2002). Often in studies of analogical knowledge transfer, the analogy used in experimental stimuli is a rather bland simile, such as "Capture! It is like a VCR for the Web" (Gregan-Paxton and Moreau 2003) or "NutriWatch software is like the popular Quicken software" (Roehm and Sternthal 2001). While technically analogies in that they follow the simile form, neither is likely to be judged very artful or clever. Nonetheless, the second analogy (Roehm and Sternthal 2001) was effective at encouraging relational mappings in expert consumers, but was not effective at encouraging novice consumers to map relations. Gregan-Paxton and Moreau (2003) found that an analogy resulted in less elaboration in consumers than non-analogical comparisons. The authors overlooked the possibility that the analogy was not very artful or clever and, as such, did not encourage consumers to engage in greater elaboration and relational mappings. Increasing the artfulness of an analogical comparison could serve to increase its effectiveness at facilitating analogical transfer, persuading consumers and encouraging elaboration. As discussed earlier, the inclusion of a paragraph of ad copy in addition to an ad headline will attenuate the effectiveness of an analogical comparison over a declarative statement in terms of eliciting analogical knowledge transfer, persuasiveness and elaboration. The same result is expected for both an artful and a plain analogical comparison. The following hypotheses are forwarded:

H10: *A consumer will be more persuaded when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant differences.*

H11: *A consumer will engage in more elaboration when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition there, will be no significant differences.*

H12: *A consumer will be more likely to transfer relations when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring relations.*

H13: *A consumer will be less likely to transfer attributes when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring attributes.*

IV. Inferences: Confidence

The ancient rhetoric scholars suggested that rhetorical figures should result in higher levels of confidence in the correctness of inferences than non-figurative

statements. According to De Rosia (2008), this is due to the fact that the recipient of a rhetorical figure inferentially self-generates the meaning implied by a rhetorical figure and is thus more willing to accept this meaning as true than the meaning conveyed by a declarative statement. Given the potential for metaphors and similes to mislead consumers and result in invalid inferences, exposure to a metaphor or simile could result in confidently held, yet invalid inferences. Clearly this topic deserves further research due to the importance of understanding when consumers are more likely to be at risk for making incorrect inferences in addition to when they are to be most confident in their inferences. Researchers point to the changing dynamics of the patient-caregiver relationship and cite the potential for DTC ads to further exacerbate the tension as a result of misinformation (Wilkes et al. 2000; Handlin 2006). A consumer holding a confident, invalid belief about his or her need for a particular drug has potentially serious consequences. Not only is the physician at risk of acquiescing to patient pressure and prescribing the demanded drug, but the consumer may also refuse to first try non-medical interventions (for example diet and lifestyle changes) that would not carry the same physical risks of side effects and interactions as drug therapies.

In a series of experiments, Gregan-Paxton and Moreau (2003) investigated the differences in knowledge transfer, recall and confidence in inferences between groups of consumers exposed to ads containing analogies and ads containing categorical comparisons. The authors found that consumers exposed to an analogy primarily transferred relations. Additionally, consumers exposed to the analogy exhibited less confidence in the inferences they made regarding the product in the ad than consumers exposed to the categorical comparison. The authors suggest that this is due to the

difficulty in creating relational mappings between a base and target domain, in addition to the uncertainty inherent in interpreting an analogy.

Somewhat contrary to Gregan-Paxton and Moreau's (2003) conclusion that analogical comparisons result in less confident inferences, Spiro et al. (1989) report that analogies used to introduce complex concepts can result in very deeply held beliefs. The difference in findings may be the result of the differences in the research designs. Spiro et al. (1989) did not compare the effects of categorical comparisons with analogical comparisons, as did Gregan-Paxton and Moreau (2003). In addition, Spiro et al. (1989) only studied participants with relatively high levels of topic knowledge, who likely felt they had successfully decoded the analogy, whereas Gregan-Paxton and Moreau's (2003) participants included primarily novices, who may not have felt that they successfully decoded the analogy. Gregan-Paxton and Moreau's (2003) measure of confidence was an inferred measure rather than a self-report measure from participants. A judge coding the inferences reported how confident he/she felt the participant was in making the listed inferences. It is possible that results could have been different had participants reported their own levels of confidence in addition to the inferred measure.

Due to the lack of studies on confidence and consumer inference, the following non-directional hypotheses are forwarded:

H14: There will be no significant difference in a consumer's level of confidence in his or her inferences after exposure to an analogical comparison: a) simile or b) metaphor versus a declarative statement in either the headline only condition or the headline plus copy condition.

H15: *After exposure to an analogical comparison: a) simile or b) metaphor, there will be no significant difference in a consumer's level of confidence in his or her inferences for a consumer who makes an invalid inference versus a consumer who does not make an invalid inference in either the headline only condition or the headline plus copy condition.*

V. Involvement

Given the context of prescription drug advertising, examining the effects of level of involvement on knowledge transfer is critical. Few products have the potential to affect consumers' health and well-being as dramatically as prescription drugs. For a consumer diagnosed with a particular medical condition, the level of personal relevance for a product promising to treat or relieve symptoms of the condition should be quite high. Not only would such consumers have an inherent interest in the product due to its expected performance, their lives might be substantially impacted by use of the product. As a result, they may demonstrate greater levels of involvement with processing DTC ads for relevant medications (Kavadas et al. 2007).

A consumer's level of involvement with a situation, product or issue is a function of the consumer's perceived personal relevance (Celsi and Olson 1988; Zaichkowsky 1985; Zaichkowsky 1994). The degree of felt involvement can arise from either situational or intrinsic sources of personal relevance (Celsi and Olson 1988). Situational sources of personal relevance include elements in a consumer's environment that activate

self-relevant consequences, such as an immediate need to make a purchase decision. Intrinsic sources of personal relevance tend to be more enduring and include past experiences and in-depth knowledge of a product. Celsi and Olson (1988) found that felt involvement has a significant, direct effect on amount of effort expended in message processing. In an advertising context, involvement is often manipulated by increasing or decreasing the personal relevance of the advertising stimulus (Laczniak and Muehling 1993).

Research on persuasion, specifically the Elaboration Likelihood Model (ELM) (Petty and Cacioppo 1986; Petty and Wegener 1999), has shown that under conditions of high involvement, people are more motivated to process persuasive communication. The more motivated a person is to process a message, the more likely that person is to engage in effortful scrutiny of the message and engage in central processing, as this is assumed to be the best manner in which to assess the validity of a message (Petty and Wegener 1999). In other words, given adequate cognitive resources, a motivated person is more likely to process the message centrally. With respect to rhetorical figures, McQuarrie and Mick (1996) conclude that rhetorical figures are effective persuasive devices, as long as consumers have the ability and motivation to engage in increased message elaboration. Increasing involvement with a message containing a rhetorical figure, then, should enhance the persuasiveness of the message by increasing the motivation to process the rhetorical figure. McQuarrie and Mick (1992) suggest that involvement be included in studies on the persuasive impact of rhetorical figures.

Although involvement and its moderating impact on persuasion has been the focus of much research in the field of consumer behaviour (for example Petty and

Cacioppo 1986; Laczniak and Muehling 1993; Johar, Maheswaran and Peracchio 2006), research on consumer knowledge transfer has not often examined the moderating impact of level of involvement. Extending the results of research on the ELM and research on rhetorical figures to analogical processing, the greater a consumer's involvement with a message or situation, the greater the effort devoted to processing the analogy and the more likely the consumer engages in analogical knowledge transfer. This suggests that if involvement with processing a message is heightened, consumers will be more likely to transfer relations than when involvement with a message is diminished. The following hypothesis is therefore forwarded:

H16: A consumer exposed to an analogical comparison: a) artful metaphor or b) plain metaphor will be more likely to transfer relations in the high involvement condition versus the low involvement condition.

H17: A consumer exposed to a declarative statement will not be more likely to transfer relations in the high involvement condition versus the low involvement condition.

An important extension of work on involvement would include the impact of level of involvement on the validity of inferences drawn as a result of the knowledge transfer process. Johar (1995) found a significant interaction between involvement and likelihood of making an invalid inference after exposure to an ad containing an incomplete claim.

Completing an incomplete claim requires elaborate processing; therefore, involved consumers are more likely to process the claim than uninvolved consumers. Consumers who are not motivated to process a message are not likely to complete the incomplete

claim and are thus less likely to make the invalid inference implied by the incomplete claim in the ad. Johar (1995) found that highly involved consumers were indeed more likely to make an invalid inference after exposure to an incomplete-comparison claim than less involved consumers. Because both analogies and incomplete-comparisons are considered indirect claims, Johar's (1995) results suggest that involvement will moderate the likelihood of making an invalid inference after exposure to an analogical comparison. However, due to the lack of published studies on involvement and knowledge transfer, a directional hypothesis will not be presented; instead, the following null hypotheses are forwarded:

H18: After exposure to an analogical comparison: a) artful metaphor or b) plain metaphor, there will be no significant difference in the likelihood of a consumer generating an invalid inference in the high involvement condition versus the low involvement condition.

H19: After exposure to a declarative statement, there will be no significant difference in the likelihood of a consumer generating an invalid inference in the high involvement condition versus the low involvement condition.

VI. Experts

Studies of analogical knowledge transfer in consumers have proposed an expertise effect; experts have been found to be better able to process analogies and map structural

relations (Gregan-Paxton and Roedder John 1997; Moreau, Lehmann and Markman 2001; Roehm and Sternthal 2001). The Consumer Learning by Analogy model (Gregan-Paxton and Roedder John 1997) posits that the ability to perceive common relations is a function of expertise. The main difference between expert and novice knowledge transfer lies in the ability of experts to distinguish when it is appropriate to create attribute mappings between domains and when it is appropriate to create relational mappings. Roehm and Strenthal (2001) found that expertise moderates the persuasiveness of an analogy; they found that experts were more persuaded by analogies than novices, as evidenced by greater comprehension of the analogy and more positive attitudes toward the brand.

In exploring how consumers transfer knowledge from a familiar base domain to a new target domain, which was either a continuous or a discontinuous innovation, Moreau, Lehmann and Markman (2001) found that expert consumers were better able to transfer relational knowledge than novices for continuous innovations only. Expertise in the base domain enabled the experts to detect relational similarities between the base and product target and facilitated their understanding of the continuous innovation. For discontinuous innovations, however, the opposite effect was found. Expertise in the base domain hindered the transfer of relational knowledge and comprehension of the discontinuous innovation. Moreau, Lehmann and Markman (2001) propose that greater product expertise resulted in consumers focusing more on the relational dissimilarities between the base and target product when the innovation was discontinuous. Experts, it would appear, were unable to overcome how the base and target products were different.

Novices, in contrast, were not able to recognize the dissimilarities and their comprehension of the innovation was thus not affected.

McQuarrie and Mick (1999) also suggest that product familiarity may be a significant moderator in the comprehension of a rhetorical figure, especially with a technical product category. According to McQuarrie and Mick (1999), consumers with high levels of product familiarity should demonstrate more favourable attitudes toward the ad containing a rhetorical figure as well as increased comprehension of the rhetorical figure over consumers with low level of familiarity.

Considering the extant findings on expertise, it is expected that increased product knowledge will enable experts to be better able to detect common structural relations than novices and therefore be more successful at decoding an analogical comparison and ultimately be more persuaded by analogical comparisons than novices. Although research by Moreau, Lehmann and Markman (2001) points to a situation in which experts might have greater difficulty than novices at transferring relations, the context for this dissertation does not involve discontinuous innovations.

The following hypotheses are therefore forwarded:

H20: *An expert consumer exposed to an analogical comparison will be significantly more likely to transfer relations versus an expert consumer exposed to a declarative statement.*

H21: *An expert consumer exposed to an analogical comparison will be significantly more likely to transfer relations versus a novice consumer exposed to an analogical comparison.*

H22: *An expert consumer exposed to an analogical comparison will be a) more persuaded and b) engage in more elaboration versus an expert consumer exposed to a declarative statement.*

H23: *An expert consumer exposed to an analogical comparison will be a) more persuaded and b) engage in more elaboration versus a novice consumer exposed to an analogical comparison.*

CHAPTER FOUR

STUDY ONE

Study 1 was intended to serve as a test of a selected medical condition (genital herpes) and drug therapy, to serve as the focal product in experimental stimuli, as well as to investigate whether there were any substantial differences among participants at processing similes versus metaphors (hypotheses H1 – H8). Even though metaphors and similes are both technically analogies, they represent different forms (implied versus explicit) and may have different impacts on knowledge transfer processes. In addition, studies on consumer behaviour have solely employed analogies in simile form, while studies on rhetorical figures have most often examined metaphors and not similes, requiring that the impact of metaphors on internal knowledge transfer to be tested. Study 1 also served as a test of hypothesis H9 by exploring the impact of rhetorical figures on the validity of inferences made by consumers after exposure to an ad.

I. Research Design

The experimental design for the study was a 3 (rhetorical figure: simile vs. metaphor vs. declarative) x 2 (information: paragraph of ad copy vs. no paragraph of ad copy) between subjects design. A declarative (i.e. literal, non-figurative) statement was included as a third headline to have a control group against which to evaluate the simile and metaphor headlines.

II. Product Selection

Genital herpes was chosen as the focal medical condition for Study 1. The particular condition was chosen for a number of reasons. First, the medical condition needed to be treatable by means of pharmaceutical intervention to be applicable to the context for this research. Genital herpes is treatable with drug therapy. Second, knowledge of the condition and its treatment in the target population needed to be impoverished to test the knowledge transfer as a result of exposure to the message (Moreau, Markman and Lehmann 2001, p. 492). Third, a product context needed to be chosen such that participants differing in their knowledge of this domain could be readily recruited (Roehm and Sternthal 2001). Participants from the faculty of nursing, medicine and pharmacy could be easily recruited to serve as product experts for future experiments. Fourth, to manipulate involvement, it needed to be plausible that the participant population would use the product. Genital herpes is one of the most common sexually transmitted diseases. A recent study by researchers from the Centres for Disease Control and Prevention found that 17% of the U.S. population aged 14 – 49 years are infected with herpes simplex virus type 2, the cause of genital herpes (Fujie et al. 2006). Given the prevalence of STD's among the undergraduate population (Weinstock, Berman and Cates 2004), it would be quite plausible that participants would use the product advertised to treat the condition.

III. Participants

Two-hundred and sixty undergraduate students from the Marketing Participant Pool program at the University of Manitoba's Asper School of Business participated in Study 1. Participants received partial course credit in exchange for their participation. All studies in this dissertation received ethics approval (see Appendix A for a copy of the approval certificate). McQuarrie and Mick (1999) found that native language fluency was required to decode rhetorical figures; therefore, all participants whose primary language of communication was not English were excluded from the analyses, leaving a final sample size of 193 (all useable responses).

There were slightly more female participants (56%) than male participants in the sample. The mean age of participants was 21 years ($SD_{age} = 2.2$). Over 80% of the participants were from the School of Business. Participants were asked to report their area of study to control for level of formal education in the health care field. No participants reported studying nursing, pharmacy or medicine.

IV. Stimuli

Six versions of a print ad for Gentrex, a medication to treat genital herpes, were developed (copies of all stimuli are included in Appendix B). Gentrex is a fictitious brand name based on the real genital herpes medication Valtrex, developed and marketed by GlaxoSmithKline (Valtrex 2005). The ad was simply a headline across the top of the page, a photo of a couple embracing (taken from the Valtrex website), and an image of a pill with the medicinal ingredients listed underneath (taken from the Valtrex website with brand name altered to be Gentrex). The headlines were developed based on information

contained on the Valtrex website indicating that Valtrex is suppressive therapy for genital herpes (see Table 4-1). The following quote from the Valtrex website was the inspiration for the headlines: “taking medicine every day to help hold back the virus and keep it ‘sleeping’ or inactive” (Valtrex 2005).

Table 4 – 1: Headlines of Print Ad Stimuli

Rhetorical Figure	Headline
Simile	Gentrex is like a sleeping pill for genital herpes.
Metaphor	One Gentrex a day keeps genital herpes at bay.
Declarative	Gentrex suppresses genital herpes.

In the copy condition, all ads contained an identical paragraph of text below the image of the couple embracing, based on text from the Valtrex website with the following characteristics: Flesch Kincaid grade level of 10.3, 95 words, and 5 sentences. The ad copy included information on the effectiveness of Gentrex and urged readers to meet with their doctor. The ads were photocopied in black and white.

V. Independent Variables

Type of Rhetorical Figure

Type of rhetorical figure was manipulated by varying the headlines of the print ads used as experimental stimuli. As described above, the headlines included simile, metaphor, and a declarative statement.

Amount of Information

The amount of information contained within the ad was varied to test for any differences in processing due to the inclusion of additional information on explaining how the drug works. Ads either included a paragraph of text explaining how the advertised drug worked, henceforth referred to as the headline plus copy condition, or they did not, henceforth referred to as the headline only condition.

VI. Dependent Variables

Relational and Attribute Knowledge Transfer and Validity of Inferences

Following previous research on knowledge transfer in consumer research (Gregan-Paxton and Moreau 2003), the nature and extent of participants' internal knowledge transfer and inference generation was captured by having participants complete two cognitive response tasks. The first task asked participants, "What does the ad headline tell you about the product? Please write down all of your thoughts." The second task asked participants, "A friend of yours has just come to you and said, 'I just heard about this new drug Gentrex. I don't understand what it is. Can you explain it to me?' Please describe Gentrex as you would to your confused friend."

A coding scheme was developed based on a subset of the responses. To capture relational knowledge transfer, cognitive responses were coded for the occurrence of the expected primary relational inference for each analogy. The use of similes and metaphors in the headlines of ads is akin to employing instructive analogies to explain a concept, in this case to explain how Gentrex works. Rather than explore all possible interpretations of the headlines, the focus for this research was on the effectiveness of the headlines at

explaining a particular concept. For this reason, the expected relational inference was deemed to be the analogical comparison that formed the basis for each headline. If participants expressed the gist of the analogical comparison they were coded as having comprehended the intended meaning of the instructive analogy. For the simile headline, “Gentrex is like a sleeping pill for genital herpes,” the expected primary relational inference was that Gentrex puts genital herpes to sleep or render herpes dormant. This inference represents a transfer of the explanatory system of how a sleeping pill works for insomniacs to how Gentrex works for genital herpes and was the intended meaning of the simile. The metaphor headline, “One Gentrex a day keeps genital herpes at bay,” implies the analogy that Gentrex is to genital herpes as apples are to illness or doctors – one a day keeps both at bay (or away). The expected primary relational inference is that of preventing the spread, controlling or reducing genital herpes. If participants expressed the gist of the primary inference in their thought protocols, they were coded as having made the expected primary relational inference. Participants were coded as having transferred attributes if they included characteristics of pills, drugs or medication in their cognitive responses. Participants could have transferred only relations, only attributes, or both relations and attributes.

To investigate the validity of the inferences generated by participants, the occurrence of the relational inference that Gentrex can cure genital herpes was examined. Currently, there is no cure for genital herpes and no information in the ads shown to participants indicates that Gentrex can cure genital herpes. This inference, therefore, is not factually founded and can be considered invalid. Participants were coded as having

made an invalid inference if they expressed the notion of Gentrex curing or permanently getting rid genital herpes.

Two trained judges, blind to the experimental conditions, coded all cognitive responses. The kappa coefficient of agreement (Cohen 1960) for the two judges was over .7 for all categories coded. Specifically, the kappa coefficients for agreement of the categories analysed in Study 1 are listed in Table 4-2. Discrepancies were resolved by a third judge.

Table 4 – 2: Kappa Coefficients of Agreement

Category	Kappa Coefficient
Gentrex puts genital herpes “to sleep”	.846
Gentrex reduces genital herpes symptoms	.966
Gentrex suppresses genital herpes	.751
Gentrex cures genital herpes	.797
Pill attributes	.821

Persuasion

To determine the persuasiveness of the different headlines, measures were also included to gauge participants’ attitude toward the brand and attitude toward the ad. The three-item scale for attitude to the ad and four-item scale for attitude to the brand were based on the scales used by McQuarrie and Mick (1992) and Mackenzie, Lutz and Belch

(1986) respectively. Both the attitude toward the ad and attitude toward the brand scales displayed strong internal reliability (Cronbach's $\alpha = .89$ and $.92$ respectively). A factor analysis with varimax rotation was performed on the items for both attitudinal scales. The items for each scale all loaded on one factor. The items for each scale were therefore averaged to create two index variables.

VII. Covariates

To control for previous experience and knowledge of genital herpes, participants were also asked a series of questions to determine how familiar and knowledgeable they felt they were about the condition and whether they knew anyone who had genital herpes. Only 9.6% of the sample reported knowing someone with genital herpes, while over half the sample (58%) reported having seen an ad for genital herpes. Participants in the sample rated themselves as having little knowledge about genital herpes. The mean level of self-assessed knowledge was 2.55 out of 7, with 7 indicating very knowledgeable.

VIII. Procedure

Participants were randomly assigned to one of the headline conditions (simile, $n = 62$; metaphor, $n = 67$; declarative, $n = 69$) and one of the copy conditions (copy, $n = 96$; no copy, $n = 102$). Before beginning, participants signed a consent form. Participants were allowed to proceed through the questionnaire at their own pace but were explicitly instructed not to look back at the ad once they had begun to answer questions. After exposure to the ad, participants were given the two cognitive response exercises to complete. Participants were then asked to respond to a series of questions to measure the remaining dependent variables, covariates and manipulation checks (see below). A copy

of the measurement instrument is included in Appendix C. Participants were debriefed at a later time in accordance with the procedures of the Marketing Subject Pool at the Asper School of Business.

IX. Manipulation Checks

A rhetorical figure should be perceived as more artfully deviant than a declarative (literal) statement (McQuarrie and Mick 1996). To test how artful the simile, metaphor and declarative headlines were perceived to be, questions designed to capture the level of artful deviation and meaning openness were administered. Artful deviation was measured with a single-item, semantic differential scale developed by McQuarrie and Mick (1996). One end point on the 7-point scale was “plain, matter of fact” and the other end point was “artful, clever”. Meaning openness was measured with a three-item, 7-point, Likert-type scale developed by Mothersbaugh et al. (2002). Participants were asked to state their level of agreement with the following statements: “I had to use my imagination to interpret this headline”, “The headline invited me to participate in generating a meaning”, and “I had to work to interpret this headline”. The items from the meaning openness scale demonstrated adequate internal reliability (Cronbach’s $\alpha = .74$) and a single factor structure. Responses were therefore averaged to form one index score.

X. Results

All analyses for this dissertation were performed using the Statistical Package for the Social Sciences (SPSS) software program. Table 4-3 summarizes the bivariate correlations between key interval-level variables in Study 1 for all experimental conditions grouped together.

Table 4 – 3: Bivariate Pearson Correlations for Variables

	Artful deviance	Meaning openness	Understanding	Credibility	Attitude toward the ad	Attitude toward the brand	Knowledge of GH
Artful deviance	1						
Meaning openness	.303(**)	1					
Understanding	-.036	-.296(**)	1				
Credibility	.000	-.186(**)	.532(**)	1			
Attitude toward the ad	.180(*)	.039	.347(**)	.480(**)	1		
Attitude toward the brand	.119	-.028	.398(**)	.534(**)	.724(**)	1	
Knowledge of GH	.118	.027	.205(**)	.129	.276(**)	.175(*)	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Manipulation Checks

An Analysis of Covariance (ANCOVA) was conducted with artful deviance as the dependent variable and headline condition (simile, metaphor or declarative) and amount of information (copy or no copy) as the factors. The covariates included in the model were: previous exposure to an ad for genital herpes, knowledge of someone suffering from genital herpes and familiarity and knowledge of genital herpes. The ANCOVA was significant, $F(8, 184) = 8.506, p < .001$; however none of the covariates was significant. The interaction between headline and amount of information in the ad was not significant, $F(2, 184) = .686, p = .718$. A significant main effect was found for the headline condition, $F(2, 184) = 29.981, p = .001$: $M_{\text{simile}} = 3.877, SD_{\text{simile}} = 1.556$; $M_{\text{metaphor}} = 4.520, SD_{\text{metaphor}} = 1.469$; $M_{\text{declarative}} = 2.581, SD_{\text{declarative}} = 1.291$. Follow-up pairwise comparisons using the Bonferroni test revealed that the simile headline was rated as significantly more artful than the declarative statement headline ($p < .001$) as was the metaphor headline ($p < .001$). The simile and metaphor headlines, however, were not rated as significantly different from each other ($p = .123$).

The ANCOVA was repeated with meaning openness as the dependent variable. The ANCOVA was not significant, $F(8, 184) = 1.308, p = .242$; however, the headline condition factor was significant. The copy factor and the covariates (none of which was significant) were removed from the model and the analysis was repeated. This time the Analysis of Variance (ANOVA) was significant, $F(2, 190) = 5.030, p = .007$: $M_{\text{simile}} = 3.597, SD_{\text{simile}} = 1.367$; $M_{\text{metaphor}} = 3.359, SD_{\text{metaphor}} = 1.105$; $M_{\text{declarative}} = 2.899, SD_{\text{declarative}} = 1.296$. Follow-up pairwise comparisons revealed that the simile headline was rated as significantly higher in meaning openness than the declarative headline ($p = .007$).

The metaphor was not significantly different than the declarative. These results suggest a successful manipulation of ad headlines into figurative and declarative statements based on artful deviance. The results of the meaning openness check suggest the simile headline was perceived as significantly different than the declarative, but not the metaphor headline.

Hypothesis Testing

Extent of Relational and Attribute Knowledge Transfer

Hypothesis H1 predicts that there will be no significant differences between simile and metaphor at encouraging the analogical transfer of relations. Hypothesis H2 predicts that simile and metaphor will both be more likely to result in the transfer of relations than a declarative statement. Although the declarative statement was not expected to result in the transfer of relations, it was possible that participants engaged in analogical reasoning on their own in the absence of an instructive analogy; therefore, the occurrence of the expected relational inference for either the simile or the metaphor headlines in the declarative headline group was also analyzed. Hypothesis H3 predicts that there will be no significant difference between simile and metaphor at encouraging the transfer of attributes, while hypothesis H4 predicts that both simile and metaphor will be less likely to result in the transfer of attributes than the declarative statement. Direct binary logistic regression analyses were performed to test the hypotheses. The tests involved comparing the likelihood of participants in each headline condition of making the primary relational inference expected for each headline (H1 and H2) and the likelihood of participants in each headline condition of transferring attributes (H3 and

H4). Separate logistic regression analyses were conducted for participants in the headline only condition and the headline plus copy condition. The following covariates were included in all regression models: previous exposure to an ad for genital herpes, knowledge of someone suffering from genital herpes, and familiarity and knowledge of genital herpes.

Preliminary descriptive analysis revealed that in the headline only condition, the primary relational inference was made by 54.5% of participants in the simile condition, 72.7% of participants in the metaphor condition, and 31.4% of participants in the declarative condition. A regression analysis was first conducted on the occurrence of the transfer of relations between the simile condition and the metaphor condition. Table 4-4 shows regression coefficients, Wald statistics, odds ratios and p-values for the different levels of the predictor variable, headline condition. A test of the full model against a constant-only model was statistically significant, $\chi^2(4) = 13.350$, $p = .010$; however, the headline term of the model was not significant, indicating no significant differences in the likelihood of participants in the simile condition making the expected relational transfer versus the likelihood of participants in the metaphor condition making the expected relational transfer. A second regression analysis was conducted comparing all three headline conditions (Table 4-5). The model was significant, $\chi^2(5) = 15.387$, $p = .009$, and the headline term was also significant. Participants in the simile condition were 2.985 times as likely as participants in the declarative condition to make the relational transfer. Participants in the metaphor condition were 6.076 times as likely as participants in the declarative condition to make the relational transfer.

Table 4 – 4: Logistic Regression Analysis of Relational Transfer of Simile vs. Metaphor for the Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headline					
Simile	-.648	.571	1.285	.257	.523
Covariates					
Seen ad	.457	.587	.607	.436	1.579
Know someone	1.072	.852	1.582	.208	2.921
Familiarity	-.738	.248	8.883	.003	.478

Table 4 – 5: Logistic Regression Analysis of Relational Transfer of All Headlines for the Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			11.000	.004	
Simile	1.094	.523	4.366	.037	2.985
Metaphor	1.804	.551	10.737	.001	6.076
Covariates					
Seen ad	.393	.439	.802	.371	1.482
Know someone	.114	.678	.028	.866	1.121
Familiarity	-.291	.177	2.703	.100	.748

The analyses were repeated for the headline plus copy condition (Table 4-6, Table 4-7). The model comparing simile versus metaphor was not significant, $\chi^2(41) = 5.816$, $p = .213$, indicating that there were no significant differences between the headlines in

terms of relational knowledge transfer in the headline plus copy condition. The model comparing all three headlines was also not significant, $\chi^2 (5) = 7.344$, $p = .196$, indicating that in the presence of a paragraph of explanatory copy neither the simile headline nor the metaphor headline were significantly more likely to result in the transfer of relations.

Taken together, these results suggest that there were no significant differences between simile and metaphor at encouraging the transfer of relations, but that both were more likely to result in the transfer of relations than a declarative statement in the headline only condition, but not in the headline plus copy condition. Hypotheses H1 and H2 are therefore supported.

Table 4 – 6: Logistic Regression Analysis of Relational Transfer of Simile vs. Metaphor for the Headline plus Copy Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headline					
Simile	.408	.683	.357	.550	1.504
Covariates					
Seen ad	-1.016	.721	1.989	.158	.362
Know someone	19.953	16092	.000	.999	462
Familiarity	.097	.273	.125	.723	1.102

Table 4 – 7: Logistic Regression Analysis of Relational Transfer of All Headlines for the Headline plus Copy Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			.928	.629	
Simile	.578	.601	.925	.336	1.783
Metaphor	.195	.586	.111	.740	1.215
Covariates					
Seen ad	-.663	.548	1.467	.226	.515
Know someone	20.271	14993	.000	.999	636
Familiarity	-.029	.215	.018	.893	.971

Hypothesis H3 predicts that consumers exposed to a metaphor will not be significantly more likely to transfer attributes than consumers exposed to a simile, in either the headline only condition or the headline plus copy condition. Hypothesis H4 predicts that participants exposed to either the simile or metaphor headlines will be significantly less likely to transfer attributes than participants exposed to the declarative statement in the headline only condition, but not the headline plus copy condition.

Analyses were first conducted for the headline only condition. The regression model comparing the transfer of attributes between simile and metaphor (Table 4-8) was not significant, $\chi^2(4) = 4.197$, $p = .380$, suggesting that the likelihood of participants transferring attributes in the simile condition was not significantly different from the likelihood of participants transferring attributes in the metaphor condition. The model comparing all three headlines was also not significant, $\chi^2(5) = 9.276$, $p = .099$, although the headline term was significant. As none of the covariates was significant, the

covariates were removed from the model and the analysis was repeated (Table 4-9). This time the model was significant, $\chi^2(2) = 7.683$, $p = .021$. Contrary to hypothesis H4, participants exposed to the metaphor headline were significantly more likely to transfer attributes than participants exposed to the declarative statement. There were no significant differences between participants exposed to the simile headline and participants exposed to the declarative headline.

Table 4 – 8: Logistic Regression Analysis of Attribute Transfer of Simile vs. Metaphor for the Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headline					
Simile	-.356	.620	.329	.566	.701
Covariates					
Seen ad	.344	.620	.308	.579	1.411
Know someone	.544	.904	.362	.547	1.723
Familiarity	-.424	.240	3.126	.077	.654

Table 4 – 9: Logistic Regression Analysis of Attribute Transfer of All Headlines for the Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			7.302	.026	
Simile	.924	.517	3.194	.074	2.519
Metaphor	1.447	.564	6.582	.010	4.250

The logistic regression analyses were repeated for the headline plus copy condition. The model comparing simile and metaphor (Table 4-10) at likelihood of attribute transfer was not significant, $\chi^2 (4) = 1.968$, $p = .742$ suggesting that simile is not significantly more likely than metaphor at encouraging the transfer of attributes in the presence of ad copy. The model comparing all three headlines (Table 4-11) was also not significant, $\chi^2 (5) = 2.606$, $p = .760$. In the presence of explanatory text, there are no significant differences in the likelihood of participants transferring attributes among the three headline conditions.

Hypothesis H3 is supported. There were no significant differences between simile and metaphor at encouraging the transfer of attributes in either the headline only condition or the headline plus copy condition. Hypothesis H4, however, is not supported. In the headline only condition participants exposed to the metaphor were significantly more likely to transfer attributes than participants in the declarative condition.

Table 4 – 10: Logistic Regression Analysis of Attribute Transfer of Simile vs. Metaphor for the Headline plus Copy Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headline					
Simile	1.028	.837	1.510	.219	2.796
Covariates					
Seen ad	.128	.756	.029	.866	1.137
Know someone	.353	1.227	.083	.774	1.423
Familiarity	-.206	.309	.442	.506	.814

Table 4 – 11: Logistic Regression Analysis of Attribute Transfer of All Headlines for the Headline plus Copy Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			1.549	.461	
Simile	.391	.844	.215	.643	1.479
Metaphor	-.579	.724	.639	.424	.561
Covariates					
Seen ad	-.021	.643	.001	.974	.979
Know someone	-.625	.958	.426	.514	.535
Familiarity	-.138	.272	.259	.611	.871

Persuasiveness and Elaboration

Hypothesis H5 predicts that metaphor will not be significantly more persuasive with consumers than a simile. Hypothesis H6 predicts that both simile and metaphor will be more persuasive than a declarative statement in the headline only condition but not in the headline plus copy condition. A headline will be deemed more persuasive if it results in significantly more favourable attitudes toward to ad (McQuarrie and Mick 1992) and toward the brand (Roehm and Sternthal 2001). To test hypotheses H5 and H6, ANCOVA models were conducted with attitude toward the ad and attitude toward the brand as dependent variables and headline condition and information condition as factors. The following covariates were included in each analysis: whether participants reported having previously seen an ad for genital herpes, whether participants reported knowing anyone with genital herpes, and how familiar and knowledgeable participants reported being about genital herpes. Results of the ANCOVA are summarized in Tables 4-12 and 4-13.

After controlling for the effects of the covariates, there were no significant differences between headline conditions on any of the dependent variables (Figure 4-1 and Figure 4-2 summarize the means). The interaction between headline and amount of information was not a significant predictor of any of the dependent variables. Amount of information, however, was a significant predictor on its own. Participants exposed to ads in the headline plus copy condition reported more favourable attitudes toward the ad ($M_{\text{copy}} = 4.12$, $SD_{\text{copy}} = 1.07$; $M_{\text{no copy}} = 3.58$, $SD_{\text{no copy}} = 1.27$) and toward the brand ($M_{\text{copy}} = 4.75$; $SD_{\text{copy}} = 1.25$; $M_{\text{no copy}} = 3.92$, $SD_{\text{no copy}} = 1.02$). Participants who saw the ad with the simile headline did not have significantly more favourable attitudes toward the ad or toward the brand than participants who saw the ad with the metaphor headline, in either the headline only or the headline plus copy condition. Hypothesis H5, which predicted that simile would not be more persuasive than metaphor, is therefore supported. Hypothesis H6 which predicted that both the simile and metaphor headlines would be more persuasive than the declarative headline in the headline only condition was not supported. It appears that participants were not more persuaded by the figurative, analogical headlines than by the literal declarative statement.

**Table 4 – 12: Results of ANCOVA on Attitude toward the Ad by
Headline Condition and Amount of Information**

IV	df	F	p-Value
Corrected Model	8	5.572	.000
Covariates:			
Seen ad	1	.192	.662
Know someone	1	7.179	.008
Familiarity	1	12.730	.000
Headline	1	.309	.735
Information	1	10.991	.001
Headline * Information	1	.612	.543

**Table 4 – 13: Results of ANCOVA on Attitude toward the Brand by
Headline Condition and Amount of Information**

IV	df	F	p-Value
Corrected Model	8	5.300	.000
Covariates:			
Seen ad	1	.011	.918
Know someone	1	10.427	.001
Familiarity	1	5.225	.023
Headline	1	.085	.918
Information	1	26.451	.000
Headline * Information	1	.032	.969

Figure 4 – 1: Estimated Marginal Means for Attitude toward the Ad by Headline and Amount of Information

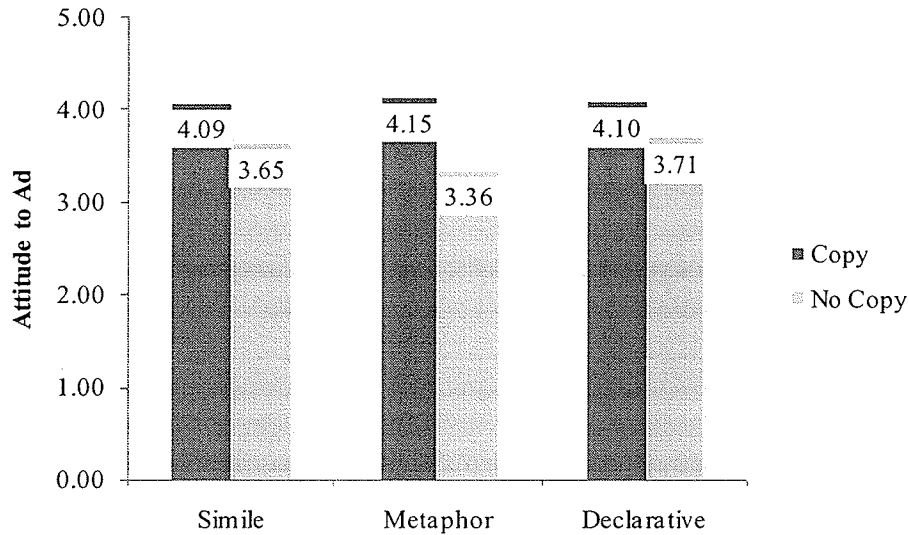
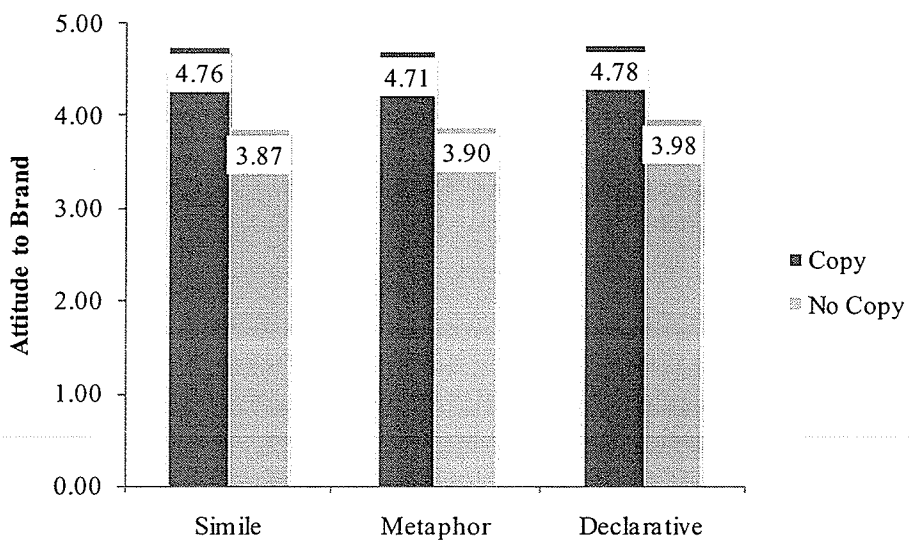


Figure 4 – 2 Estimated Marginal Means for Attitude toward the Brand by Headline and Amount of Information



Hypothesis H7 predicts that a metaphor will not result in significantly greater elaboration than a simile. Hypothesis H8 predicts that both simile and metaphor will result in more elaboration than a declarative statement in the headline only condition but not the headline plus copy condition. The total number of thoughts in each participant's thought protocol was recorded as a measure of extent of message elaboration. An ANCOVA was performed with number of thoughts as the dependent variable and headline condition and amount of information as the factors. The following covariates were included in each analysis: whether participants reported having previously seen an ad for genital herpes, whether participants reported knowing anyone with genital herpes, and how familiar and knowledgeable participants reported being about genital herpes. Estimated marginal means are displayed in Figure 4-3 and results of the ANCOVA are summarized in Table 4-14. The interaction term of headline condition by amount of information was marginally significant ($F(2, 184) = 2.982, p = .053$). There were also significant main effects for headline condition ($F(2, 184) = 3.649, p = .028$) as well as amount of information ($F(1, 187) = 25.222, p < .001$).

To further explore the interaction between headline and information, follow-up analyses were performed on a split sample of headline only versus headline plus copy. The split-sample analyses revealed a significant main effect for the headline condition for participants who were exposed to ads in the headline only condition, $F(5, 95) = 4.528, p = .048$: $M_{\text{simile}} = 4.635, SD_{\text{simile}} = 1.560, M_{\text{metaphor}} = 5.284, SD_{\text{metaphor}} = 1.403, M_{\text{declarative}} = 4.219, SD_{\text{declarative}} = 1.114$. Pairwise comparisons (summarized in Table 4-15) revealed that participants in the metaphor condition reported significantly more thoughts than participants in the declarative condition ($p = .002$). There were no significant differences

in the number of thoughts between participants in the simile condition and participants in the metaphor condition. These results lend support to hypothesis H7 which predicted that there will be no significant differences between metaphor and simile at encouraging elaboration, as measured by number of thoughts made by participants, in either information condition. Hypothesis H8a was not supported. Simile did not result in significantly more elaboration than a declarative statement in either the headline only condition or the headline plus copy condition. Hypothesis H8b is supported, which predicted that a metaphor would result in more elaboration than a declarative statement in the headline only condition, but not the headline plus copy condition.

Figure 4 – 3: Estimated Marginal Means for Number of Thoughts by Headline and Amount of Information

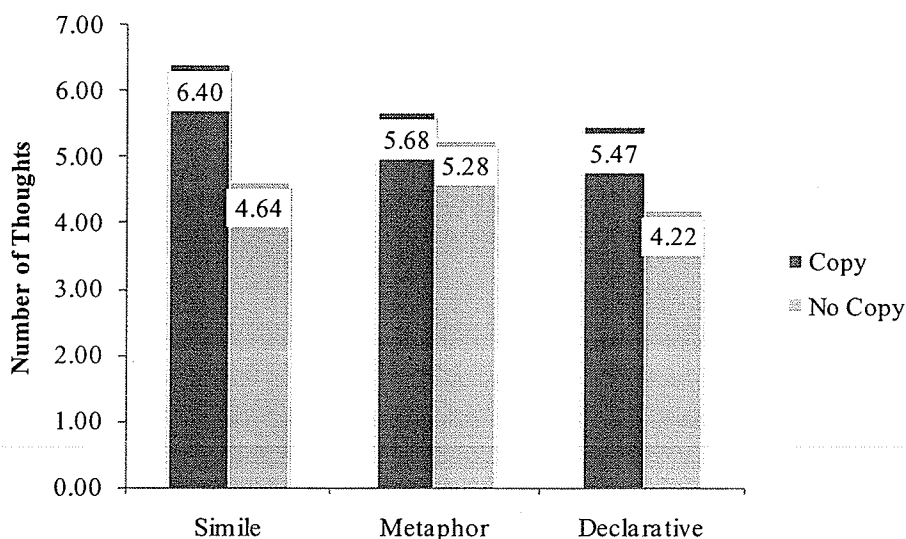


Table 4 – 14: Results of ANCOVA on Number of Thoughts by Headline Condition and Amount of Information

IV	df	F	p-Value
Corrected Model	8	5.426	.000
Covariates:			
Seen ad	1	1.015	.315
Know someone	1	.887	.348
Familiarity	1	1.767	.185
Headline	1	3.649	.028
Information	1	25.222	.000
Headline * Information	1	2.982	.053

Table 4 – 15: Mean Difference Score for Pairwise Comparisons of Number of Thoughts by Headline in the Headline Only Condition

I (mean)	J (mean)	Mean Difference (I – J)	Standard Error	p-Value
Simile (4.635)	Metaphor (5.284)	-.650	.347	.064
	Declarative (4.219)	.416	.341	.226
Metaphor (5.284)	Declarative	1.065	.343	.002

Inference Validity

Hypothesis H9 predicts that consumers will be more likely to generate an invalid inference after exposure to an analogical comparison than a declarative statement in the headline only information condition, but not in the headline plus copy information condition. As discussed in a previous section, participants were coded as having made an

invalid inference if they expressed the notion that Gentrex could cure, or permanently get rid of genital herpes in their responses to the cognitive tasks. The hypothesis was tested separately for each information condition.

Preliminary analysis revealed that in the headline only condition, the invalid, curative inference was made by 49% of participants in the simile condition, 36% of participants in the metaphor condition and 14% of participants in the declarative condition. In the headline plus copy condition, the invalid inference was made by 14% of participants in the simile condition, 25% of participants in the metaphor condition, and 16% of participants in the declarative condition.

Logistic regression analysis was performed with occurrence of the curative inference as the outcome variable and headline condition as the predictor variable. The following covariates were included in all regression models: previous exposure to an ad for genital herpes, knowledge of someone suffering from genital herpes, and familiarity and knowledge of genital herpes. In the headline only condition, a test of the full model against a constant-only model was significant, $\chi^2(5) = 12.709$, $p = .026$, indicating that headline condition reliably distinguishes between participants who made the curative inference and those who did not. Table 4-16 summarizes the results. Headline condition was a significant predictor of invalid inferences (Wald- $z = 9.237$, $p = .010$). Participants in the simile condition were 6.303 times as likely to make the invalid inference as participants in the declarative condition. Participants in the metaphor condition were 3.839 times as likely to make the invalid inference as participants in the declarative condition.

The analysis was repeated for the headline plus copy condition (Table 4-17). In contrast to the headline only condition, headline was not a significant predictor of occurrence of the invalid inference for participants in the headline plus copy condition ($\chi^2(5) = 6.709, p = .243$). Participants exposed to the simile and metaphor headlines were no more likely to make the invalid curative inference than participants exposed to the declarative statement. Hypothesis H9, which predicted that an analogical comparison, either a simile or a metaphor, would be more likely to result in an invalid inference than a declarative statement in the headline only condition but not the headline plus copy condition, is therefore supported.

Table 4 – 16: Logistic Regression Analysis of Invalid Inference as a Function of Headline – Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			9.237	.010	
Simile	1.841	.609	9.141	.002	6.303
Metaphor	1.345	.616	4.773	.029	3.839
Covariates					
Seen ad	-.495	.457	1.175	.278	.609
Know someone	-.504	.750	.451	.502	.604
Familiarity	-.129	.181	.502	.479	.879

Table 4 – 17: Logistic Regression Analysis of Invalid Inference as a Function of Headline – Headline plus Copy Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			2.448	.294	
Simile	-.096	.749	.016	.898	.908
Metaphor	.895	.678	1.745	.187	2.447
Covariates					
Seen ad	.789	.644	1.502	.220	2.202
Know someone	-19.724	14856	.000	.999	.000
Familiarity	-.173	.265	.427	.513	.841

XI. Discussion

The results of Study 1 indicate that there were no significant differences between simile and metaphor at encouraging the transfer of relations (H1), the transfer of attributes (H3), persuasion (H5), or elaboration (H7). These findings indicate that simile and metaphor have similar impacts on knowledge transfer processes and persuasion. A limitation of Study 1 was, however, that the comparisons in the simile and metaphor did not draw on the same base domains. Therefore, hypotheses H1, H3, H5, and H7 will be tested again in Study 2, in which parallel simile and metaphor pairs will be employed. The simile and metaphor in the pair will draw on the same domains and will only vary the nature of the comparison: explicit for the simile and implicit for the metaphor.

Participants exposed to the simile and metaphor headlines were significantly more likely to engage in the transfer of relations than participants exposed to the declarative headline, supporting hypothesis H2. Hypothesis H4, however, was not supported.

Participants exposed to the simile and metaphor headlines were not less likely to engage in the transfer of attributes. In fact, participants exposed to the metaphor headline were significantly more likely to transfer attributes than participants exposed to the declarative statement. One possible explanation is that the participants who saw the metaphor engaged in more elaboration overall than participants who saw the declarative statement, as demonstrated by the greater number of total thoughts. The transfer of attributes was not at the expense of the transfer of relations, but rather in addition to the transfer of relations. Once participants made the primary relational inference, they may have also turned their attention to the image of the tablet at the bottom of the ad and transferred attributes of pills and medication to Gentrex.

Hypothesis H6 was not supported as participants were not significantly more persuaded by an analogical comparison as opposed to a declarative statement in the headline only condition. Participants exposed to the simile and metaphor headlines did not report significantly more favourable attitudes toward the ad and toward the brand than participants exposed to the declarative statement. The declarative statement in the context of prescription drugs may have been looked on more favourably by participants than in other contexts, for example everyday consumer products. The participants may have responded favourably to the lack of ambiguity in the declarative headline, and therefore the simile and metaphor ads were not more persuasive with participants.

Hypothesis H8a predicted that a simile would result in more elaboration than a declarative statement and H8b predicted that a metaphor would result in more elaboration than a declarative statement. Only H8b was supported, not H8a. Participants exposed to the simile did not engage in more elaboration than the declarative statement. It is possible

that the lack of a significant difference in elaboration is partly due to the experimental setting. Participants were explicitly asked to record their thoughts; this may have served to increase the elaboration engaged in by participants exposed to the declarative statement over and above what would have occurred in a natural setting. Another possible explanation for why the metaphor resulted in greater elaboration than the declarative but the simile did not is related to the nature of the analogies. The simile represents a novel analogy, one that participants had never seen before. The metaphor, in contrast, is a variation on an existing, conventional metaphor. The greater familiarity of the metaphor over the simile might have resulted in participants elaborating more freely, as evidenced by the likelihood of transferring attributes in addition to relations. The participants exposed to the simile, however, may have experienced more focused elaboration restricted to common relations.

Hypothesis H9 predicted that participants exposed to an analogical comparison would be significantly more likely to make an invalid inference. This hypothesis was supported for participants who were exposed to ads containing only a headline. When the ad contained a headline plus copy, there were no significant differences in the likelihood of participants making the curative inference. It is possible that the paragraph of copy in the ad attenuated the inference of curing activated by the analogical comparison. Additionally, the finding points to the potential danger of analogical comparisons involving medication. If there is no copy that corrects for invalid inferences, or, as is more likely the case in a natural setting, consumers do not pay attention to the copy and only read the headline, consumers are in danger of drawing invalid, misleading conclusions about the advertised medication. Hypothesis H9 will again be tested in Study

2 to examine whether results will be replicated when parallel pairs of simile and metaphor are employed, as well as when the level of artfulness of the rhetorical figures is varied.

The information manipulation was successful in that differences were found in many variables. The inclusion of the paragraph of copy attenuated the effectiveness of analogical comparisons over declarative statements in terms of: the transfer of relations, elaboration and the occurrence of invalid inferences. The amount of information in the stimuli for Study 2 was also manipulated so that the ads contained either a headline only or a headline plus a paragraph of copy, to investigate whether the results would hold when the artfulness of the analogical comparisons was varied.

Participants in Study 1 were exposed to a print ad and immediately after reading the ad began completing the cognitive response exercises. Perhaps as a result, quite a few subjects repeated either the ad headline or sections of the ad copy verbatim in their thought protocols. To counteract this effect, in Study 2, a simple distracter task was administered after exposure to the ad for Gentrex to clear short-term memory.

CHAPTER FIVE

STUDY TWO

The purpose of this chapter is to present the results from the second study for this dissertation. The study was designed to test hypotheses H10 - H15, specifically addressing the degree of artfulness of the analogical comparison and the resultant effect on the validity of inferences made by consumers, as well as the confidence with which inferences are held. Building on the results of Study 1, the effects of metaphor versus simile will be further explored (hypotheses H1, H3, H5, and H7). Study 2 will be discussed in terms of the pre-test, research design, product selection, research participants, independent variables, dependent variables, and finally the results and discussion.

I. Pre-test

To test the hypothesis that the degree of artfulness, or creativity, of a rhetorical figure will influence the validity of inferences and the confidence with which they are held, a pre-test was required to select figures that differed significantly on perceived artfulness. An experiment was run on 66 undergraduate students participating in the marketing research participant pool at the University of Manitoba. Participants were randomly assigned to one of two categories, simile ($n = 33$) or metaphor ($n = 33$), and were asked to rate four different rhetorical figures as well as a declarative statement as a control on McQuarrie and Mick's (1996) artful deviance scale. The participants in the simile condition were exposed to four different similes while participants in the metaphor

condition were exposed to four different metaphors. As in Study 1, the rhetorical figures were developed based on information from the Valtrex website that explained how the drug worked, saying it “keeps the herpes virus inactive, or ‘sleeping’.” The figures were all created using the same primary relation of putting the virus “to sleep”. The simile and metaphors were parallels of each other, only varying the structure of the comparison: explicit comparison for the simile form and implicit comparison for the metaphor form. Table 5-1 summarizes the rhetorical figures used in the pre-test, along with the means and standard deviations of perceived artfulness (McQuarrie and Mick 1996).

A one-way within-subjects ANOVA was conducted for each group with rhetorical figure as the factor and perceived artfulness as the dependent variable. The results of the ANOVA were significant at the $\alpha = 0.05$ level for the simile group, Wilks' lambda = 0.433, $F(4, 29) = 9.50$, $p < 0.001$ and the metaphor group, Wilks' lambda = 0.527, $F(4, 29) = 6.50$, $p = 0.001$. Follow-up paired samples t-tests revealed that the declarative statement was rated as significantly less artful than all other rhetorical figures in both the simile and metaphor groups. In the simile group, the “good night” figure and the “sleeping pill” figure demonstrated the largest difference in perceived artfulness of any of the figures (mean difference = .818, $t = 2.956$, $p = .006$). In the metaphor group, the “good night” figure was also rated as significantly more artful than the “sleeping pill” figure (mean difference = .879, $t = 2.591$, $p = .014$).

Table 5 – 1: Means and Standard Deviations for Perceived Artfulness of Rhetorical Figures

Rhetorical Figure	Mean	Std. Dev.
Simile Group		
1) Taking Gentrex is like putting genital herpes to sleep	4.39	1.48
2) Taking Gentrex in the morning is like saying good night to genital herpes	4.70	1.38
3) Gentrex is like a sleeping pill for genital herpes	3.88	1.52
4) Taking Gentrex is like putting genital herpes to bed	4.21	1.65
5) Gentrex suppresses genital herpes (declarative – control)	2.61	1.54
Metaphor Group		
1) Gentrex puts genital herpes to sleep	4.73	1.33
2) Say good morning to Gentrex and good night to genital herpes	5.33	1.43
3) Gentrex – a sleeping pill for genital herpes	4.46	1.56
4) Gentrex puts genital herpes to bed	4.15	1.54
5) Gentrex suppresses genital herpes (declarative – control)	2.94	1.78

Based on the results of the pre-test, the “good night” figure was chosen to represent a high degree of artfulness, referred to henceforth as the artful simile or metaphor. The “good night” figure received the highest score on the artful deviance scale for both the simile and metaphor groups. The “sleeping pill” figure was chosen to represent a low level of artfulness, referred to henceforth as the plain simile or metaphor. The “sleeping pill” figure received the lowest score for artful deviance in the simile group. Although the “sleeping pill” figure did not receive the lowest artful deviance score in the metaphor group, it received the second lowest score in the group and was rated significantly less artful than the “good night” metaphor. Selecting the “sleeping pill”

figure also allowed for the creation of parallel pairs of similes and metaphors, a goal of Study 2.

II. Research Design

The design of Study 2 was a 2 (rhetorical figure: simile vs. metaphor) x 2 (artfulness: artful vs. plain) x 2 (information: paragraph of copy vs. no paragraph of copy) between subjects factorial design with two control groups. One control group was exposed to a declarative statement with a paragraph of copy and the other control group was exposed to a declarative statement with no paragraph of copy.

III. Product Selection and Stimuli

The same medical condition (genital herpes) and product (Gentrex) as tested in Study 1 were used in Study 2. Print ads were used in Study 2 as the experimental stimuli, in exactly the same format as Study 1. Appendix D contains copies of all stimuli used in Study 2. The ads contained a headline centered across the top of the page, followed by an image of a couple embracing (the same image as used in Study 1). In the information condition, a brief paragraph of text (the same as used in Study 1) followed the image. In all conditions, an image of a capsule and the dosage of medicinal ingredients in the drug appeared at the bottom of the ad.

There were five different headline conditions: artful simile, plain simile, artful metaphor, plain metaphor, and a declarative statement (see Table 5-2).

Table 5 – 2: Headlines of Print Ad Stimuli

Artfulness	Rhetorical Figure	Headline
Artful	Simile	Taking Gentrex in the morning is like saying good night to genital herpes.
	Metaphor	Say good morning to genital herpes and good night to genital herpes.
Plain	Simile	Gentrex is like a sleeping pill for genital herpes.
	Metaphor	Gentrex – a sleeping pill for genital herpes.
	Declarative	Gentrex suppresses genital herpes

IV. Participants

Two hundred and sixty-eight undergraduate students participated in this experiment in exchange for course credit. This research received human ethics approval. As in Study 1, only participants who reported speaking English most often were used in the analyses, given the language fluency required in interpreting rhetorical figures (McQuarrie and Mick 1999). As a result, there were useable responses from 215 participants (46% female). This sample size is large enough to maintain a power of .8 for any analysis of variance and contingency table analysis (Cohen 1977). The mean age of participants was 20.3 years ($SD_{age} = 2.03$). No participants reported studying pharmacy, nursing or medicine.

V. Independent Variables

Rhetorical Figure

Type of rhetorical figure was manipulated by varying the headlines for the print ads used as experimental stimuli. As described above, the headlines included simile, metaphor and a declarative statement.

Artfulness

The artfulness of the rhetorical figures was manipulated as described in the section on the pre-test for Study 2. The rhetorical figures were either artful or plain.

Amount of Information

As in Study 1, ads either included a paragraph of text explaining how the advertised drug worked (headline plus copy) or they did not (headline only).

VI. Dependent Variables

Relational and Attribute Knowledge Transfer and Validity of Inferences

The same procedure was used in Study 2 as in Study 1 to capture the nature and extent of participants' knowledge transfer. Based on a subset of participants' thought protocols, a coding scheme was developed to capture relational knowledge transfer and validity of inferences. The primary relational inference expected for all figures (both plain and artful) was that Gentrex puts genital herpes to sleep, or renders the virus dormant. This inference represents a transfer of the explanatory system of how a sleeping pill works for insomniacs (puts them to sleep) to how Gentrex works for genital herpes, in the case of the plain simile and metaphor. The explanatory system transferred in the

case of the artful simile and metaphor is that of putting someone (or something) to bed and thus to sleep. If participants expressed the gist of this concept in their responses to the cognitive tasks they were coded as having made the relational transfer. As in Study 1, participants were coded as having made an invalid inference if they expressed the notion that Gentrex could cure, or permanently get rid of, genital herpes in their responses to the cognitive tasks. As in Study 1, participants were coded as having transferred attributes if they wrote about the characteristics of pills, drugs or medication in their responses to the cognitive tasks.

Two trained judges, blind to the experimental conditions, coded all responses. The kappa coefficients of agreement (Cohen 1960) for the two judges were above .7 for all categories coded. Discrepancies were resolved by a third judge. The kappa coefficients for the categories analyzed in Study 2 are listed in Table 5-3.

Table 5 – 3: Kappa Coefficients of Agreement

Category	Kappa Coefficient
Gentrex puts genital herpes “to sleep”	.806
Gentrex is literally a sleeping pill	.803
Gentrex cures genital herpes	.826
Pill attributes	.843

Persuasion

The same measures were used in Study 2 as in Study 1 to capture attitudes toward the ad and attitudes toward the brand. The attitude measures demonstrated good scale reliability ($\alpha = .90$ for attitude to the ad and $\alpha = .93$ for attitude to the brand) as well as single-factor structures for both scales.

Confidence

Participants' confidence in their inferences was measured directly following each of the cognitive response tasks. Participants were asked to rate how confident they were that what they had just written down was correct on a 7-point Likert-type scale with 1 indicating not very confident and 7 indicating very confident. In addition to the scale, participants were also asked to rate their confidence in terms of a percentage from 0 – 100%.

VII. Covariates

To control for previous experience and knowledge of genital herpes, participants were also asked a series of questions to determine how familiar and knowledgeable they felt they were about the medical condition, whether they knew anybody who had genital herpes, and whether they had seen an ad for genital herpes medication prior to the experiment. The mean level of self-assessed familiarity with genital herpes was 2.76 out of 7. Twenty-four participants (11.2 %) reported knowing someone with genital herpes, and 157 (73%) participants reported having previously seen an ad for genital herpes medication.

VIII. Procedure

Participants were randomly assigned to one of the experimental conditions. Participants in Study 1 were exposed to a print ad and immediately after reading the ad began completing the cognitive response exercises. Perhaps as a result, quite a few participants repeated either the ad headline or sections of the ad copy verbatim in their thought protocols. To counteract this effect, a simple distracter task was administered after exposure to the ad for Gentrex. Participants were given 30 seconds to read the ad and were then instructed to turn the page and complete a “spot-the-differences” puzzle. After two minutes had elapsed, participants were instructed to turn the page and begin answering the cognitive thought exercises. Participants were told to proceed through the following questions which measured the remaining dependent variables, covariates and manipulation checks at their own pace (Appendix E contains the measurement instrument for Study 2).

IX. Results

Table 5 – 4 summarizes the bivariate correlations between key interval-level variables in Study 2.

Table 5 – 4: Bivariate Pearson Correlations for Variables

	Artfulness of Headline	Meaning Openness	Attitude toward the Ad	Attitude toward the Brand	Knowledge of GH
Artfulness of Headline	1				
Meaning Openness	.353(**)	1			
Attitude toward the Ad	.117	.001	1		
Attitude toward the Brand	.066	-.023	.542(**)	1	
Knowledge of GH	.042	-.046	.046	.084	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Manipulation Checks

To test the manipulation of the headlines into rhetorical figures an ANOVA was performed with perceived artful deviance (McQuarrie and Mick 1996) as the dependent variable and headline condition and amount of information as the factors. After controlling for the effects of the covariates, there was a significant main effect for headline condition ($F(4, 200) = 6.753, p < .001$), but no significant main effect for amount of information ($F(1, 200) = 2.270, p = .133$). The interaction between headline condition and amount of information was not significant ($F(4, 200) = 1.238, p = .296$). Previous exposure to an ad for genital herpes medication was the only significant covariate, $F(1, 200) = 5.857, p = .016$. The estimated marginal means and standard deviations are summarized in Table 5-5.

Table 5 – 5: Means and Standard Deviations for Artful Deviance of Headlines

Headline	Estimated Marginal Means	Standard Deviation	N
Simile artful	4.12	1.53	45
Simile plain	4.16	1.60	41
Metaphor artful	4.71	1.32	45
Metaphor plain	4.62	1.44	43
Declarative	3.19	1.58	40

Follow-up tests were conducted to evaluate pairwise differences among the estimated marginal means. The mean perceived artfulness of the declarative headline was significantly lower than all other headlines, indicating a successful manipulation of the headline. Table 5-6 summarizes the difference scores between the artful and plain versions of the rhetorical figures. There were no other significant differences, suggesting that participants did not perceive a difference in artfulness between the simile and metaphor headlines and between the plain and artful headlines. In spite of pre-test results that demonstrated a significant difference among the plain and artful headlines, the effect was not replicated in the actual study. This result will be further addressed in the discussion section of this chapter.

Table 5 – 6: Significant Mean Difference Scores for Pairwise Comparisons of Artful Deviance of Headlines

I (mean)	J (mean)	Mean Difference (I – J)	Standard Error	p-Value
Declarative (3.19)	Simile artful (4.12)	.917	.326	.005
	Simile plain (4.16)	.982	.335	.004
	Metaphor artful (4.71)	1.517	.324	.000
	Metaphor plain (4.62)	1.434	.326	.000

An ANCOVA was also conducted with perceived meaning openness (Mothersbaugh et al. 2002) as the dependent variable and headline condition and amount of information as the factors. The following covariates were also included: previous

exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, and familiarity with and knowledge of genital herpes. Table 5-7 summarizes the means and standard deviations for perceived meaning openness of each headline condition. The analysis was not significant ($F(13, 201) = 1.150, p = .319$), suggesting that participants did not perceive significant differences among the headlines in terms of meaning openness. None of the covariates was significant.

Table 5 – 7: Means and Standard Deviations for Meaning Openness of Headlines

Headline	Estimated Marginal Mean	Std. Deviation	N
Simile artful	3.459	1.230	45
Simile plain	3.387	1.233	41
Metaphor artful	3.747	1.250	45
Metaphor plain	4.044	1.422	44
Declarative	3.318	1.203	40

These results suggest support for the successful manipulation of the headlines used in Study 2 in terms of artful deviance but not in terms of meaning openness.

Hypothesis Testing

Simile versus Metaphor: Knowledge Transfer

Hypotheses H1, H3, H5 and H7 predict that simile and metaphor will not be significantly different in terms of relational knowledge transfer, transfer of attributes, persuasiveness, and elaboration. The results of Study 1 supported these hypotheses;

however, a limitation of Study 1 was the fact that the simile and metaphor did not draw on the same base domains. Study 2 corrects for this limitation by including parallel similes and metaphors and allows for a more stringent comparison of the two rhetorical figures.

Simile versus Metaphor – Knowledge Transfer

To test hypothesis H1, which predicts that metaphor will not be significantly more likely to result in the transfer of relations than simile, a direct logistic analysis was conducted on each simile and metaphor pair (artful and plain). The outcome variable was the occurrence of the “to sleep” inference. The headline, either simile or metaphor, was the predictor variable. The following variables were included as covariates: familiarity with genital herpes, previous exposure to an ad for genital herpes, and whether the participant indicated they knew someone with genital herpes. The analyses were conducted separately for the headline only information condition and the headline plus copy information condition.

Preliminary contingency table analysis revealed that in the headline only condition, the primary relational inference was made by: 9.5% of participants in the artful simile condition, 4.2% of participants in the artful metaphor condition, 41.2% of participants in the plain simile condition, and 36.4% of participants in the plain metaphor condition. In the headline plus copy condition, the following percentages of participants made the primary relational inference: 29.2% in the artful simile condition, 28.6% in the artful metaphor condition, 66.7% in the plain simile condition, and 50% in the plain metaphor condition.

In the headline only condition the logistic regression models were not significant for either the artful pair, $\chi^2(4) = 3.577$, $p = .466$, or the plain pair, $\chi^2(4) = 3.472$, $p = .482$, indicating that there are no significant differences between simile and metaphor at encouraging relational transfer. None of the covariates was significant. The logistic regression analyses were repeated for the headline plus copy information condition. Again, the model for comparing the artful simile and metaphor was not significant, $\chi^2(4) = 4.110$, $p = .391$, nor was the model comparing the plain simile and metaphor, $\chi^2(4) = 4.789$, $p = .310$. These results support hypothesis H1 which predicted that simile and metaphor would not be significantly different in terms of encouraging the transfer of relations in either the headline only condition or the headline plus copy condition.

Hypothesis H3 predicts that metaphor will not be significantly more likely to result in the transfer of attributes than simile. A logistic regression analysis was conducted on each pair of rhetorical figures with the transfer of attributes as the outcome variable and headline figure (simile or metaphor) as the predictor variable. The following covariates were also entered into the model: previous exposure to an ad for genital herpes, knowledge of someone with genital herpes, and familiarity with genital herpes. Separate analyses were conducted for each information condition. In the headline only condition, the models were not significant for either the artful pair, $\chi^2(4) = 2.161$, $p = .706$, or the plain pair, $\chi^2(4) = 1.613$, $p = .807$. None of the covariates was significant. Similar results were found for the headline plus copy condition. The model comparing the artful simile and metaphor was not significant, $\chi^2(4) = 4.338$, $p = .362$, nor was the model comparing the plain simile and metaphor, $\chi^2(4) = 6.321$, $p = .176$. These results

suggest that type of rhetorical figure (simile or metaphor) does not reliably predict whether participants transferred attributes. Hypothesis H3, which predicted no significant differences between simile and metaphor in terms of encouraging transfer of attributes in either the headline only condition or the headline plus copy condition, is supported.

Simile versus Metaphor – Persuasion & Elaboration

Hypothesis H5 predicted that metaphor would not be significantly more persuasive than simile with consumers, and hypothesis H7 predicted that metaphor would not result in significantly more elaboration by consumers than simile. Hypotheses H5 and H7 were tested by conducting ANCOVA tests with the persuasion and elaboration measures as dependent variables and headline and amount of information as factors. The following variables were included as covariates in all the models: familiarity with genital herpes, previous exposure to an ad for genital herpes, and whether the participant indicated they knew someone with genital herpes. The estimated marginal means and standard deviations for each dependent variable by headline are summarized in Table 5-8 and 5-9.

The ANCOVA model with attitude toward the ad as the dependent variable was not significant. The results suggest no significant differences among any headlines on attitude toward the ad, $F(12, 202) = .770, p = .681$. The ANCOVA was significant, however, for attitude toward the brand, $F(12, 202) = 1.803, p = .05$. There was no significant main effect for headline condition, $F(4, 202) = 1.154, p = .333$, but there was a significant main effect for amount of information, $F(1, 202) = 4.608, p = .033$. The interaction between amount of information and headline was not significant, $F(4, 202) = .518, p = .722$. These results suggest that there are no significant differences between

simile and metaphor in terms of persuasion for either the headline only condition or the headline plus copy condition. Hypothesis H5 is therefore supported.

Extent of elaboration was measured by the number of thoughts participants generated on the thought protocols. The ANCOVA was significant, $F(12, 202) = 2.271$, $p = .010$. There was a significant main effect for headline condition, $F(4, 202) = 3.758$, $p = .006$. There was no significant main effect for amount of information, nor was the interaction between headline and amount of information significant. Follow-up pairwise comparisons revealed that there were no significant differences within each simile and metaphor pair: the artful simile did not result in more elaboration than the artful metaphor; the plain simile did not result in more elaboration than the plain metaphor. The plain simile and metaphor, however, both resulted in more elaboration than the declarative statement ($p = .011$ and $p = .001$ respectively). In addition, the plain metaphor resulted in more elaboration than the artful simile. There were no other significant differences. Although the plain metaphor resulted in greater elaboration than the artful simile, the difference cannot be attributed solely to the type of analogical comparison as the comparisons were not parallel. Within each parallel pair of simile and metaphor there were no significant differences. These results support hypothesis H7, which predicted that a metaphor would not result in significantly greater elaboration than a simile.

Table 5 – 8: Estimated Marginal Means for Persuasion by Headlines

Headline	Attitude Ad	SD	Attitude Brand	SD	SD
Simile artful	3.604	1.166	4.402	1.290	1.713
Metaphor artful	3.893	1.147	4.799	1.181	1.590
Simile plain	3.905	1.383	4.340	1.447	1.550
Metaphor plain	3.682	1.088	4.271	1.221	1.576

**Table 5 – 9: Estimated Marginal Means for Persuasion and Elaboration
by Headlines**

Headline	Number of thoughts	SD
Simile artful	4.892	1.713
Metaphor artful	5.303	1.590
Simile plain	5.627	1.550
Metaphor plain	5.873	1.576

Inference Validity

Hypothesis H9 predicts that consumers exposed to an analogical comparison will be significantly more likely to make an invalid inference than consumers exposed to a declarative statement. To test hypothesis H9, a direct logistic regression analysis was performed on the occurrence of an invalid inference. As in Study 1, the invalid inference investigated was that of inferring that Gentrex cures genital herpes. The occurrence of making the curative inference was the outcome variable and headline condition was the predictor variable with five categories: artful simile, plain simile, artful metaphor, plain

metaphor, and declarative. The following covariates were also included in the model: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, and familiarity with and knowledge of genital herpes. The invalid inference that Gentrex cures genital herpes was made by 30.7% of participants in the headline only condition (see Figure 5-1 for percentage of participants reporting the invalid inference by headline in the headline only condition). In contrast, only 9.6% of participants made the invalid inference in the headline plus copy condition.

The logistic regression analyses were conducted separately for each information condition. In the headline only condition, the regression model was statistically significant, $\chi^2(7) = 17.350$, $p = .015$, indicating that the predictor variable (i.e. headline condition) reliably distinguishes between participants who made an invalid inference and those who did not. None of the covariates was significant. Table 5-10 shows regression coefficients, standard errors, Wald statistics, odds ratios, and p-values for the different levels of the predictor variable headline condition. The only headline category to be a significant predictor of likelihood of making the curative inference was the artful metaphor headline. Participants exposed to this headline were over 5.4 times as likely to make the invalid inference that Gentrex cures genital herpes as participants exposed to the declarative statement headline. In the headline plus copy condition, the regression model was not significant, $\chi^2(7) = 8.139$, $p = .321$, indicating that headline condition did not reliably predict the occurrence of the invalid inference.

Contingency table analysis was also conducted on the occurrence of the invalid inference by headline condition. In the headline plus copy condition there were no significant differences, $\chi^2(4) = 6.386$, $p = .172$. In the headline only condition, however,

there were significant differences among the percentage of participants making the invalid inference for each headline ($\chi^2(4) = 16.277, p = .003$). Follow-up pairwise comparisons revealed that both the artful simile ($\chi^2(1) = 3.750, p = .053$; marginally significant) and the artful metaphor ($\chi^2(1) = 5.577, p = .018$) were more likely to result in the invalid inference than the declarative statement. There were no other significant differences.

The results of the previous analyses lend partial support to hypotheses H9a and H9b. Participants exposed to the plain simile and metaphor were not more likely to make the invalid inference than participants exposed to the declarative statement in the headline only condition. Participants exposed to the artful simile and metaphor, however, were significantly more likely to make the invalid inference that Gentrex cures than participants exposed to the declarative statement.

Figure 5 – 1: Percentage of Participants Making Invalid Curative Inference by Headline for Headline Only Condition

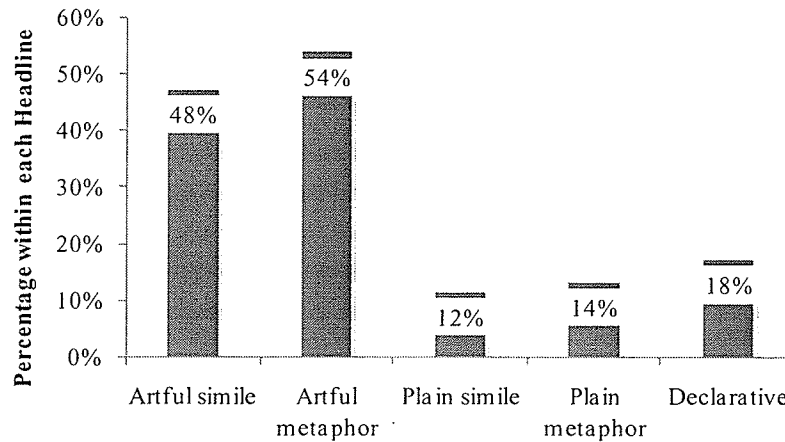


Table 5 – 10: Logistic Regression Analysis of Invalid Inference as a Function of Headline – Headline Only Condition

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
All Headlines			13.789	.008	
Simile artful	1.434	.791	3.282	.070	4.194
Simile plain	-.478	1.003	.227	.634	.620
Metaphor artful	1.690	.763	4.903	.027	5.419
Metaphor plain	-.299	.896	.111	.739	.742
Covariates					
Seen ad	-.329	.544	.367	.545	.719
Know someone	-.021	.785	.001	.979	.979
Familiarity	.110	.174	.402	.526	1.117

Artfulness

To test the hypotheses on artfulness, H10, H11, H12 and H13, the simile and metaphor conditions for each analogy category (plain and artful) were collapsed. Previous analyses found no significant differences within each condition, and this allowed for an examination of the influence of degree of artfulness of the analogies.

Hypothesis H10 predicts that an artful analogy will be more persuasive with consumers than a plain analogy in the headline only condition, but not in the headline plus copy condition. Analyses were conducted for attitude toward the ad and attitude toward the brand as dependent variables. An ANCOVA was conducted with attitude toward the ad as the dependent variable and headline grouping and amount of information as factors. The following covariates were included in all models: previous exposure to an ad for genital herpes, knowledge of someone suffering from genital herpes, and familiarity and knowledge of genital herpes. The ANCOVA was not significant, $F(8, 206) = .842, p = .566$, indicating that there were no significant differences in participants' attitude toward the ad among the headline groupings: $M_{\text{artful}} = 3.750, SD_{\text{artful}} = 1.157$; $M_{\text{plain}} = 3.794, SD_{\text{plain}} = 1.240$; $M_{\text{declarative}} = 4.034, SD_{\text{declarative}} = 1.451$. The ANCOVA on attitude toward the brand was significant, $F(8, 206) = 3.971, p = .015$, however there was no main effect for headline grouping, $F(2, 206) = 1.235, p = .293$: $M_{\text{artful}} = 4.604, SD_{\text{artful}} = 1.243$; $M_{\text{plain}} = 4.298, SD_{\text{plain}} = 1.329$; $M_{\text{declarative}} = 4.384, SD_{\text{declarative}} = 1.376$. The only significant effect was for the amount of information term, $F(1, 206) = 3.962, p = .048$. These results do not provide evidence for increased persuasion of artful analogical comparisons over plain analogical comparison and therefore do not support hypothesis H10.

Hypothesis H11 predicts that exposure to an artful analogy will result in greater elaboration than exposure to a plain analogy in the headline only condition but not in the headline plus copy condition. An ANCOVA was conducted with total thoughts from participants' responses to the cognitive tasks as the dependent variable and headline grouping and amount of information as the factors. The following covariates were also included: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, and familiarity and knowledge of genital herpes. The ANCOVA was significant, $F(8, 206) = 3.192, p = .002$. There was a significant main effect for the headline grouping: $M_{\text{artful}} = 5.737, SD_{\text{artful}} = 1.839$; $M_{\text{plain}} = 5.144, SD_{\text{plain}} = 1.925$; $M_{\text{declarative}} = 4.457, SD_{\text{declarative}} = 1.679$. The interaction of headline and amount of information was not significant ($F(1, 206) = 2.732, p = .067$). Follow-up pairwise comparisons revealed that participants in the plain group listed significantly more thoughts than participants in both the artful group and the declarative statement condition. There were no other significant differences. These results do not lend support to hypothesis H11 which predicted greater extent of elaboration (as measured by number of thoughts generated) for participants exposed to the artful analogy.

A contingency table analysis was conducted to test hypothesis H12 which predicts that exposure to an artful analogical comparison will result in a greater likelihood of transferring relations than exposure to a plain analogical comparison. In the headline only condition the analysis was significant ($\chi^2(2) = 18.854, p < .001$) and revealed that only 6.7% of participants in the artful analogy group made the primary relational transfer of "to sleep" compared to 38.5% of participants in the plain analogy group and 0% of participants in the declarative statement condition. Follow-up pairwise comparisons

revealed that participants in the plain group were significantly more likely to make the primary relational inference than participants in the artful group, $\chi^2(1) = 12.454$, $p < .001$, as well as participants in the declarative condition, $\chi^2(1) = 8.931$, $p = .003$. There were no significant differences between the artful group and the declarative statement.

The analysis was repeated for the headline plus copy condition. The “to sleep” relational inference was made by 28.9% of participants in the artful group, 58.7% of participants in the plain group, and 17.4% of participants in the declarative condition. Pairwise comparisons were conducted and revealed that participants in the plain group were significantly more likely than participants in the artful group to make the relational transfer, $\chi^2(1) = 8.024$, $p = .004$, as well as participants in the declarative condition, $\chi^2(1) = 10.573$, $p = .001$. There were no significant differences between the artful group and the declarative condition. Hypothesis H12, which predicted that participants exposed to the artful analogy would be more likely to transfer relations than participants exposed to the plain analogy in the headline only condition but not in the headline plus copy condition, is therefore not supported.

Hypothesis H13 predicts that participants exposed to the artful analogical comparisons will be less likely to transfer attributes than participants exposed to the plain analogical comparisons in the headline only condition, but not in the headline plus copy condition. Contingency table analysis was conducted on the occurrence of attribute transfer for both the headline only condition and the headline plus copy condition. The analysis was not significant in the headline only condition, $\chi^2(2) = 3.208$, $p = .201$, indicating no significant differences in terms of whether participants transferred attributes among the artful group, plain group and declarative condition. There were also no

significant differences in attribute transfer for the headline plus copy condition, $\chi^2(1) = .058$, $p = .972$. Hypothesis H13 is therefore not supported.

Confidence

Hypotheses H14 and H15 pertain to the confidence that consumers have in their inferences after exposure to an ad containing an analogical comparison. H14 and H15 were phrased as null hypotheses due to the contradictory results of the studies by Gregan-Paxton and Moreau (2003) and Spiro et al. (1989), as well as the general paucity of published studies examining this issue. Specifically, H14 predicts that there will be no significant difference in the confidence levels of consumers' inferences after exposure to an analogical comparison and a declarative statement. H15 predicts that there will be no significant difference in the confidence levels of consumers who make an invalid inference and those who do not.

After each of the two cognitive response tasks ("write down all your thoughts" and "explain how this works") participants were asked to rate how confident they were that what they had just written down was correct on a Likert-type scale from 1 – 7 as well as to give a percentage. The scores for each confidence question were standardized and the mean for each score was calculated as a measure of total confidence for each participant across both cognitive tasks. A descriptive analysis of the data revealed strong departures from normality (skewness = -1.239, kurtosis = 1.950). According to procedures outlined by Tabachnik and Fidell (2007), total confidence scores were first reflected, and then a constant was added to all the scores. Then the square root was taken of the total confidence scores. This transformation produced considerable improvement in skewness (.670) and kurtosis (.326).

To test for differences in confidence levels among participants, an ANCOVA was conducted with the transformed confidence scores as the dependent variable and headline condition, occurrence of the invalid inference and amount of information as the factors. The following covariates were also included in the model: previous exposure to an ad for genital herpes medication, knowledge of someone with genital herpes, and familiarity and knowledge of genital herpes. The ANCOVA was not significant, $F(22, 192)$, $p = .262$, indicating that there were no significant differences in confidence levels among the analogical and declarative headline conditions, $F(4, 192) = 1.976$, $p = .100$, no significant differences between those participants making an invalid inference and those not making the invalid inference, $F(1, 192) = .044$, $p = .835$, for either headline only condition or headline plus copy condition. Based on these results, hypothesis H14 and hypothesis H15 cannot be rejected.

X. Discussion

Results of Study 2 supported hypotheses H1, H3, H5, and H7. When compared to simile, metaphor was not found to be significantly more likely to result in the transfer of relations (H1), the transfer of attributes (H3), to be more persuasive (H5), or result in greater elaboration (H7). Study 2 employed parallel pairs of simile and metaphor and as such represents a more stringent test of the hypotheses than Study 1. The replication of the findings from Study 1 suggests that simile and metaphor are not significantly different from each other in terms of impact on analogical knowledge transfer and persuasion. In Study 3 and Study 4 only the metaphor form of analogy will be employed. Results from Study 2 lend partial support for hypothesis H9; participants exposed to the

artful analogies were significantly more likely to make the invalid inference that Gentrex cures genital herpes than participants exposed to the declarative statement. The inclusion of a paragraph of copy in the ad continued to attenuate the effect of the rhetorical figures on making an invalid inference. Due to the repetition of non significant findings, this condition will be dropped from future studies. The ads used for the experimental stimuli will only contain a headline and an image and will not include a paragraph of text.

In spite of positive pre-test results, participants in the main study did not perceive any significant differences in artfulness among the plain and artful headlines. In contrast to the pre-test, which asked participants to rate the various similes and metaphors on the artful deviance scale immediately after reading the figures, the main study did not ask participants to rate the headlines on artful deviance until halfway through the questionnaire. In addition, the artful deviance scale followed questions pertaining to the perceived credibility of the ad and difficulty in understanding the ad, which may have influenced responses. Rating a headline as artful or clever is arguably more favourable than rating a headline as plain or simple (the end points on the artful deviance scale). It is possible that if respondents rated the artful headlines as less credible or more difficult to understand they may have been less likely to rate the same headline favourably as artful or clever. This problem will be corrected for in Study 3, in which the artful deviance scale will be the first question participants respond to after the cognitive tasks. The same artful metaphor will be used again in Study 3 to determine whether the problem in Study 2 was with the artfulness manipulation or when the manipulation check was administered. In spite of the difficulties with the manipulation check, there appears to be

significant differences between the plain and artful analogies, especially in terms of the invalid inference, that are worthy of further investigation.

Hypothesis H11 predicted that the artful analogical comparisons would result in greater elaboration than the plain analogical comparisons; results from Study 2 did not support H11. There were significant differences, however, between artful and plain headlines in terms of relational knowledge transfer, but they were in the opposite direction of that predicted by hypothesis H11. A much lower percentage of participants exposed to the artful headlines made the expected primary relational inference than participants exposed to the plain headlines. In addition, only participants exposed to the artful headlines were significantly more likely than participants in the control group to make the invalid inference that Gentrex cures genital herpes. If the artfulness of an analogy is considered in terms of the openness of the analogy to multiple interpretations (McQuarrie and Phillips 2005), then it is possible that the more artful simile and metaphor may have made participants more receptive to multiple inferences beyond the expected primary relational inference of the analogy than the plain simile and metaphor. This would explain why participants exposed to the artful analogies were significantly more likely to make the inference that Gentrex could cure genital herpes than participants not exposed to the artful headlines.

The artful simile and metaphor told participants that by taking Gentrex they would be saying good night to genital herpes. The primary relational inference that participants were expected to make was that of putting genital herpes to sleep, or rendering it dormant. Only 18% of participants exposed to the artful simile and metaphor made the expected relational inference. Given these findings, it is plausible that

participants made an alternative relational inference; in effect transferring the explanatory system that taking Gentrex will allow someone to “bid farewell” or “say good bye” to genital herpes rather than “putting genital herpes to sleep”. If this is the case, it would explain why participants in this group were significantly more likely to infer that Gentrex would cure genital herpes. Saying good-bye to herpes could be equated to getting rid of the virus, or curing genital herpes. The base domain that was being accessed by participants reading the artful simile and metaphor was perhaps not that of sleep and dormancy, but rather that of parting and saying good-bye. In addition, the analogy in the plain condition represents a within-domain comparison. The base on which it draws (sleeping pills) is in the same general domain as the target (medication in pill form), even though the two medical conditions are far removed (insomnia and genital herpes). In contrast, the artful analogy represents a between domain comparison (bidding someone good night and suppressing a virus).

The results of Study 2 failed to reject hypotheses H14 and H15. Both hypotheses were phrased as null hypotheses and predicted no significant differences in confidence between participants exposed to an analogical comparison and those exposed to a declarative statement (H14) as well as no significant difference in confidence between participants who made an invalid inference and those who did not (H15). Overall participants expressed high levels of confidence in their responses to the cognitive tasks. The median for both scale confidence measures was 6 out of 7 and the median for the percentage measures was over 80%. Perhaps as a result, there was no significant relationship detected between level of confidence and the headline in the ad.

The artful and plain metaphors will again be employed in Study 3 to further explore the impact of each figure on analogical knowledge transfer and validity of inferences under conditions of high and low involvement. Study 1 and Study 2 only employed one medical condition, genital herpes. To address the generalizability of the results of this research to other medical conditions, Study 3 will also include cold sores as an additional experimental condition.

CHAPTER SIX

STUDY THREE

The purpose of this chapter is to present the results from the third study of this dissertation. The study is designed to test hypotheses H16 – H19, specifically addressing the issue of involvement and the resultant effect on the validity of inferences made by consumers. A new medical condition has also been introduced to address the generalizability of results to other medical conditions. Study 3 will be discussed in terms of the research design, product selection, research participants, independent variables, dependent variables, manipulation checks and finally the results and discussion.

I. Research Design

The design for Study 3 was a 3 (rhetorical figure: artful metaphor vs. plain metaphor vs. declarative) x 2 (involvement: high vs. low) x 2 (medical condition: genital herpes vs. cold sores) between subjects factorial design. Amount of information was not manipulated in Study 3; ads contained only a headline and no paragraph of copy.

II. Product Selection and Stimuli

The medical condition employed in Study 3 was expanded to include cold sores in addition to genital herpes. This was done to address the potential to generalize results to other medical conditions as well as to address the sexual nature of genital herpes. It is possible that participants may have felt uncomfortable responding to the cognitive response exercises due to the fact that genital herpes is a sexually transmitted disease. In

a study of choice of health care provider in people suspecting an STD, researchers found that respondents who chose not to visit their general practitioner for treatment cited embarrassment in discussing the STD with the general practitioner as an important reason for their choice (Leenaars, Rombouts and Kok 1994). Although STD's are relevant to the undergraduate student population, the rate of occurrence of genital herpes is relatively low (17% of adults aged 14-49 years). The majority of participants, therefore, are not likely to be familiar with medication to treat the condition. Dahl, Manchanda and Argo (2001) studied the purchase of an embarrassing product (condoms) and found that simply imagining a social presence increased feelings of embarrassment for consumers. Further, when consumers were unfamiliar with the purchase of the product they were more likely to imagine a social presence. This suggests that the embarrassing nature of an STD and the awareness that someone would be reading their responses might have made participants feel embarrassed. To address these concerns cold sores was added as a second medical condition.

Cold sores are caused by the same virus family (herpes simplex) as genital herpes, but the nature of transmission and the infected areas are different and not of the same sexual nature as with genital herpes. In addition, cold sores are a relatively common medical condition. A recent survey found that 57.7% of the U.S. population aged 14-49 years was infected with herpes simplex virus type 1, the cause of cold sores (Fujie et al. 2006). Participants should therefore be more familiar with cold sores than with genital herpes. Because genital herpes and cold sores are caused by the same virus family, they can also be treated by the same medication. Valtrex, the GlaxoSmithKline medication on which the experimental brand Gentrex is based, is frequently prescribed to treat both cold

sores and genital herpes. The drug works on the virus in the same manner for both conditions; it is a form of suppressive therapy that renders the virus inactive, or “sleeping” (Valtrex 2005).

Experimental stimuli were print ads in the same format as those employed in Study 1 and Study 2. The ads contained a headline centred across the top of the page, followed by an image of a couple embracing. In all conditions an image of a capsule and the dosage of medicinal ingredients appeared at the bottom of the ad. All ads were printed in black and white on letter-sized paper. Copies of the stimuli for Study 3 are included in Appendix F.

III. Participants

Five hundred and sixty-five undergraduate students from two large Canadian universities participated in the experiment in exchange for course credit. Two hundred and forty-eight students participated from the University of Manitoba and 317 students participated from York University. All participants were enrolled in their respective university’s introductory marketing course. As with the previous two studies, only participants who reported speaking English most often were included in the analysis. As a result, there were usable responses from 437 participants (194 from the University of Manitoba and 243 from York University). Female participants represented 47% of the total sample. The mean age of participants was 19.9 years ($SD_{age} = 2.24$). No participants reported studying pharmacy, nursing or medicine.

IV. Independent Variables

Artfulness

The artfulness of the rhetorical figures was manipulated by using the plain metaphor and the artful metaphor from Study 2.

Medical Condition

As described previously, two medical conditions were employed: genital herpes and cold sores.

Involvement with the Message

To manipulate higher levels of involvement with processing the advertising message, participants were given the following instructions: “Read the following ad as though you have an immediate need for the advertised product. You will be told to turn the page and take 30 seconds to read the ad and think about the product being advertised. Pay close attention to the message in the ad.” Heightening the immediate need for the product as well as the directions to pay close attention should increase the personal relevance of the ad to participants and thus increase the felt involvement with processing the message. In contrast, participants in the low involvement condition were given the following instructions: “Read the following ad as though you were flipping through a magazine. Take only a few seconds to look at the ad and then turn to the next page.” The message involvement manipulations were adapted from those employed by Lacznia and Muehling (1993).

V. Dependent Variables

Relational Knowledge Transfer and Validity of Inferences

The procedure to capture the nature and extent of participants' knowledge transfer and inference generation was the same as in Study 1 and Study 2. If participants expressed the gist of the concept that Gentrex treats genital herpes (or cold sores) by putting the virus "to sleep" in their responses to the cognitive tasks they were coded as having made the relational transfer. As in Study 1 and Study 2, participants were coded as having made an invalid inference if they expressed the notion that Gentrex could cure, or permanently get rid of, genital herpes in their responses to the cognitive tasks.

Two trained judges, blind to the experimental conditions, coded all responses. The kappa coefficients of agreement (Cohen 1960) for the two judges were greater than .7 for all categories coded. Discrepancies were resolved by a third judge. The kappa coefficients for the specific categories analyzed in Study 3 are listed in Table 6-1.

Table 6 – 1: Kappa Coefficients of Agreement

Category	Kappa Coefficient
Gentrex puts genital herpes "to sleep"	.842
Gentrex is literally a sleeping pill	.907
Gentrex cures genital herpes	.849

Inferences were also captured by asking participants an explicit true or false question regarding Gentrex. Participants were asked to answer either true or false to the

following question: Gentrex keeps the genital herpes (cold sores) virus inactive. The question is a direct extension of the primary relational inference expected from both metaphors.

VI. Covariates

Participants were asked the same questions as in Study 1 and Study 2 to control for how familiar and knowledgeable they felt they were about the medical condition (genital herpes or cold sores), whether they knew anybody who had genital herpes (or cold sores), and whether they had seen an ad for genital herpes (or cold sores) medication prior to the experiment. In addition, need for cognition (NFC) was added as a covariate and was measured using the 18-item scale developed by Cacioppo, Petty and Kao (1984). Roehm and Sternthal (2001) found that NFC influenced the persuasiveness of analogies used in marketing communication. The NFC scale demonstrated good internal reliability ($\alpha = .87$). Items from all scales were averaged to form index scores. The covariates were included in all analyses to control for any effects they might have on the dependent variables. In addition, because participants were drawn from two different universities, the university participants attended was also included as a covariate in the analyses.

VII. Procedure

The same procedure was used as in Study 2 with the exception of the involvement manipulation. Participants were randomly assigned to one of the experimental conditions.

A copy of the measurement instrument is included in Appendix G.

VIII. Results

Manipulation Checks

Artfulness

An ANCOVA was conducted to determine whether participants perceived a significant difference in the artful deviance amongst the headlines. The factors in the ANCOVA were headline condition, medical condition and involvement condition. The following covariates were included in the model: previous exposure to an ad for genital herpes/cold sore medication, knowledge of someone suffering from genital herpes/cold sores, familiarity and knowledge of genital herpes/cold sores, university attended and NFC. The ANCOVA was significant ($F(16, 418) = 4.468, p < .001$). There was a significant main effect for headline condition ($F(2, 418) = 27.396, p < .001$). There were no significant interactions and no significant main effects for medical condition and involvement condition. NFC was the only significant covariate. The estimated marginal means and standard deviations for headline condition are summarized in Table 6-2. Follow-up pairwise comparisons revealed that the declarative headline was perceived as significantly less artful than both the plain metaphor and the artful metaphor headlines. The artful headline was perceived as significantly more artful than the plain headline (see Table 6-3).

Table 6 – 2: Means and Standard Deviations for Artful Deviance of Headlines

Headline	Estimated Marginal Mean	Std. Deviation	N
Metaphor plain	3.552	1.597	147
Metaphor artful	3.914	1.500	151
Declarative	2.627	1.388	138

Table 6 – 3: Mean Difference Score for Pairwise Comparisons of Artful Deviance of Headlines

I (mean)	J (mean)	Mean Difference (I – J)	Standard Error	p-Value
Metaphor plain (3.552)	Metaphor artful (3.914)	-.372	.174	.032
	Declarative (2.627)	.915	.177	.000
Metaphor artful (3.914)	Declarative (2.627)	1.287	.176	.000

An ANCOVA was also conducted with meaning openness as the dependent variable and headline condition, medical condition and involvement condition as factors and the same covariates as in the previous ANCOVA model. The ANCOVA was significant ($F(15, 421) = 9.917, p < .001$). The means and standard deviations for headline condition are displayed in Table 6-4. Follow-up pairwise comparisons revealed significant differences in the level of meaning openness among all headlines (summarized in Table 6-5). The plain metaphor was rated as highest in meaning

openness, the artful metaphor was second highest, and the declarative statement was rated the lowest. These results point to an effective manipulation of the ad headlines into figurative and non-figurative phrases.

Table 6 – 4: Means and Standard Deviations for Meaning Openness of Headlines

Headline	Estimated Marginal Mean	Standard Deviation	N
Metaphor plain	4.167	1.514	147
Metaphor artful	3.439	1.296	152
Declarative	2.870	1.365	138

Table 6 – 5: Mean Difference Score for Pairwise Comparisons of Meaning Openness of Headlines

I (mean)	J (mean)	Mean Difference (I – J)	Standard Error	p-Value
Metaphor plain (4.167)	Metaphor artful (3.439)	.728	.161	.000
	Declarative (2.870)	1.279	.164	.000
Metaphor artful (3.439)	Declarative (2.870)	.569	.164	.001

Medical Condition

A comparison of means revealed that participants reported significantly higher levels of knowledge and familiarity with cold sores than with genital herpes, $t(434) = 4.106, p < .001$: $M_{\text{cold sores}} = 2.814, SD_{\text{cold sores}} = 1.479$; $M_{\text{genital herpes}} = 2.248, SD_{\text{genital herpes}} = 1.397$. In addition, a significantly greater percentage of participants reported knowing someone who suffers from cold sores (63%) than someone who suffers from genital herpes (10.6 %), $\chi^2(1) = 129.228, p < .001$. There were no significant differences between the percentage of participants having seen an ad for cold sore medication (60.1%) and those having seen an ad for genital herpes medication (51.6%). These results indicate that cold sores represent a medical condition that participants are significantly more familiar with than genital herpes.

Involvement

To check for a significant manipulation of involvement, participants were asked to respond to an 8-item designed to capture level of felt involvement. The scale was adapted from the one developed by Laczniaak and Muehling (1993). An ANCOVA was conducted with felt involvement as the dependent variable and involvement instructions and medical condition as the factors. The following covariates were also included: previous exposure to an ad for genital herpes/cold sore medication, knowledge of someone suffering from genital herpes/cold sores, familiarity and knowledge of genital herpes/cold sores, university attended and NFC. Table 6-6 summarizes the estimated marginal means and standard deviations. There was no significant effect for involvement instructions on level of felt involvement, $F(1, 429) = .473, p = .492$. There was, however, a significant main effect for medical condition on the level of felt involvement, $F(1, 429)$

= 5.953, $p = .015$. University attended and NFC were significant covariates. Participants expressed greater levels of felt involvement for the product to treat cold sores than the product to treat genital herpes, suggesting that cold sores are more personally relevant than genital herpes. These results do not lend support to a successful manipulation of the involvement condition. Although the 8-item scale was used successfully by Lacznia and Muehling (1993), it is possible that it was not adequate as a manipulation check in the context of this research. The high involvement instructions directed participants to pay close attention to the message in the ad; however, the involvement scale did not contain any items pertaining to the amount of attention participants devoted to processing the message. Hypothesis testing on the influence of involvement will proceed with caution. Given the results of the manipulation check, it is possible that the involvement manipulation was not successful and as such significant relationships might not be detected.

Table 6 – 6: Means and Standard Deviations for Felt Involvement

Involvement Instructions	Medical Condition	Mean	Std. Deviation	N
High	Genital herpes	2.300	1.487	103
	Cold sores	2.547	1.404	108
	Total	2.423	1.452	
Low	Genital herpes	2.085	1.203	115
	Cold sores	2.587	1.302	111
	Total	2.336	1.284	

Hypothesis Testing

Involvement and Knowledge Transfer

Hypothesis H16 predicts that a consumer exposed to an analogical comparison will be more likely to transfer relations under conditions of high involvement than under conditions of low involvement. As in Study 2, the primary relational inference expected of participants exposed to the analogical comparisons was that Gentrex puts genital herpes to sleep, or renders the virus dormant. To test hypothesis H16, a logistic regression analysis was conducted with occurrence of the “to sleep” inference as the outcome variable and type of headline, involvement, and medical condition as predictor variables. Need for cognition, familiarity with the medical condition, previous exposure to an ad for genital herpes (cold sores), knowledge of someone with genital herpes (cold sores), and university attended were included as covariates. Table 6-7 summarizes the parameter estimates, odds ratios and significance levels. The model was significant $\chi^2(8) = 100.550, p < .001$). After controlling for the effects of the covariates, headline condition reliably predicted occurrence of the “to sleep” inference. Participants exposed to the plain metaphor headline were 89 times as likely to make the primary relational inference as participants exposed to the declarative headline. Participants exposed to the artful headline were 9 times as likely to make the primary relational inference as participants exposed to the declarative headline. Involvement was not a significant predictor of the relational inference.

Table 6 – 7: Logistic Regression Analysis of Occurrence of Primary Relational Inference

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headlines			51.704	.000	
Metaphor plain	4.492	1.021	19.353	.000	89.312
Metaphor artful	2.193	1.057	4.302	.038	8.966
Involvement	-.406	.312	1.692	.193	.666
Medical condition	.017	.318	.003	.957	1.017
NFC	-.766	.365	4.410	.036	.465
Familiarity	.004	.114	.001	.972	1.004
Seen ad	-.327	.339	.935	.334	.721
Know someone	-.186	.399	.218	.641	.830
University	.089	.312	.082	.775	1.093

To further examine the relationship between involvement and headline condition within each medical, a condition contingency table analysis was performed. Level of involvement (high or low) for each headline was entered into a contingency table to determine whether there were significant differences in the proportions reporting the primary relational inference. Each medical condition was examined separately. Results are summarized in Table 6-8. For the genital herpes condition there were no significant differences in proportions of participants making the primary relational inference based on level of involvement ($\chi^2(1) = .284, p = .594$). There were significant differences, however, in the cold sores condition ($\chi^2(1) = 4.633, p = .031$). A second contingency analysis was conducted only on participants in the cold sores condition. The different headlines (plain, artful, or declarative) were each entered separately into a table and

crossed with involvement (high or low) to examine differences in proportions reporting the primary relational inference. The only headline to demonstrate a significant relationship between the primary relational inference and level of involvement was the artful metaphor ($\chi^2(1) = 5.206, p = .023$). The direction of the relationship, however, was opposite to that predicted by H16. Participants in the low involvement condition were more likely to have made the relational inference than participants in the high involvement condition (19% for low involvement and 2.7% for high involvement). These results therefore provide no support for hypothesis H16.

Hypothesis H17 predicts that consumers exposed to a declarative statement will not be more likely to transfer relations under conditions of high involvement versus low involvement. Based on the previous analysis, no significant differences were found in terms of transferring relations for participants exposed to the declarative statement in the genital herpes condition, $\chi^2(1) = .1.168, p = .280$. None of the participants in the cold sores group made the primary relational inference after exposure to the declarative statement. Hypothesis H17 is therefore supported.

Table 6 – 8: Percentage of Participants Making Primary Relational Inference in Cognitive Responses

	Genital herpes (n=218)			Cold sores (n=219)			Total Sample (N=437)		TOTAL
	High involvement	Low involvement	GH Total	High involvement	Low involvement	CS Total	High involvement	Low involvement	
Plain metaphor	44%	40%	42%	30%	38%	34%	38%	39%	38%
Artful metaphor	0%	3%	1%	3%	19%	11%	1%	11%	7%
Declarative	3%	0%	1%	0%	0%	0%	1%	0%	1%
TOTAL	17%	14%	15%	10%	21%	16%	13%	17%	15%

An examination of the responses to the true/false question “Gentrex keeps the genital herpes (cold sore) virus inactive” by involvement condition (high or low) provided an additional test of hypothesis H16 and H17. Participants who responded “true” to the question are assumed to have made the relational inference that Gentrex works by rendering the virus inactive, or “putting it to sleep”. When the responses to this question were entered into a contingency table analysis (see Table 6-9) with involvement, no significant relationship between the variables emerged ($\chi^2(2) = 1.881$, $p = .391$). Participants were not significantly more likely to answer “true” to the question “Gentrex keeps the virus inactive” under conditions of high involvement (53.1%) than under conditions of low involvement (48.2%). Type of headline (plain metaphor, artful metaphor or declarative), and university attended did not have significant effects on the results. These results provide further evidence that hypothesis H16 is not supported. These results also provided further support for hypothesis H17, which predicted that

participants exposed to the declarative statement would not be more likely to transfer relations under conditions of high versus low involvement.

Table 6 – 9: Percentage of Participants Answering True To Question - "Gentrex Keeps Virus Inactive"

	Genital herpes (n=218)			Cold sores (n=219)			Total Sample (N=437)		TOTAL
	High involve ment	Low involve ment	GH Total	High involv ement	Low involve ment	CS Total	High involv ement	Low involve ment	
Plain metaphor	42%	42%	42%	53%	54%	54%	47%	48%	48%
Artful metaphor	65%	49%	56%	49%	59%	54%	57%	54%	55%
Declara- tive	50%	34%	41%	61%	52%	57%	56%	42%	49%
TOTAL	52%	42%	47%	54%	55%	55%	53%	48%	51%

Validity of Inferences

Overall, 39% of the total sample made the invalid inference that Gentrex cures genital herpes or cold sores as evidenced by an analysis of participants' cognitive response protocols. Table 6-10 contains a summary of the percentages of participants making the invalid inference by involvement, medical condition and the type of headline to which they were exposed. Contingency table analysis revealed a significant relationship between occurrence of the invalid inference and headline condition only for participants exposed to the genital herpes ad ($\chi^2(2) = 8.408, p = .015$). Pairwise comparisons showed that participants exposed to the artful metaphor headline were

significantly more likely to make the invalid inference (43%) than participants exposed to either the plain metaphor headline (23%) or the declarative headline (24%).

Table 6 – 10: Percentage of Participants Making Invalid Inference in Cognitive Responses

	Genital herpes (n=218)			Cold sores (n=219)			Total Sample (N=437)		TOTAL
	High involve ment	Low involve ment	GH TOTAL	High involve ment	Low involve ment	CS TOTAL	High involve ment	Low involve ment	
Plain metaphor	28%	18%	23%	55%	45%	49%	40%	32%	36%
Artful metaphor	38%	46%	43%	57%	50%	53%	48%	48%	48%
Declarative	24%	24%	24%	37%	41%	39%	31%	31%	31%
TOTAL	30%	30%	30%	49%	46%	48%	40%	38%	39%

Hypothesis H18 is phrased as a null hypothesis and predicts that level of involvement will not have a significant impact on the validity of inferences made by consumers after exposure to an analogical comparison. Hypothesis H19 predicts that after exposure to a declarative statement, there will be no significant difference in the likelihood of consumers making an invalid inference under conditions of high versus low involvement. To test hypotheses H18 and H19, a direct logistic regression analysis was performed with occurrence of the curative inference as outcome variable and type of headline, involvement and medical condition as predictor variables. The following variables were included as covariates: need for cognition, familiarity with the medical condition, previous exposure to an ad for genital herpes (cold sores), knowledge of

someone with genital herpes (cold sores), and university attended. The model was statistically significant, $\chi^2 (9) = 32.458, p < .001$, indicating that the predictors reliably distinguish between those participants who made the invalid inference that Gentrex cures the virus and those participants who did not. Table 6-11 shows regression coefficients, Wald statistics, odds ratios and significance levels. According to the Wald criterion, only medical condition and type of headline reliably predict the occurrence of the invalid inference. Participants in the cold sores condition were 2.077 times as likely to make the invalid inference than participants in the genital herpes condition. Of the different headlines, only the artful metaphor was a significant predictor of making the invalid inference. Participants exposed to the artful metaphor headline were 1.993 times as likely to make the curative inference as participants exposed to the declarative headline. Involvement, as determined by the instructions given to participants was not a significant predictor of whether participants made the invalid curative inference or not.

Table 6 – 11: Logistic Regression Analysis of Occurrence of Invalid Inference

Variables	B	Standard Error	Wald-z	p-Value	Odds Ratio
Headlines			8.306	.016	
Metaphor plain	.176	.259	.463	.496	1.193
Metaphor artful	.690	.254	7.397	.007	1.993
Involvement	-.120	.206	.340	.560	.887
Medical condition	.731	.249	8.608	.003	2.077
NFC	.139	.220	.401	.527	1.149
Familiarity	-.084	.079	1.133	.287	.919
Seen ad	-.392	.219	3.218	.073	.675
Know someone	.147	.273	.289	.591	1.158
University	.300	.216	1.922	.166	1.349

To further explore the role of involvement on the occurrence of an invalid inference, two contingency table analyses were performed. Occurrence of the invalid inference was entered into a contingency table with level of involvement. Each medical condition was examined separately. The analysis revealed no significant relationship between occurrence of the invalid inference and levels of involvement for either the genital herpes condition ($\chi^2(1) = .007$, $p = .932$), or the cold sores condition ($\chi^2(1) = .215$, $p = .643$). A second contingency analysis was conducted in which the different headline conditions were each entered separately into a table and crossed with involvement. Results are summarized in Table 6-12. The analysis revealed no significant relationship between headline condition and involvement for either the genital herpes condition or the cold sores condition.

Table 6 – 12: Contingency Table Analysis of Occurrence of Invalid**Inference by Involvement**

Medical Condition	Headline	Involvement	% Invalid Inference	χ^2	DF	p-Value
Genital Herpes	Plain metaphor	High	27.8%	.915	1	.339
		Low	18.4%			
	Artful metaphor	High	38.2%	.466	1	.495
		Low	46.2%			
	Declarative	High	42.5%	.003	1	.956
		Low	23.7%			
Cold Sores	Plain metaphor	High	54.5%	.659	1	.417
		Low	45%			
	Artful metaphor	High	56.8%	.361	1	.548
		Low	50%			
	Declarative	High	36.8%	.143	1	.706
		Low	41.4%			

These results suggest that the null hypothesis of H18 cannot be rejected, i.e. level of involvement does not have an impact on the validity of inferences consumers make after exposure to an analogical comparison. The results support hypothesis H19 that level of involvement did not have an impact on the likelihood of making an invalid inference after exposure to a declarative statement.

IX. Discussion

Results from Study 3 did not support hypothesis H16 – participants in the high involvement condition were not significantly more likely to transfer relations than participants in the low involvement condition. Hypothesis H18 was phrased as a null hypothesis and predicted that involvement would not have a significant effect on the validity of inferences after exposure to an analogical comparison. Hypothesis H18 was

not rejected by the results of Study 3. The likelihood of participants exposed to an analogical comparison, either a simile or a metaphor, of making the invalid inference that Gentrex cures was not significantly different under conditions of high versus low involvement. As predicted by hypotheses H17 and H19, level of involvement had no impact on participants exposed to the declarative statement in terms of likelihood of transferring relations and the occurrence of the invalid inference, respectively.

An examination of the overall rate of knowledge transfer shows that participants who made the primary relational inference were overwhelmingly those who saw the plain metaphor. Although the plain and artful metaphors were thought to result in the same primary relational inference, obviously this was not the case. This finding may shed some light on why participants who saw the artful metaphor were significantly more likely to make the invalid curative inference. Participants who saw the plain metaphor (Gentrex – a sleeping pill for genital herpes/cold sores) successfully decoded the intended meaning of the analogy and transferred the explanatory system of how a sleeping pill works on an insomniac to how Gentrex works on the herpes virus by rendering it inactive or “sleeping” and therefore not curing the virus. As a result, these participants were significantly less likely to make the inference that Gentrex cures herpes. Participants who saw the artful metaphor (Say good morning to Gentrex and good night to genital herpes/cold sores) did not successfully decode the analogy, as evidenced by how few made the primary relational inference.

A second medical condition, cold sores, was included in Study 3 to address the generalizability of the results of this research. Participants reported significantly higher levels of familiarity with cold sores as with genital herpes. Participants were also

significantly more likely to report that they knew of someone who suffered from cold sores than genital herpes. Interestingly, when medical condition was controlled for, participants in the cold sore group were significantly more likely to make the invalid inference that Gentrex cures than participants in the genital herpes group. The increased awareness of the medical condition did not translate into a decrease in the occurrence of invalid inferences. There was no significant effect of headline on the occurrence of the invalid inference for participants in the cold sore group. For the genital herpes group, however, participants exposed to the artful metaphor were significantly more likely to make the invalid curative inference.

As discussed previously, the involvement manipulation check was not successful. One possible explanation is that the scale used in the manipulation check did not adequately capture the level of involvement participants experienced in processing the message, or that the instructions given to participants did not actually result in different levels of involvement. Both the involvement manipulation and the scale used as the manipulation check, however, were adapted from Lacznia and Muehling (1993). The particular involvement manipulation employed was based on the “learn” instructions developed by Lacznia and Muehling (1993). The authors employed multiple manipulations in their study and the “learn” manipulation was the only one successful at discriminating between high and low involvement groups on all manipulation check items (Lacznia and Muehling 1993). Participants in Study 3 were asked to respond to the manipulation check items approximately half-way through the questionnaire. Before responding to the involvement manipulation check, participants responded to two questions, designed to capture behavioural intentions, which asked them to imagine that

they were suffering from genital herpes (cold sores). Participants in both the high and low involvement conditions responded to these questions. Given the time elapsed between reading the instructions designed to manipulate involvement and the manipulation check items, it is possible that the questions immediately preceding the manipulation check attenuated the differences in perceived involvement achieved by the instructions. Given the problematic nature of how the manipulation check was administered, the results of Study 3 with respect to involvement should be interpreted with caution.

As DTC ads for pharmaceuticals become more and more common (e.g. the ubiquitous Viagra ads), this might have the effect of increasing perceived prevalence (Park and Grow 2007) of the medical conditions the drugs are designed to treat among consumers. Similar to the findings for the cold sore ad, if consumers come to believe the condition is very common, it may lead to an overall increase in invalid inferences regardless of whether a rhetorical figure is included in the message or not.

CHAPTER SEVEN

STUDY FOUR

The purpose of this chapter is to present the results from the fourth study for this dissertation. The study is designed to test hypotheses H20 – H23, specifically addressing the issues of expertise and the resultant effect on knowledge transfer and the persuasiveness of analogical comparisons. Study 4 will be discussed in terms of the research design, research participants, independent variables, dependent variables, manipulation checks, and finally the results and discussion.

I. Research Design

Study 4 was a 2 (expertise: experts vs. novices) x 2 (headline: metaphor vs. declarative) between subjects factorial design.

II. Product Selection and Stimuli

Study 4 only employed one medical condition, genital herpes. Genital herpes was chosen over cold sores in part because it was used in all previous studies and therefore would allow for a more in-depth comparison of experts versus novices than cold sores. Study 4 employed the same print-ad format for stimuli as used in the previous studies. The rhetorical figure used as a headline in the experimental stimuli was the plain metaphor “Gentrex – a sleeping pill for genital herpes”. This metaphor was chosen over the artful metaphor “Say good morning to Gentrex and good night to genital herpes” because previous studies have shown that it is more effective at encouraging relational knowledge transfer. The declarative statement used as the headline in the control group.

was the same as in all other studies. There was no paragraph of text included in the ads. Appendix H contains the stimuli employed in Study 4.

III. Participants

Participants to represent experts for Study 4 were recruited from an advanced undergraduate pharmacy class at the University of Manitoba. All students were in the final year of their program of study. These students represent a group with objective expert knowledge on the subject of pharmaceuticals, but are still comparable to the novice participants of previous studies in that both groups are undergraduate students. The average age of the expert participants in Study 4 was 23.72 years ($SD_{age} = 3.74$). Those students who participated in the study did so voluntarily and not in exchange for course credit or payment. The instructor set aside time in one class for the experiment to be conducted. Forty six students from the class participated in the study (from a total enrolment of 50). This sample size is large enough to ensure a power of .8 for the statistical analyses (Cohen 1977). All participants reported speaking English most often. Females represented 72% of the sample.

Participants to represent novices were drawn from a subset of those who participated in Study 3. Responses from 38 participants in Study 3, who were exposed to the same ad as the expert participants, as well as the same low involvement instructions, were re-used in Study 4. None of the participants in Study 3 reported studying pharmacy, nursing or medicine. The average age of the novice participants was 20.16 years ($SD_{age} = 1.31$). Females represented 56.2% of the sample. All participants reported speaking English most often.

IV. Independent Variables

Type of Rhetorical Figure

Type of rhetorical figure was manipulated by varying the headline in the stimuli as described above and included metaphor and declarative statement.

Expertise

As described above, expertise was varied by recruiting expert participants from the pharmacy degree program at the University of Manitoba. Participants who were exposed to the “sleeping pill” metaphor in addition to being in the low involvement condition in Study 3 were employed as novices.

V. Dependent Variables

Relational Knowledge Transfer

As in previous studies, the expected primary relational inference after exposure to the metaphor “Gentrex – a sleeping pill for genital herpes” was that of putting the virus “to sleep”, in essence rendering it dormant or inactive. Expert participants’ responses to the two cognitive tasks were analyzed to determine how many actually made this relational inference and transferred the explanatory system of how a sleeping pill works on an insomniac to how Gentrex works on genital herpes. Expert participants were coded as having made the primary relational inference if they clearly expressed the notion of putting the virus “to sleep”. In addition, participants were coded as having interpreted the headline literally if they expressed the notion that Gentrex was literally a sleeping pill in their responses. Participants were coded as having focused on the implausibility of the headline if they expressed the notion that genital herpes has nothing to do with sleeping.

Finally, participants were coded as having been unable to process the headline if they wrote about being confused by the headline in their responses.

Two trained judges, blind to the experimental conditions, coded all responses. The kappa coefficients of agreement (Cohen 1960) for the two judges were greater than .7 for all categories coded. Discrepancies were resolved by a third judge. The kappa coefficients for the specific categories analyzed in Study 4 are listed in Table 7-1.

Table 7 – 1: Kappa Coefficients of Agreement

Category	Kappa Coefficient
Gentrex puts genital herpes “to sleep”	.876
Gentrex is literally a sleeping pill	.923
Genital herpes is not sleeping related	.950
This headline is confusing	.857

Persuasion

The same measures were used in Study 4 as in previous studies to capture attitudes toward the ad and toward the brand. The attitude measures demonstrated good scale reliability ($\alpha = .92$ for attitude toward the ad and $\alpha = .94$ for attitude toward the brand).

VI. Covariates

Participants were asked a series of questions to determine how familiar and knowledgeable they felt they were about genital herpes, whether they knew anybody who

had genital herpes, and whether they had seen an ad for genital herpes medication prior to the experiment. Expert participants were also asked to rate how knowledgeable they felt they were about genital herpes medication. In addition, participants were also measured on their NFC using the same 18-item scale employed in Study 3 (Cacioppo et al. 1984), as well as on their level of felt involvement using the same 8-item scale as in Study 3 (Laczniak and Muehling 1993).

An analysis of the covariate variables (see Table 7-2 and Table 7-3) revealed significant differences between expert participants and novice participants. Experts demonstrated significantly higher NFC than novices. This effect of NFC will be controlled for in all analyses. Experts also demonstrated significantly higher levels of self-reported familiarity and knowledge of genital herpes, as well as greater felt involvement. These results point to a successful manipulation of experts versus novices. It was expected that the context of pharmaceuticals should have been more personally relevant to experts (i.e. pharmacy students) than to novices (i.e. business students). There were no significant differences between experts and novices on previous exposure to an ad for genital herpes medication. Experts were significantly more likely to report knowledge of someone suffering from genital herpes than novices.

Table 7 – 2: Covariate Analysis – Comparison of Means

Covariate	Expertise	Mean	Standard Deviation	t	DF	p-Value
NFC	Novices	4.057	.336	-6.262	59	.000
	Experts	4.954	.774			
Familiarity	Novices	2.088	1.308	-9.722	59	.000
	Experts	5.319	1.170			
Involvement	Novices	1.855	.973	-3.626	59	.001
	Experts	3.082	1.674			

Table 7 – 3: Covariate Analysis – Contingency Table

Expertise	Seen ad		Know Someone	
	No	Yes	No	Yes
Novices	31.6%	68.4%	86.8%	13.2%
Experts	26.1%	73.9%	60.9%	39.1%
χ^2	.208		5.466	
DF	1		1	
p-Value	.649		.019	

VII. Procedure

Expert participants were randomly assigned to either the metaphor condition (n = 23) or the declarative condition (n = 23). The procedure for Study 4 was the same as that used in Study 3 under conditions of low involvement. Participants were given instructions to spend only 5 seconds looking at the ad and to read it as though they were flipping through a magazine. After participants saw the ad, they completed a distracter

task and then proceeded to complete the two cognitive response tasks followed by the questionnaire which measured the remaining dependent variables, manipulation checks and covariates. A copy of the measurement instrument is included in Appendix I.

VIII. Results

Manipulation Checks

Type of Rhetorical Figure

An ANCOVA was conducted on the perceived level of artful deviance (McQuarrie and Mick 1996) as the dependent variable and headline condition as the factor for the expert participants. The following covariates were included in the model: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, familiarity and knowledge with genital herpes, NFC and felt involvement. The ANCOVA was significant, $F(6, 39) = 2.352, p = .049$. There was a significant effect for headline condition, $F(1, 39) = 9.012, p = .005$: $M_{\text{metaphor}} = 4.5, SD_{\text{metaphor}} = 1.473$; $M_{\text{declarative}} = 3.2, SD_{\text{declarative}} = 1.302$. Participants perceived the metaphor to be significantly more artfully deviant than the declarative statement. None of the covariates was significant.

An ANCOVA was also conducted with perceived meaning openness (Mothersbaugh et al. 2003) as the dependent variable and headline condition as the factor. The same covariates were included as with the ANCOVA on artful deviance. The ANCOVA was significant, $F(6, 39) = 3.219, p = .012$. The analysis showed a significant effect for headline condition, $F(1, 39) = 14.422, p < .001$: $M_{\text{metaphor}} = 4.555, SD_{\text{metaphor}} = 1.418$; $M_{\text{declarative}} = 2.8, SD_{\text{declarative}} = 1.281$. None of the covariates was significant.

Taken together, these results suggest an effective manipulation of the headlines in the experimental stimuli into a rhetorical figure and a declarative statement.

Expertise

As reported in the section on covariates, expert participants reported significantly higher levels of familiarity with and knowledge of genital herpes, in addition to significantly higher levels of felt involvement than novice participants. The expertise manipulation was successful.

Hypothesis Testing

Knowledge Transfer

Hypothesis H20 predicts that experts will be more likely to engage in relational transfer after exposure to an analogy than after exposure to a declarative statement. As mentioned above, participants were coded as having made a relational transfer if they expressed the concept of putting the virus “to sleep” in their thought protocols. Contingency table analysis revealed that none of the expert participants who saw the declarative statement made the primary relational inference, while 21.7% of expert participants who saw the metaphor headline did. This difference was significant ($\chi^2 (1) = 5.610, p = .018$) and lends support to hypothesis H20.

To test hypothesis H21, which predicts that experts will be significantly more likely to transfer relations than novices, the percentage of experts that transferred relational knowledge was compared to the percentage of novices who engaged in relational knowledge transfer. A logistic regression analysis was conducted with the occurrence of the “to sleep” inference as the outcome variable and expertise as the predictor variable. The following covariates were also included in the model: previous

exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, familiarity and knowledge with genital herpes, NFC and felt involvement. The model was not significant, $\chi^2 (6) = 6.261$, $p = .395$, indicating that expertise did not reliably predict the occurrence of the relational inference. Contingency table analysis revealed that 28.9% of novices made the primary relational inference of “to sleep”. While a greater percentage of novices made the inference than experts (21.7%), this difference was not statistically significant ($\chi^2 (1) = .385$, $p = .535$).

A different approach to testing whether experts are more likely to engage in relational knowledge transfer than novices after exposure to an analogical comparison is to examine the percentage of participants who were not successful in processing the analogy. The coding scheme for participants’ cognitive responses included whether the participant explicitly stated that Gentrex was literally a sleeping pill, whether they stated that genital herpes had nothing to do with sleeping, and whether they stated that they were confused by the headline and did not understand it. These three categories were collapsed into an overall measure of failure to decode the analogy. A logistic regression analysis was conducted with failure to decode the analogy as the outcome variable and expertise as the predictor variable. The following covariates were also included in the model: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, familiarity and knowledge with genital herpes, NFC and felt involvement. The model was not significant, $\chi^2 (6) = 5.452$, $p = .487$. A contingency table analysis revealed that 39.5% of novices failed to decode the analogy while 65.2% of experts failed to decode the analogy. This difference is marginally statistically significant ($\chi^2 (1) = 3.799$, $p = .051$). Taken together, these results provide no support for hypothesis

H21. Experts were no more likely than novices to make the primary relational inference, and were in fact significantly more likely to process the analogy literally than novices.

Persuasion

Hypothesis H22 predicts that the analogical comparison will be more persuasive than the declarative statement and will result in more elaboration for expert consumers. Three separate ANCOVAs were conducted on the expert participants (excluding the novices) with attitude toward the ad, attitude toward the brand, and extent of elaboration as dependent variables and headline condition as the factor. The following covariates were also included in the models: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, familiarity and knowledge with genital herpes, NFC and felt involvement. The ANCOVA for attitude toward the ad was not significant, $F(6, 39) = .699$, $p = .652$: $M_{\text{metaphor}} = 3.984$, $SD_{\text{metaphor}} = 1.549$; $M_{\text{declarative}} = 4.219$, $SD_{\text{declarative}} = 1.108$. The ANCOVA for attitude toward the brand was also not significant, $F(6, 39) = 1.440$, $p = .225$: $M_{\text{metaphor}} = 3.960$, $SD_{\text{metaphor}} = 1.528$; $M_{\text{declarative}} = 4.443$, $SD_{\text{declarative}} = .885$. These results suggest that the analogical comparison was not significantly more persuasive with experts than the declarative statement. The ANCOVA on number of thoughts was significant, $F(6, 36) = 2.861$, $p = .021$, although there was no main effect for the headline term, $F(1, 39) = 1.899$, $p = .176$: $M_{\text{metaphor}} = 7.006$, $SD_{\text{metaphor}} = 2.200$; $M_{\text{declarative}} = 6.038$, $SD_{\text{declarative}} = 2.285$. The analogical comparison did not result in more elaboration than the declarative statement for experts. Hypothesis H22 is therefore not supported.

Hypothesis H23 predicts that experts will be more persuaded by an analogical comparison than novices and engage in more elaboration than novices after exposure to

an analogical comparison. To test hypothesis H23, three ANCOVAs were run on attitude toward the ad, attitude toward the brand, and number of thoughts as the dependent variables and expertise as the factor. The following covariates were also included in the models: previous exposure to an ad for genital herpes medication, knowledge of someone suffering from genital herpes, familiarity and knowledge with genital herpes, NFC and felt involvement. The ANCOVA for attitude toward the ad was not significant, $F(6, 54) = .811, p = .566$; $M_{\text{experts}} = 3.950, SD_{\text{experts}} = 1.549$; $M_{\text{novices}} = 3.258, SD_{\text{novices}} = 1.138$. The ANCOVA for attitude toward the brand was also not significant, $F(6, 54) = .662, p = .680$; $M_{\text{experts}} = 3.688, SD_{\text{experts}} = 1.58$; $M_{\text{novices}} = 3.695, SD_{\text{novices}} = 1.043$. The tests suggest that experts were not significantly more persuaded by an analogical comparison than novices. The ANCOVA on number of thoughts was not significant, $F(6, 53), p = .102$; $M_{\text{experts}} = 6.089, SD_{\text{experts}} = 2.200$; $M_{\text{novices}} = 5.512, SD_{\text{novices}} = 2.038$. Experts did not engage in more elaboration than novices after exposure to an analogical comparison. Hypothesis H23, therefore, is not supported.

IX. Discussion

Results from Study 4 supported hypothesis H20, but failed to support hypotheses H21, H22 or H23. Experts exposed to an analogical comparison were significantly more likely to transfer relations than experts exposed to declarative statement (H20). The analogical comparison, however, was not more persuasive than the declarative statement, nor did it result in more elaboration than the declarative statement for expert consumers (H22). Expert participants were not more likely than novices to transfer relations (H21), nor were they more persuaded by the analogical comparison or engaged in more

elaboration (H23). Previous research on analogical knowledge transfer posits that a certain level of expertise in the base domain of an analogy is required to determine which structural relations should be transferred onto a target domain (Gregan-Paxton and Roedder John 1997; Moreau, Lehmann and Markman. 2001; Roehm and Sternthal 2001). The previous research that found evidence of this expertise effect in analogical knowledge transfer relied on self-report measures of product knowledge as well as true/false quizzes from among undergraduate business students (see Roehm and Sternthal (2001) for an example). There is nothing in this process that ensures the students possess objective expert level knowledge. For this research, experts were selected from among undergraduate students in the final year of the pharmacy degree program at the University of Manitoba. Given the base and target domains of the analogy employed (pharmaceuticals and medical conditions), these participants possess expert knowledge well above what an undergraduate business student (novice consumers) would normally possess. Contrary to previous findings, experts in this case were not significantly more likely to transfer relations than novices, and were in fact marginally significantly more likely to process the analogy literally.

Third year pharmacy students have spent a number of years learning exact, specific knowledge about pharmaceuticals, the effectiveness of pharmaceuticals at treating medical conditions, and possible side-effects and interactions. McQuarrie and Mick (1999) suggest that tolerance for ambiguity is a moderating variable in the persuasiveness of rhetorical figures. It is possible that when confronted with the metaphor headline the experts' training to be specific and exact about pharmaceuticals did not allow much room for ambiguity in meaning. Rather than interpreting the ad headline as a

rhetorical figure, they focused either on the literal meaning (as demonstrated by the following quote from an expert participant's thought protocol: "it must be a sleeping aid specifically for people with genital herpes") or the implausibility of the statement (as demonstrated by the following quote from a second expert participant's thought protocol: "genital herpes has nothing to do with sleeping pills!"). The metaphor employed with the experts represents a within-domain analogy (Vosniadou 1989). Sleeping pills and medication to treat herpes are both within the domain of pharmaceuticals. What this research did not explore, however, was whether experts would be better able to process a between-domain analogy than a within-domain analogy. For example, a between-domain analogy could have been created by drawing on the domain of music for the base: "Gentrex is a lullaby for genital herpes". Perhaps experts might be more willing to process analogically if the base domain is further removed from their area of expertise. Alternatively, it might also be the case that experts in the health care field have in general been trained not to process analogically. That is, as a result of their training, health care experts are unable or unwilling to process analogically regardless of the domains employed in the analogies. Further research is required to explore the different variables at play in the realm of experts and analogical knowledge transfer.

Interestingly, the results of Study 4 are consistent with what Moreau, Lehmann and Markman (2001) found with respect to experts and discontinuous innovations. The experts focused on the relational dissimilarities between the discontinuous innovation and the familiar base product at the expense of uncovering any relational similarities. The product employed in Study 4, however, was arguably a continuous innovation, not a discontinuous innovation, and yet it appears that a similar process took place with the

expert consumers. Experts focused on the dissimilarities between a person suffering from insomnia and a person suffering from genital herpes, to the extent that they were unable to detect any relational similarities between putting someone to sleep and rendering genital herpes inactive. In the Moreau, Lehmann and Markman (2001) study instructive analogies were not included in the print ads used in the experiments. Consumers were left on their own to generate productive analogies. The studies in this dissertation, in contrast, employed instructive analogies. It appears that providing experts with an instructive analogy operates in a similar fashion to exposing them to a discontinuous innovation – both serve to focus attention on the ways in which the base and target differ, rather than on the relational similarities.

The findings of Study 4 suggest that the expertise effect with processing analogies might be best represented by a curvilinear, inverted U-shaped relationship. Increasing a consumer's knowledge about a product might better enable them to detect common relational mappings up to a point, after which increasing knowledge restricts analogical processing and instead focuses consumers on literal processing and dissimilarities. More research is required to determine whether this effect only holds for products that are very complex (such as pharmaceuticals), or whether the same effect would be found in other areas such as home electronics if objective experts were recruited to participate, such as electrical or computer engineers. Rather than act as a facilitator to processing analogies, increased levels of expertise may be a hindrance. Until now, most studies have employed a simple "either or" distinction between experts and novices. This dichotomous division has perhaps masked the true nature of the expertise dimension. The results from this research point to a continuum, rather than a dichotomy, ranging from absolute novice to

absolute expert. More objective scales to determine the level of expertise a consumer possesses in a particular area would allow for expertise to be treated as a continuous variable and the true nature of the relationship between expertise and analogical knowledge transfer to be explored in greater detail.

In addition to not being significantly more likely to transfer relational knowledge, experts in this research were also not significantly more persuaded by the analogical comparison than were novices. This is not surprising given the finding that experts were more likely to have processed the metaphor literally. If the ad headline was interpreted either as a literal statement or as a nonsensical statement, it is unlikely that attitudes towards either the ad or the brand would be heightened. An alternative explanation regarding the unwillingness of the experts to process analogically is that the experts felt the ad lacked realism and their responses were a result of negative feelings directed towards the ad. Only one expert participant, however, expressed a negative reaction in her response to the cognitive task, in which she made reference to a “typical marketing scheme”. There were no other derogatory comments made by experts, and as stated earlier, experts did not demonstrate less favourable attitudes toward the ad.

CHAPTER EIGHT

GENERAL DISCUSSION AND CONCLUSION

This chapter is divided into four sections. In the first section, the findings from four experiments are discussed. In the second section, the theoretical and managerial implications that result from this research are discussed. The third section discusses the limitations of this research and the fourth section proposes directions for future research.

I. Discussion of Findings

This research sought to answer the following question: what influence does the use of rhetorical figures in marketing communication have on consumer learning? The impact on consumer learning was examined from the perspective of internal knowledge transfer and the validity of the inferences consumers made after exposure to a persuasive communication containing a rhetorical figure, specifically either a simile or a metaphor. The persuasive impact of the rhetorical figure as well as the confidence with which inferences were held was also examined. Moderating conditions included the amount of information contained in the communication, the degree of artfulness of the rhetorical figure, level of involvement with processing the communication and level of expertise. Further, this research sought to demonstrate the similarity between simile and metaphor in terms of analogical knowledge transfer. This research also sought to expand the scope of research on knowledge transfer to a different context: the health care industry, specifically direct-to-consumer (DTC) advertising for prescription drugs.

In the context of DTC print ads for pharmaceutical products, four experiments demonstrated that consumer knowledge transfer and the validity of inferences after exposure to an ad are affected by the presence of a rhetorical figure (either simile or metaphor) in the ad headline. See Table 8-1 for a summary of each hypothesis tested in this dissertation, the applicable study and whether the hypothesis was supported or not.

Table 8 – 1: Summary of Hypotheses

Number	Hypothesis	Applicable Study	Support
H1	The likelihood of a consumer transferring relations will not be significantly different if the consumer is exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.	1, 2	Supported in 1, 2
H2	A consumer will be more likely to transfer relations when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring relations.	1	Supported in 1
H3	The likelihood of a consumer transferring attributes will not be significantly different if the consumer is exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.	1, 2	Supported in 1, 2
H4	A consumer will be less likely to transfer attributes when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring attributes.	1	Not supported

Number	Hypothesis	Applicable Study	Support
H5	A consumer will not be significantly more or less persuaded when exposed to a simile versus a metaphor in either the headline only condition or the headline plus copy condition.	1, 2	Supported in 1, 2
H6	A consumer will be more persuaded when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant differences.	1	Not supported
H7	A consumer will not engage in significantly more or less elaboration when exposed to a simile versus a metaphor in either the headline only condition, or the headline plus copy condition.	1, 2	Supported in 1, 2
H8	A consumer will engage in more elaboration when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant differences.	1	H8a not supported; H8b supported
H9	A consumer will be more likely to generate an invalid inference when exposed to an analogical comparison: a) simile or b) metaphor versus a declarative statement in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of making an invalid inference.	1, 2, 3	Supported in 1; Partially supported in 2 and 3 (artful headlines only)
H10	A consumer will be more persuaded when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant differences.	2	Not supported

Number	Hypothesis	Applicable Study	Support
H11	A consumer will engage in more elaboration when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition there, will be no significant differences.	2	Not supported
H12	A consumer will be more likely to transfer relations when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring relations.	2	Not supported
H13	A consumer will be less likely to transfer attributes when exposed to an artful versus plain analogical comparison: a) simile or b) metaphor in the headline only condition, but in the headline plus copy condition, there will be no significant difference in the likelihood of transferring attributes.	2	Not supported
H14	There will be no significant difference in a consumer's level of confidence in his or her inferences after exposure to an analogical comparison: a) simile or b) metaphor versus a declarative statement in either the headline only condition or the headline plus copy condition.	2	Fail to reject
H15	After exposure to an analogical comparison: a) simile or b) metaphor, there will be no significant difference in a consumer's level of confidence in his or her inferences for a consumer who makes an invalid inference versus a consumer who does not make an invalid inference in either the headline only condition or the headline plus copy condition.	2	Fail to reject
H16	A consumer exposed to an analogical comparison: a) artful metaphor or b) plain metaphor will be more likely to transfer relations in the high involvement condition versus the low involvement condition.	3	Not supported

Number	Hypothesis	Applicable Study	Support
H17	A consumer exposed to a declarative statement will not be more likely to transfer relations in the high involvement condition versus the low involvement condition.	3	Not supported
H18	After exposure to an analogical comparison: a) artful metaphor or b) plain metaphor, there will be no significant difference in the likelihood of a consumer generating an invalid inference in the high involvement condition versus the low involvement condition.	3	Fail to reject
H19	After exposure to a declarative statement, there will be no significant difference in the likelihood of a consumer generating an invalid inference in the high involvement condition versus the low involvement condition.	3	Fail to reject
H20	An expert consumer exposed to an analogical comparison will be significantly more likely to transfer relations versus an expert consumer exposed to a declarative statement.	4	Supported
H21	An expert consumer exposed to an analogical comparison will be significantly more likely to transfer relations versus a novice consumer exposed to an analogical comparison.	4	Not supported
H22	An expert consumer exposed to an analogical comparison will be significantly more persuaded and engage in more elaboration versus an expert consumer exposed to a declarative statement.	4	Not supported
H23	An expert consumer exposed to an analogical comparison will be more persuaded and engage in more elaboration versus a novice consumer exposed to an analogical comparison.	4	Not supported

Evidence of a significant interaction effect with the amount of information in the ad was also found. There were no significant interaction effects, however, for the degree

of artfulness of the analogies, the confidence consumers have in their inferences, or the level of involvement with processing the message on knowledge transfer, inference validity or persuasion. Although expertise was hypothesized to facilitate the transfer or relations as well as the persuasiveness of an analogical comparison, this research did not find evidence of this expertise effect. Although the result was only marginally significant ($p = .051$), experts were found to be more likely to process the analogical comparison literally than novices.

Simile and metaphor were found to have similar impacts in term of persuasion and in terms of consumers' knowledge transfer. This result suggests that the findings from the literature on analogical knowledge transfer in consumer research, which has primarily employed the simile form of analogy, and the findings from the literature on rhetorical figures, which has primarily employed the metaphor form of analogy, can be combined. Discussion of the results of this research will draw on both literatures.

Consumers were significantly more likely to make an invalid inference after exposure to an ad with a rhetorical figure as the headline than after exposure to an ad with a declarative statement as the headline. Study 1 found this result for both the simile and metaphor headlines. A shortcoming of Study 1, however, was that the simile and metaphor did not draw on the same base domains. Study 2 corrected for this and employed parallel pairs of simile and metaphor. In addition, Study 2 also varied the degree of artfulness of the rhetorical figures. There were no significant differences in terms of the occurrence of the invalid inference within each pair of parallel simile and metaphor. However, degree of artfulness had a significant impact. More precisely, consumers exposed to the ad with the artful simile or metaphor as the headline were

significantly more likely to make an invalid inference than consumers exposed to ads with either the plain simile or metaphor as the headline, or consumers exposed to ads with the declarative statement as the headline.

Although no formal hypothesis was forwarded predicting the impact of artfulness of the rhetorical figure on inference validity, the result is discussed because of its implications. The manipulation of the degree of artfulness of the rhetorical figures in Study 2 was based on significant pre-test results; however, the manipulation in the main study was not successful. The impact on inference validity, therefore, might not be a result of the artfulness of the simile and metaphor, but perhaps a result of the nature of the comparison employed in the figures. The comparison in the plain simile and metaphor (“Gentrex is like a sleeping pill for genital herpes”) clearly indicated the base domain for the analogy, that of putting someone to sleep. In contrast, the comparison in the artful simile and metaphor (“Taking Gentrex in the morning is like saying good night to genital herpes”) does not as clearly indicate the base domain. The comparison between Gentrex and putting someone to sleep is more obscure than in the plain simile and metaphor. As a result, the comparison is more ambiguous and it may have been more difficult for consumers who saw the ads with the artful headlines to access the base domain of putting someone to sleep and they were therefore not able to successfully decode the analogy. Unresolved, the simile or metaphor would have remained an incomplete claim and may have resulted in more unrestricted transfer of knowledge than if the analogy had been resolved, including the possibility that the product could cure the medical condition.

An alternative explanation is that consumers who saw the artful simile or metaphor accessed a different base domain than that of putting someone to sleep, due to

the lack of clarity in the artful comparison. Consumers may have accessed the base domain of saying good bye to someone rather than putting someone to sleep. If this were the case, it would explain why consumers who saw the artful analogies were more likely to make the invalid inference that Gentrex could cure the virus. Consumers may have transferred the structural relations of saying good bye to something unwanted, or getting rid of something unwanted to how Gentrex works on the virus. If Gentrex gets rid of the virus, it may have seemed logical to consumers to infer that it cures the virus.

Although in Study 1 the plain simile (Gentrex is like a sleeping pill for genital herpes) resulted in significantly more consumers generating an invalid inference than the declarative statement, this finding was not replicated in Study 2, nor was it replicated with the plain metaphor (Gentrex – a sleeping pill for genital herpes) in Study 3. In fact, consumers who saw the plain simile and metaphor in Study 2 and the plain metaphor in Study 3 were not more likely than consumers who saw the declarative statement to make the invalid inference. The results of Study 2 and Study 3 suggest that an analogical comparison can in fact be an effective tool when communicating information about a new product to consumers. If the analogical comparison is clear, it focuses consumers' processing towards the appropriate base domain and permits consumers to increase their understanding of how the new product works.

The amount of information contained in the ads used as experimental stimuli was varied in both Study 1 and Study 2. In one condition the ads included only a headline; in the other condition the ads included a headline plus a paragraph of explanatory ad copy. As hypothesized, the inclusion of the paragraph of copy generally attenuated the effectiveness of the analogical comparisons at encouraging the transfer of relations and

increased elaboration over the declarative statement. The paragraph of copy also reduced the likelihood of consumers making an invalid inference after exposure to an analogical comparison, specifically the artful simile and metaphor. When there was no literal anchor for the artful simile or metaphor, consumers self-generated the invalid inference that Gentrex cures genital herpes. This finding supports the suggestion by Phillips and McQuarrie (2002) that the risk of consumers not comprehending a rhetorical figure in an ad increases when there is no explanatory copy included in the ad.

Although previous studies have suggested that metaphors may have the power to mislead consumers (Phillips and McQuarrie, 2005), this research is the first to document the occurrence of invalid inferences after exposure to rhetorical figures as well as to identify conditions under which the generation of invalid inferences is attenuated. The inclusion of a paragraph of copy to the ads made consumers who saw a simile or metaphor headline no more likely to make an invalid inference than consumers who saw a declarative headline.

In general, consumers reported high levels of confidence in their inferences. The results of Study 2 returned no significant differences in confidence levels among consumers who saw either a simile or metaphor headline and those consumers who saw a declarative headline. In addition, there were no significant differences in confidence levels for those consumers who made an invalid inference and those who did not. Given the highly skewed nature of the confidence data, it is possible that the measures employed in this research did not adequately capture the actual confidence that consumers had in the veracity of their inferences. The potential for an analogical comparison to mislead consumers and result in invalid yet confidently held beliefs

deserves further attention. Future research should include developing a better measure for confidence in inferences generated after exposure to an ad

Contrary to previous studies, this research did not find that increasing levels of expertise with a product category increased the ability of consumers to process analogical comparisons. In contrast, this research found that consumers with objective expertise were significantly less likely than novice consumers to successfully decode an analogy. Rather than facilitate the detection of common structural relations, increased expertise with a product category hindered consumers' ability to process figuratively and instead focused consumers on interpreting the analogy literally. This research differs from previous studies in the way in which expertise was defined. Rather than defining experts as consumers with high levels of self-reported familiarity with a product category or by high scores on a quiz designed to test product knowledge, this research defined expertise as level of specialized, formal education in a participant relevant to the product category. When expertise is defined in more formal terms, it appears that expert knowledge does not allow for ambiguity or figurative language in matters related to the area of expertise. Experts at this level understand the mechanisms of how products in this category work and an instructive analogy, therefore, might only serve to obfuscate rather than clarify.

The context for this research was direct-to-consumer (DTC) advertising for pharmaceutical products. This context was chosen in part because pharmaceutical products, while relatively simple to consume, are incredibly complex in terms of interactions with other medications and/or lifestyles. Specialized knowledge is required to fully understand pharmaceuticals. Health care professionals used to be the sole targets of advertising for prescription drugs; however, in recent years pharmaceutical companies

have begun actively targeting consumers with advertisements promoting prescription drugs. Advertising prescription drugs directly to consumers means that pharmaceutical companies and their advertising agencies are creating persuasive communications about complex products to an audience with little or no knowledge in the product category.

The results from this research indicate that an analogy, in either simile or metaphor form, can be an effective tool to explain how a complex, unfamiliar drug works, provided the comparison is clear. The plain “sleeping pill” analogy in this research effectively conveyed to novice consumers how a new drug to treat genital herpes (or cold sores) worked. When the analogical comparison is not clear, however, there is the potential for the analogy to mislead consumers and result in the generation of invalid inferences. The artful “good night analogy” was not effective at conveying how the new drug worked and, in fact, resulted in consumers inferring that the drug could cure the virus, when no cure currently exists for either genital herpes or cold sores.

The particular medical condition used in Study 1 and Study 2 was genital herpes. This medical condition was chosen because it is treatable by means of pharmaceutical intervention, participants differing in their knowledge of this product category could be readily recruited, and it was plausible that the participant population would use the product. In addition, genital herpes is not readily observable and affects approximately 17% of the population (Fujie et al. 2006). As such, participants were not expected to be very familiar with the condition. To further extend the generalizability of the results of this research, Study 3 added cold sores as a second medical condition. Cold sores are caused by the same virus family as genital herpes (herpes simplex), but are much more prevalent in the population; approximately 58% of the population suffers from cold sores

(Fujie et al. 2006). Cold sores, therefore, represented a medical condition with which participants were expected to be much more familiar than genital herpes. Consumers were significantly more likely to report that they knew of someone who suffers from cold sores than genital herpes. Consumers also reported significantly higher levels of familiarity and knowledge of cold sores than genital herpes, although the mean was still well below the scale midpoint.

Interestingly, consumers who saw ads for a medication to treat cold sores were significantly more likely to infer that the drug could cure the condition than consumers who saw ads for a medication to treat genital herpes. Whether consumers saw an analogical comparison in the ads for the cold sore medication had no impact on the occurrence of the invalid curative inference. In contrast, consumers who saw ads for a medication to treat genital herpes were significantly more likely to make the inference that the drug could cure the virus if they saw ads with the artful “good night” analogy than the declarative statement. These results suggest that the more common the medical condition, the more likely consumers are to infer that a drug being advertised to treat the condition can actually cure it, regardless of whether the ad headline was an analogical comparison or a declarative statement. A pre-test on the perceived availability of a cure for each medical condition would have revealed if significantly more participants believed a cure existed for cold sores than for genital herpes. This might have explained why participants were significantly more likely to make the invalid inference whether or not an analogy was used as the headline of the ad. In contrast, the risk of consumers making an invalid inference after exposure to an analogical comparison appears greatest for situations consumers are not very familiar with.

II. Implications

The theoretical implications of this dissertation encompass an integration and extension of existing theories. By combining the literature on rhetorical figures with that on internal knowledge transfer, this dissertation provides a more complete framework for studying consumer learning processes. This dissertation extended the scope of consumer research on analogical knowledge transfer and rhetorical figures beyond commonly purchased consumer products, such as electronics and household cleansers, to complex health care products such as prescription drugs, and expands the reach of the theories.

This dissertation is among the first research to investigate the similarities and differences between similes and metaphors at encouraging analogical knowledge transfer and persuasion. Both similes and metaphors are constructed based on underlying analogical comparisons. Both similes and metaphors are considered rhetorical figures. Research on analogical knowledge transfer, however, has typically only investigated similes, while research on rhetorical figures has typically focused on metaphors. The results from this dissertation point to an equivalency between simile and metaphor at encouraging consumers to transfer relations as well as at persuading consumers to have positive attitudes towards a brand or ad and engaging in elaboration. Therefore, findings regarding similes and knowledge transfer can be applied to metaphors employed in marketing communication, while findings on the rhetorical nature of metaphors can be applied to similes employed in marketing communication.

A second contribution of this research is the investigation of the validity of consumers' inferences made as a result of analogical knowledge transfer. The validity of consumers' inferences was investigated by examining thought protocols. The inferences

included in the thought protocols were spontaneous; consumers were not “forced” into answering a question to determine whether they made an invalid inference.

A major contribution of this dissertation is the identification of a boundary condition for the effectiveness of instructive analogies. Previous research has found that increasing levels of product knowledge facilitates the processing of analogies by facilitating the detection of common relations. The results of Study 4 suggest that there is a limit to the benefits of increasing consumer expertise. Consumers with very specialized, expert knowledge of a product category were less willing, or less able, to process an analogical comparison and identify common relations than novice consumers. This finding supports work by Alba and Hutchinson (1997) which suggests that experts process information more analytically than novices. When consumers possess a very high degree of expertise in a product category, they appear to process information analytically to the point where they are unwilling, or unable, to process figuratively. Rather than interpreting the comparison as a rhetorical figure, they focused either on the literal meaning ("it must be a sleeping aid specifically for people with genital herpes") or the implausibility of the statement ("genital herpes has nothing to do with sleeping pills!"). The experts could not see the relational aspect of the analogical comparison and instead interpreted it as a literal comparison. Metaphors, and perhaps other rhetorical figures, do not appear to be as effective at communicating product information with experts as they are with novices.

Specialized expert knowledge may not allow for ambiguity or figurative language in matters related to the area of expertise. Experts at this level understand the mechanisms of how products in this category work and an instructive analogy, therefore,

serves to obfuscate rather than clarify. This finding suggests that the expertise effect with processing analogies might be best represented by a curvilinear, U-shaped relationship. Increasing a consumer's knowledge about a product might better enable them to detect common relational mappings up to a point, after which increasing knowledge restricts analogical processing and instead focuses consumers on factual, or literal, processing.

Marketing managers can use the results of this research to ensure that they are communicating effectively with consumers. An analogical comparison can be effectively used to communicate a complex concept, such as how pharmaceuticals work, to novice consumers without the need for technical jargon or scientific terms. However, analogical comparisons also have the power to mislead consumers, especially with situations consumers are not familiar with, and care must be taken that the base domains being drawn on by an analogical comparison are clear and not ambiguous.

When marketing managers are communicating with expert consumers, for example pharmacists or physicians, it may be advisable to avoid the use of metaphors and similes with respect to communications regarding the efficacy and functionality of new products. In this case, the use of non-figurative language (i.e. declarative statements) may be more effective than employing rhetorical figures.

Health care organizations can benefit from this research by using it to build a proactive approach to dealing with the recent proliferation of DTC ads for prescription drugs. Communication strategies with patients can be built around an understanding of how consumers learn about prescription drugs from DTC advertisements.

Communication materials could be developed to educate patients about the nature of DTC ads, common information that is missing or misleading in the ads.

This research also has implications for policy makers. Greater emphasis should be placed on monitoring consumers' reactions to the promotional language of DTC ads in addition to the technical content. There are potentially severe ramifications from misleading consumers by the use of an analogical comparison in an ad for a pharmaceutical product. If a consumer sees an ad for a medication and incorrectly infers that the medication can cure a particular medical condition, he or she might down play the severity of contracting the particular condition because they believe that it can be cured. If this condition is a sexually transmitted disease, such as genital herpes, it might encourage consumers to engage in more high risk behaviours than if they believed the condition was incurable.

III. Limitations

There are several limitations to this dissertation. The limitations are primarily concerned with external and internal validity issues.

A limitation of the present research is that it was conducted in only one context – DTC advertising for pharmaceuticals. Although two medical conditions were investigated, the results of the research are limited to the realm of pharmaceutical advertising. This context was chosen in part to extend the scope of previous research beyond commonly purchased consumer products, such as electronics. Although this research found that consumers exposed to analogical comparisons are at risk of making an invalid inference, this finding might not hold in another context with which consumers are more familiar.

Another limitation of this research is that although the context was DTC ads for prescription drugs, the print ads used as experimental stimuli did not include reference to side-effects and/or direct consumers to call a toll-free number or visit a web page for more information, as is the case with actual DTC print ads. This may have served to render the ads less realistic to participants, although as all participants were Canadian undergraduate students, and DTC print ads are much more restricted in Canada than the U.S., the participants might not have perceived the lack of realism. Future research could include the risk-disclosure information to investigate any interactive effects with a simile or metaphor in the headline of the ad.

The results of this research may also not generalize to another population other than undergraduate students. Although the product selected for the experiments was relevant to the student population, there may be significant differences in the ability to process analogies between the students and other populations. For example, older adults may be better able to process even an obscure analogy given their increased life experience. Undergraduate students might also demonstrate higher NFC than the general population and thus be better able to process and comprehend analogies. Additionally, university students have above average IQs and social economic status, both known correlates of information processing abilities (Adams et al. 1997).

Finally, the use of the Marketing Research Subject Pool may have influenced results due to the conditions under which participants completed the experiments. As is typical, participants completed multiple studies within a one-hour timeframe. As a result, if the questionnaire for this research was completed in the last 20 minutes of the hour, participants may have been suffering from a depletion of cognitive resources. It is also

possible that the context and directions of the other studies might have influenced how participants responded to the experimental stimuli in this research.

IV. Directions for Future Research

A number of future research directions can be pursued to extend the findings of the present research.

Experts and Different Rhetorical Figures

An interesting extension would be to pursue research on the expertise effect in the context of other rhetorical figures. By employing various rhetorical figures, such as personification, it would be possible to determine whether objective expertise hinders the processing of figures in general or only of metaphor. Another extension would be to present experts with the analogical comparison in the form of: A is to B as C is to D, to determine if experts would be more receptive to the comparison in this format. This analogy would still have to be processed, but it is arguably less figurative than a metaphor, and experts might therefore be more willing to process analogically.

Experts and Different Product Contexts

An extension that would address the generalizability of the research would be including different product contexts, for example consumer electronics or software. Electrical or computer engineers, or computer programmers, could be recruited as expert consumers. An investigation of their reaction to rhetorical figures would determine whether the findings of this research can be extended to product contexts beyond pharmaceuticals.

Experts and Emotions

This research did not explore the emotional consequences of employing metaphors with expert consumers. Previous research has found that processing an analogy can result in a positive emotional state. The emotional state of experts after having processed analogies has not been explored. The experts' responses to the cognitive tasks in this research suggest that the expert consumers were frustrated by the metaphor and their inability, or unwillingness, to interpret the metaphor as a rhetorical figure. It is possible that the resultant emotional state was not positive but rather negative. This future research could add an additional boundary condition to the positive outcomes of processing analogies.

Self-study Experts

This research employed undergraduate pharmacy students in the final year of their program of study to represent consumers with advanced levels of specialized product expertise. Given the amount of health care information that is available on the Internet, as well as through online medical databases of academic studies, an interesting extension of this research would be to study average consumers who have done extensive, focused research on their own with the goal of becoming better informed on a particular medical condition. These consumers would still lack any formal education on the matter, but they would possess fairly in-depth knowledge in one narrow domain, and as such would be different than consumers chosen as experts in previous studies based on self-report measures of general familiarity and knowledge of a broad product category. It would be interesting to see whether these consumers react similarly in response to analogical comparisons in their area of expertise as did the formally educated experts.

Visual Metaphors and Invalid Inference

Visual metaphors in a DTC context are an interesting avenue to explore in the context of DTC advertising in Canada. Employing only a visual metaphor and not including any text in an ad would allow the ad to be distributed in Canada, but depending on the base domains employed by the visual metaphor, the ad could be communicating potentially misleading information. As a result, consumers might be at risk for generating invalid inferences regarding functionality and effectiveness of the advertised drug.

Confidence

As discussed, the mean level of confidence participants reported having in their inferences after exposure to an ad was quite high, in addition to being very skewed. It appears that simply asking participants to record their thoughts and then rate how confident they are that what they just wrote down was correct might not be the best way to gather accurate levels of inference confidence. It would be beneficial to develop a better measure of confidence that is able to accurately probe how confident consumers are in the veracity of their inferences. This would allow for a more in-depth exploration of the impact that the use of rhetorical figures has on how confidently consumers hold self-generated inferences.

Older Consumers

Older adults represent the most significant market segment for prescription drugs in North America. Many studies assume that older adults are more vulnerable to persuasion attempts, but little is known about the capabilities of older adults to process analogically. Given the significance of prescription drugs to their well being, extending this present research into the population of older adults could provide important

contributions to both theory, i.e. are older adults as capable as younger adults at processing analogies?, and public policy, i.e. if older adults are in fact more vulnerable to making invalid inferences after exposure to analogical comparisons, regulation of DTC advertising could be impacted.

V. Conclusion

This dissertation demonstrated that consumer learning about new, complex products is impacted by the presence of a rhetorical figure in the headline of an ad. Consumers were more at risk of making an invalid inference if they saw an ad with a simile or metaphor in the headline rather than a declarative statement, but only when the ad did not contain a paragraph of explanatory copy. The artful analogies employed in this research were more likely to result in an invalid inference than the plain analogies. When the medical condition was varied, the presence of a rhetorical figure only impacted the validity of inferences for the less common medical condition. Level of involvement was not found to significantly impact the knowledge transfer process. Simile and metaphor were found to be similar in terms of encouraging the transfer of relations and attributes, persuasiveness and elaboration. This dissertation also identified a potential boundary condition on the effectiveness of analogical comparisons with expert consumers. It appears that after a certain level of very specialized expertise, analogical comparisons are no longer effective at encouraging relational knowledge transfer or as persuasive devices. This research makes contributions at both a theoretical and managerial level.

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APPENDIX A: ETHICS APPROVAL CERTIFICATE



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APPROVAL CERTIFICATE

08 January 2007

TO: Marjorie Delbaere (Advisor M. Smith)
Principal Investigator

FROM: Wayne Taylor, Chair
Joint-Faculty Research Ethics Board (JFREB)

Re: Protocol #J2006:150
"Knowledge Transfer and Rhetoric: The Influence of Rhetorical
Figures on Consumer Learning"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), including the Sponsor name, before your account can be opened.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.

Bringing Research to Life

APPENDIX B: STUDY 1 EXPERIMENTAL STIMULI

I. Headline Only Condition: Simile



*GENTREX is like a
sleeping pill for genital
herpes*



GENTREX® (valacyclovir HCl) Caplets.

II. Headline Only Condition: Metaphor



*One GENTREX a day
keeps genital herpes at
bay*



GENTREX® (valacyclovir HCl) Caplets.

III. Headline Only Condition: Declarative

*GENTREX suppresses
genital herpes*



GENTREX® (valacyclovir HCl) Caplets.

IV. **Headline Plus Copy Condition: Simile**

GENTREX is like a sleeping pill for genital herpes




Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.



GENTREX® (valacyclovir HCl) Caplets.

V. **Headline Plus Copy Condition: Metaphor**

*One GENTREX a day
keeps genital herpes at
bay*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

VI. **Headline Plus Copy Condition: Declarative**

*GENTREX suppresses
genital herpes*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

APPENDIX C: STUDY 1 INSTRUMENT

Research Credit Questionnaire

Thank you for your participation in this questionnaire. The goal of this study is to better understand your reaction towards certain kinds of ads. Your responses will be kept strictly confidential. Responses will be aggregated across all respondents so that no individual can be identified. This survey will take you about 15 minutes to complete.

Instructions

Please turn the page and take approximately 30 seconds to read the ad headline and think about the product being advertised. Once you have done this, please turn the page again and follow the instructions at the top of the page. It is important that you do not turn back to look at the ad once you have begun to answer the questions.

Without turning back to look at the ad, please respond to the following questions.

1. What does the ad headline tell you about the product? Please write down all of your thoughts.

Please turn the page for the next question.

Indicate your responses to the following questions by circling the appropriate number.

3. Please rate your overall feelings about the ad. Circle a number for each scale.

<i>Unpleasant</i>	1	2	3	4	5	6	7	<i>Pleasant</i>
<i>Not enjoyable</i>	1	2	3	4	5	6	7	<i>Enjoyable</i>
<i>Dislikeable</i>	1	2	3	4	5	6	7	<i>Likeable</i>

4. Please rate the strength of your overall feeling for the ad.

<i>Weak</i>	1	2	3	4	5	6	7	<i>Strong</i>
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5. Please rate your overall feelings about Gentrex. Circle a number for each scale.

<i>Unfavourable</i>	1	2	3	4	5	6	7	<i>Favourable</i>
<i>Bad</i>	1	2	3	4	5	6	7	<i>Good</i>
<i>Dislikeable</i>	1	2	3	4	5	6	7	<i>Likeable</i>
<i>Worthless</i>	1	2	3	4	5	6	7	<i>Valuable</i>

6. Please rate the strength of your overall feeling for Gentrex.

<i>Weak</i>	1	2	3	4	5	6	7	<i>Strong</i>
-------------	---	---	---	---	---	---	---	---------------

7. State your agreement with the following statements:

*Strongly
Disagree*

*Strongly
Agree*

a) After reading this ad, I have a solid understanding of how Gentrex works.

1 2 3 4 5 6 7

b) The ad is credible.

1 2 3 4 5 6 7

c) I think the ad is an exaggeration.

1 2 3 4 5 6 7

d) I think the ad is believable.

1 2 3 4 5 6 7

8. Rate your difficulty in understanding Gentrex.

<i>Not very difficult</i>	1	2	3	4	5	6	7	<i>Very difficult</i>
---------------------------	---	---	---	---	---	---	---	-----------------------

The following questions pertain to the headline in the ad.

9. Please rate the headline on the following dimension:

<i>Plain, matter-of-fact</i>	1	2	3	4	5	6	7	<i>Artful, clever</i>
------------------------------	---	---	---	---	---	---	---	-----------------------

10. State your agreement with the following statements:

Strongly Disagree

Strongly Agree

a) I had to use my imagination to interpret this headline.

1 2 3 4 5 6 7

b) The headline invited me to participate in generating a meaning.

1 2 3 4 5 6 7

c) I had to work to interpret this headline.

1 2 3 4 5 6 7

The following questions pertain to the medical condition genital herpes.

11. How familiar are you with genital herpes?

Not very familiar 1 2 3 4 5 6 7 *Very familiar*

12. Please rate your agreement with the following statements:

Strongly Disagree

Strongly Agree

a) I know a lot about genital herpes.

1 2 3 4 5 6 7

b) I know more than most people do about genital herpes.

1 2 3 4 5 6 7

13. Have you ever seen an ad for medication that treats genital herpes?

_____ No _____ Yes

14. Do you know of anyone who suffers from genital herpes?

_____ No _____ Yes

Please answer the following questions about yourself.

15. Are you an exchange student?

_____ No _____ Yes

16. What language do you speak most often?

17. What is your gender?

_____ Male _____ Female

18. What is your age (in years)?

19. What is your main area of study? (e.g. business, human ecology, psychology, etc.)

Thank you for your participation!

APPENDIX D: STUDY 2 EXPERIMENTAL STIMULI

I. Headline Only Condition: Artful Simile



*Taking GENTREX in the
morning is like saying
good night to genital
herpes*



GENTREX® (valacyclovir HCl) Caplets.

II. Headline Only Condition: Artful Metaphor



*Say good morning to
GENTREX and good night
to genital herpes*



GENTREX® (valacyclovir HCl) Caplets.

III. Headline Only Condition: Plain Simile



*GENTREX is like a
sleeping pill for genital
herpes*



GENTREX® (valacyclovir HCl) Caplets.

IV. **Headline Only Condition: Plain Metaphor**



*GENTREX - a sleeping
pill for genital herpes*



GENTREX® (valacyclovir HCl) Caplets.

V. **Headline Only Condition: Declarative**

*GENTREX suppresses
genital herpes*



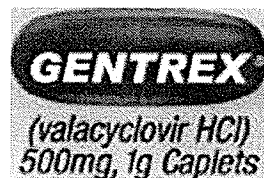
GENTREX® (valacyclovir HCl) Caplets.

VI. Headline Plus Copy Condition: Artful Simile

Taking GENTREX in the morning is like saying good night to genital herpes




Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.



GENTREX® (valacyclovir HCl) Caplets.

VII. Headline Plus Copy Condition: Artful Metaphor

*Say good morning to
GENTREX and good night
to genital herpes*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it “sleeping” or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

VIII. Headline Plus Copy Condition: Plain Simile

*GENTREX is like a
sleeping pill for genital
herpes*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it “sleeping” or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

IX. Headline Plus Copy Condition: Plain Metaphor

*GENTREX - a sleeping
pill for genital herpes*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

X. Headline Plus Copy Condition: Declarative

*GENTREX suppresses
genital herpes*



Living with genital herpes can be a hassle - but only if you let it. Your healthcare provider may have told you about suppressive therapy—taking medicine every day to help hold back the virus and keep it "sleeping" or inactive. GENTREX is the first and only once-daily herpes medication clinically proven to reduce the number of outbreaks you get. In fact, many people on once-daily suppressive therapy with GENTREX may go a year outbreak-free. Ask your healthcare provider if daily GENTREX is right for you.

GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

APPENDIX E: STUDY 2 INSTRUMENT

Research Credit Questionnaire

Thank you for your participation in this questionnaire. We are conducting research on product advertising. Your responses will be kept strictly confidential. Responses will be aggregated across all respondents so that no individual can be identified. This survey will take you approximately 20 minutes to complete.

Instructions

Please wait for all questionnaires to be handed out. You will then be told to turn the page and take 30 seconds to read the ad headline and think about the product being advertised. You will be told once the 30 seconds is over. Then turn the page again and follow the instructions at the top of the page. It is important that you **do not turn back to look at the ad** once you have begun to answer the questions.

Puzzle Task

Before beginning to answer the questionnaire, please take a couple of minutes to relax. Complete the following puzzle by spotting the differences between the two panels. There are **12** differences in total. Please circle or list as many as you can in the next 2 minutes. Do not worry if you cannot find all 12 differences. You will be notified when the 2 minutes are up. You can then turn the page and begin the questionnaire.



List or circle the differences

- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

Without turning back to look at the ad, please respond to the following questions.

1. a) What does the ad headline tell you about the product? Please write down all of your thoughts.

1. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

1. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

2. a) A friend of yours has just come to you and said, "I just heard about this new drug Gentrex. I don't understand what it is. Can you explain it to me?" Please describe Gentrex as you would if you were speaking to your confused friend.

2. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

2. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

Indicate your responses to the following questions by circling the appropriate number.

3. Please rate your overall feelings about the ad. Circle a number for each scale.

<i>Unpleasant</i>	1	2	3	4	5	6	7	<i>Pleasant</i>
<i>Not enjoyable</i>	1	2	3	4	5	6	7	<i>Enjoyable</i>
<i>Dislikeable</i>	1	2	3	4	5	6	7	<i>Likeable</i>

4. Please rate the strength of your overall feeling for the ad.

<i>Weak</i>	1	2	3	4	5	6	7	<i>Strong</i>
-------------	---	---	---	---	---	---	---	---------------

5. Please rate your overall feelings about Gentrex. Circle a number for each scale.

<i>Unfavourable</i>	1	2	3	4	5	6	7	<i>Favourable</i>
<i>Bad</i>	1	2	3	4	5	6	7	<i>Good</i>
<i>Dislikeable</i>	1	2	3	4	5	6	7	<i>Likeable</i>
<i>Worthless</i>	1	2	3	4	5	6	7	<i>Valuable</i>

6. Please rate the strength of your overall feeling for Gentrex.

<i>Weak</i>	1	2	3	4	5	6	7	<i>Strong</i>
-------------	---	---	---	---	---	---	---	---------------

7. For the following three questions, imagine that you were suffering from genital herpes.

a) Assuming the medication was available, how likely would you be to talk to your doctor about prescribing Gentrex to you?

<i>Not Very Likely</i>	1	2	3	4	5	6	7	<i>Very Likely</i>
------------------------	---	---	---	---	---	---	---	--------------------

b) Why or why not?

c) Again imagining you were suffering from genital herpes, is there any other information you would like to have about Gentrex if you were considering talking to your doctor about prescribing it to you?

8. State your agreement with the following statements:

a) After reading this ad, I have a solid understanding of how Gentrex works.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The ad is credible.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I think the ad is an exaggeration.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

d) I think the ad is believable.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

9. Rate your difficulty in understanding Gentrex.

Not very difficult 1 2 3 4 5 6 7 *Very difficult*

The following questions pertain to the headline in the ad.

10. Please rate the headline in the ad on the following dimension:

Plain, matter-of-fact 1 2 3 4 5 6 7 *Artful, clever*

11. State your agreement with the following statements:

a) I had to use my imagination to interpret the headline in the ad.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The headline invited me to participate in generating a meaning.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I had to work to interpret this headline.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

The following questions pertain to the medical condition genital herpes.

12. How familiar are you with genital herpes?

Not very familiar 1 2 3 4 5 6 7 *Very familiar*

13. Please rate your agreement with the following statements:

a) I know a lot about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) I know more than most people do about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

14. Have you ever seen an ad for medication that treats genital herpes? _____ No _____ Yes

15. Do you know of anyone who suffers from genital herpes? _____ No _____ Yes

Please answer the following questions about yourself.

16. Are you an exchange student?

_____ No _____ Yes

17. What language do you speak most often?

18. What is your gender?

_____ Male _____ Female

19. What is your age (in years)?

20. What is your main area of study? (e.g. business, human ecology, psychology, etc.)

Thank you for your participation!

APPENDIX F: STUDY 3 EXPERIMENTAL STIMULI

I. Genital Herpes: Artful Metaphor


Taking GENTREX in the morning is like saying good night to genital herpes



GENTREX® (valacyclovir HCl) Caplets.

II. Genital Herpes: Plain Metaphor

*GENTREX is like a
sleeping pill for genital
herpes*




GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

III. Genital Herpes: Declarative

*GENTREX suppresses
genital herpes*



GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

IV. Cold Sores: Artful Metaphor



*GENTREX - a sleeping
pill for cold sores*



GENTREX® (valacyclovir HCl) Caplets.

V. Cold Sores: Plain Metaphor



*Say good morning to
GENTREX and good night
to cold sores*



GENTREX® (valacyclovir HCl) Caplets.

VI. Cold Sores: Declarative

*GENTREX suppresses
cold sores*



GENTREX® (valacyclovir HCl) Caplets.

APPENDIX G: STUDY 3 INSTRUMENT

QUESTIONNAIRE

Instructions – High Involvement Condition

Please wait for all questionnaires to be handed out.

Read the following ad as though you have an immediate need for the advertised product. You will be told to turn the page and take 30 seconds to read the ad and think about the product being advertised. Pay close attention to the message in the ad. You will be told once the 30 seconds is over.

It is important that you **do not turn back to look at the ad** once you have begun to answer the questions.

This survey will take you approximately 15 minutes to complete.

~

Instructions – Low Involvement Condition

Please wait for all questionnaires to be handed out.

Read the following ad as though you were flipping through a magazine. Take only a few seconds to look at the ad and then turn to the next page.

It is important that you **do not turn back to look at the ad** once you have begun to answer the questions.

This survey will take you approximately 15 minutes to complete.

Puzzle Task

Before beginning to answer the questionnaire, please take a couple of minutes to relax. Complete the following puzzle by spotting the differences between the two panels. There are **12** differences in total. Please circle or list as many as you can in the next 2 minutes. Do not worry if you cannot find all 12 differences. You will be notified when the 2 minutes are up. You can then turn the page and begin the questionnaire.



List or circle the differences

- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

Without turning back to look at the ad, please respond to the following questions.

1. a) What does the ad headline tell you about the product? Please write down all of your thoughts.

1. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

1. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

2. a) A friend of yours has just come to you and said, "I just heard about this new drug Gentrex. I don't understand what it is. Can you explain it to me?" Please describe Gentrex as you would if you were speaking to your confused friend.

2. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

2. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

The following questions pertain to the headline in the ad.

Please rate the headline in the ad on the following dimension:

Plain, matter-of-fact 1 2 3 4 5 6 7 *Artful, clever*

State your agreement with the following statements:

a) I had to use my imagination to interpret the headline in the ad.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The headline invited me to participate in generating a meaning.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I had to work to interpret this headline.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Indicate your responses to the following questions by circling the appropriate number.

Please rate your overall feelings about the ad. Circle a number for each scale.

Unpleasant 1 2 3 4 5 6 7 *Pleasant*

Not enjoyable 1 2 3 4 5 6 7 *Enjoyable*

Dislikeable 1 2 3 4 5 6 7 *Likeable*

Please rate the strength of your overall feeling for the ad.

Weak 1 2 3 4 5 6 7 *Strong*

Please rate your overall feelings about Gentrex. Circle a number for each scale.

Unfavourable 1 2 3 4 5 6 7 *Favourable*

Bad 1 2 3 4 5 6 7 *Good*

Dislikeable 1 2 3 4 5 6 7 *Likeable*

Worthless 1 2 3 4 5 6 7 *Valuable*

Please rate the strength of your overall feeling for Gentrex.

Weak 1 2 3 4 5 6 7 *Strong*

Please indicate whether you believe the following statement to be True or False.

Taking Gentrex keeps the genital herpes [cold sores] virus inactive. _____ True _____ False

For the following three questions, imagine that you were suffering from genital herpes [cold sores].

a) Assuming the medication was available, how likely would you be to talk to your doctor about prescribing Gentrex to you?

Not Very Likely 1 2 3 4 5 6 7 *Very Likely*

b) Why or why not?

c) Again imagining you were suffering from genital herpes, is there any other information you would like to have about Gentrex if you were considering talking to your doctor about prescribing it to you?

State your agreement with the following statements:

a) After reading this ad, I have a solid understanding of how Gentrex works.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The ad is credible.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I think the ad is an exaggeration.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

d) I think the ad is believable.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Rate your difficulty in understanding Gentrex.

Not very difficult 1 2 3 4 5 6 7 *Very difficult*

Indicate your responses to the following questions by circling the appropriate number.

When you saw the ad for Gentrex, did you feel that the information in the ad:	<i>Strongly Disagree</i>						<i>Strongly Agree</i>
Might be important to you	1	2	3	4	5	6	7
Might be meaningful to you	1	2	3	4	5	6	7
Might be worth remembering	1	2	3	4	5	6	7
Might be of value to you	1	2	3	4	5	6	7
Might be relevant to you	1	2	3	4	5	6	7
Might be useful to you	1	2	3	4	5	6	7
Might be worth paying attention to	1	2	3	4	5	6	7
Might be interesting to you	1	2	3	4	5	6	7

Indicate your responses to the following questions by circling the appropriate number.

	<i>Strongly Disagree</i>					<i>Strongly Agree</i>	
I prefer complex to simple tasks.	1	2	3	4	5	6	7
Thinking is not my idea of fun.	1	2	3	4	5	6	7
I find satisfaction in deliberating hard and for long hours.	1	2	3	4	5	6	7
I only think as hard as I have to.	1	2	3	4	5	6	7
I like tasks that require little thought once I've learned them.	1	2	3	4	5	6	7
The idea of relying on thought to make my way to the top appeals to me.	1	2	3	4	5	6	7
I really enjoy a task that involves coming up with new solutions to problems.	1	2	3	4	5	6	7
I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5	6	7
I usually end up deliberating about issues even when they do not affect me personally.	1	2	3	4	5	6	7
I like to have the responsibility of handling a situation that requires a lot of thinking.	1	2	3	4	5	6	7
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.	1	2	3	4	5	6	7
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	7
I prefer to think about small daily projects to long-term ones.	1	2	3	4	5	6	7
Learning new ways to think doesn't excite me very much.	1	2	3	4	5	6	7
The notion of thinking abstractly is appealing to me.	1	2	3	4	5	6	7
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	6	7
I feel relief rather than satisfaction after completing a task that required a lot of mental effort.	1	2	3	4	5	6	7
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	6	7

The following questions pertain to genital herpes.

How familiar are you with genital herpes?

Not very familiar 1 2 3 4 5 6 7 *Very familiar*

Please rate your agreement with the following statements:

a) I know a lot about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) I know more than most people do about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Have you ever seen an ad for medication that treats genital herpes?

_____ No _____ Yes

Do you know of anyone who suffers from genital herpes?

_____ No _____ Yes

Please answer the following questions about yourself.

Are you an exchange student?

_____ No _____ Yes

What language do you speak most often?

What is your gender?

_____ Male _____ Female

What is your age (in years)?


What is your main area of study? (e.g. business, human ecology,
psychology, etc.)

Thank you for your participation!

APPENDIX H: STUDY 4 EXPERIMENTAL STIMULI

VII. Plain Metaphor

*GENTREX - a sleeping
pill for genital herpes*




GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

VIII. Declarative Statement

*GENTREX suppresses
genital herpes*



GENTREX
(valacyclovir HCl)
500mg, 1g Caplets

GENTREX® (valacyclovir HCl) Caplets.

APPENDIX I: STUDY 4 INSTRUMENT

QUESTIONNAIRE

Instructions

Please wait for all questionnaires to be handed out.

Read the following ad as though you were flipping through a magazine. You will be told to turn the page and take 5 seconds to read the ad. You will be told once the 5 seconds are over.

It is important that you **do not turn back to look at the ad** once you have begun to answer the questions.

This survey will take you approximately 15 minutes to complete.

Puzzle Task

Before beginning to answer the questionnaire, please take a couple of minutes to relax. Complete the following puzzle by spotting the differences between the two panels. There are 12 differences in total. Please circle or list as many as you can in the next 2 minutes. Do not worry if you cannot find all 12 differences. You will be notified when the 2 minutes are up. You can then turn the page and begin the questionnaire.



List or circle the differences

- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

Without turning back to look at the ad, please respond to the following questions.

1. a) What does the ad headline tell you about the product? Please write down all of your thoughts.

1. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

1. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

2. a) A friend of yours has just come to you and said, "I just heard about this new drug Gentrex. I don't understand what it is. Can you explain it to me?" Please describe Gentrex as you would if you were speaking to your confused friend.

2. b) How confident are you that what you just wrote down is correct?

Not Very Confident 1 2 3 4 5 6 7 *Very Confident*

2. c) On a percentage scale (from 0% to 100%), how confident are you that what you just wrote down is correct?

_____ %

Please turn the page for the next question.

The following questions pertain to the headline in the ad.

Please rate the headline in the ad on the following dimension:

Plain, matter-of-fact 1 2 3 4 5 6 7 *Artful, clever*

State your agreement with the following statements:

a) I had to use my imagination to interpret the headline in the ad.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The headline invited me to participate in generating a meaning.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I had to work to interpret this headline.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Indicate your responses to the following questions by circling the appropriate number.

Please rate your overall feelings about the ad. Circle a number for each scale.

Unpleasant 1 2 3 4 5 6 7 *Pleasant*

Not enjoyable 1 2 3 4 5 6 7 *Enjoyable*

Dislikeable 1 2 3 4 5 6 7 *Likeable*

Please rate the strength of your overall feeling for the ad.

Weak 1 2 3 4 5 6 7 *Strong*

Please rate your overall feelings about Gentrex. Circle a number for each scale.

Unfavourable 1 2 3 4 5 6 7 *Favourable*

Bad 1 2 3 4 5 6 7 *Good*

Dislikeable 1 2 3 4 5 6 7 *Likeable*

Worthless 1 2 3 4 5 6 7 *Valuable*

Please rate the strength of your overall feeling for Gentrex.

Weak 1 2 3 4 5 6 7 *Strong*

Please indicate whether you believe the following statements to be True or False.

Taking Gentrex keeps the genital herpes virus inactive. _____ True _____ False

Taking Gentrex reduces the severity of genital herpes outbreaks. _____ True _____ False

State your agreement with the following statements:

a) After reading this ad, I have a solid understanding of how Gentrex works.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) The ad is credible.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I think the ad is an exaggeration.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

d) I think the ad is believable.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Rate your difficulty in understanding Gentrex.

Not very difficult 1 2 3 4 5 6 7 *Very difficult*

Indicate your responses to the following questions by circling the appropriate number.

When you saw the ad for Gentrex, did you
feel that the information in the ad:

*Strongly
Disagree*

*Strongly
Agree*

Might be important to you 1 2 3 4 5 6 7

Might be meaningful to you 1 2 3 4 5 6 7

Might be worth remembering 1 2 3 4 5 6 7

Might be of value to you 1 2 3 4 5 6 7

Might be relevant to you 1 2 3 4 5 6 7

When you saw the ad for Gentrex, did you feel that the information in the ad:	<i>Strongly Disagree</i>						<i>Strongly Agree</i>
Might be useful to you	1	2	3	4	5	6	7
Might be worth paying attention to	1	2	3	4	5	6	7
Might be interesting to you	1	2	3	4	5	6	7

Indicate your responses to the following questions by circling the appropriate number.

	<i>Strongly Disagree</i>						<i>Strongly Agree</i>
I prefer complex to simple tasks.	1	2	3	4	5	6	7
Thinking is not my idea of fun.	1	2	3	4	5	6	7
I find satisfaction in deliberating hard and for long hours.	1	2	3	4	5	6	7
I only think as hard as I have to.	1	2	3	4	5	6	7
I like tasks that require little thought once I've learned them.	1	2	3	4	5	6	7
The idea of relying on thought to make my way to the top appeals to me.	1	2	3	4	5	6	7
I really enjoy a task that involves coming up with new solutions to problems.	1	2	3	4	5	6	7
I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5	6	7
I usually end up deliberating about issues even when they do not affect me personally.	1	2	3	4	5	6	7
I like to have the responsibility of handling a situation that requires a lot of thinking.	1	2	3	4	5	6	7
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.	1	2	3	4	5	6	7
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	7
I prefer to think about small daily projects to long-term ones.	1	2	3	4	5	6	7
Learning new ways to think doesn't excite me very much.	1	2	3	4	5	6	7

	<i>Strongly Disagree</i>					<i>Strongly Agree</i>	
The notion of thinking abstractly is appealing to me.	1	2	3	4	5	6	7
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	6	7
I feel relief rather than satisfaction after completing a task that required a lot of mental effort.	1	2	3	4	5	6	7
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	6	7

The following questions pertain to genital herpes.

How familiar are you with genital herpes?

Not very familiar 1 2 3 4 5 6 7 *Very familiar*

Please rate your agreement with the following statements:

a) I know a lot about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

b) I know more than most people do about genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

c) I am familiar with medication for treating genital herpes.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

d) I know more than most people do about genital herpes medication.

Strongly Disagree 1 2 3 4 5 6 7 *Strongly Agree*

Have you ever seen an ad for medication that treats genital herpes? _____ No _____ Yes

Do you know of anyone who suffers from genital herpes? _____ No _____ Yes

Please answer the following questions about yourself.

Are you an exchange student?

_____ No _____ Yes

What language do you speak most often?

What is your gender?

_____ Male _____ Female

What is your age (in years)?

What is your main area of study? (e.g. business, human ecology,
psychology, etc.)

What year of your program are you currently in? (e.g. 3rd year, 4th year)

Thank you for your participation!