Abstract

SHAVER, ERIC FRANKLIN. Evaluating the Influence of Presentation Modality on the Communication of Pharmaceutical Risk Information in Direct-to-Consumer (DTC) Television Commercials. (Under the direction of Michael S. Wogalter, Ph.D.)

Direct-to-consumer prescription drug advertising markets medications requiring a physician's script to the general public. Currently, the Food and Drug Administration mandates that direct-to-consumer prescription drug advertising include risk disclosures (i.e., side effects and contraindications) in auditory (voice) or both auditory and visual (text) parts of the commercials. Little research has examined the factors that affect the communication of risk disclosures.

The present research was conducted to identify what factors influence recall and recognition of risk disclosures in direct-to-consumer prescription drug television commercials. Three issues were investigated. One was to determine if concurrently presented visual and auditory risk disclosures produced greater recall and recognition than either presented independently. A second issue is whether recall and recognition is better for visual risk disclosures compared to auditory or vise versa. A third issue is whether concurrently presented non-risk disclosures in a competing modality would negatively affect risk disclosure recall and recognition.

The results showed several effects. The first was that risk disclosures presented either visually, auditorily, or combined increased the likelihood of recall and recognition compared to no presentation. Second, risk disclosures presented concurrently in visual and auditory modalities produced the highest recall and recognition. Third, the results indirectly support the idea that presentation of visual risk disclosures produces better recall and recognition compared to auditory risk disclosures. Finally, concurrent presentation of non-risk

disclosures with risk disclosures produced lower recall and recognition compared to presenting only risk disclosures. Implications for the design of direct-to-consumer prescription drug television commercials as well as directions for future research are discussed.

EVALUATING THE INFLUENCE OF PRESENTATION MODALITY ON THE COMMUNICATION OF PHARMACEUTICAL RISK INFORMATION IN DIRECT-TO-CONSUMER (DTC) TELEVISION COMMERCIALS

by
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Biography

Eric F. Shaver, the son of David L. and Judy S. Shaver, was born in Boise, Idaho on September 6, 1974. His first five years of life saw his family move between several small farming communities in Southern Idaho before settling in Gooding. He graduated from Gooding High School in 1993. After high school, he attended the University of Idaho where he obtained a Bachelors of Science in Psychology and a minor in Philosophy in 1997. After attaining his B.S., he completed a Masters of Science in Psychology with an emphasis in Human Factors in 2000 under the direction of Dr. Curt Braun. Mr. Shaver moved with his wife, Darci, to Raleigh to pursue a Ph.D. in Ergonomics Psychology at North Carolina State University in 2000.

For the past three years, Mr. Shaver has worked in the Cognitive Ergonomics Laboratory (CEL) in the Psychology Department under the direction of Dr. Michael Wogalter. For the first year, he worked as a research assistant. Currently, he is the Graduate Director of the CEL where he oversees the day-to-day operation of the lab and directs the research of five undergraduate students. While at NCSU, Mr. Shaver has published and presented several papers at the Annual Meetings of the Human Factors and Ergonomics Society (HFES). Mr. Shaver is a student affiliate of the HFES and a member of the American Society of Safety Engineers.

Upon completing his Doctor of Philosophy, Mr. Shaver will take a position as a Research Scientist with a human factors consulting firm, Applied Safety and Ergonomics, Inc., in Ann Arbor, Michigan. His future plans include working as a consultant, a warnings expert for product liability cases, teaching a few courses at a local university, and pursuing a number of hobbies that have been on hold for the last several years.

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1. Introduction

Effective labeling of pharmaceutical products is important because the general public does not know the risks, side effects, and contraindications associated with many types of drugs. Surveys (e.g., Everett, 1991) indicate that people want to be informed of the benefits and risks associated with their medications. Direct-to-consumer (DTC) advertising is becoming a key method of informing individuals about prescription drugs (Holmer, 1999), so it is important that information is presented in a manner that allows for optimal comprehension and retention.

Effective communication of drug benefit and risk information comprises a complex set of issues and has become more complicated and important given the recent increase of direct-to-consumer prescription drug advertisements (DTCPDA). The purpose of DTCPDA is to market a prescription drug directly to the general public even though they cannot purchase it directly. To purchase a prescription drug, individuals must first get approval via a prescription written by a physician or other licensed medical professional. Although federal regulations mandate that there must be a balanced presentation of benefit and risk information DTCPDA (Prescription Drug Advertising, 2001), there has been very little research examining the factors that facilitate (or hinder) the communication of this information. The study described here begins to address this issue.

1.1 Advertising

1.1.1 Direct-to-Consumer Advertising

According to Calfee (2002), DTCPDA is unique from most other advertising in two ways. First, individuals must obtain a physician's prescription prior to purchase. Second,

DTCPDA advertisements are regulated in the U.S. by the Food and Drug Administration (FDA). Currently, there are four requirements that dictate what information must be included in prescription drug advertisements. Two ("brief summary" and "fair balance") are derived from the Federal Food, Drug, and Cosmetic Act (FDCA), while the other two are from the FDA prescription drug regulations ("major statement" and "adequate provision"). The brief summary [21 USC 352(n)(3)] must include "… information … relating to side effects, contraindications, and effectiveness" (FDA, 1999b). Fair balance refers to the need for equal presentation of the potential benefits and risks associated with the advertised drug (FDA, 1999b).

According to the Prescription Drug Advertising (2001) regulations, the major statement [21 CFR 202.1(e)(1)] requires that "advertisements broadcast through media such as radio, television, or telephone communications systems shall include information relating to the major side effects and contraindications of the advertised drugs in the audio or audio and visual parts of the presentation" (p. 74). Adequate provision [21 CFR 202.1(e)(1)] requires that if an advertisement does not provide a brief summary that it must include an "adequate provision … for dissemination of the approved or permitted package labeling in connection with the broadcast presentation" (Prescription Drug Advertising, 2001, p. 74). This usually occurs with television advertisements because it is very difficult to provide a brief summary in the limited span of a commercial. According to the FDA (1999a), there are four avenues in which a drug company can fulfill the adequate provision requirement: (1) provide a toll-free number in the advertisement that consumers can call to request the drugs package labeling, (2) provide reference to a print advertisement (i.e., magazine) where the complete product information is provided, (3) provide an Internet web page (URL) address,

or (4) disclose in the advertisement that pharmacists or physicians can be contacted for further information. To better understand the intricacies underlying DTCPDA, a review of its regulatory history, potential benefits, potential problems, and survey findings that address individual's beliefs and attitudes towards DTCPDA advertising will be discussed.

1.1.1.1 History. The regulatory history of DTCPDA advertising extends back to the Food and Drug Act of 1906 (Lyles, 2002). This act prohibited interstate commerce in misbranded foods and drugs. In 1938, the Food, Drug, and Cosmetic Act (FDCA) was passed to replace it. One of the major provisions of the act was to require evidence that new drugs were safe prior to marketing. At this same time, the Wheeler-Lea Act of 1938 was passed, which extended authority to the Federal Trade Commission (FTC) to oversee pharmaceutical advertisements (Center for Drug Evaluation and Research, 2002). Thus, the FTC regulated over-the-counter (OTC) and prescription drug commercials. Regulatory authority transferred from the Federal Trade Commission (FTC) back to the FDA in 1962 with the passing of the Kefauver-Harris Drug Amendment to the FDCA of 1938 (Lyles, 2002). This amendment required including risk and benefit information in medical journal advertisements.

In the early 1980s the first product-specific DTCPDAs were Rufen® (generic ibuprofen) and Phneumovax® (pneumonia vaccine) (Pines, 1999). In September 1982, FDA Commissioner Arthur Hull Hayes, Jr. called for a voluntary moratorium on all DTCPDA advertising until the FDA could address its potential ramifications. On September 9, 1985, the FDA lifted the ban on DTCPDA. At the same time, the FDA clarified that it had regulatory jurisdiction over the advertisements and put forth requirements that all

advertisements must meet the same criteria as those directed toward physicians. According to Pine (1999), "this meant that the advertisements had to be balanced fairly with regard to benefit and risk information; that the 'brief summary' of risk information had to accompany all such advertisements; and that all the other requirements set forth in the regulations for paid advertisements had to be met" (p. 493). With respect to electronic advertisements (i.e., radio or television), the "brief summary" of risk information could be replaced with a "major statement" while also making "adequate provision" for consumers to acquire the FDA-approved prescription information. The addition of the "adequate provision" requirement made it almost impossible for drug manufacturers to use broadcast advertisements because it was difficult to include all the necessary information in a limited amount of time. Thus, the drug manufacturers were forced to advertise their drugs in one of two ways: help-seeking or reminder advertisements (Calfee, 2002).

Help-seeking advertisements provide consumers information about specific types of diseases or conditions and encourage them to consult their doctor to learn more. They mention nothing about specific drugs, treatments, or methods to learn about specific products (Lyles, 2002). Reminder advertisements focus on the drug name but could not state what it was used to treat. Neither of these advertisement types had to address the FDCA or FDA requirements (brief summary, fair balance, major statement, and adequate provision) because they mention nothing about benefits or risks. The problem with help-seeking and reminder advertisements is that they provide little useful information about the prescription drug being advertised. As an attempt to deal with this problem, the FDA published the "Draft Guidance for Industry: Consumer-Directed Broadcast Advertisements" (FDA, 1997). This document allowed DTCPDA to include benefit and risk information. Moreover, it outlined that the

broadcast commercial include a "major statement" containing the most important risks presented in either the (a) audio portion of the commercial or the (b) audio and visual portions of the commercial and that "adequate disclosure" of the complete product information must be assessable by the consumer.

1.1.1.2 Potential Benefits of DTCPDA. Advocates of DTCPDA provide several potential reasons for their utility. First, it could enhance the individual's knowledge about new treatment options (Redmond, 2002). In many instances, individuals may be unaware that a treatment exists for their ailments. This is especially true for individuals who are not in regular contact with their primary physician or who may not have a primary physician. Second, it could encourage individuals to seek treatment for otherwise untreated conditions (Hollon, 1999). Third, it could make individuals aware of risks and benefits of newly marketed prescription drugs (Pharmaceutical Research and Manufacturers of America [PHARMA], 2002). Due to the requirements outlined by the FDA (1999), individuals are provided information about the potential benefits and risks of advertised prescription drugs. Fourth, it could enhance the patient-physician relationship by encouraging the patient to take an active role in his or her own health (Council for Ethical and Judicial Affairs of the American Medical Association, 2000). Fifth, it could encourage adherence to a prescription drug regimen (PHRMA, 2002; Redmond, 2002). Sixth, it could encourage individuals to talk to their doctors about drugs they have seen advertised (Henry J. Kaiser Family Foundation [HJKFF], 2001; Rosenthal, Berndt, Donohue, Frank, & Epstein, 2002). Every prescription drug advertisement must include a message that encourages individuals to talk to their physician or pharmacist about the advertised prescription drug. Finally, it could foster

competition between pharmaceutical manufacturers, which should lead to lower prescription drug prices (PHRMA, 2002). Although there are several potential benefits to DTCPDA, there are also potential drawbacks.

1.1.1.3 Potential Problems of DTCPDA. Opponents of DTCPDA provide several potential reasons why they may be detrimental for patients and physicians. According to Calfee (2002), the majority of criticisms against DTCPDA have been from physicians and insurance companies. First, it might harm the patient-physician relationship (Lyles, 2002; Pinto, Pinto, & Barber, 1998). Part of the harm may come from having to spend greater amounts of time trying to persuade patients that they do not need a particular prescription drug (National Health Council, 2002). Second, it might increase the number of unnecessary physician visits (Redmond, 2002). If individuals believe that they have a particular ailment mentioned in the prescription drug advertisement, when in fact they do not, this will further burden an already overtaxed medical system. Third, the DTCPDA might not adequately communicate the risks of the drug being advertised (National Health Council, 2002). Using trained pharmacists to assess 39 print DTCPDAs, Roth (1996) determined that one-third of the advertisements did not present a fair balance of risk and benefit information. Individuals exposed to DTCPDA that do not present a fair balance of risk and benefit information may incorrectly believe that a drug is safer to use than it is, for example, and not realize that there are several severe side effects. Fourth, it might cause patients to pressure their physicians into prescribing a particular drug when it may not be needed (Lyles, 2002; Redmond, 2002). Although it is unlikely that physicians will inappropriately accommodate such requests, it may stress the relationship with the patient and increase the amount of time needed to

educate the patient. Moreover, there is no conclusive evidence that DTCPDA has adversely affected physicians prescribing practices (Kline, 2000), even though there has been some preliminary evidence linking increased DTCPDA with increased prescribing for certain drugs (e.g., peptic ulcer disease, seasonal allergy, etc.) (Zachery, Shepherd, Hinich, Wilson, Brown, & Lawson, 2002). Fifth, it might lead to increased drug prices (Redmond, 2002). Although, it is widely agreed upon that the amount of DTCPDA has risen sharply in the last several years (HJKFF, 2002; NIHCM, 2001a; NIHCM, 2002; Wilkes, Bell, & Kravitz, 2000), the findings indicate that DTCPDA has not contributed to the increase in prescription drug prices (HJKFF, 2002; NIHCM, 2001b). Instead, their contribution has remained stable at 14 – 15% of the total cost of prescription drugs. Sixth, it might encourage prescription drug overuse (Lyles, 2002). To date, there are no reliable data either confirming or disconfirming this hypothesis.

Overall, several potential benefits and problems of DTCPDA have been raised. What is unclear is if the benefits outweigh the problems, and if so, what factors (i.e., presentation modality) should be considered to maximize the effectiveness with which DTCPDA convey risk and benefit information. One method that has been used to identify critical aspects of DTCPDA is through the use of surveys.

1.1.1.4 Surveys. Several surveys have investigated individuals' awareness, attitudes, and reported behaviors with respect to DTCPDA. The FDA conducted a telephone survey of 960 randomly selected individuals who visited a doctor in the last three months to investigate their attitudes and behaviors to DTCPDA (Aikin, 2002; FDA, 1999). The survey consisted of 58 questions including demographics, consumer awareness, DTCPDA for print and

television, effects of advertising on consumer behavior, and interactions with their doctor. Only the results that have implications for the proposed research will be discussed. First, 72% of individuals reported seeing/hearing a prescription drug advertisement in the previous three-month period. Of this group, 94% reported seeing/hearing an advertisement on television. Moreover, the two pieces of information they most frequently recalled seeing/hearing were benefits (87%) and risk/side effects (82%). This indicates that individuals are aware that commercials do present risk and benefit information, but it does not identify if they knew or paid attention to any specific information.

The next set of questions used a 5-point scale (1 = agree strongly, 2 = agree somewhat, 3 = neither agree nor disagree, 4 = disagree somewhat, 5 = disagree strongly) to rate participants responses. To the question, "Advertisements for prescription drugs do not give enough information about the possible benefits and positive effects of using the drug" participants reported a mean response of 2.84 (*SD* = 1.41). On the other hand, participants reported a mean response of 2.48 (*SD* = 1.37) for the question "Advertisements for prescription drugs do not give enough information about the possible risk and negative effects of using the drug." These results indicate that most individuals want more information about drugs potential benefit and risk provided in DTCPDA.

The Henry J. Kaiser Family Foundation (2001) conducted a Web-based survey of 2511 individuals to determine how people respond to DTCPDAs, their perceptions of them, if these ads encourage information seeking, if they educate about health conditions and treatments, and if they succeed in communicating side effects. The sample was divided into two groups: viewers (*n* = 1872) and non-viewers (*n* = 639). The former was further divided into three groups and asked to assess their perception of a specific prescription drug

advertisement [Group A: Lipitor (n = 623); Group B: Nexium (n = 627); and Group C: Singular (n = 622)], while the latter did not see any advertisements and were asked to assess prescription drug advertisements in general. With respect to the study question "Do these ads succeed in communicating the information about drug side effect and where to go for additional information," participants were asked three questions about drug advertisements they viewed: (1) identify the potential side effects named in the advertisement, (2) indicate your perceptions about the potential side effects of the medicines, and (3) list the potential sources provided in the advertisement to learn more about the drug. For the first question, viewers were better able to recall side effects than non-viewers, but they still recalled fewer than half of the potential side effects. For the second question, the results indicated that viewers perceived the side effects as more serious than the non-viewers. Lastly, only 49% of viewers remembered that more information could be obtained from physicians or pharmacist, while only 12% mentioned any other type of source (e.g., toll free number, magazine ad, etc.). Moreover, 40% reported they did not know where to look for further information about the advertised drug. Taken together these results indicate that DTCPDA need to be as explicit and attention getting as possible to increase the likelihood that individuals will attend to, and remember, risk and benefit information.

Bell, Kravitz, and Wilkes (1999) conducted a random-digit telephone survey of 329 individuals to evaluate individual's awareness, attitudes, misconceptions, and behavioral responses towards DTCPDA. Of particular interest are the four questions dealing with misconceptions individuals had with regards to regulation of DTCPDA. According to the authors, "approximately 50% thought that DTCPDA had to be submitted to the government for prior approval, 43% thought that only 'completely safe' prescription drugs could be

advertised directly to the consumer, 21% believed that only 'extremely effective' drugs could be marketed, and 22% believed that the advertising of prescription drugs with serious side effects had already been banned" (Bell, Kravitz, & Wilkes, 1999, pp. 654-655). None of these assumptions are correct. The main implication of these findings is that people are relying on the government to protect them from potential hazardous advertisements. This misplaced belief may decrease individual's willingness to look for and attend to risk information because they believe the advertised prescription drugs are safe.

1.2 Information Processing Theories & Concepts

1.2.1 Multiple Resource Theory

Multiple resource theory (MRT) is a performance model developed to explain the effects of time-sharing efficiency on dual-task performance and to predict how these tasks will interfere with each other based upon task difficulty (resource demand) and the processing resources shared by each (resource composition) (Wickens & Liu, 1988). Resource demand implies that increases in difficulty for one task will either increase the interference with another task or cause its own performance to degrade. Resource competition (i.e., multiple resources) implies that the before mentioned difficulty-performance tradeoff will occur only to the degree that the two tasks share the same resources.

Multiple resource theory conceptualizes three separate attentional resources that are dichotomously divided across three structures: (1) processing stages (perception/cognition & response), (2) perceptual modalities (auditory & visual), and (3) processing codes (verbal &

spatial) (Wickens, 1984). Figure 1 provides a graphical representation of MRT. There are several points to note. First, the structure of the cube implies that the three structures are independent of one another. Second, the horizontal line dividing the perceptual modalities extends only into the perceptual processing stage. Third, the vertical line dividing the processing codes extends through all processing stages. Lastly, the placement of the verbal (left) and spatial (right) processing codes corresponds with the verbal (left) and spatial (right) cerebral hemispheres of the brain.

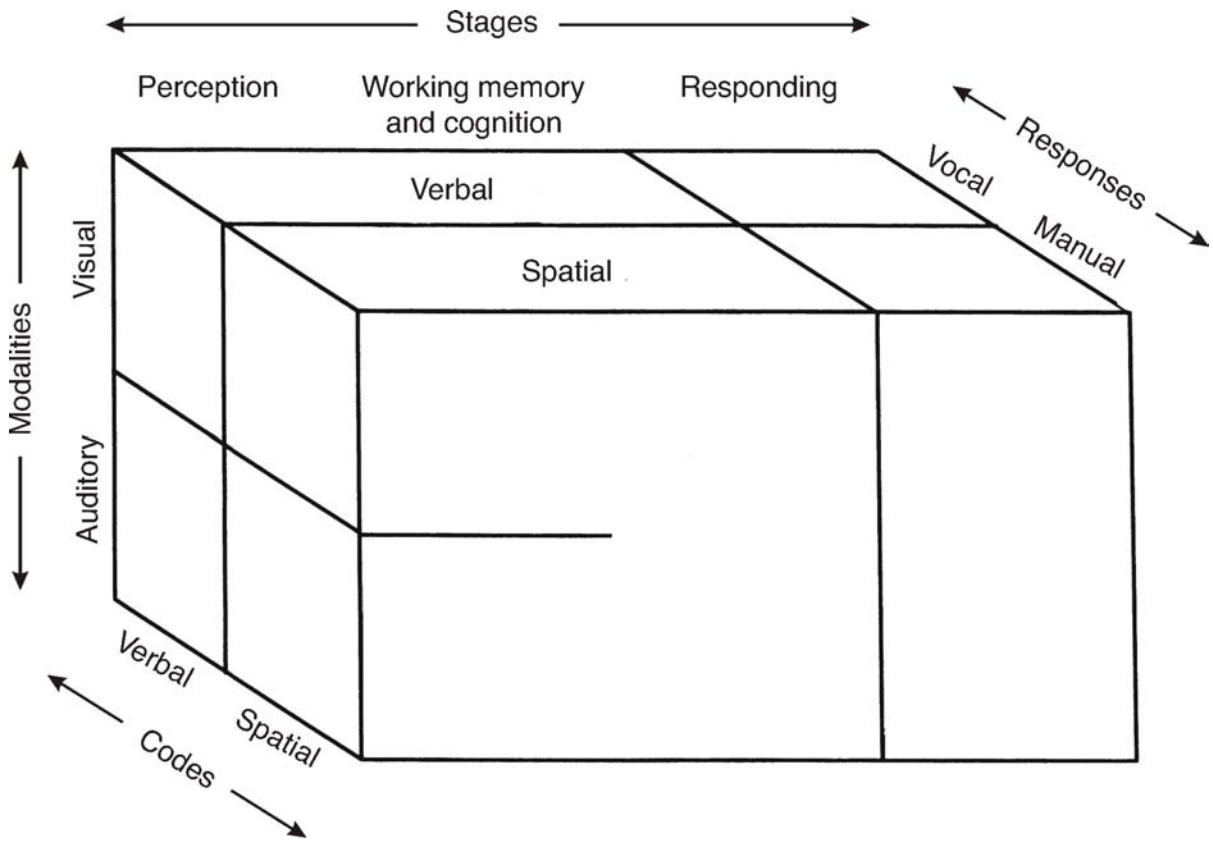


Figure 1. *Multiple Resource Theory*

The impetus for the development of MRT was to account for the inability of the single-resource theory (SRT) of attention (Kahneman, 1973) to adequately predict dual task performance. According to SRT, humans have a single pool of resources that are distributed between tasks requiring attentional resources (Kahneman, 1973). If a particular task consumes all the resources then the performance on any other tasks should degrade. According to Wickens (1984), research on dual-task performance has not always supported this theory. Instead, research seems to indicate that humans have more than one pool of resources with which to draw upon to perform tasks. Specifically, SRT could not account for four experimental phenomena: (1) difficulty insensitivity, (2) perfect time-sharing, (3) structural alteration effects, and (4) difficulty-structure uncoupling (Wickens, 1984). Difficulty insensitivity occurs when increases in primary task difficulty (i.e., consuming more processing resources) does not cause degraded performance on a secondary task. According to Wickens (1991), there are three possible explanations for difficulty insensitivity. First, performance may not remain constant on the manipulated task. This occurs because the individual maintains the supply of resources to the manipulated task even though the task demands have increased. Second, the task performance is data-limited and not resource-limited. Norman and Bobrow (1975) identified two types of processing limitations that can influence performance on a task: resource-limited and data-limited. The former occurs when performance is determined by the amount of resources allocated to a given task such that an increase in resource allotment will increase performance. Conversely, a decrease in resource allotment will decrease performance. The latter occurs when task performance is independent of the amount of resources that can be allocated to the task. With respect to difficulty insensitivity, data-limited processing would predict that a

decrease in the amount of resources would not degrade performance. The third explanation is that the processing resources are structure-dependent (Kantowitz & Knight, 1976; Navon & Gopher, 1979). If two tasks used separate structure-dependent processing resources, then increasing the difficulty of one task would have no affect on the performance of the other.

Perfect-time sharing refers to the ability of an individual to concurrently perform two tasks without degraded performance on either task. According to Wickens (1984), "structural alteration effects refer to instances in which the change in a processing-structure (modality of display, memory code, modality of response) brings about a change in interference with a concurrent task, even when the difficulty (demand for resources) of the changed task has not been altered" (p. 77). Difficulty-structure uncoupling refers to occasions when pairing the easier of two tasks with a third task results in greater interference than pairing the more difficult of the two tasks with the third task.

Multiple resource theory is built upon the foundation of two previously postulated capacity and structural theories. Capacity theory has been used to explain the variation in time-sharing efficiency between two tasks. Specifically, capacity theory posits that attentional resources can be allocated to different tasks based upon the demands they place on the human such that a high demand task will be allotted more resources than a low demand task (Wickens, 1980). Moreover, when the joint demands of two concurrent tasks exceed the supply of resources, the performance of one or both tasks will degrade (Wickens, 1984). With respect to MRT, it is conceived that humans have more than one "pool" of attentional resources to allocate to a given task(s) (Wickens & Holland, 2000). According to Wickens (1980), there are three characteristics of resources that affect dual-task performance: scarcity, allocation, and task difficulty. Scarcity refers to how a lack of resources will cause

performance of either one or both tasks to degrade. This is known as the dual-task decrement. Allocation refers to the ability to redistribute resources between more than one task. Task difficulty refers to the influence of different levels of task difficulty on the performance of two tasks. Two potential outcomes are possible. As the difficulty in a primary task increases, more resources will be needed to maintain the same level of performance on that task and fewer resources will be available for the secondary task. This should lead to degraded performance on the secondary task. Conversely, if resource allocation is maintained between the two tasks even though the difficulty in the primary task increases, the primary task performance will degrade.

The other foundational theory for MRT is structural theory. According to Wickens (1980), "structural theories infer attention to be related to the competition of tasks for specific information-processing mechanism (structures) necessary for performance" (p. 239). This theory originated in the research investigating the "bottleneck" that limited human information processing (Wickens, 1984). At that time, the focus was on the processing structure and whether the bottleneck occurred at the perceptual stage (early-selection theory) or the decision stage (late-selection theory). With respect to MRT, the structural theory has been expanded from one structure (processing stages) that influences dual-task performance to three structures (processing stages, perceptual modalities, and processing codes).

According to Wickens (1984), there are four underlying implications for time-sharing efficiency of dual tasks on MRT. First, fewer resources shared between two tasks will translate to increased time-sharing efficiency. Second, a greater amount of shared resources between two tasks will translate to a smoother performance operating characteristic (POC) compared to two tasks that do not share resources. The smoother POC occurs because freed

resources from a task that has decreased in difficulty can be shared with the other task to increase its performance. Third, a change in task difficulty is defined as a demand increase for one or more resources to maintain its previous performance level. Finally, an increase in task difficulty due to increasing the need for resources shared with a concurrent task will make performance dependent on the shared resources.

As noted previously, MRT consists of three resource structures that each have independent pools of attentional resources. These structures include processing stages, processing codes, and perceptual modalities. Processing stages consist of the following dichotomously divided stages: perceptual/central processing and responding (response selection and response execution). According to MRT, perceptual/central processing relies upon the same processing resources, while responding is functionally separate. A task that uses perceptual/central processing and a task that uses response processing will have better concurrent performance than two tasks that use both perceptual/central processing or response processing. The reason for the degraded performance of the latter is due to interference between the two tasks.

Processing codes is the second type of structure and it consists of two types of codes: verbal and spatial. As noted previously, the layout of the two codes in the graphical representation of the MRT correspond to the verbal (left) and spatial (right) cerebral hemispheres of the brain. According to MRT, two concurrent tasks requiring the same hemispheric resources should interfere with each other more than two tasks that use separate hemispheric resources (Wickens, 1991). Research findings seem to support this theory (Friedman, Polson, Dafoe, & Gaskill, 1982; Polson & Friedman, 1988). Performance on one or both of the tasks in the former should be lower than the latter tasks.

The dichotomy between processing codes is also relevant to the three information processing stages: perception, central processing, and response (Wickens, 1991). Perceptual processing decodes the meaning of raw sensory data that is relayed to the brain via the senses into useful information. With respect to displays (e.g., television), the individual is presented with verbal (text and speech) and spatial (pictures) information. MRT would predict that receiving too much information via the verbal code (i.e., concurrent text and speech) would cause degraded processing performance of information in the spatial code because of a lack of attentional resources that can be distributed to both concurrently. Thus, the amount of verbal information presented to the individual should be kept to a minimum.

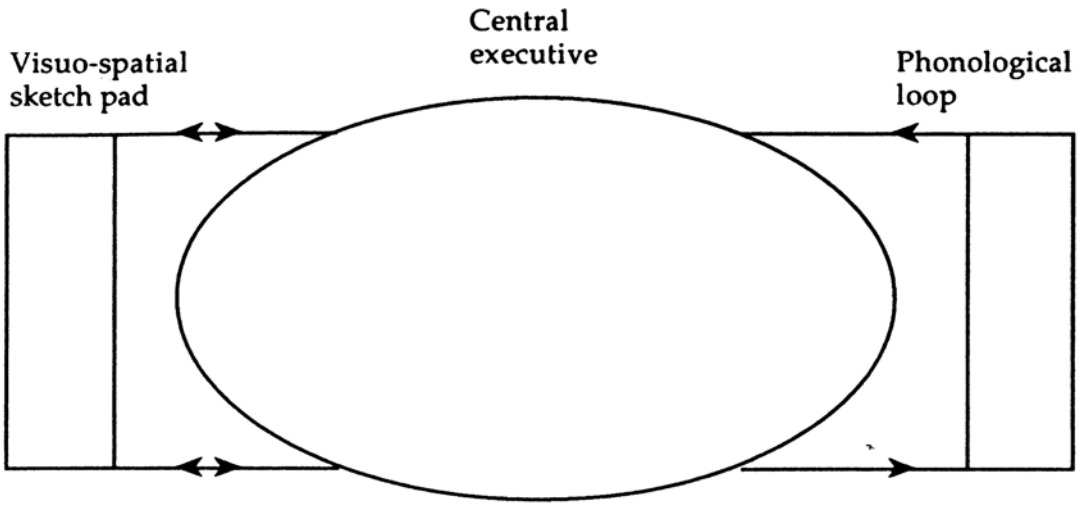


Figure 2. Working Memory

With respect to the central processing stage, research has identified two types of working memory: verbal and spatial (Klapp & Netick, 1998; Wickens & Hollands, 2000). According to Baddeley (1992; 1995), working memory consists of three components: central

executive, phonological loop, and visuo-spatial sketchpad. A graphical representation is presented in Figure 2. The central executive coordinates working memory activity and is responsible for allocating attentional resources to the phonological loop and the visuo-spatial sketchpad (Baddeley, 1996). The phonological loop (verbal working memory) consists of two components: phonological store and articulatory loop. The former is responsible for maintaining linguistic information (i.e., speech and sound) for 1 – 2 seconds in working memory, while the latter allows for retention of linguistic information in working memory indefinitely through subvocal rehearsal (Baddeley, 1992; Logie, 1995). The visuo-spatial sketchpad (spatial working memory) is responsible for retention and manipulation of visual and spatial images (Baddeley, 1995; Bruyer & Scailquin, 1998).

According to Wickens and Hollands (2000), three phenomena have been identified that can be attributed to working memory limitations: code interference, central executive interference, working memory codes and display matching. With respect to code interference, verbal and spatial codes do not compete for the same processing resources. In other words, two tasks will have better time-sharing performance if they use different working memory codes then if they share the same code.

The central executive is thought to have a limited amount of resources with which it uses to allocate attentional resources to the other two working memory components (Baddeley, 1995). This predicts that two tasks that each require a lot of central processing attentional resources should not be performed concurrently due to the increased likelihood for interference. Moreover, two concurrently performed tasks that do not demand a lot of central executive resources should have better performance than two requiring a lot of resources.

The last working memory limitation deals with working memory codes and display matching. Research findings indicate that performance can be increased when displays are optimally matched to processing codes (Wickens & Hollands, 2000). Specifically, when presenting verbal material, speech is better than text for verbal working memory (Nilson, Ohlsson, & Ronnberg, 1977; Wickens, Sandry, & Vidulich, 1983) because the decay rate of echoic memory (speech) is less than iconic memory (text), speech is more readily assessable to phonological store (Wickens & Hollands, 2000), and speech can be retained indefinitely in the phonological loop through subvocal rehearsal (Logie, 1995). Moreover, visual displays are better than auditory displays for tasks that require spatial working memory (Wickens, Vidulich, & Sandry-Garza, 1984).

The last processing code dichotomy pertains to response processing (Wickens, 1991). Specifically, verbal codes are represented by verbal responses and spatial codes are represented by manual responses. Research investigating concurrent dual-task performance using manual and speech responses has demonstrated that greater interference (i.e., worse performance) occurs when both tasks require manual responses or speech responses compared to one task requiring manual responses and the other speech responses (Vidulich, 1988; Wickens & Liu, 1988; Wickens, Sandry, & Vidulich, 1983).

Perceptual modalities are the last resource structure proposed by MRT (Wickens, 1984). According to MRT, the two modalities (auditory and visual) utilize different processing resources. This is supported by research findings that indicate dual-task performance is better when information presentation is cross-modal (auditory-visual) compared to intramodal (auditory-auditory or visual-visual) (Mousavi, Low, & Sweller, 1995; Rollins & Hendricks, 1980; Tindall-Ford, Chandler, & Sweller, 1997; Treisman &

Davies, 1978; Wickens, 1984; Wickens, Sandry, & Vidulich, 1983). With respect to television commercials, MRT would hypothesize that performance (i.e., recall and recognition of information) would be worse for commercials that included text, pictures, and speech compared to commercials using only pictures and speech because the former includes two channels (text and pictures) of input via the visual modality.

1.2.2 Cross-Modality Attention

Cross-modality attention occurs when a person receives parallel information input from two or more modalities. Auditory (verbal messages) and visual (pictures and text) modalities are the two types used in television commercials. Five design considerations may impact the ability of television commercials to adequately convey important information. They include (1) redundant coding, (2) the contiguity principle, (3) the split-attention principle, (4) visual dominance, and (5) auditory dominance.

1.2.2.1 Redundant Coding. Under certain circumstances it is most efficient to present the same information by more than one modality; a phenomenon known as redundant coding (Wickens & Hollands, 2000), or modality congruence (Leigh, 1992). The potential benefits of redundant coding are numerous. First, it capitalizes on the inherent strengths of different modalities (Mayer, 1997; 1999). Second, concurrent presentation of information via two modalities increases the likelihood the person will remember the information compared to presentation from only one modality (Frick, 1984). Third, redundant coding also increases the probability that the message will be transmitted to someone with a physical disability in one of the modalities. Fourth, redundantly coded information presented via two modalities decreases processing time (Miller, 1991). Finally, it decreases the likelihood of

interference due to incongruent messages being presented by two modalities (Leigh, 1992). These findings indicate that important television commercial information should be identically presented in more than one modality to ensure transmission to viewer.

With respect to television, research has demonstrated mixed results dealing with the importance of redundant coding to attention, memory, and learning. Grimes (1990) investigated how audio-video channel correspondence (i.e., redundancy) influenced attention and memory. The level of correspondence between audio and video (pictures) messages dealt with how well the two modalities matched one another. Using three versions (high, medium, and no-correspondence) of four television news programs, Grimes determined that the high audio-visual correspondence program "promoted the most efficient division of attention and the best memory scores on visual and factual recognition measures" (p. 15). It should be noted that Grimes did not manipulate the text as part of the visual message. Instead, the visual message included only background pictures. Murray, Manrai, and Manrai (1993) evaluated the comprehension of advertisements disclosures when voice-over was added to print "supers" (lines of small type printed at the bottom of advertisements). They determined that comprehension was significantly better when supers included both voice-over and print (72.9%) compared to only print supers (43.7%). In a similar study, Murray, Manrai, and Manray (1998) determined that dual modality (visual and auditory) video supers provided higher comprehension rates (77.1%) compared to single modality (visual) video supers (40.8%).

On the other hand, Reese (1984) investigated how redundancy of television voice, text, and pictures affect learning of news program content. The results indicated that learning was better when voice and pictures were redundant compared to when they were not

redundant. Interestingly, the addition of redundant text to redundant voice and pictures decreased learning compared to redundant voice and pictures. Multiple resource theory would predict that the performance decrement is due to overloading verbal working memory because two channels of verbal information (voice and text) must be concurrently processed.

1.2.2.2 Contiguity Principle. Closely related to redundant coding is the idea of the contiguity principle (Mayer & Anderson, 1992; Moreno & Mayer, 1999). When presenting information in words and pictures, research has shown that the advantages of redundancy will occur only if they are presented concurrently and not sequentially (Mayer, 1999; Mayer & Anderson, 1991; Mayer & Anderson, 1992; Mayer & Sims, 1994). Although research into the contiguity principle has focused on word and picture contiguity, it is possible that these findings may extend to auditory information. Thus, commercials should present important information (e.g., prescription drugs risks, side effects, and contraindications) concurrently via auditory and visual modalities to facilitate the likelihood that viewers will remember the information.

1.2.2.3 Split-Attention Principle. Also referred to as the split-attention effect (Chandler & Sweller, 1991), the split-attention principle states that words should be presented as auditory narration instead of visual text (Mayer, 1999). According to this viewpoint, the reason is that "the on-screen text and animation can overload the visual information processing system whereas narration is processed in the verbal information processing system and animation is processed in the visual information processing system" (Mayer, 1999, p. 560). Moreover, individuals can more readily integrate words and pictures when words are presented auditorily and not visually (Mayer & Moreno, 1998). Multiple

resource theory would also predict that information processing would be overloaded because text and animation both require visual attention resources to process the information.

1.2.2.4 Visual Dominance. Research has shown that when a person receives input from visual and auditory modalities, the latter is often neglected in favor of the former especially when the information content is different; a phenomenon known as visual dominance (Wickens & Hollands, 2000). Moreover, when individuals are forced to divide their attention between auditory and visual modalities, there is a tendency for the former to suffer at the expense of the latter (Massaro & Warner, 1977). In a study investigating the effects of visual and auditory modalities on delayed recall and recognition of word lists, Penney (1989b) determined that visual presentation produced better recall and recognition than auditory presentation. Similar results were found by Dean, Yekovich, and Gray (1988).

Posner, Nissen, and Klein (1976) proposed a four-part theory to explain visual dominance: (1) visual stimuli are not as inherently alerting as other modality stimuli; (2) visual stimuli require attentional monitoring to alert an individual; (3) attentional resources required by visual stimuli reduce available resources to other modalities; and (4) due to the need to monitor visual stimuli and limited attentional resources, individuals are attentionally biased towards the visual modality if they believe reliable input will be received from it. This theory suggests that visual and auditory information should be identical to prevent the auditory information from being masked by the visual information or that if different information must be presented for each of the modalities that the less important information should be in the auditory modality. With respect to television commercials, adequate provision disclosures could be concurrently printed on the screen (visual channel) with the same risk information presented through voice

over (auditory channel). If cognitive interference and visual dominance occurs between the two information channels it could be predicted that non-risk information presented visually might be processed at the expense of the auditory risk information.

Although visual dominance has been shown to be a powerful phenomenon, research has demonstrated that its influence can be moderated. Ward (1994) conducted an experiment that evaluated the effect of visual only, auditory only, both auditory & visual, and no cues on response times for auditory (sound in left or right ear) and visual targets (an 'x' projected on the left or right side of a white wall). The results indicated that when visual and auditory cues conflicted and the target was visual, visual cues dominated. But, when visual and auditory cues conflicted and the target was auditory, auditory cues dominated. The latter results tend to indicate that a potential exists for auditory dominance under certain circumstances.

1.2.2.5 Auditory Dominance. Although visual dominance usually occurs when visual and auditory information are presented together, there have been instances where visual information is neglected in favor of auditory information; referred to as auditory dominance (Easton & Basala, 1982). The first example is referred to as modality effect. Modality effect refers to the phenomenon that auditory presentation is better than visual presentation for recall of verbal information in short-term memory tasks (Penney, 1975; Penney, 1989a). One explanation for this phenomenon is that auditory information decays slower from echoic memory than visual information does from iconic memory, which in turn allows for a longer period of time for the former to be encoded into memory (Solso, 2001).

Although modality effects deal only with the superiority of auditory over visual presentation for short-term memory, auditory bias has been demonstrated in situations where

perceptual discrepancies exist between concurrently presented visual and auditory information. Specifically, Easton and Basala (1982) investigated the effects of perceptual dominance on lip reading. They found that "competing visual information exerted little effect on auditory speech recognition, but visual speech recognition was substantially interfered with when discrepant auditory information was present" (p. 562).

1.3 Warnings and Risk Communication

Prior to the mid-1980s, there was little published empirical research on the effectiveness of warnings (Wogalter et al., 1987). Since then, research has investigated how warnings influence people's knowledge and cautionary behavior. Some of the factors investigated include: warning placement (Wogalter et al., 1987), severity of consequences (Wogalter & Barlow, 1990), inclusion of pictorials (Wogalter, Rashid, Clarke, & Kalsher, 1991), presentation modality (Conzola & Wogalter, 1999), and effort needed to comply (Wogalter, Allison, & McKenna, 1989). Besides compliance, research has examined warning effectiveness at the intermediate stages of human information processing, such as attention (Laughery, Young, Vaubel, & Brelsford, 1993), perception (Wogalter, Godfrey, Fontenelle, Desaulniers, Rothenstein, & Laughery, 1987), and comprehension (Young & Wogalter, 1990).

Research on the effectiveness of pharmaceutical warnings is limited. The little research that has been done has largely addressed issues of warning placement and formatting. Researchers have examined the use of supplemental label space to convey drug risk information (Wogalter, Magurno, Dietrich, & Scott, 1999), consumer preference for over-the-counter (OTC) drug label formatting (Vigilante & Wogalter, 1999), and the

preferred ordering of OTC medication information (Vigilante & Wogalter, 1997). Other research has examined the use of supplemental pictographs on drug information sheets (Sojourner & Wogalter, 1997).

Limited research has investigated the effectiveness of including risk disclosures in DTC television commercials. The little research that has been conducted has focused on three types of commercials: prescription drugs, over-the-counter drugs, and alcoholic beverages. With respect to prescription drugs, Morris, Mazis, and Brinberg (1989) conducted a study to investigate the impact of different risk disclosure variations on individual's awareness and knowledge of warnings and commercial messages. Specifically, the authors manipulated the amount of risk disclosures (two or four risk statements), the specificity of the risk disclosures (general or specific), and the format of risk disclosures (single or dual modality & grouped or dispersed) for two, sixty-second fictitious prescription drugs advertisements (diuretic for hypertension & anti-inflammatory for arthritis) imbedded in a 17.5-minute program. The results indicated that longer risk disclosures (four risk statements), specific disclosures, and dual-modality/dispersed disclosures produced better risk awareness and knowledge than shorter risk disclosures (two risk statements), general disclosures, and single modality/grouped disclosures, respectively. Moreover, the results indicated that better awareness and knowledge of risk disclosures resulted in lower awareness and knowledge of benefits disclosures.

Two studies have focused on risk disclosures for over-the-counter drugs. Using an ingenious methodological design, Wright (1979) evaluated the influence of two types of action recommendations (general or concrete) and visual segments (action object only or action object and action demonstration) for antacid commercials imbedded in a 30-minute

television program on the likelihood of reading warnings on antacid bottles. Participants watched a television program that included three commercial breaks. Each commercial break included two 30-second commercials, one of which was one of three different antacid products. After watching the program, a distractor questionnaire was administered and the subject was paid for participating (cash and coupons; one of which was an antacid coupon). Later that same day, the person shopped in a retail store where antacid products were sold. The antacid shelf included a visual warning reminding participants about the potential hazards of antacids. An in-store observer recorded the antacid products the participant handled, how long they held them, and whether they looked on the back or side of the bottle. After shopping, the participants completed a questionnaire that asked questions about over-the-counter antacids. The results indicated that as part of the commercial, "a message combining a concrete verbal action recommendation with a visual enactment of the action sequence produced a stronger effect on compliance than messages excluding the concretizing materials" (Wright, 1979, p. 267). Moreover, the results indicated that expanding the length of the risk disclosures in the commercial would not strongly affect the buyer's behaviors (i.e., reading the back of the antacid bottles) in and of itself. This indicates that it isn't the length of the commercial, but the content, that is important.

A study using similar methodology to Wright (1979), was conducted by Houston and Rothschild (1980). The authors investigated the effects of 4 variations of Alka Seltzer commercials on four groups of participant's awareness, attitudes, and behavioral actions. The four disclosures consisted of the current disclosure (visual - "Read the label. Use only as directed."), current experimental (visual & auditory – "Read the label. Use only as directed."), general (visual & auditory – "Some antacids may not be safe for you. To avoid

harm, read the warnings on the label before you take this product."), and specific (visual & auditory – "Some antacids may not be safe if you are on a low salt diet. To avoid harm, read this and other warnings on the label before you take this product."). The four participant groups included individuals on a restricted-sodium diet, Alka Seltzer users, other antacid users, and non-antacid users. Participants watched a 30-minute television program that included 3 television programs and five commercial breaks. Each commercial break consisted of one 30-second repetition of one of the four conditions and two 30-second distractor commercials. The 14 distractor commercials consisted of five other types of products (dishwashing liquid, denture cleaner, shampoo, deodorant, and soda). After watching the program, the participants completed a distractor questionnaire about the three television programs. Then participants were given the opportunity to purchase one product for each of eight classes of products (antacids, four of the brands mentioned above, and three unrelated products) at a 40% discount in a store environment. Two observers recorded each participant's buying habits. The first recorded the amount of time spent considering antacids and the total time in the store with a stopwatch, while the second recorded the number of antacid brands picked up and the number picked up and closely examined. Finally, each participant completed a questionnaire that contained "measures of the effects of warnings on awareness and recall of Alka Seltzer commercials and warnings, knowledge of warning information about Alka Seltzer and two other antacid brands, tendency to inappropriately generalize warnings, and brand preferences for antacids" (Houston & Rothschild, 1980, p. 438). The results indicated that the current message format (visual only) was completely ineffective because none of the participants recognized or recalled the message. Instead, risk disclosures presented both auditory and visually were more effective than visual only.

Moreover, with respect to format and content, the results indicate that longer and more specific disclosures provided the best recall and recognition. These results indicate for commercial risk disclosures to be effective, they need to be concurrently presented in the visual and auditory modalities and that the content must provide explicit disclosures about the potential hazards of a product to facilitate recall and recognition.

Two studies have been conducted that focus on risk information for alcoholic beverage commercials. Barlow and Wogalter (1993) investigated the potential impact of including alcoholic beverage risk disclosures in television advertisements. Participants were presented with a television program that contained five commercial breaks. Risk disclosures were presented in either auditory (voice), visual (print), combined (voice and print) modalities, or no risk disclosure. Results showed greater knowledge and memory of the combined modality and visual-only risk disclosures compared to auditory-only risk disclosures.

Smith (1990) used a 2 (risk disclosure severity: high, low) x 2 (product relevance: high, low) x 3 (mode: auditory, visual, auditory-visual) factorial design to investigate the effects of risk disclosure severity, product relevance, and mode of presentation on risk disclosure recall and product safety beliefs for alcoholic beverage commercials. Participants were presented with a 22-minute program that had one commercial interruption (four 30-second commercials; alcoholic beverage commercial was second) inserted 10-minutes into the program. Overall, the results indicate that including alcoholic beverage risk disclosures in television commercials can increase warning awareness. Specifically, high severity risk disclosures produced significantly greater recall than low, low product relevance greater than high, and auditory and auditory-visual greater recall than visual.

Two studies focusing on DTCPDA for print advertisements are worth mentioning. Using two studies, Davis (2000) investigated the influence of risk disclosure completeness on consumer's perception of drug safety and appeal. The first study manipulated risk disclosure completeness (incomplete vs. complete) for eight prescription drugs to determine how it would influence the participant's reported intentions to purchase or recommend the drug on a 7-point scale. The incomplete risk disclosures consisted of the original print advertisements, while the complete risk disclosures included all known side effects for the drugs that had a probability of occurrence above 3%. The results indicated that the more complete risk disclosures decreased the appeal of the drug compared to the incomplete risk disclosures. Although the two types of disclosures differed significantly, the overall responses for both groups indicated a positive likelihood to purchase or recommend the drug. This was unexpected because the authors assumed the complete risk disclosures would result in negative responses while the incomplete risk disclosures would result in positive responses. The second study attempted to address the unintuitive results from the first study. Complete and incomplete risk disclosures (using the aforementioned guidelines) that included a numerical description of side effect occurrence were developed for five drugs. Five-page questionnaires were created using pairs of drug risk disclosures (one complete & one incomplete) for different products. Participants were asked to rate how safe they believed each of the drugs to be and to pick which one of the pair they would choose to purchase or recommend to someone else. The results indicated incomplete risk disclosures were always rated safer than complete risk disclosures. Moreover, the incomplete risk disclosures were always chosen instead of complete risk disclosures for intent to purchase or recommend.

Wogalter, Paine, Mills, and Smith-Jackson (1999) investigated which type of format would best facilitate communication of benefit and risk disclosures in DTC print advertisements. Six placements (separated, no color; separate, color; integrated, no color; integrated, color; separated, enhanced; and control) were created for six fictional prescription drugs. The drug advertisements were integrated into a realistic-appearing magazine. Each participant saw all six drug advertisements, each with a different placement. The results showed that greater knowledge of risks is obtained when risk disclosures are simultaneously made more salient and placed in a separate location in the printed ad from the benefit disclosures.

1.4 Study Objectives

The proposed study seeks to determine whether concurrently presented visual (text) and auditory (voice) disclosures can affect the processing and comprehension of risk disclosures in television DTCPDA. Most current prescription drug commercials present risk disclosures auditorily. One issue addressed is whether, like the Barlow and Wogalter (1993) study using alcohol beverage commercials, risk disclosures are better conveyed by concurrent presentation in both visual and auditory modalities as suggested by the redundant coding principle. A second issue is whether recall and recognition is better for visual risk disclosures compared to auditory as suggested by the visual dominance principle or vise versa as suggested by the auditory dominance and split-attention principles. A third issue is whether concurrently presenting non-risk disclosures in a competing modality would negatively affect the recall and recognition risk disclosures as suggested by MRT.

1.5 Hypotheses

Based on the study objectives and the previous research discussed above, 13 hypotheses were developed. Table 1 presents each of the hypotheses and an explanation. A thorough justification for each of the hypotheses follows the table.

Table 1

Thirteen Hypotheses and Explanations

Hypothesis	Explanation
1	Any risk disclosure conditions produce higher drug name recall, risk recall, and risk recognition than no risk disclosures.
2	VR & AR produces higher drug name recall, risk recall, and risk recognition than VR.
3	VR & AR produces higher drug name recall, risk recall, and risk recognition than AR.
4	VR & AR produces higher drug name recall, risk recall, and risk recognition than VR & ANR.
5	VR & AR produces higher drug name recall, risk recall, and risk recognition than AR & VNR.
6	VR produces different drug name recall, risk recall, and risk recognition than AR.
7	VR produces higher drug name recall, risk recall, and risk recognition than VR & ANR.
8	VR produces higher drug name recall, risk recall, and risk recognition than AR & VNR.
9	AR produces higher drug name recall, risk recall, and risk recognition than VR & ANR.
10	AR produces higher drug name recall, risk recall, and risk recognition than AR & VNR.
11	VR & ANR produces lower drug name recall, risk recall, and risk recognition than all other risk disclosure conditions.
12	AR & VNR produces lower drug name recall, risk recall, and risk recognition than all other risk disclosure conditions.
13	VR & ANR produces different drug name recall, risk recall, and risk recognition than AR & VNR.

Hypothesis 1: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with any risk disclosure modality* (e.g., both visual and auditory, only visual, only auditory, visual risk and auditory non-risk, or auditory risk and visual non-risk) compared to prescription drug commercials *without risk disclosures*.

Hypothesis 2: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual and auditory risk disclosures* (VR & AR) compared to prescription drug commercials with *visual risk disclosures* (VR). According to the redundant coding principle, concurrent presentation of visual and auditory risk disclosures would increase the likelihood of recall and recognition compared to individual presentation in the visual modality (Wickens & Hollands, 2000).

Hypothesis 3: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual and auditory risk disclosures* (VR & AR) compared to prescription drug commercials with *auditory risk disclosures* (AR). According to the redundant coding principle, concurrent presentation of visual and auditory risk disclosures would increase the likelihood of recall and recognition compared to individual presentation in the auditory modality (Wickens & Hollands, 2000).

Hypothesis 4: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual and auditory risk disclosures* (VR & AR) compared to prescription drug commercials with *visual risk disclosures and auditory non-risk disclosures* (VR & ANR). According to MRT,

concurrent presentation of visual and auditory risk disclosures would increase the likelihood of recall and recognition (Frick, 1984) compared to visual risk disclosures and auditory non-risk disclosures because the latter would overload verbal working memory because non-redundant disclosures are presented simultaneously in two modalities (Wickens, 1984).

Hypothesis 5: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual and auditory risk disclosures* (VR & AR) compared to prescription drug commercials with *auditory risk disclosures and visual non-risk disclosure* (AR & VNR). According to MRT, concurrent presentation of visual and auditory risk disclosures would increase the likelihood of recall and recognition (Frick, 1984) compared to auditory risk disclosures and visual non-risk disclosure because the latter would overload verbal working memory because non-redundant disclosures are presented simultaneously in two modalities (Wickens, 1984).

Hypothesis 6: Recall of drug names and recall and recognition of risk disclosures will be significantly different between prescription drug commercials *with visual risk disclosures* (VR) and prescription drug commercials *with auditory risk disclosures* (AR). On the one hand, according to the visual dominance principle, visual risk disclosures should produce significantly better recall and recognition compared to auditory risk disclosures because the latter is neglected in favor of the former (Wickens & Hollands, 2000). On the other hand, according to the split-attention principle (Mayer, 1999) and auditory dominance principle (Penney, 1975), auditory risk disclosures should produce significantly better recall and recognition compared

to visual risk disclosures because verbal information should be presented in auditory narration instead of visual text.

Hypothesis 7: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual risk disclosures* (VR) compared to prescription drug commercials *with visual risk disclosures and auditory non-risk disclosures* (VR & ANR). According to MRT, the latter variation should produce poorer recall and recognition because verbal information from two modalities will have to be concurrently processed, causing an overload for verbal working memory, while the visual risk disclosure variation only requires processing verbal information from a single modality (Wickens, 1984).

Hypothesis 8: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with visual risk disclosures* (VR) compared to prescription drug commercials *with auditory risk disclosures and visual non-risk disclosures* (AR & VNR). According to MRT, the latter variation should produce poorer recall and recognition because verbal information from two modalities will have to be concurrently processed, causing an overload for verbal working memory, while the visual risk disclosure variation only requires processing verbal information from a single modality (Wickens, 1984).

Hypothesis 9: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with auditory risk disclosures* (AR) compared to prescription drug commercials *with visual risk disclosures and auditory non-risk disclosures* (VR & ANR). According to MRT, the latter variation should produce poorer recall and recognition because verbal

information from two modalities will have to be concurrently processed, causing an overload for verbal working memory, while the auditory risk disclosure variation only requires processing verbal information from a single modality (Wickens, 1984).

Hypothesis 10: Recall of drug names and recall and recognition of risk disclosures will be significantly better for prescription drug commercials *with auditory risk disclosures* (AR) compared to prescription drug commercials *with auditory risk disclosures and visual non-risk disclosures* (AR & VNR). According to MRT, the latter variation should produce poorer recall and recognition because verbal information from two modalities will have to be concurrently processed, causing an overload for verbal working memory, while the auditory risk disclosure variation only requires processing verbal information from a single modality (Wickens, 1984).

Hypothesis 11: Recall of drug names and recall and recognition of risk disclosures will be significantly worse for prescription drug commercials *with visual risk disclosures and auditory non-risk disclosures* (VR & ANR) compared to all other commercial variations. According to MRT, this variation will produce poor recall and recognition because two modalities of verbal information have to be concurrently processed, causing an overload for verbal working memory (Wickens, 1984).

Hypothesis 12: Recall of drug names and recall and recognition of risk disclosures will be significantly worse for prescription drug commercials *with auditory risk disclosures and visual non-risk disclosures* (AR & VNR) compared to all other commercial variations. According to MRT, this variation will produce poor recall and recognition because two modalities of verbal information have to be concurrently processed, causing an overload for verbal working memory (Wickens, 1984).

Hypothesis 13: Recall of drug names and recall and recognition of risk disclosures will be significantly different between prescription drug commercials *with visual risk disclosures and auditory non-risk disclosures* (VR & ANR) and prescription drug commercials *with auditory risk disclosures and visual non-risk disclosures* (AR & VNR). On the one hand, according to the auditory dominance principle, auditory non-risk disclosures might be processed at the expense of visual risk disclosures resulting in significantly worse recall and recognition of risk disclosures in prescription drug commercials with visual risk disclosures and auditory non-risk disclosures compared to prescription drug commercials with auditory risk disclosures and visual non-risk disclosures (Penney, 1975). On the other hand, according to the visual dominance principle, visual non-risk disclosures might be processed at the expense of auditory risk disclosures resulting in significantly worse recall and recognition of risk disclosures in prescription drug commercials with auditory risk disclosures and visual non-risk disclosure compared to prescription drug commercials with visual risk disclosures and auditory non-risk disclosures (Massaro & Warner, 1977).

2. Method

2.1 Participants

One hundred eighty participants were randomly assigned to one of six groups each consisting of 30 participants. Each group viewed one of six programs. Participants were

recruited from Introduction to Psychology courses via an on-line scheduling system (Experimetrix). Participants were given course credit for participation.

2.2 Design

Six conditions were developed for each of six prescription drug commercials. The conditions were:

Control: No visual (text) or auditory (voice) disclosures [control]

AR: Auditory (voice) risk disclosures

VR: Visual (text) risk disclosures

VR & AR: Visual (text) risk disclosures and auditory (voice) risk disclosures

VR & ANR: Visual (text) risk disclosures and auditory (voice) non-risk disclosures

AR & VNR: Auditory (voice) risk disclosures and visual (text) non-risk disclosures

Examples of the visual risk and non-risk disclosures for Prevacid are provided in Appendix A and B, respectively.

2.3 Materials

2.3.1 Prescription Drug Commercials

Six prescription drug commercials, 12 distractor commercials, and 6 primetime news excerpts from four primetime news programs were recorded from digital cable with a digital video camera, uploaded, and stored on a Macintosh G4 computer. The names for each are provided in Table 2.

Table 2

Program Content, Names, and Topic for the Two Types of Commercials (Prescription Drug & Distractor) and Program Excerpts

Program Content	Name	Topic
Prescription Drug Commercials	Advair	Asthma
	Ambien	Sleep aid
	Elidel	Eczema
	Paxil	Generalized Anxiety Disorder
	Prevacid	Acid Reflux Disease
	Zyrtec	Allergies
Distractor Commercials	Charmin	Toilet paper
	Clorox	Bleach
	Colgate	Toothpaste
	Equal	Sweetener
	Gain	Laundry detergent
	Glad	Trash bags
	Merita	Bread
	Pledge	Furniture polish
	Quaker	Breakfast cereal
	Stouffers	Read to eat meals
	Suave	Lotion
	Visine	Eye drops
Primetime News Excerpts	Colin Powell	
	Down the Drain	
	Dr. Sharistani	
	Lionel Tate	
	Moving Violations	
	Top Cop	

The commercials and excerpts were combined to create 6 programs consisting of 12 segments each (6 primetime news excerpts and 6 commercial clusters). The 12 segments were spliced together where a news excerpt followed a commercial cluster segment. A five second blank section was inserted after each news excerpt to provide the experimenter with time to stop the program. During the stopped period, participants rated the preceding segment. The completed programs were exported to DVD-R to allow presentation using a DVD player on a 48.26-cm (19-inch) diagonal color television. The order of the prescription drug commercials, distractor commercials, primetime news excerpts, and blank sections for each of the 6 programs are presented in Appendix C

Each commercial cluster was comprised of three 30-second commercials, one of which was a prescription drug commercial. Final Cut Pro 3.0 video-editing software was used to alter the means by which risk and non-risk disclosures were presented in the prescription drug commercials. Initially, the 6 prescription drug commercials were stripped of all auditory (i.e., background music and voiceovers) and visual content (i.e., print) besides the name of the drug. The stripped commercials served as the control condition for each drug commercial and were used as the foundation for developing the other 5 conditions. Visual content presented on the top and/or bottom of the screen for the original drug commercial was removed by adding black bars, while content in the middle was removed by deleting scenes. The auditory content was removed by turning off the auditory track via Final Cut Pro 3.0. Only commercials that could be modified and retain realism were included in the study.

The five conditions that included risk disclosures (i.e., AR, VR, VR & AR, VR & ANR, AR & VNR) had content consisting of four side effects and two contraindication

statements. Conditions that included non-risk disclosures (i.e., VR & ANR and AR & VNR) had content consisting of five indications and one adequate provision statement consisting of either an Internet web page (URL) address, a toll-free number to contact the manufacturer, or to contact their physician for further information.

Risk and non-risk disclosures were presented in one of three ways: visual, auditory, or concurrent visual and auditory. Visual risk disclosures presented the four side effects and two contraindication statements such that only one was presented on the screen at a time. The same presentation format was used for visual non-risk disclosures with the exception that five indications and one adequate provision statement were used instead. The number of words per risk and non-risk disclosure ranged from 29 to 37. Auditory risk and non-risk disclosures presented the same disclosures that were used for visual risk and non-risk disclosures, respectively. Auditory disclosures were presented in a male voice. Concurrent visual and auditory disclosures presented risk disclosures in one modality and non-risk disclosures in the other. Words were spoken and shown at an average rate of 92 words per minute.

To prevent participant's familiarity with certain prescription drug commercials from affecting their recall and recognition scores, the risk disclosures consisted of fictitious content. This was done to confirm that participants were recalling and recognizing risk disclosures from this study and not from past exposures to the commercials. The risk and non-risk disclosures for each of the six products are provided in Appendix D.

2.3.2 Informed Consent Form

A North Carolina State University Institutional Review Board (IRB) approved consent form was used to inform participants about the nature of the study (see Appendix E). The consent form included the title of the study, experimenter's name, information about the study including any potential risks and benefits, compensation received for participation, contact information, and signature lines for the participant and experimenter.

2.3.3 Study Instructions

The study instructions consisted of two parts (see Appendix F). The first part informed the participants that they were taking part in a study that would ask them to evaluate their perceptions of several primetime news programs. Also, it provided an overview of the steps the participant would be asked to complete during the study. It was read to the participant after they completed the informed consent form and before they viewed the program. The second part was read to the participants after they viewed the program. It explained that they would complete three questionnaires, to read the instructions for each questionnaire prior to completing them, to complete each page of the study before turning it over, and to not turn back to previous pages.

2.3.4 Demographics Form

Participants completed a demographics form that included the categories of age, gender, ethnicity, occupation, and education (see Appendix G).

2.3.5 Television Viewing Habits Questionnaire

Participants completed a television viewing habits questionnaire (see Appendix H) that asked if they watch television, and if so, how many hours per week. The questionnaire also asked the participants to choose the types of programs they normally watch from a list of 17 categories. Finally, they were asked to choose their favorite category of television program from the list of 17 categories.

2.3.6 Television Excerpts Rating Form

Participants completed a television excerpts rating form (see Appendix I) after viewing each of the six segments (one commercial cluster and one primetime news excerpt). The form comprised two questions that asked them to rate how important and appealing they thought each segment to be compared to similar programs they have viewed in the past. Ratings were made on a 7-point Likert-type scale that included anchors for each point ranging from extremely important (appealing) to extremely unimportant (unappealing).

2.3.7 Recall and Recognition Questionnaires

The dependent variables were derived from responses to three questionnaires assessing participant's ability to recall and recognize information about the primetime news excerpts, the distractor commercials, and the prescription drug commercials risk and non-risk disclosures. Participants first completed a drug name recall questionnaire followed by a risk recall questionnaire and a risk recognition questionnaire. The order of questionnaires was such that participants were initially presented with no cues (drug and risk recall) followed by some cues (risk recognition). The order of presentation for the three questionnaires could not be counterbalanced because presenting the risk recognition questionnaire prior to the risk

recall would increase the likelihood that the participants would be able to correctly recall risks because the former would provide cues for the latter.

2.3.7.1 Drug name recall. Questionnaire 1 consisted of ten open-ended questions to assess recall of the content of the news excerpts and commercials (see Appendix J). Four of the questions focused on the program excerpts, while two of the remaining six dealt with general commercial information. The last four questions dealt with prescription drug commercials risk and non-risk disclosures. Two of the four questions asked the participant if any of the commercials contained statements dealing with risks, hazards, and warnings, and if so, to list the names of the commercials. The second two drug commercial questions asked the participant if any of the commercials contained statements not dealing with risks, hazards, and warnings (i.e., non-risk information), and if so, to list the names of the commercials.

2.3.7.2 Risk Recall. Questionnaire 2 consisted of eight open-ended questions to assess general recall of the news excerpts and commercials along with risk recall for the drug commercials (see Appendix K). Two of the questions focused on the program excerpts, while four of the remaining six dealt with general commercial information. The last two questions asked the participants to report all risk and non-risk disclosures they remember seeing or hearing in the prescription drug commercials along with the brand and type of product where it occurred.

2.3.7.3 Risk Recognition. Questionnaire 3 consisted of 30 multiple-choice questions to assess general recognition of the news excerpts and commercials along with risk

recognition for the drug commercials (see Appendix L). Two of the questions dealt with the program excerpts and four dealt with general commercial information. With respect to the remaining 24 items, four were included for each of the six prescription drug commercials. Two dealt with risk disclosures and two with non-risk disclosures. For the risk disclosures, one question asked the participants to identify the side effects they saw or heard in a given prescription drug commercial by choosing from a list of six side effects, whereas another question had them identify the warning statements they saw or heard by choosing from a list of three contraindications. The participants were instructed to check all that apply for each of the questions. Two distractor items were included and placed randomly in the side effects list. There was also one distractor item in the contraindications list. For the non-risk disclosures, one question asked the participants to identify the symptoms they saw or heard in a given prescription drug commercial by choosing from a list of six symptoms, while another question had them identify the information statements they saw or heard by choosing from a list of three adequate provision statements. The participants were instructed to check all that apply for each of the questions. Two distractor items were included and placed randomly in the symptoms list. There was also one distractor item in the adequate provision statements list.

2.3.8 Follow-Up Questionnaire

Participants completed a follow-up questionnaire (see Appendix M) after completing the drug name recall, risk recall, and risk recognition questionnaires. The questionnaire asked the participants if they had seen any of the commercials for the six prescription drugs

prior to the study, whether they had been prescribed any of the drugs, and to list any comments or thoughts they might have about the prescription drug commercials.

2.3.9 Debriefing Form

Participants were provided a debriefing form (see Appendix N) following completion of the study. The form explained the two types of deception that were included in the study and explained why it was necessary. They were told that the true purpose of the study was to assess their recall and recognition of prescription drug commercials risk disclosures and that fictitious risk disclosures were included. Moreover, they were provided with the actual side effects for each of the six drug commercials.

2.4 Procedure

Initially, the participants were asked to complete an informed consent form. Second, the experimenter read a set of scripted instructions that explained to the participants that they were taking part in a study that would ask them to evaluate their perceptions of several primetime news programs. Third, the participants completed the demographics questionnaire. Fourth, the participants completed the television viewing habits questionnaire. Fifth, participants viewed the program in six segments (one commercial cluster and one primetime news excerpt). After each segment, the program was stopped and participants were asked to rate the segment's importance and appeal using the television excerpts rating form. The program was started again after all of the participants completed the form. Sixth, after all six segments were viewed and rated, the participants completed the drug name recall, risk recall, and risk recognition questionnaires. Seventh, after the three questionnaires were completed, the participants completed the follow-up questionnaire. Finally, the participants

were presented with the debriefing form. Upon completing the study, each participant was remunerated with three credits for their participation.

3. Results

3.1 Demographics Data

Of the 180 participants (M = 20.6 yrs, SD =4.6), 87 % (n = 158) reported being full-time students. Men comprised 57% (n = 103) of the participants. Participant ethnicity is provided in Table 2. The majority of participants were Caucasian (74%). The average education level was 13.2 years (SD = 1.4) or a sophomore in college. All but two participants reported watching television. Of those who reported watching television, they reported watching an average of 10.5 hours (SD = 9.2) of television per week. Participants were asked if they had seen the prescription drug commercials presented in the study on television and whether they had been prescribed any of the six drugs. Table 3 and 4 present these data, respectively.

Table 3

Ethnicity Data

Ethnic Background	Percentage of Participants
Caucasian	74.6%
African-American	9.4%
Asian	6.1%
Middle Eastern	2.2%
Mixed Race	2.2%
African	1.6%
Other	1.6%
East Indian	1.1%
Hispanic or Latino	.6%
Native American	.6%

Table 4

Mean Percentage Responses to the Question, "Have You Seen Any of the Following Commercials in the Past?

Prescription Drug Commercial	Percent Reporting "Yes"
Advair	45.0%
Ambien	47.8%
Elidel	14.4%
Paxil	64.4%
Prevacid	62.8%
Zyrtec	91.1%

Table 5

Mean Percentage Responses to the Question, "Have You Ever Been Prescribed any of the Following Prescription Drugs?"

Prescription Drug Commercial	Percent Reporting "Yes"
Advair	1.1%
Ambien	2.2%
Elidel	1.7%
Paxil	3.3%
Prevacid	3.3%
Zyrtec	10.6%

3.2 Scoring

The scoring for the three questionnaires are described in the following subsections.

3.2.1 Drug Name Recall Questionnaire

Three score categories were calculated (hits, false alarms, and corrected hits) for each of the six drugs for risk disclosures. Hits scores were considered correct if the participant identified either the drug name (i.e., Advair, Ambien, Elidel, Paxil, Prevacid, or Zyrtec) or what the drug treated for commercials that included risk disclosures. Correct answers received a "1" and incorrect answers received a "0." A proportion was calculated for each drug using the number of correct drug names (0 or 1) identified by 1.

False alarms scores were calculated similarly to the hits scores, with the exception that the participant had to identify either a brand name or what the drug treated for a commercial that did not include risk disclosures. The false alarms scores were computed only to allow calculation of the corrected hits scores. Thus, analyses of false alarms scores

were not conducted for drug name recall. The corrected hits scores were calculated by subtracting the false alarms score from the hits score and could range between –1 and 1.

The two score categories (hits and corrected hits) for each of the six drugs were rearranged such that all drug commercials for a given condition had their own data column. Thus, there were six drug columns for each of the two score categories for a total of 12 columns for the drug name recall questionnaire. These columns were used in the subsequent analyses.

3.2.2 Risk Recall Questionnaire

Three score categories were calculated (hits, false alarms, and corrected hits) for each of the six drugs risk disclosures. A hits score was considered correct if the participant identified either the drug name or what the drug treated and one or more risk disclosures for that drug. For each drug, a total of six correct risk disclosures could be reported. A proportion was calculated for each drug using the reported number of correct risk disclosures divided by the six possible correct risk disclosures. Scoring was lenient in the sense that the exact wording for each risk was not necessary to earn a point, although the answer needed to be synonymous with the correct answer to receive credit.

False alarms scores were calculated similarly to the hits scores, with the exception that the participant had to identify either the drug name or what the drug treated and one or more incorrect risk disclosures for the given drug. A proportion was calculated for each product using the number of incorrect risk disclosures identified divided by a total of three incorrect risk disclosures. The false alarms scores were computed only to allow calculation of the corrected hits scores. Thus, analyses of false alarms scores were not conducted for risk

recall. The corrected hits scores were calculated by subtracting the false alarms score from the hits score and could range between –1 and 1.

The two score categories (hits and corrected hits) for each of the six drugs were rearranged such that all drug commercials for a given condition had their own data column. Thus, there were six drug columns for each of the two score categories for a total of 12 columns for the risk recall questionnaire. These columns were used in the subsequent analyses.

3.2.3 Risk Recognition Questionnaire

Three score categories were calculated (hits, false alarms, and corrected hits) for each of the six drugs risk disclosures. For each drug, the participants were presented with two questions dealing with risk disclosures. One question asked the participants to recognize the side effects they saw or heard in a given prescription drug commercial by choosing from a list of six side effects. The other question had the participants recognize the warning statements they saw or heard by choosing from a list of three warning statements. The participants were instructed to check all that apply for each of the questions. Of the six side effects, four were included in the commercials and two were distractors. Moreover, for the warnings statements, two were included in the commercials and one was a distractor.

With respect to scoring, the side effects and warnings responses for the two questions were combined. In other words, there were a possibility of six correct responses and three incorrect responses per drug. The hits score was calculated by summing the number of correct risk disclosures checked by the participant for a given drug. A proportion was

calculated for each drug using the number of correct risk disclosures identified divided by the six possible correct risk disclosures.

The false alarms score was calculated the same as the hits score, with the exception that the participant had to check one or more incorrect risk disclosures responses for the given drug. A proportion was calculated for each product using the number of incorrect risk disclosures identified by the three possible incorrect risk disclosures. The false alarms scores were computed only to allow calculation of the corrected hits scores. Thus, analyses of false alarms scores were not conducted for risk recognition. The corrected hits scores were calculated by subtracting the false alarms score from the hits score and could range between –1 and 1.

The two score categories (hits and corrected hits) for each of the six drugs were rearranged such that all drug commercials for a given condition had their own data column. Thus, there were six drug columns for each of the two score categories for a total of 12 columns for the risk recognition questionnaire. These columns were used in the subsequent analyses.

3.3 Analyses Used

Multivariate analyses of variance (MANOVAs) were performed on the three dependent variables (drug name recall, risk recall, and risk recognition) for hits and corrected hits for risk disclosures. MANOVAs were conducted to protect against an inflated Type 1 error (finding a significant effect when there is not one). Analyses of variance (ANOVAs) were preformed on each of the dependent variables for statistically significant MANOVAs for hits and corrected hits. Comparisons among the means for significant effects were

conducted using Tukey's Honestly Significant Difference (HSD) test. The data for all analyses is provided in Appendix O. MANOVA and ANOVA tables are provided in Appendices P – MM.

3.4 Organization of Results

3.4.1 Primary Analyses

This purpose of this section is to provide the reader with an overview of the way the analyses are presented in the remainder of the Results section. The primary goal of the research was to identify which of six methods of risk disclosure presentation provided the greatest drug name recall, risk recall, and risk recognition. Therefore, the non-risk disclosures were not analyzed for any of the dependent variables. One-way MANOVAs were performed for the dependent variables drug name recall, risk recall, and risk recognition for hits and corrected hits. Subsequent ANOVAs were performed for all significant MANOVAS, for a total of six ANOVAs.

Analyses of corrected hits, based upon Threshold/Choice Theory (Luce, 1959; Luce, 1963), were included to show the effect that false alarms have on hits by correcting the latter for guessing by subtracting out the false alarm scores. Corrected hits were also included because advertising research has shown that hit and false alarm rates sometimes do not follow a similar pattern of results across experimental conditions (Leigh & Menon, 1986). Although, there are limitations to threshold analysis (i.e., calculation of changes in individual sensitivity are not possible with single hit/false alarm pairs), it was used instead of Signal Detection Theory analysis because participants' scores had several instances of 0s (no recall

or recognition) and 1s (perfect recall or recognition), which precludes the calculation of individual or group sensitivity (*d*') scores (Macmillan & Kaplan, 1985).

3.4.2 Secondary Analyses

Further analyses were completed for several reasons. First, to determine if statistically significant differences exist between the drug commercials for a given condition. If so, this could be useful in explaining why some of the hypotheses failed to show statistical significance. Second, to determine if differences exist between the drug commercials across conditions. It may be that a drug commercial for one risk disclosure condition that was hypothesized to produce greater recall or recognition compared to another drug commercial in another condition would in fact show the opposite trend. Third, to determine if drug name recall, risk recall, and/or recognition varied due to participant's gender. With these reasons in mind, two sets of factorial MANOVAs (Program x Condition & Gender x Condition) were calculated for the dependent variables drug name recall, risk recall, and risk recognition for hits and corrected hits, for a total of 4 factorial MANOVAs. As with the primary analyses, subsequent ANOVAs were performed for all MANOVAS with significant interactions or for the significant main effects in instances where the interaction was not significant, for a total of 12 ANOVAs.

3.5 Primary Analyses

3.5.1 MANOVAs

3.5.1.1 Hits. A one-way repeated measures MANOVA with six levels performed on drug name recall, risk recall, and risk recognition for proportion hits produced a significant

effect for risk disclosure: Wilks' Lambda = .09, $F(15, 165)=116.62$, $p<.0001$. Subsequent ANOVAs for each of the three dependent variables are discussed below.

3.5.1.2 Corrected Hits. A one-way repeated measures MANOVA with six levels performed on drug name recall, risk recall, and risk recognition for proportion corrected hits produced a significant effect for risk disclosure: Wilks' Lambda = .12, $F(15, 165)=77.83$, $p<.0001$. Subsequent ANOVAs for each of the three dependent variables are discussed below.

3.5.2 ANOVAs

3.5.2.1 Drug Name Recall (Hits). A one-way ANOVA with six levels performed on the hits scores produced a significant effect of risk disclosure conditions, $F(5,895)=15.79$, $p<.0001$. Mean drug name recall ("proportion hits") for the six risk disclosure conditions are provided in Figure 3.

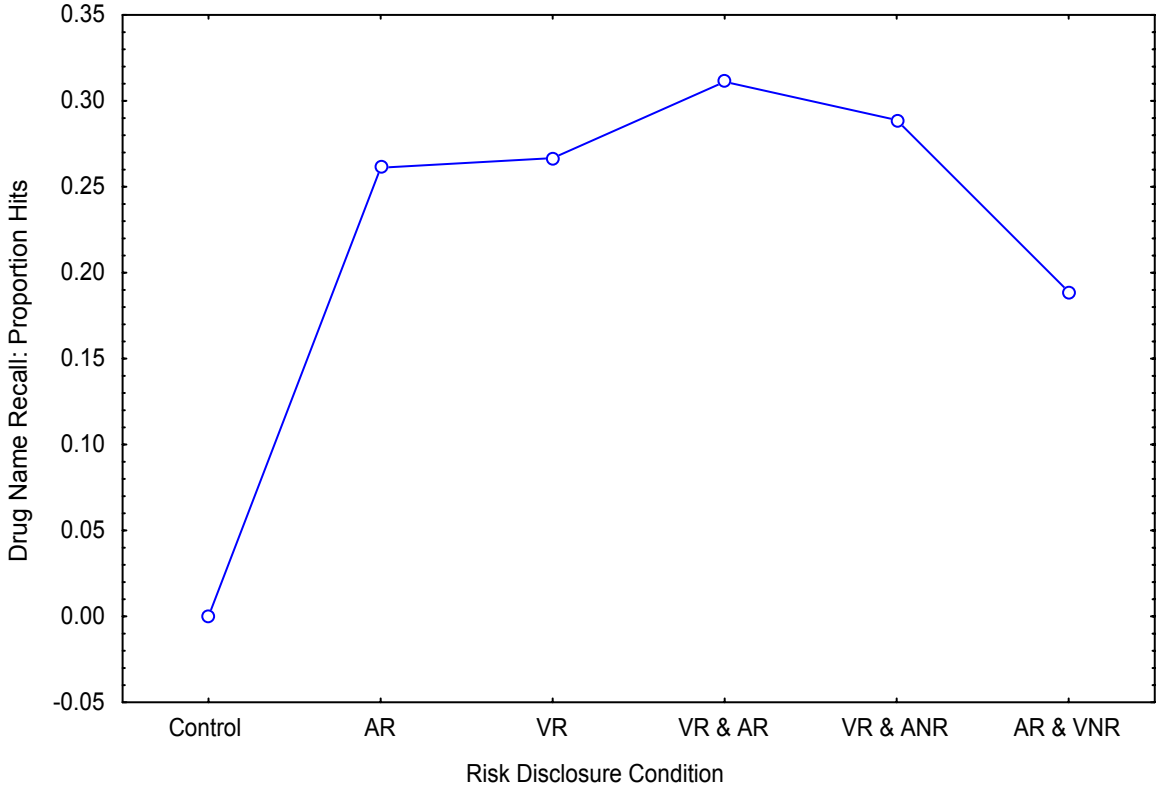


Figure 3. Mean drug name recall ("proportion hits") for the six risk disclosure conditions.

Comparisons among means using Tukey's HSD test showed significant support for Hypothesis 1 (any risk disclosure conditions produce higher drug name recall hit scores than no risk disclosures) and Hypothesis 5 (VR & AR produces higher drug name recall hit scores than AR & VNR). For Hypothesis 1, a greater number of drug names were recalled for VR & AR (*M*=.31), VR & AR (*M*=.29), VR (*M*=.27), AR (*M*=.26), and AR & VNR (*M*=.19) compared to the Control (*M*=.00). For Hypothesis 5, a greater number of drug names were recalled for VR & AR (*M*=.31) compared to AR & VNR (*M*=.19).

3.5.2.2 Drug Name Recall (Corrected Hits). A one-way ANOVA with six levels performed on the corrected hits scores produced a significant effect of risk disclosure conditions, $F(5,895)=38.32$, $p<.0001$. Mean drug name recall ("proportion corrected hits") for the six risk disclosure conditions are provided in Figure 4.

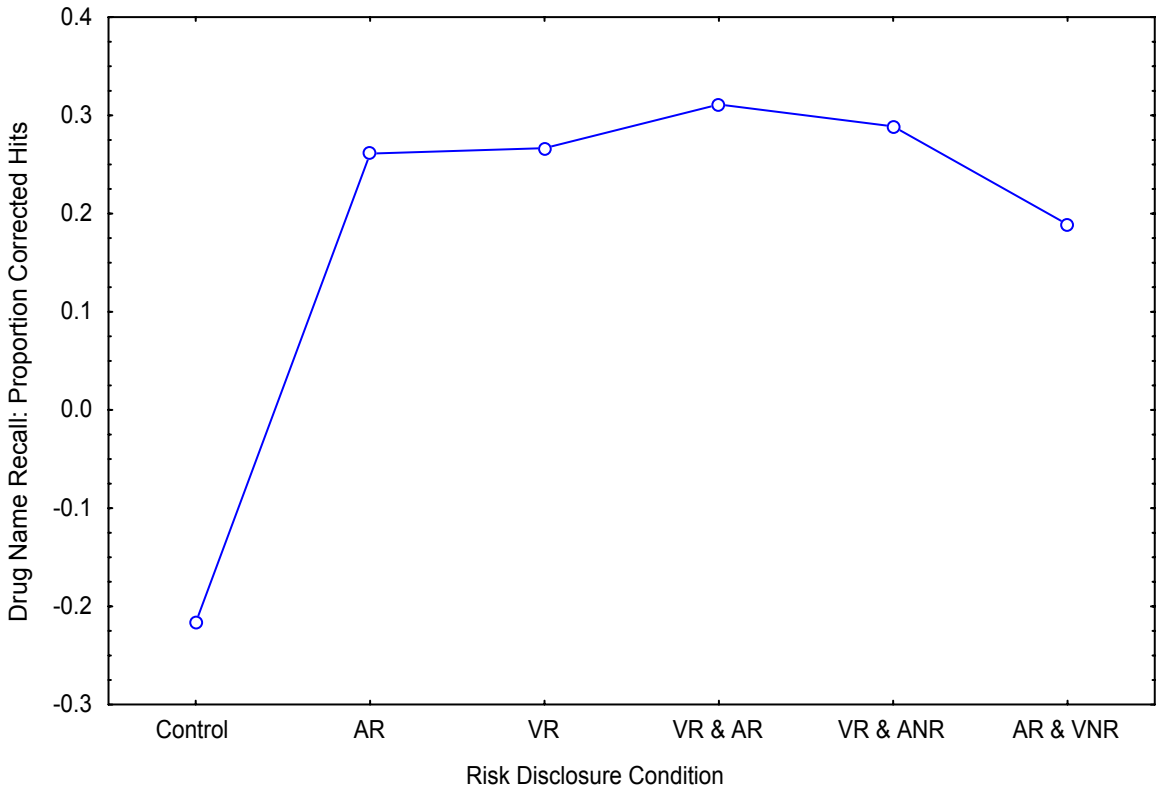


Figure 4. Mean drug name recall ("proportion corrected hits") for the six risk disclosure conditions.

Comparisons among means using Tukey's HSD test showed significant support for Hypothesis 1 (all risk disclosure conditions produce higher drug name recall corrected hit scores than no risk disclosures). For Hypothesis 1, a greater number of drug names were

recalled for VR & AR (*M*=.31), VR & AR (*M*=.29), VR (*M*=.27), AR (*M*=.26), and AR & VNR (*M*=.19) compared to the Control (*M*=-.22).

3.5.2.3 Risk Recall (Hits). A one-way ANOVA with six levels performed on the hits scores produced a significant effect of risk disclosure conditions, $F(5,895)=5.55$, $p<.0001$. Mean risk recall ("proportion hits") for the six risk disclosure conditions are provided in Figure 5.

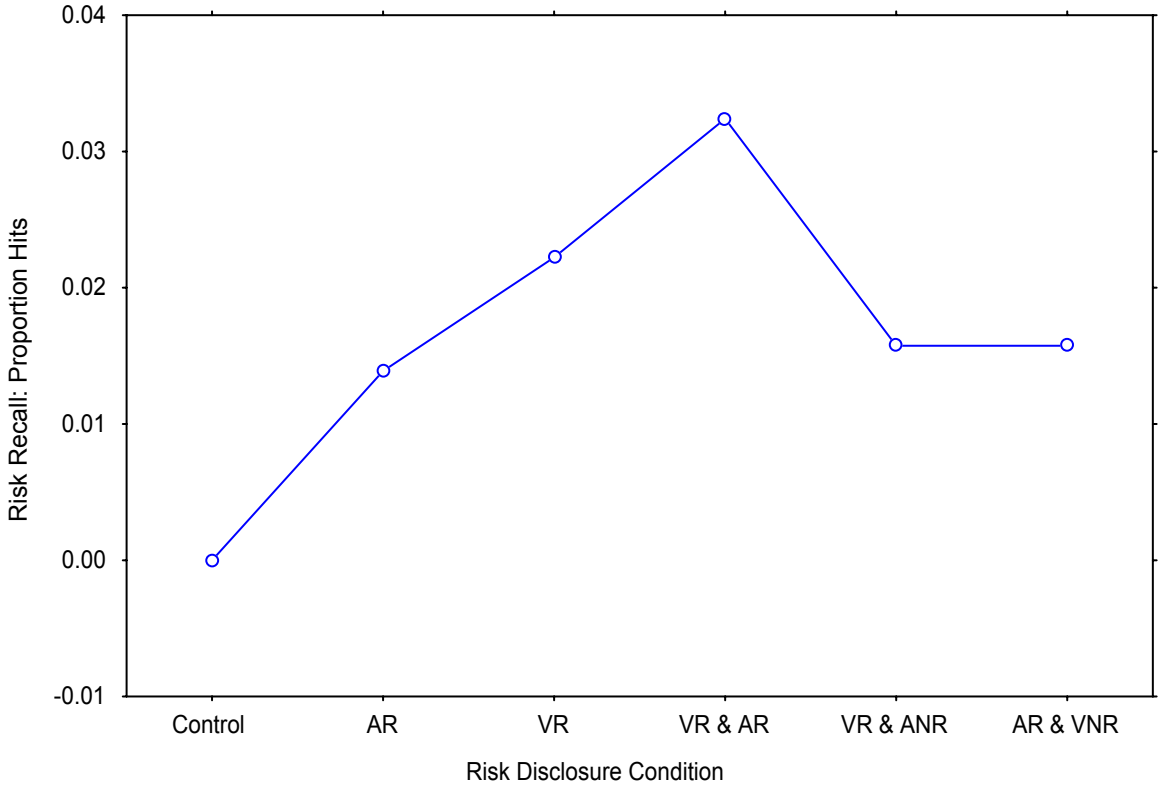


Figure 5. Mean risk recall ("proportion hits") for the six risk disclosure conditions.

Comparisons among means using Tukey's HSD test showed significant support for Hypothesis 1 (any risk disclosure conditions produce higher risk recall hit scores than no risk

disclosures) and Hypothesis 3 (VR & AR produces higher risk recall hit scores than AR). For Hypothesis 1, a greater number of risk disclosures were recalled for VR & AR (M=.03) and VR (M=.02) compared to the Control (M=.00). For Hypothesis 3, a greater number of risk disclosures were recalled for VR & AR (M=.03) compared to AR (M=.01).

3.5.2.4 Risk Recall (Corrected Hits). A one-way ANOVA with six levels performed on the corrected hits scores failed to produce a significant effect of risk disclosure conditions, $F(5,895)=.87$, $p>.05$.

3.5.2.5 Risk Recognition (Hits). A one-way ANOVA with six levels performed on the hits scores produced a significant effect of risk disclosure conditions, $F(5,895)=204.71$, $p<.0001$. Mean risk recognition ("proportion hits") for the six risk disclosure conditions are provided in Figure 6.

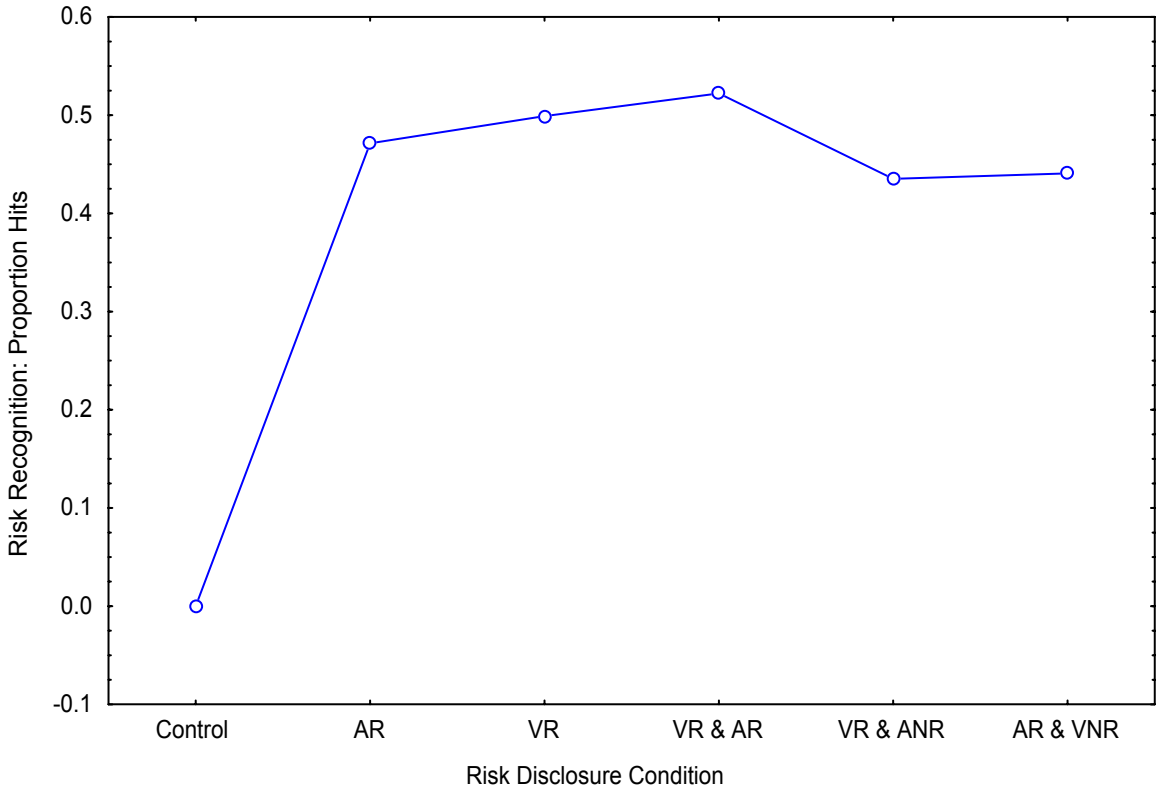


Figure 6. Mean risk recognition ("proportion hits") for the six risk disclosure conditions.

Comparisons among means using Tukey's HSD test showed significant support for Hypothesis 1 (any risk disclosure conditions produce higher risk recognition hit scores than no risk disclosures), Hypothesis 4 (VR & AR produces higher risk recognition hit scores than VR & ANR), Hypothesis 5 (VR & AR produces higher risk recognition hit scores than AR & VNR), Hypothesis 7 (VR produces higher risk recognition hit scores than VR & ANR), and Hypothesis 8 (VR produces higher risk recognition hit scores than AR & VNR). For Hypothesis 1, a greater number of risk disclosures were recognized for VR & AR (*M*=.52), VR (*M*=.50), AR (*M*=.47), VR & ANR (*M*=.44), and AR & VNR (*M*=.44) compared to Control (*M*=.00). For Hypothesis 4, a greater number of risk disclosures were recognized for VR & AR (*M*=.52) compared to VR & ANR (*M*=.44). For Hypothesis 5, a greater number of

risk disclosures were recognized for VR & AR (*M*=.52) compared to AR & VNR (*M*=.44). For Hypothesis 7, a greater number of risk disclosures were recognized for VR (*M*=.50) compared to VR & ANR (*M*=.44). For Hypothesis 8, a greater number of risk disclosures were recognized for VR (*M*=.50) compared to AR & VNR (*M*=.44).

3.5.2.6 Risk Recognition (Corrected Hits). A one-way ANOVA performed on the corrected hits scores produced a significant effect of risk disclosure conditions, $F(5,895) = 123.03$, $p<.001$. Mean risk recognition ("proportion corrected hits") for the six risk disclosure conditions are provided in Figure 7.

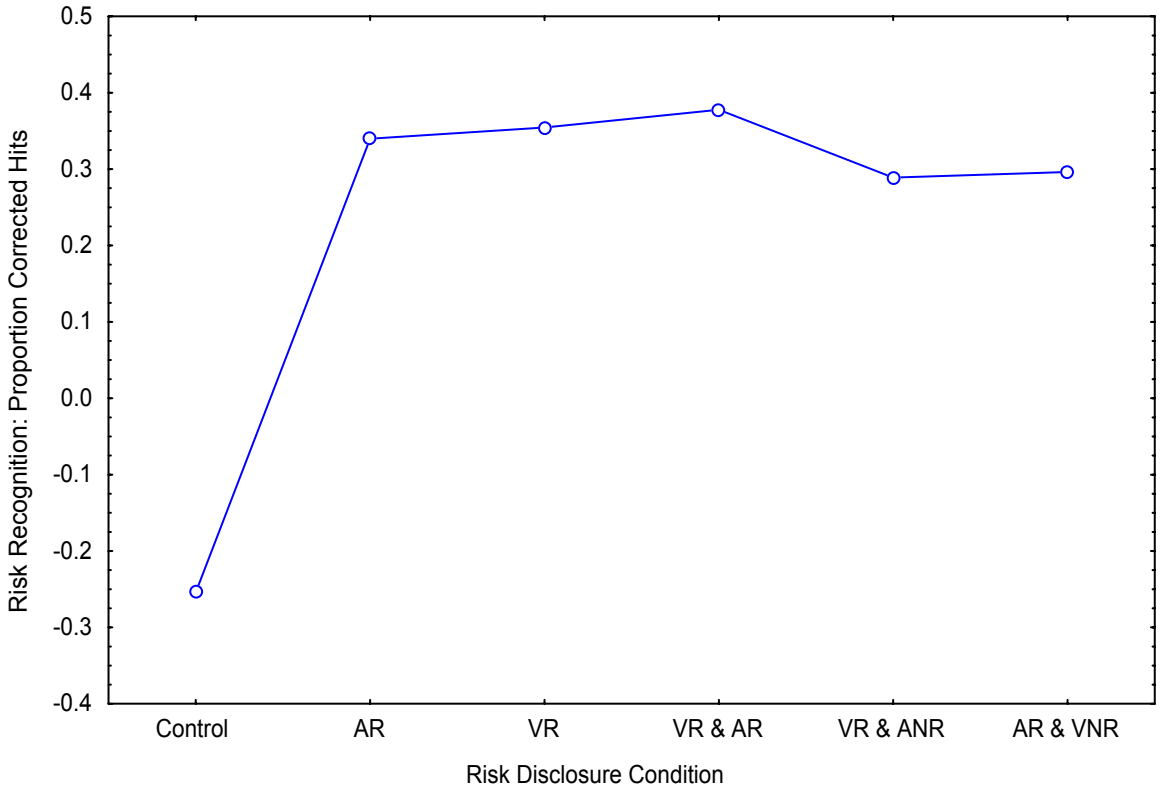


Figure 7. Mean risk recognition ("proportion corrected hits") for the six risk disclosure conditions.

Comparisons among means using Tukey's HSD test showed significant support for Hypothesis 1 (any risk disclosure conditions produce higher risk recognition corrected hit scores than no risk disclosures) and Hypothesis 4 (VR & AR produces higher risk recognition hit scores than VR & ANR). For Hypothesis 1, a greater number of risk disclosures were recognized for VR & AR (*M*=.38), VR (*M*=.35), AR (*M*=.34), AR & VNR (*M*=.30), and VR & ANR (*M*=.29) compared to the Control (*M*=-.25). For Hypothesis 4, a greater number of risk disclosures were recognized for VR & AR (*M*=.38) than VR & ANR (*M*=.29).

3.6 Secondary Analyses

3.6.1 MANOVAs

3.6.1.1 Program x Risk Disclosure Condition (Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model MANOVA was performed on drug name recall, risk recall, and risk recognition for proportion hits. With the use of Wilks' Lambda criterion, there was a significant main effect of program, $F(15, 475)=1.84$, $p<.05$, risk disclosure condition, $F(15, 160)=118.60$, $p<.0001$, and the interaction, $F(75, 770)=3.39$, $p<.0001$. Subsequent ANOVAs for each of the three dependent variables were conducted and are provided below.

3.6.1.2 Program x Risk Disclosure Condition (Corrected Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model MANOVA was performed on drug name recall, risk recall, and risk recognition for proportion corrected hits. With the use of Wilks' Lambda

criterion, there was a significant main effect of program, $F(15, 475)=2.08$, $p<.01$, the main effect of risk disclosure condition, $F(15, 160)=77.75$, $p<.0001$, and the interaction, $F(75, 770)=3.10$, $p<.0001$. Subsequent ANOVAs for each of the three dependent variables were conducted and are provided below.

3.6.1.3 Gender x Risk Disclosure Condition (Hits). A 2 (gender) x 6 (risk disclosure condition) mixed-model MANOVA was performed on drug name recall, risk recall, and risk recognition for proportion hits. With the use of Wilks' Lambda criterion, there was a significant main effect of gender, $F(3, 176)=4.39$, $p<.01$, the main effect of risk disclosure condition, $F(15, 164)=122.28$, $p<.0001$, and the interaction, $F(15, 164)=2.10$, $p<.05$. Subsequent ANOVAs for each of the three dependent variables were conducted and are provided below.

3.6.1.4 Gender x Risk Disclosure Condition (Corrected Hits). A 2 (gender) x 6 (risk disclosure condition) mixed-model MANOVA was performed on drug name recall, risk recall, and risk recognition for proportion corrected hits. With the use of Wilks' Lambda criterion, there was a significant main effect of gender, $F(3, 176)=2.80$, $p<.05$, the main effect of risk disclosure condition, $F(15, 164)=88.02$, $p<.0001$, and the interaction, $F(15, 164)=2.94$, $p<.001$. Subsequent ANOVAs for each of the three dependent variables were conducted and are provided below.

3.6.2 ANOVAs

3.6.2.1 Program x RDC: Drug Name Recall (Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for hits for drug name recall.

The results produced significant support for the main effect of program, $F(5,174)=2.46$, $p<.05$, the main effect of condition, $F(5,870)=16.67$, $p<.0001$, and the interaction, $F(25,870)=3.00$, $p<.0001$. Mean drug name recall ("proportion hits") for the six risk disclosure conditions based upon program are provided in Figure 8.

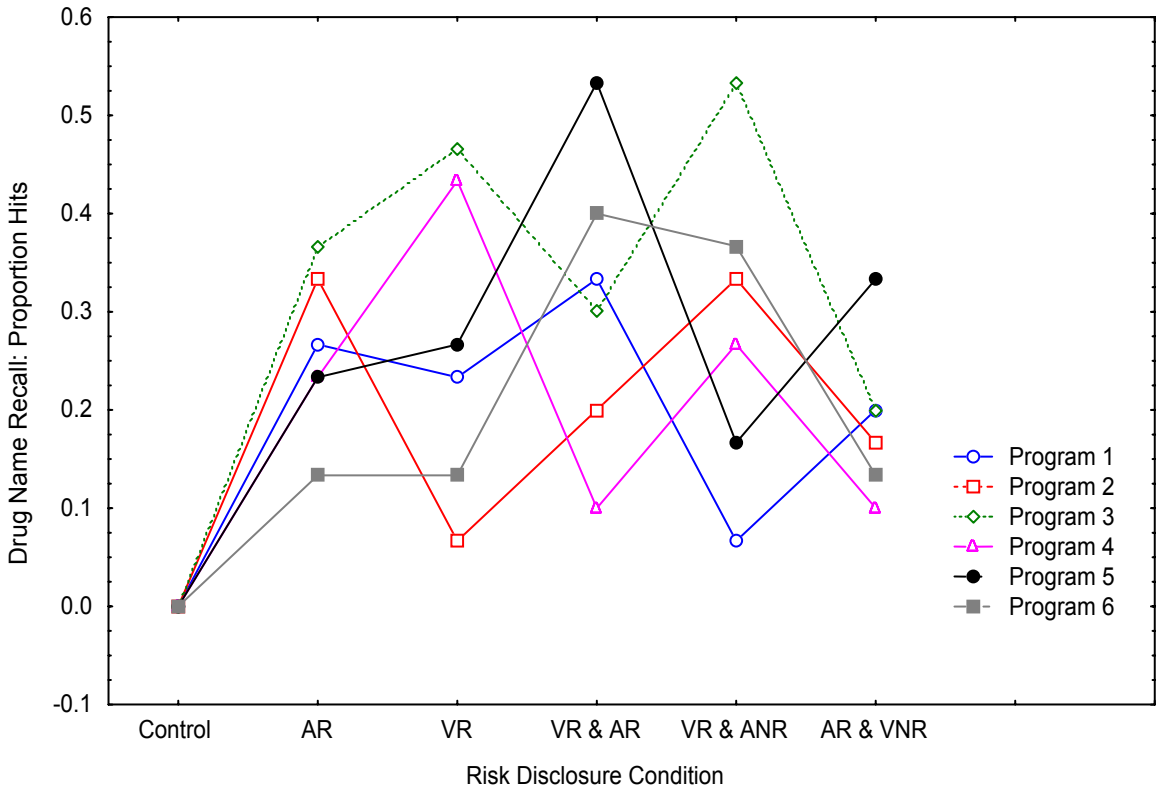


Figure 8. Mean drug name recall ("proportion hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in drug name recall exist between drug commercials for a given risk disclosure condition. The results showed significant differences for VR, VR & AR, and VR & ANR.

Mean drug name recall ("proportion hits") for the three statistically significant risk disclosure conditions are provided in Table 6.

Table 6

Mean Drug Name Recall ("Proportion Hits") for the Three Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Drug Name Recall- H[a]
VR	3	Zyrtec	.47[c]
	4	Paxil	.43[bc]
	5	Advair	.27[abc]
	1	Prevacid	.23[abc]
	6	Ambien	.13[ab]
	2	Elidel	.07[a]
VR & AR	5	Zyrtec	.53[b]
	6	Advair	.40[ab]
	1	Paxil	.33[ab]
	3	Prevacid	.30[ab]
	2	Ambien	.20[a]
	4	Elidel	.10[a]
VR & ANR	3	Paxil	.53[b]
	6	Zyrtec	.37[ab]
	2	Advair	.33[ab]
	4	Ambien	.27[ab]
	5	Prevacid	.17[a]
	1	Elidel	.07[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences existed between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant differences were found between commercials for all programs. Mean drug name recall ("proportion hits") for the six statistically significant programs are provided in Table 7.

Table 7

Mean Drug Name Recall ("Proportion Hits") for the Six Statistically Significant Programs

Program	Condition	Drug	Drug Name Recall – Hits[a]
1	VR & AR	Paxil	.33[c]
	AR	Zyrtec	.27[bc]
	VR	Prevacid	.23[abc]
	AR & VNR	Ambien	.20[abc]
	VR & ANR	Elidel	.07[ab]
	Control	Advair	.00[a]
2	VR & ANR	Advair	.33[b]
	AR	Paxil	.33[b]
	VR & AR	Ambien	.20[ab]
	AR & VNR	Zyrtec	.17[ab]
	VR	Elidel	.07[ab]
	Control	Prevacid	.00[a]
3	VR & ANR	Paxil	.53[c]
	VR	Zyrtec	.47[bc]
	AR	Advair	.37[bc]
	VR & AR	Prevacid	.30[bc]
	AR & VNR	Elidel	.20[ab]
	Control	Ambien	.00[a]
4	VR	Paxil	.43[b]
	VR & ANR	Ambien	.27[ab]
	AR	Prevacid	.23[ab]
	VR & AR	Elidel	.10[a]
	AR & VNR	Advair	.10[a]
	Control	Zyrtec	.00[a]
5	VR & AR	Zyrtec	.53[c]
	AR & VNR	Paxil	.33[bc]
	VR	Advair	.27[abc]
	AR	Ambien	.23[ab]
	VR & ANR	Prevacid	.17[ab]
	Control	Elidel	.00[a]
6	VR & AR	Advair	.40[b]
	VR & ANR	Zyrtec	.37[b]
	AR	Elidel	.13[ab]
	VR	Ambien	.13[ab]
	AR & VNR	Prevacid	.13[ab]
	Control	Paxil	.00[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.2 Program x RDC: Drug Name Recall (Corrected Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for corrected hits for drug name recall. The results showed significance for the main effect of program, $F(5,174)=2.77$, $p<.05$, the main effect of condition, $F(5,870)=39.80$, $p<.0001$, and the interaction, $F(25,870)=2.38$, $p<.0001$. Mean drug name recall ("proportion corrected hits") for the six risk disclosure conditions based upon program are provided in Figure 9.

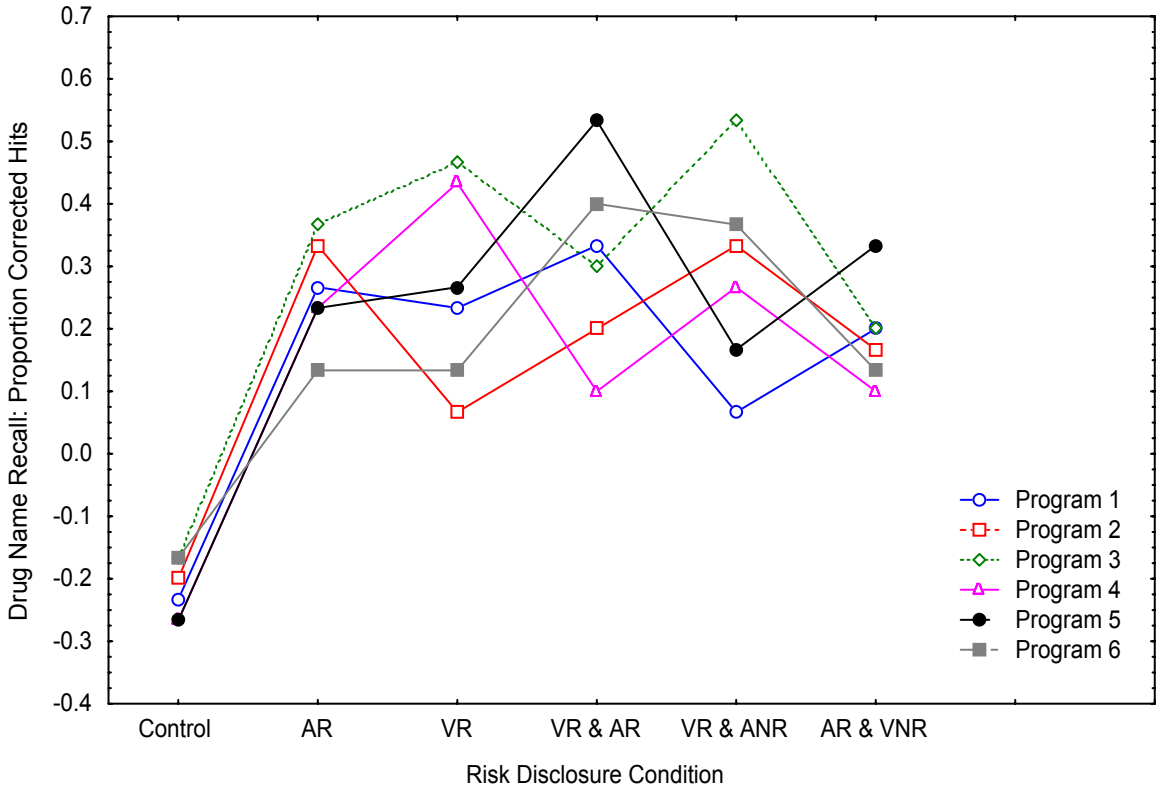


Figure 9. Mean drug name recall ("proportion corrected hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in drug name recall exist between drug commercials for a given risk disclosure

condition. Statistically significant differences were found for VR, VR & AR, and VR & ANR. Mean drug name recall ("proportion corrected hits") for the three statistically significant risk disclosure conditions are provided in Table 8.

Table 8

Mean Drug Name Recall ("Proportion Corrected Hits") for the Three Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Drug Name Recall – CH[a]
VR	3	Zyrtec	.47[c]
	4	Paxil	.43[bc]
	5	Advair	.27[abc]
	1	Prevacid	.23[abc]
	6	Ambien	.13[ab]
	2	Elidel	.07[a]
VR & AR	5	Zyrtec	.53[b]
	6	Advair	.40[ab]
	1	Paxil	.33[ab]
	3	Prevacid	.30[ab]
	2	Ambien	.20[a]
	4	Elidel	.10[a]
VR & ANR	3	Paxil	.53[b]
	6	Zyrtec	.37[ab]
	2	Advair	.33[ab]
	4	Ambien	.27[ab]
	5	Prevacid	.17[a]
	1	Elidel	.07[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences existed between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant differences were found between commercials for all programs. Mean drug name recall ("proportion corrected hits") for the six statistically significant programs are provided in Table 9.

Table 9

Mean Drug Name Recall ("Proportion Corrected Hits") for the Six Statistically Significant Programs

Program	Condition	Drug	Drug Name Recall – CH[a]
1	VR & AR	Paxil	.33[b]
	AR	Zyrtec	.27[b]
	VR	Prevacid	.23[b]
	AR & VNR	Ambien	.20[b]
	VR & ANR	Elidel	.07[ab]
	Control	Advair	-.23[a]
2	AR	Paxil	.33[b]
	VR & ANR	Advair	.33[b]
	VR & AR	Ambien	.20[b]
	AR & VNR	Zyrtec	.17[b]
	VR	Elidel	.07[ab]
	Control	Prevacid	-.20[a]
3	VR & ANR	Paxil	.53[c]
	VR	Zyrtec	.47[bc]
	AR	Advair	.37[bc]
	VR & AR	Prevacid	.30[bc]
	AR & VNR	Elidel	.20[b]
	Control	Ambien	-.17[a]
4	VR	Paxil	.43[c]
	VR & ANR	Ambien	.27[bc]
	AR	Prevacid	.23[bc]
	VR & AR	Elidel	.10[b]
	AR & VNR	Advair	.10[b]
	Control	Zyrtec	-.27[a]
5	VR & AR	Zyrtec	.53[c]
	AR & VNR	Paxil	.33[bc]
	VR	Advair	.27[bc]
	AR	Ambien	.23[bc]
	VR & ANR	Prevacid	.17[b]
	Control	Elidel	-.27[a]
6	VR & AR	Advair	.40[b]
	VR & ANR	Zyrtec	.37[b]
	AR	Elidel	.13[ab]
	VR	Ambien	.13[ab]
	AR & VNR	Prevacid	.13[ab]
	Control	Paxil	-.17[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.3 Program x RDC: Risk Recall (Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for hits for risk recall. The results showed significance for the main effect of condition, $F(5,870)=5.76$, $p<.0001$, and the interaction, $F(25,870)=2.39$, $p<.001$, but not for the main effect of program, $F(5,174)=.72$, $p>.05$. Mean risk recall ("proportion hits") for the six risk disclosure conditions based upon program are provided in Figure 10.

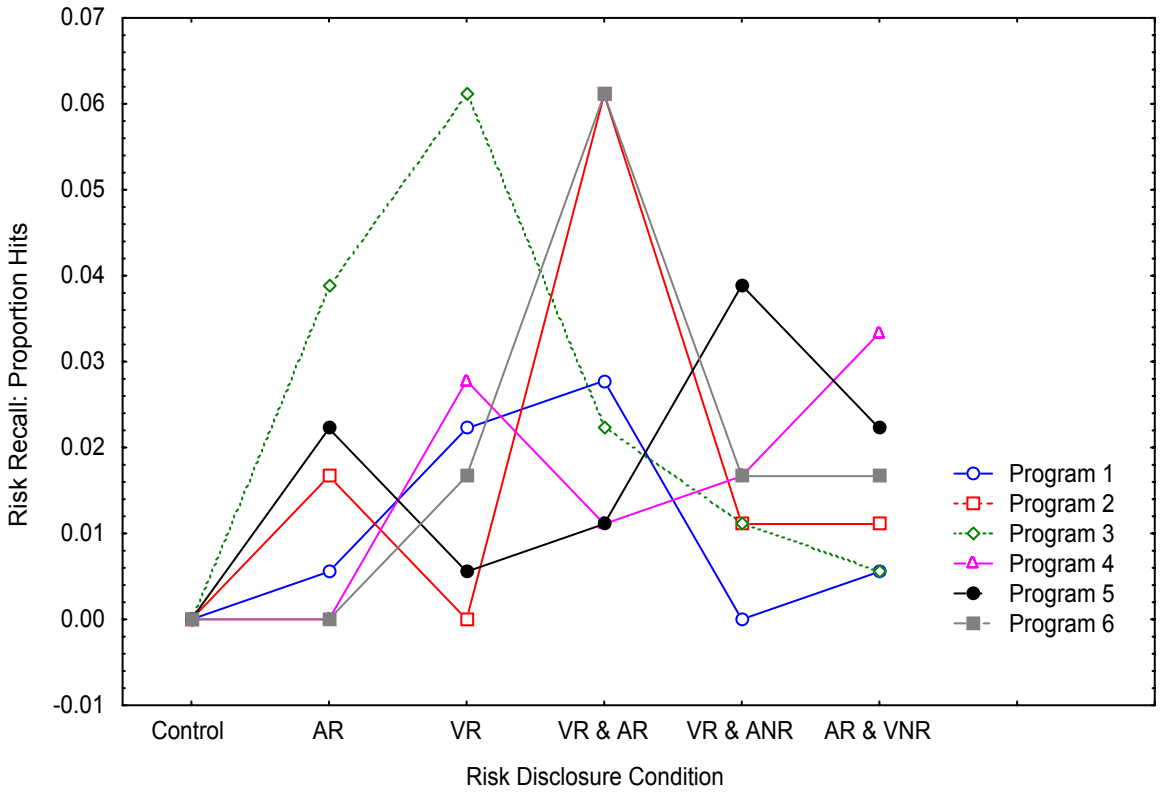


Figure 10. Mean risk recall ("proportion hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in risk recall exist between drug commercials for a given condition. Statistically significant differences were found for VR and AR. Mean risk recall ("proportion hits") for the two statistically significant risk disclosures based upon condition are provided in Table 10.

Table 10

Mean Risk Recall ("Proportion Hits") for the Two Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Risk Recall – Hits[a]
AR	3	Advair	.04[b]
	2	Paxil	.02[ab]
	5	Ambien	.02[ab]
	1	Zyrtec	.01[ab]
	6	Elidel	.00[a]
	4	Prevacid	.00[a]
VR	3	Zyrtec	.06[b]
	4	Paxil	.03[ab]
	1	Prevacid	.02[ab]
	6	Ambien	.02[ab]
	5	Advair	.01[a]
	2	Elidel	.00[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences existed between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant differences were found between commercials for Programs 2, 3, and 6. Mean risk recall ("proportion hits") for the three statistically significant programs are provided in Table 11.

Table 11

Mean Risk Recall ("Proportion Hits") for the Three Statistically Significant Programs

Program	Condition	Drug	Risk Recall – Hits[a]
2	VR & AR	Ambien	.06[c]
	AR	Paxil	.02[abc]
	VR & ANR	Advair	.01[ab]
	AR & VNR	Zyrtec	.01[ab]
	VR	Elidel	.00[a]
	Control	Prevacid	.00[a]
3	VR	Zyrtec	.06[b]
	AR	Advair	.04[ab]
	VR & AR	Prevacid	.02[ab]
	VR & ANR	Paxil	.01[ab]
	AR & VNR	Elidel	.01[a]
	Control	Ambien	.00[a]
6	VR & AR	Advair	.06[b]
	VR	Ambien	.02[ab]
	VR & ANR	Zyrtec	.02[ab]
	AR & VNR	Prevacid	.02[ab]
	AR	Elidel	.00[a]
	Control	Paxil	.00[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.4 Program x RDC: Risk Recall (Corrected Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for corrected hits for risk recall. The results showed significance for the interaction, $F(25,870)=2.20$, $p<.001$, but not for the main effect of program, $F(5,174)=.96$, $p>.05$, or condition, $F(5,870)=.90$, $p>.05$. Mean risk recall ("proportion corrected hits") for the six risk disclosure conditions are provided in Figure 11.

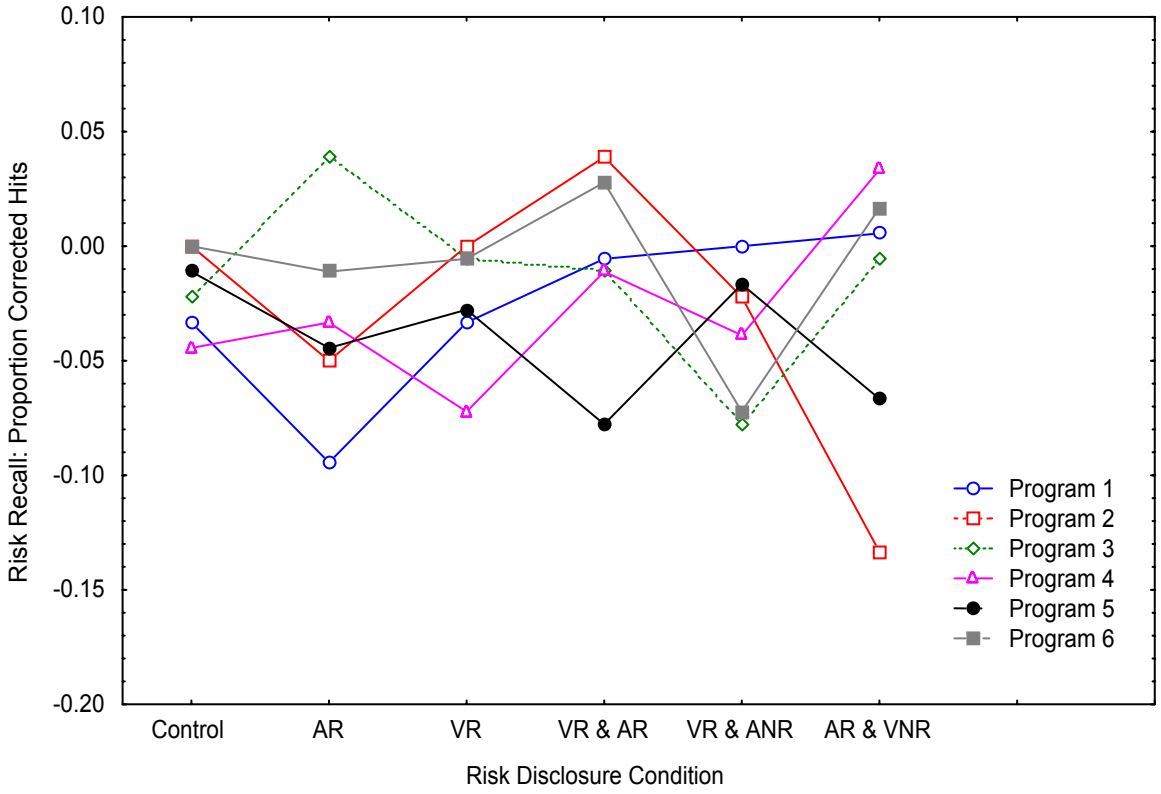


Figure 11. Mean risk recall ("proportion corrected hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in recall of risk disclosures existed between drug commercials for a given condition. Statistically significant differences were found for AR and AR & VNR. Mean risk recall ("proportion corrected hits") for the two statistically significant risk disclosure conditions are provided in Table 12.

Table 12

Mean Risk Recall ("Proportion Corrected Hits") for the Two Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Risk Recall – CH[a]
AR	3	Advair	.04[b]
	6	Elidel	-.01[ab]
	4	Prevacid	-.03[ab]
	5	Ambien	-.04[ab]
	2	Paxil	-.05[ab]
	1	Zyrtec	-.09[a]
AR & VNR	4	Advair	.03[b]
	6	Prevacid	.02[b]
	1	Ambien	.01[b]
	3	Elidel	-.01[b]
	5	Paxil	-.07[ab]
	2	Zyrtec	-.13[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences exist between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant differences were found between commercials for Programs 2, 4, and 6. Mean risk recall ("proportion corrected hits") for the three statistically significant programs are provided in Table 13.

Table 13

Mean Risk Recall ("Proportion Corrected Hits") for the Three Statistically Significant Programs

Program	Condition	Drug	Risk Recall – CH[a]
2	VR & AR	Ambien	.04[b]
	VR	Elidel	.00[b]
	Control	Prevacid	.00[b]
	VR & ANR	Advair	-.02[ab]
	AR	Paxil	-.05[ab]
	AR & VNR	Zyrtec	-.13[a]
4	AR & VNR	Advair	.03[b]
	VR & AR	Elidel	-.01[ab]
	AR	Prevacid	-.03[ab]
	VR & ANR	Ambien	-.04[ab]
	Control	Zyrtec	-.04[ab]
	VR	Paxil	-.07[a]
6	VR & AR	Advair	.03[b]
	AR & VNR	Prevacid	.02[ab]
	Control	Paxil	.00[ab]
	AR	Elidel	-.01[ab]
	VR	Ambien	-.01[ab]
	VR & ANR	Zyrtec	-.07[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.5 Program x RDC: Risk Recognition (Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for hits for risk recognition. The results showed significance for the main effect of condition, $F(5,870)=2.68$, $p<.05$, the main effect of program, $F(5,174)=230.20$, $p<.0001$, and the interaction, $F(25,870)=5.46$, $p<.0001$. Mean risk recognition ("proportion hits") for the six risk disclosure conditions based upon program are provided in Figure 12.

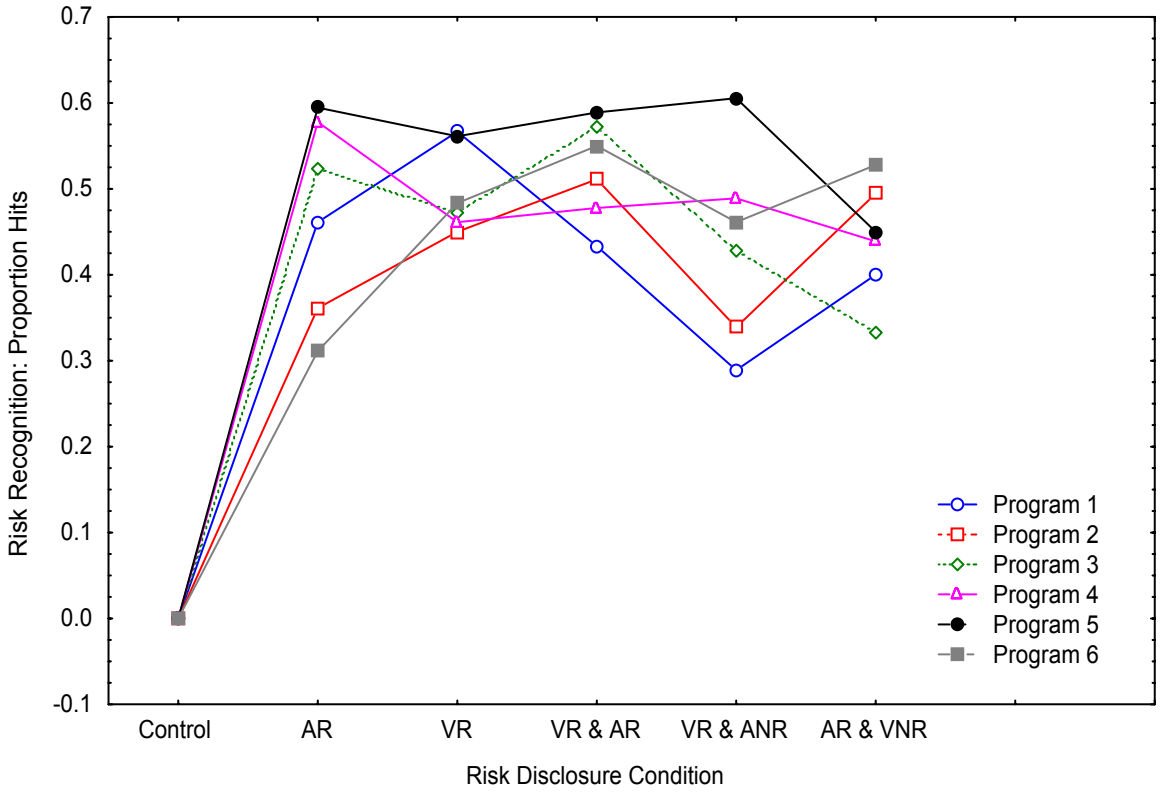


Figure 12. Mean risk recognition ("proportion hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in risk recall exist between drug commercials for a given condition. Statistically significant differences were found for AR, VR & ANR, and AR & VNR. Mean risk recognition ("proportion hits") for the three statistically significant risk disclosure conditions are provided in Table 14.

Table 14

Mean Risk Recognition ("Proportion Hits") for the Three Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Risk Recognition – Hits[a]
AR	5	Ambien	.59[b]
	4	Prevacid	.58[b]
	3	Advair	.52[b]
	1	Zyrtec	.46[ab]
	2	Paxil	.36[a]
	6	Elidel	.31[a]
VR & ANR	5	Prevacid	.61[c]
	4	Ambien	.48[bc]
	6	Zyrtec	.46[bc]
	3	Paxil	.42[ab]
	2	Advair	.34[ab]
	1	Elidel	.29[a]
AR & VNR	6	Prevacid	.53[b]
	2	Zyrtec	.49[ab]
	5	Paxil	.45[ab]
	4	Advair	.44[ab]
	1	Ambien	.40[ab]
	3	Elidel	.33[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences existed between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant differences were found between commercials for all programs. Mean risk recognition ("proportion hits") for the six statistically significant programs are provided in Table 15.

Table 15

Mean Risk Recognition ("Proportion Hits") for the Six Statistically Significant Programs

Program	Condition	Drug	Risk Recognition – Hits[a]
1	VR	Prevacid	.57[d]
	AR	Zyrtec	.46[cd]
	VR & AR	Paxil	.43[c]
	AR & VNR	Ambien	.40[bc]
	VR & ANR	Elidel	.29[b]
	Control	Advair	.00[a]
2	VR & AR	Ambien	.51[c]
	AR & VNR	Zyrtec	.49[c]
	VR	Elidel	.45[bc]
	AR	Paxil	.36[b]
	VR & ANR	Advair	.34[b]
	Control	Prevacid	.00[a]
3	VR & AR	Prevacid	.57[d]
	AR	Advair	.52[cd]
	VR	Zyrtec	.47[cd]
	VR & ANR	Paxil	.43[bc]
	AR & VNR	Elidel	.33[b]
	Control	Ambien	.00[a]
4	AR	Prevacid	.58[c]
	VR & ANR	Ambien	.49[bc]
	VR & AR	Elidel	.48[bc]
	VR	Paxil	.46[bc]
	AR & VNR	Advair	.44[b]
	Control	Zyrtec	.00[a]
5	VR & ANR	Prevacid	.61[c]
	VR & AR	Zyrtec	.59[c]
	AR	Ambien	.59[c]
	VR	Advair	.56[bc]
	AR & VNR	Paxil	.45[b]
	Control	Elidel	.00[a]
6	VR & AR	Advair	.55[c]
	AR & VNR	Prevacid	.53[c]
	VR	Ambien	.48[c]
	VR & ANR	Zyrtec	.46[c]
	AR	Elidel	.31[b]
	Control	Paxil	.00[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.6 Program x RDC: Risk Recognition (Corrected Hits). A 6 (program) x 6 (risk disclosure condition) mixed-model ANOVA was calculated for corrected hits for risk recognition. The results showed significance for the main effect of condition, $F(5,870)=139.52$, $p<.0001$, and the interaction, $F(25,870)=5.79$, $p<.0001$, but not for the main effect of program, $F(5,174)=2.04$, $p>.05$. Mean risk recognition ("proportion corrected hits") for the six risk disclosure conditions based upon program are provided in Figure 13.

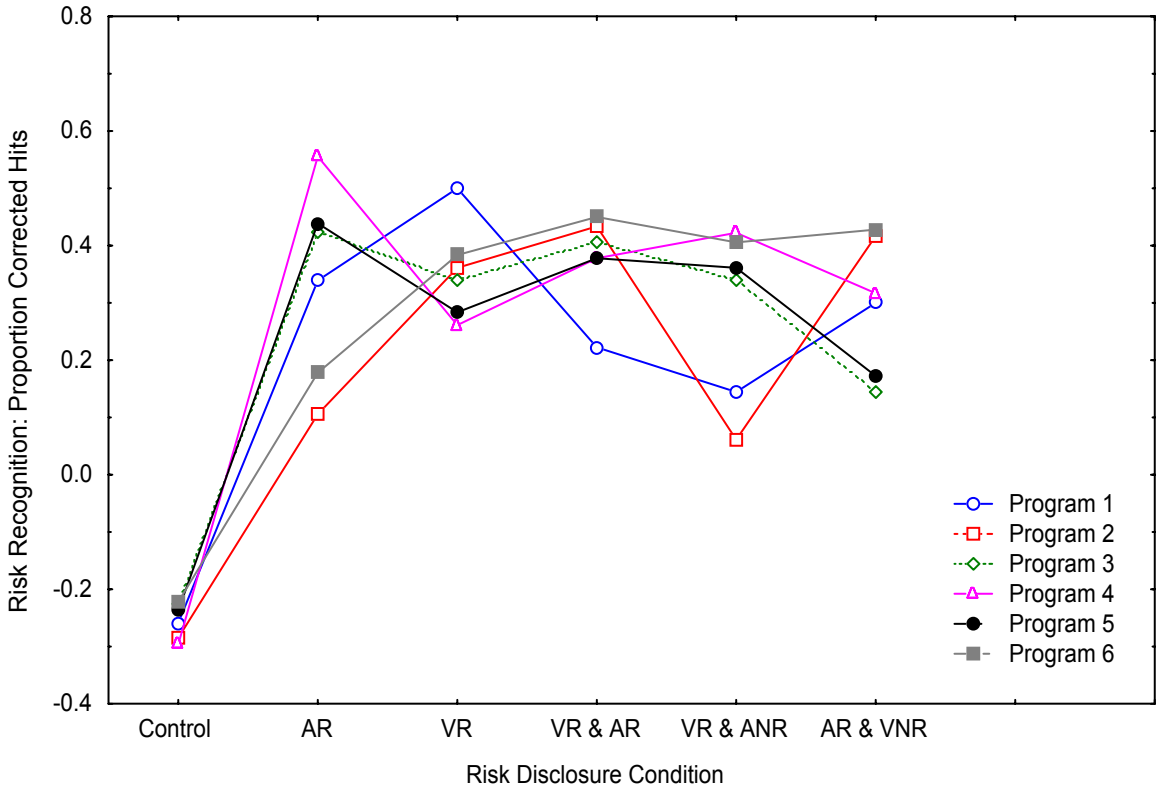


Figure 13. Mean risk recognition ("proportion corrected hits") for the six risk disclosure conditions based upon program.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in recognition of risk disclosures existed between drug commercials for a given

condition. Statistically significant differences were found for AR, VR, VR & ANR, and AR & VNR. Mean risk recognition ("proportion corrected hits") for the four statistically significant risk disclosure conditions are provided in Table 16.

Table 16

Mean Risk Recognition ("Proportion Corrected Hits") for the Four Statistically Significant Risk Disclosure Conditions

Condition	Program	Drug	Risk Recognition – CH[a]
AR	4	Prevacid	.56[c]
	5	Ambien	.44[bc]
	3	Advair	.42[bc]
	1	Zyrtec	.34[b]
	6	Elidel	.18[ab]
	2	Paxil	.11[a]
VR	1	Prevacid	.50[b]
	6	Ambien	.38[ab]
	2	Elidel	.36[ab]
	3	Zyrtec	.34[ab]
	5	Advair	.28[ab]
	4	Paxil	.26[a]
VR & ANR	4	Ambien	.42[c]
	6	Zyrtec	.41[c]
	5	Prevacid	.36[bc]
	3	Paxil	.34[bc]
	1	Elidel	.14[ab]
	2	Advair	.06[a]
AR & VNR	6	Prevacid	.42[b]
	2	Zyrtec	.42[b]
	4	Advair	.32[ab]
	1	Ambien	.30[ab]
	5	Paxil	.17[a]
	3	Elidel	.14[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

To determine if statistically significant differences existed between drug commercials for a given program, comparisons among means using Tukey's HSD test were conducted.

Significant differences were found between drug commercials for all programs. Mean risk recognition ("proportion corrected hits") for the six statistically significant programs are provided in Table 17.

Table 17

Mean Risk Recognition ("Proportion Corrected Hits") for the Six Statistically Significant Programs

Program	Condition	Drug	Risk Recognition – CH[a]
1	VR	Prevacid	.50[c]
	AR	Zyrtec	.34[bc]
	AR & VNR	Ambien	.30[bc]
	VR & AR	Paxil	.22[b]
	VR & ANR	Elidel	.14[b]
	Control	Advair	-.26[a]
2	VR & AR	Ambien	.43[c]
	AR & VNR	Zyrtec	.42[c]
	VR	Elidel	.36[c]
	AR	Paxil	.11[b]
	VR & ANR	Advair	.06[b]
	Control	Prevacid	-.29[a]
3	AR	Advair	.42[c]
	VR & AR	Prevacid	.41[c]
	VR	Zyrtec	.34[bc]
	VR & ANR	Paxil	.34[bc]
	AR & VNR	Elidel	.14[b]
	Control	Ambien	-.23[a]
4	AR	Prevacid	.56[c]
	VR & ANR	Ambien	.42[bc]
	VR & AR	Elidel	.38[bc]
	AR & VNR	Advair	.32[b]
	VR	Paxil	.26[b]
	Control	Zyrtec	-.30[a]
5	AR	Ambien	.44[c]
	VR & AR	Zyrtec	.38[bc]
	VR & ANR	Prevacid	.36[bc]
	VR	Advair	.28[bc]
	AR & VNR	Paxil	.17[b]
	Control	Elidel	-.24[a]
6	VR & AR	Advair	.45[c]
	AR & VNR	Prevacid	.43[c]
	VR & ANR	Zyrtec	.41[c]
	VR	Ambien	.38[c]
	AR	Elidel	.18[b]
	Control	Paxil	-.22[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.7 Gender x RDC: Drug Name Recall (Hits). To determine if drug name recall was different for hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed significance for the main effect of gender, $F(1,178)=5.05$, $p<.05$, and the main effect of condition, $F(5,890)=15.89$, $p<.0001$, but no significance for the interaction, $F(5,890)=1.07$, $p>.05$. Comparisons among means using Tukey's HSD test for the main effect of gender showed that women ($M=.26$) recalled a significantly greater number of drug names compared to men ($M=.19$).

Comparisons among means using Tukey's HSD test were conducted for the main effect of condition. A significantly greater number of risk disclosures were recalled for VR & AR ($M=.32$), VR & ANR ($M=.29$), VR ($M=.27$), AR ($M=.27$), and AR & VNR ($M=.20$) compared to Control ($M=.00$); VR & AR ($M=.32$) compared to AR & VNR ($M=.20$). None of the other conditions were statistically significant.

3.6.2.8 Gender x RDC: Drug Name Recall (Corrected Hits). To determine if drug name recall was different for corrected hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed significance for the main effect of condition, $F(5,890)=39.81$, $p<.0001$, but no significance for the main effect of gender, $F(1,178)=2.35$, $p>.05$ and the interaction, $F(5,890)=2.15$, $p>.05$.

Comparisons among means using Tukey's HSD test were conducted for the main effect of condition. A significantly greater number of risk disclosures were recalled for VR & AR ($M=.32$), VR & ANR ($M=.29$), VR ($M=.27$), AR ($M=.27$), and AR & VNR ($M=.20$) compared to Control ($M=-.23$). None of the other conditions were statistically significant.

3.6.2.9 Gender x RDC: Risk Recall (Hits). To determine if risk recall was different for hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed significance for the main effect of condition, $F(5,890)=5.63$, $p<.0001$, but no significance for the main effect of gender, $F(1,178)=2.24$, $p>.05$, or the interaction, $F(5,890)=.48$, $p>.05$.

Comparisons among means using Tukey's HSD test were conducted for the main effect of condition. A significantly greater number of risk disclosures were recalled for VR & AR ($M=.03$) compared to AR ($M=.01$) and Control ($M=.00$); and VR ($M=.02$) compared to Control ($M=.00$). None of the other conditions were statistically significant.

3.6.2.10 Gender x RDC: Risk Recall (Corrected Hits). To determine if risk recall was different for corrected hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed no significance for the main effect of gender, $F(1,178)=2.59$, $p>.05$, the main effect of condition, $F(5,890)=.87$, $p>.05$, or the interaction, $F(5,890)=1.02$, $p>.05$.

3.6.2.11 Gender x RDC: Risk Recognition (Hits). To determine if risk recognition was different for hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed significance for the main effect of gender, $F(1,178)=9.55$, $p<.01$, the main effect of condition, $F(5,890)=208.53$, $p<.0001$, and the interaction, $F(5,890)=4.10$, $p<.01$. Mean risk recognition ("proportion hits") for the six risk disclosure conditions based upon gender are provided in Figure 14.

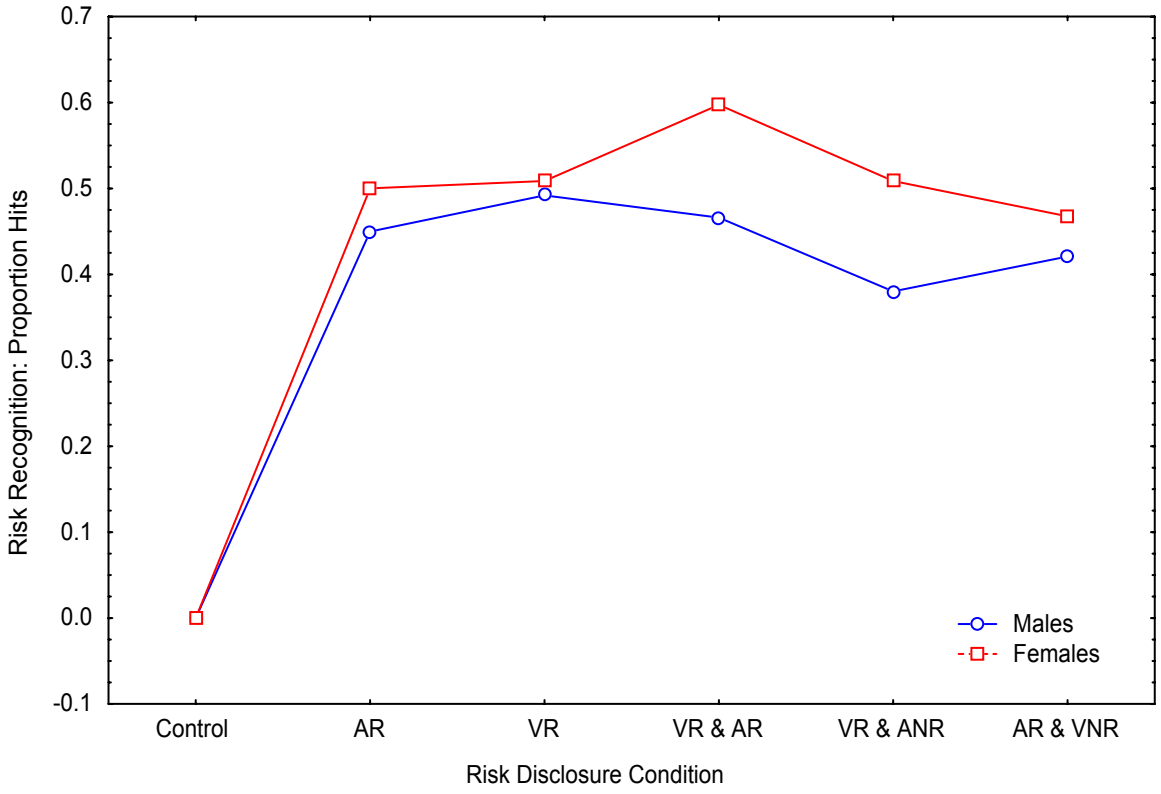


Figure 14. Mean risk recognition ("proportion hits") for the six risk disclosure conditions based upon gender.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in recognition of risk disclosures existed between men and women for a given condition. Statistically significant differences were found for VR & AR and VR & ANR. For VR & AR, women (*M*=.60) recognized a greater number of risk disclosures than men (*M*=.47). For VR & ANR, women (*M*=.51) recognized a greater number of risk disclosures than men (*M*=.38).

To determine whether there are statistically significant differences exist between men and women for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant results were found for both men and women. Mean risk recognition ("proportion hits") for gender are provided in Table 18.

Table 18

Mean Risk Recognition ("Proportion Hits") for Gender

Gender	Condition	Risk Recognition – Hits[a]
Men	VR	.49[d]
	VR & AR	.47[cd]
	AR	.45[bcd]
	AR & VNR	.42[bc]
	VR & ANR	.38[b]
	Control	.00[a]
Women	VR & AR	.60[c]
	VR	.51[b]
	VR & ANR	.51[b]
	AR	.50[b]
	AR & VNR	.48[b]
	Control	.00[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

3.6.2.12 Gender x RDC: Risk Recognition (Corrected Hits). To determine if risk recognition was different for corrected hits based upon gender, a 2 (gender) x 6 (risk disclosure condition) mixed-model ANOVA was calculated. The results showed significance for the main effect of gender, $F(1,178)=5.41$, $p<.05$, the main effect of condition, $F(5,890)=125.67$, $p<.0001$, and the interaction, $F(5,890)=3.29$, $p<.01$. Mean risk disclosure ("proportion corrected hits") for the six risk disclosure conditions are provided in Figure 15.

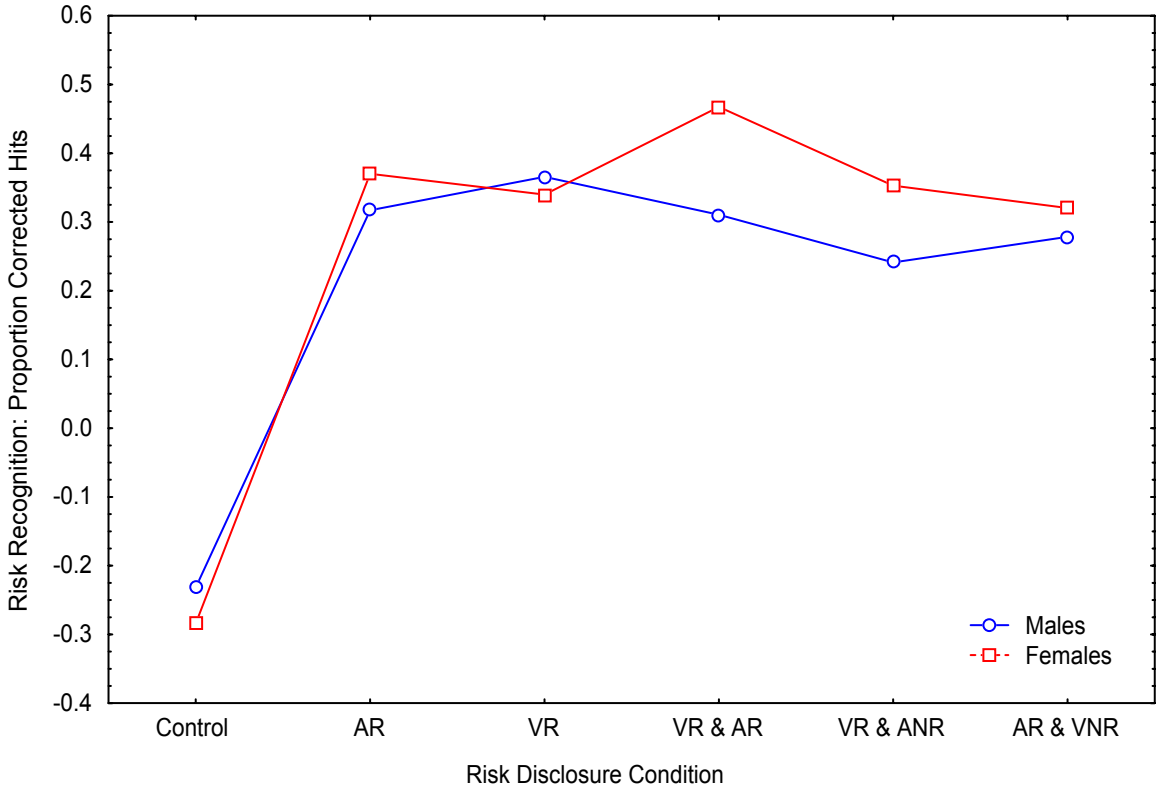


Figure 15. Mean risk recognition ("proportion corrected hits") for the six risk disclosure conditions based upon gender.

Comparisons among means using Tukey's HSD test were conducted to determine if differences in recognition of risk disclosures existed between gender for a given condition. Significant differences were found for Control, VR & AR, and VR & ANR. For Control, women (*M*=-.28) incorrectly recognized a greater number of risk disclosures than men (*M*=-.23). For VR & AR, women (*M*=.47) recognized a greater number of risk disclosures than men (*M*=.31). For VR & ANR, women (*M*=.35) recognized a greater number of risk disclosures than men (*M*=.24).

To determine if statistically significant differences exist between gender for a given program, comparisons among means using Tukey's HSD test were conducted. Statistically significant results were found for men and women. Mean risk recognition ("proportion corrected hits") for gender are provided in Table 19.

Table 19

Mean Risk Recognition ("Proportion Corrected Hits") for Gender

Gender	Condition	Risk Recognition – CH[a]
Men	VR	.37[c]
	AR	.32[bc]
	VR & AR	.31[bc]
	AR & VNR	.28[bc]
	VR & ANR	.24[b]
	Control	-.23[a]
Women	VR & AR	.47[c]
	AR	.37[bc]
	VR & ANR	.35[bc]
	VR	.34[bc]
	AR & VNR	.32[b]
	Control	-.28[a]

[a]Means with different superscript letters are significantly different at an alpha level of .05.

4. Discussion

The purpose of this study was to determine what factors influenced the recall and recognition of risk disclosure conditions in prescription drug television commercials. Specifically, three primary issues were investigated. The first was to determine if concurrently presented visual (text) and auditory (voice) risk disclosures produce greater recall and recognition than either one presented independently. Previous research by Barlow and Wogalter (1993), using alcohol beverage commercials, showed that risk disclosures are better conveyed by concurrent presentation in both visual and auditory modalities as

suggested by the redundant coding principle (Leigh, 1992). The second was to determine whether recall and recognition is higher for visual risk disclosures compared to auditory risk disclosures as suggested by the visual dominance principle (Barlow & Wogalter, 1993; Massaro & Warner, 1977) or vice versa as suggested by the auditory dominance (Easton & Basala, 1992) and split-attention principles (Chandler & Sweller, 1991). The third was to determine if concurrent presentation of non-risk disclosures in a competing modality would negatively affect recall and recognition of risk disclosures as suggested by multiple resource theory (Wickens, 1984).

4.1 Drug Name Recall

Risk disclosures presented in any manner (i.e., VR & AR, VR, AR, VR & ANR, or AR & VNR) increased drug name recall. This finding was supported by both the hits and corrected hits analyses. False alarms did not negatively impact drug name recall.

The results for hits also indicate that risk disclosures presented in both visual and auditory modalities (VR & AR) produced greater drug name recall compared to risk disclosures presented in the auditory modality with concurrently presented visual non-risk disclosures (AR & VNR). This finding supports the idea that concurrent presentation of two types of information (i.e., risk and non-risk disclosures) in two modalities may overload verbal working memory, which in turn, might hinder encoding of the information into long-term memory. Thus, concurrent presentation of two types of information would result in lower recall compared to concurrent presentation of the same or similar information in dual modalities (i.e., both auditory and visual risk disclosures), as predicted by multiple resource theory (Wickens, 1984).

The corrected hits analysis did not find that VR & AR produced higher drug name recall scores than AR & VNR like the hits analysis. This finding indicates that false alarms did have a negative impact on hits. One explanation for this finding is that participants wrote down any names of prescription drugs they remembered seeing advertisements for even if they may not have included risk disclosures.

4.2 Risk Recall

Overall, risk recall was low across all risk disclosure conditions. The means for hit scores ranged between .00 and .03, while all of the means for corrected hits scores were less than .00 after correcting the hits for guessing. The low recall produced only two significant results for the hits analysis and none for the corrected hits analysis. For hits, the VR & AR and VR risk disclosure conditions produced greater risk recall compared to the no risk disclosures condition. Also, including risk disclosures in both visual and auditory modalities (VR & AR) produced greater recall compared to auditory only risk disclosures (AR). This finding supports the redundant coding principle, which predicts that including the same or similar risk disclosures in more than one modality, in this case visual and auditory, may result in greater recall compared to presentation in only one modality (Leigh, 1992).

There are a few explanations for the low recall of risk disclosures. First, recall has been shown to produce lower information retrieval compared to recognition because the latter includes cues that facilitate retrieval (du Plessis, 1994). With respect to this study, there were no cues (i.e., actual risk disclosure statements) provided in the risk recall questionnaire that would have assisted the participants recall. Instead, the participants had to rely on their memory to retrieve the specific risk disclosures for a given drug.

Second, the participants were exposed to 30 risk disclosure statements (five prescription drug commercials x six unique risk disclosures statements). Assuming that all the risk disclosure statements were encoded into long-term memory, the participants had to retrieve and match each risk disclosure statement with the correct drug. Thus, the complexity of this task produced many false alarms, resulting in corrected hits scores below zero.

A third possible explanation comes from the Elaboration Likelihood Model (ELM) (Petty & Cacciopo, 1986; Petty & Wegener, 1999). The ELM posits that persuasive information (i.e., risk disclosures) can be processed in one of two routes: central and peripheral. Information is processed via the central route when individuals are motivated, able to attend to the information, and focus in depth on the content of the message. Conversely, peripheral route processing occurs when individuals do not readily attend to the persuasive information and instead are influenced by cues that accompany the message. With respect to commercials, these cues could include the person speaking, the type of product advertised, and the product's brand name. One of the best ways to have people process the information through the central route is to make it personally relevant. Thus, people are going to be more motivated to attend to and cognitively process risk disclosures for prescription drug commercials they find relevant.

4.3 Risk Recognition

Several significant results were found for risk recognition. Five were found for the hits analysis and two for the corrected hits analysis. For the hits analysis, including any type of risk disclosure increased risk recognition compared to the no risk disclosures condition. Second, presentation of concurrent risk disclosures in both visual and auditory modalities

(VR & AR) produced greater risk recognition than conditions with visual risk and auditory non-risk disclosures (VR & ANR). Third, presentation of concurrent risk disclosures in both visual and auditory modalities (VR & AR) produced greater risk recognition than conditions with auditory risk and visual non-risk disclosures (AR & VNR). Both of these results indicate that including concurrent non-risk disclosures when risk disclosures are given in either modality negatively affects risk recognition. One potential explanation is that presentation of dual modality, incongruent information overload working memory, may prevent some of the information from being encoded and retrieved at a later time (Wickens, 1984). Fourth, risk disclosures presented in the visual modality (VR) produced greater risk recognition than conditions with visual risk and auditory non-risk (VR & ANR). Finally, risk disclosures presented in the visual modality (VR) produced greater risk recognition than conditions with auditory risk and visual non-risk disclosures (AR & VNR).

For the corrected hits analysis, only the first (any risk disclosure conditions produce higher risk recognition hit scores than no risk disclosures) and second (VR & AR produces higher risk recognition hit scores than VR & ANR) findings from the hits analysis were supported. The lack of support for the other three indicates that false alarms had a negative impact on hits. The lack of difference between VR & AR vs. AR & VNR is unclear given that the VR & AR vs. VR & ANR conditions produced a difference. It may be that presenting non-risk disclosures in the auditory modality is more detrimental to risk recognition compared to presentation in the visual modality. If so, this points to a potential bias towards auditory dominance (Easton & Basala, 1982) when in the presence of incongruent visual risk disclosures.

Participants recognized a significantly greater proportion of risk disclosures for both VR conditions in the hits analysis, but not in the corrected hits analysis. One potential reason for this finding is that participants were very liberal when checking risk disclosures they thought were in the drug commercials. The liberal responses produced a large number of false alarms, which in turn, resulted in lower corrected hits scores.

4.4 Program x Risk Disclosure Condition

The program x risk disclosure analyses were conducted to identify trends that may have contributed to the general lack of support for many of the hypotheses. One explanation is that the aspects of the commercials and not the inclusion or exclusion of risk disclosures might have increased drug name recall, risk recall, and risk recognition. Results supporting this explanation would show trends that certain commercials produced greater recall and recognition than other commercials no matter the risk disclosure condition. This would produce an increase in the variability between the commercials for a given risk disclosure condition, making it more difficult in showing subtle differences between certain conditions. Unique trends for drug name recall, risk recall, and risk recognition were shown.

The drug names "Advair," "Paxil," and "Zyrtec" were consistently recalled more than any others for statistically significant risk disclosures conditions and programs for both hits (see Table 6 & 7) and corrected hits (see Table 8 & 9). One explanation for this finding is that the participants were more likely to focus on these three commercials because they advertised drugs that may have relevance to them or someone they know. For instance, many people suffer from allergies or know someone who does, so the Zyrtec commercial

would have been more relevant than the commercial for Elidel (eczema cream). The exact reasoning for this finding is unknown given that relevance was not tested.

For the risk recall analyses, participants consistently recalled a greater number of risk disclosures for Advair compared to any other commercials for statistically significant risk disclosures and programs for hits (see Table 10 & 11) and corrected hits (see Table 12 & 13). One of the six risk disclosures for Advair is "smelly stool." One potential explanation is that the uniqueness of this risk disclosure made it stand out no matter the type of risk disclosure condition, which in turn, increased its recall.

The risk recognition analyses showed that participants consistently recognized a greater number of risk disclosures for Prevacid compared to the other five commercials for statistically significant risk disclosures and programs for both hits (see Table 14 & 15) and corrected hits (see Table 16 & 17). One potential explanation for this finding is that participants were able to determine that the distractors ("incontinence," "blurred vision," and "Prevacid should not be taken by children less than 8 years of age") were not actual side effects or warnings statements, resulting in few instances where they were chosen.

4.5 Gender x Risk Disclosure Condition

Differences were found between men and women for the three dependent variables. Women recalled and recognized (correctly or incorrectly) a greater number of risk disclosures than men. Women recalled a greater number of drug names compared to men. Women recognized a greater number of risk disclosures for the VR & AR and VR & ANR conditions compared to men. One explanation for this is that the women attended to the commercials more than men, resulting in greater recall and recognition.

4.6 Influence of False Alarms on Corrected Hits

False alarms were found for both recall and recognition. This is shown by a difference in recall and recognition between the hits and corrected hits analyses. There are several potential explanations for the occurrence of false alarms including problems during encoding due to overloading the participant with too much information or with concurrently presented incongruent information, retrieval problems because of memory limitations, or guessing. Guessing is the most likely explanation for many of the false alarms because participants wanted to provide an answer for the questions even if they were not sure it was correct.

The main issue with false alarms is that when a participant reports a side effect or contraindication for a drug that does not exist, the participant may believe he or she has a reason to be concerned about a drug that is unwarranted. The purpose of including risk disclosures is not to introduce needless apprehension or caution. Instead, they are provided to inform the individual about the potential side effects or contraindications associated with a drug.

This study shows the importance of including corrected hits. Corrected hits were included because advertising research has shown that hit and false alarm rates may not follow a similar pattern of results across experimental conditions (Leigh & Menon, 1986). Moreover, they were included because calculating only the proportion of ("hits") would have provided an inaccurate picture of the effectiveness of certain risk disclosures conditions. As noted earlier, ideally Signal Detection Theory analysis would have been used instead of Threshold/Choice Theory analysis but the participants' scores had several instances of 0s (no

recall or recognition) and 1s (perfect recall or recognition), which precludes calculating individual or group sensitivity (*d*') scores (Macmillan & Kaplan, 1985).

4.7 Study Limitations

There are several limitations to the present study. First, the study included only undergraduate participants. Although previous research with over-the-counter medications (Vigilante & Wogalter, 1997; 1999) has shown consistent results between undergraduates, adults, and older adults, this does not assure the same type of results will occur with prescription drug commercials. Thus, future direct-to-consumer prescription drug television advertising research should include samples of non-students to determine if the results found in this study generalize to other populations.

A related limitation is relevance. An effort was made to include prescription drug commercials that were relevant (i.e., a drug the participant had been prescribed or had been prescribed to someone they knew) to the undergraduate participants. These commercials include Advair (asthma), Ambien (sleep aid), and Zyrtec (allergies). The experimenter was limited to prescription drug commercials that are currently advertised and that could be modified (i.e., removal of print information). Future studies should identify and include commercials that have been determined to be relevant to the participants being tested.

Another related limitation is the use of pre-produced commercials. Ideally, unique prescription drug commercials would have been developed that made use of similar background visuals and content and generic brand names. This would have controlled against the potential for commercial type and brand name to influence recall and recognition of risk disclosures. Moreover, this would have allowed the experimenter to only include

commercials that were relevant to the participants. This was not possible due to financial and artistic constraints. Instead, commercials were selected that had the same time duration and could be modified.

Three limitations result from using a laboratory setting for testing recall and recognition of risk disclosures in DTCPDC: (1) demand characteristics, (2) artificial viewing situation, and (3) artificial alertness. Demand characteristics refer to cues from the experimental setting that influences participant's perception of what is expected of them, which in turn, may influence their behavior (Orne, 1962). Although the present study included deception to minimize the likelihood that participant's would focus on the prescription drug commercials, including six DTCPDC per program may have cued them that the focus was on the commercials and not the primetime news excerpts. The artificial nature of the viewing environment (i.e., laboratory setting) may have inflated the recall and recognition of risk disclosures because the participants may have been more likely to attend to the programs compared to normal viewing conditions. Moreover, the laboratory environment may have contributed to an artificial alertness, which would inflate the recall and recognition of risk disclosures.

4.8 Future Research

Future research in the area of prescription drug commercials should examine what features could enhance the saliency of the visual and auditory risk disclosures. For the former, past advertising research has shown that larger print size (Murray, Manrai, & Manri, 1993) and risk disclosures dispersed through a commercial (Morris, Mazis, & Brinberg, 1989) produce greater recall and recognition compared to smaller print size and disclosures

grouped at the end of the commercial. Increasing the print size would have improved risk disclosure conspicuity, which would increase the likelihood they would have captured the participant's attention and increased the amount of information they retained.

Another visual aspect that should be investigated is the placement of risk disclosures on the screen. The present study included risk disclosures only at the bottom of the screen. It may be that print risk disclosures presented in the middle of the screen would increase their recall and recognition because of their ability to better capture attention compared to the bottom of the screen. By locating the risk disclosures at the bottom of the screen, participants may have missed some of them, which would lower their recall and recognition.

With respect to auditory risk disclosures, previous research with auditory (vocal) warnings has shown that several different factors influence ratings of intended carefulness (Barzegar & Wogalter, 1998a; 1998b). One factor is the speaker's gender. Specifically, that warnings presented with a female voice produced higher carefulness rating than a male voice. These same findings might extend to presentation of auditory risk disclosures. The present study presented warnings with only a male voice. Future research should determine whether risk disclosures presented in a female or male voice produces greater risk recall and recognition.

5. Conclusion

Several conclusions can be drawn from these findings that impact the manner in which risk disclosures should be presented in prescription drug commercials. Each of these is discussed below. Moreover, recommendations for changes to the current FDA regulations are discussed.

People Know or Recognize More Risks if Given an Opportunity to View or Hear Them

One consistent finding for drug name recall, risk recall, and risk recognition is that presenting risk disclosures either visually, auditorily, or combined increased the likelihood that participants would recall and recognize them compared to no presentation. Therefore, participants should be presented the potential side affects and warnings for a given prescription drug when viewing a television commercial. While including risk disclosures in any modality increases recall and recognition, one method is clearly superior: concurrent visual and auditory presentation.

Dual Modality Risk Disclosure Presentation is Best

Risk disclosures concurrently presented in visual and auditory modalities (i.e., VR & AR) provides the greatest recall and recognition. This finding was supported by the drug name recall, risk recall, and risk recognition analyses. For drug name recall, VR & AR produced significantly greater recall than AR & VNR for the hits analysis. For risk recall, VR & AR produced significantly greater recall than AR for the hits analysis. For risk recognition, VR & AR produced significantly greater recognition than both VR & ANR and AR & VNR for the hits analysis and VR & ANR for the corrected hits analysis. When looking at the findings across all three dependent variables, VR & AR produces significantly better recall and recognition especially when compared to a condition that includes non-risk disclosures in a competing modality.

Dual modality presentation has the potential to benefit disadvantaged groups like the hearing or vision impaired. Presentation in the visual modality would allow the hearing impaired to read the risk disclosures, while presentation in the auditory modality would allow

the vision impaired to hear the risk disclosures. Also, dual modality presentation would provide individuals who are not disadvantaged the opportunity to learn about potential risk disclosures. It is not unreasonable that individuals might perform other tasks that divert their attention away from the television or that the volume is turned down during commercials. Presentation of risk disclosures in dual modalities would still allow the individuals the opportunity to learn about the risk disclosures for a prescription drug.

Concurrent Presentation of Non-Risk Disclosures in a Competing Modality is Distracting

Concurrent presentation of non-risk disclosures with risk disclosures is more distracting (i.e., decreases recall and recognition) than presenting only risk disclosures. This finding was supported by the analyses for both recall and recognition. Specifically, inclusion of non-risk disclosures was distracting when compared to VR & AR for drug name recall and risk recognition for hits. Moreover, non-risk disclosures were distracting when compared to VR for risk recognition for hits. Thus, when risk disclosures are presented in prescription drug commercials, they should not be concurrently presented with non-risk disclosures. The best way to prevent this from occurring is to concurrently present the risk disclosures in both visual and auditory modalities.

Presentation of Risk Disclosures is Somewhat Better in Visual than Auditory Modality

The results tend to indicate that presentation of visual risk disclosures (VR) produces better recall and recognition compared to auditory risk disclosures (AR). Three findings support this conclusion. First, VR produced significantly greater risk recall for hits compared to Control (no visual or auditory risk disclosures), while no significant difference was found between AR and Control. Second, VR produced significantly greater risk

recognition for hits compared to VR & ANR and AR & VNR, while AR was not significantly different from these two. Third, across all three dependent variables, AR was only found to produce significantly greater recall and recognition compared to Control. Taken together, these three sets of findings indicate that VR may be a better modality for presenting risk disclosures compared to AR.

Recommendations

The U.S. Food and Drug Administration (FDA) regulates direct-to-consumer prescription drug advertising (DTCPDA) (Calfee, 2002). Currently, there are four requirements (brief summary, fair balance, major statement, and adequate provisions) that dictate how risk disclosures (i.e., side effects & contraindications) should be presented in DTCPDA (Prescription Drug Advertising, 2001). Brief summary requires that DTCPDA include information about side effects, contraindications, and effectiveness. Fair balance requires that DTCPDA include equal presentation of the drug's potential benefits and risks. Major statement requires that DTCPDA "… include information relating to the major side effects and contraindications of the advertised drugs in the audio or audio and visual parts of the presentation" (p. 74). Adequate provision requires including an alternative avenue (i.e., toll-free number, Internet web page address, etc.) to learn about the side effects and contraindications if a brief summary cannot be included in the advertisement. Findings from the present research have implications for the brief summary and major statement requirements.

With regards to brief summary, the findings provide justification for requiring presentation of potential side effects and contraindications in prescription drug commercials.

Including the potential side effects and contraindications will increase the likelihood that people will recall and recognize them at a later time. Thus, people will be provided with the opportunity to learn about the potential harmful affects of some prescription drugs.

The findings from this study also have implications for the major statement requirement. Specifically, that risk disclosures should be presented in both visual and auditory modalities to increase the likelihood that they will be recalled or recognized. Moreover, that if for some reason the risk disclosures can only be presented in one modality, it should be visual and not auditory as the requirements specify (Prescription Drug Advertising, 2001). Based on the findings from this study, the FDA should reconsider rewording the major statements requirement to (1) allow side effects and contraindications be presented only in visual modality and (2) to stress the need to include them in both visual and auditory over visual or auditory only.

6. References

Aiken, K.J. (2002). Direct-to-consumer advertising of prescription drugs: Patient survey results (Presentation for the Healthcare Marketing Communications Council). Retrieved December 28, 2002, from http://www.fda.gov/cder/ddmac/Presentations/KitHMCC2002out/

Baddeley, A. (1992). Working memory. *Science, 255,* 556-559.

Baddeley, A. (1995). Working memory. In M.S. Gazzaniga, et al. (Eds.), *The Cognitive Neurosciences* (pp. 755-764). Cambridge, MA: MIT Press.

Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology, 49A,* 5-28.

Barlow, T., & Wogalter, M.S. (1993). Alcoholic beverage warnings in magazine and television advertisements. *Journal of Consumer Research, 20,* 147-156.

Barzegar, R.S., & Wogalter, M.S. (1998a). Effects of auditorily-presented warning signal words on intended carefulness. In M.A. Hanson (Ed.), *Cognitive Ergonomics.* London: Taylor & Francis.

Barzegar, R.S., & Wogalter, M.S. (1998b). Intended carefulness for voiced warning signal words. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 42,* 1068-1072.

Bell, R.A., Kravitz, R.L., & Wilkes, M.S. (1999). Direct-to-consumer prescription drug advertising and the public. *Journal of General Internal Medicine, 14,* 651-657.

Bruyer, R., & Scailquin, J.C. (1998). The visuospatial sketchpad for mental images: Testing the multicomponent model of working memory. *Acta Psychologica, 98,* 17-36.

Calfee, J.E. (2002). Public policy issues in direct-to-consumer advertising of prescription drugs. *Journal of Public Policy & Marketing, 21,* 174-193.

Center for Drug Evaluation and Research. (2002). Time line: Chronology of drug regulation in the United States. Retrieved December 22, 2002, from http://www.fda.gov/cder/about/history/time1.htm

Chandler, R. & Sweller, J. (1991). Cognitive load theory and the format of instruction. *Cognition and Instruction, 8,* 293-332.

Conzola, V.C, & Wogalter, M.S. (1999). Using voice and print directives and warnings to supplement product manual instructions. *International Journal of Industrial Ergonomics, 23,* 549-556.

The Council on Ethical and Judicial Affairs of the American Medical Association (2000). Direct-to-consumer advertisements of prescription drugs. *Food and Drug Law Journal, 55,* 119-124.

Davis, J.J. (2000). Riskier than we think? The relationship between risk statement completeness and perceptions of direct to consumer advertised prescription drugs. *Journal of Health Communications, 5,* 349-369.

Dean, R.S., Yerkovich, F.R., & Gray, J.W. (1988). The effect of modality on long-term recognition memory. *Contemporary Educational Psychology, 13,* 102-115.

Du Plessis, E. (1994). Recognition versus recall. *Journal of Advertising Research, 34,* 75-91.

Easton, R.D., & Basala, M. (1982). Perceptual dominance during lipreading. *Perception & Psychophysics, 32,* 562-570.

Everett, S.E. (1991). Lay audience response to prescription drug advertising. *Journal of Advertising Research, 31,* 43-49.

Food and Drug Administration [FDA]. (1997). Draft guidelines for industry: Consumer-directed broadcast advertisements. *Federal Register, 62(155),* 43171-43193.

Food and Drug Administration [FDA]. (1999a). Attitudes and behaviors associated with direct-to-consumer (DTC) promotion of prescription drugs: Preliminary survey results. Washington, DC: Office of Medical Policy, Division of Drug Marketing, Advertising, and Communication. Retrieved December 28, 2002, from http://www.fda.gov/cder/ddmac/DTCtitle.htm

Food and Drug Administration [FDA]. (1999b). Guidance for industry: Consumer-directed broadcast advertisements. Retrieve December 22, 2002, from http://www.fda.gov/cder/guidance/1804fnl.pdf

Frick, R.W. (1984). Using both an auditory and a visual short-term store to increase digit span. *Memory & Cognition, 12,* 507-514.

Friedman, A., Polson, M.C., Dafoe, C.G., & Gaskill, S.J. (1982). Dividing attention within and between hemispheres: Testing a multiple resource approach to limited-capacity information processing. *Journal of Experimental Human Perception and Performance, 8,* 625-650.

Grimes, T. (1990). Audio-visual correspondence and its role in attention and memory. *Educational Technology Research and Development, 38,* 15-25.

Henry J. Kaiser Family Foundation (2001, November). Understanding the effects of direct-to-consumer prescription drug advertising. Retrieved on December 23, 2002, from http://www.kff.org/content/2001/3197/DTC%20Ad%20Survey.pdf

Henry J. Kaiser Family Foundation (2002, February). Trends in direct-to-consumer advertising of prescription drugs. Retrieved on December 23, 2002, from http://www.kff.org/content/2002/3162/Harvard%20Paper.pdf

Hollon, M.F. (1999). Direct-to-consumer marketing of prescription drugs: Creating consumer demand. *Journal of the American Medical Association, 281(4)*, 382-384.

Holmer, A.F. (1999). Direct-to-consumer prescription drug advertising builds bridges between patients and physicians. *Journal of the American Medical Association, 281(4)*, 380-382.

Houston, M.J., & Rothschild, M.L. (1980). Policy-related experiments on information provision: A normative model and explication. *Journal of Marketing Research, 17,* 432-449.

Kahneman, D. (1973). *Attention and effort.* Englewood Cliffs, NJ: Prentice-Hall.

Kantowitz, B.H., & Knight, J.L. (1976). Testing taping timesharing, II: auditory secondary task. *Acta Psychologica, 40,* 343-362.

Klapp, S.T., & Netick, A. (1998). Multiple resources for processing and storage in short-term working memory. *Human Factors, 30,* 617-632.

Kline, S. (2000). Medical-legal considerations regarding the provision of medication-related information to consumers by pharmaceutical manufacturers. *Drug Information Journal, 34,* 1017-1020.

Kopp, S.W. (1996). Direct-to-consumer advertising and consumer prescription prices. *Drug Information Journal, 30,* 59-65.

Kopp, S.W., & Sheffett, M.J. (1997). The effect of direct-to-consumer advertising of prescription drugs on retail gross margins: Empirical evidence and public policy implications. *Journal of Public Policy & Marketing, 16,* 270-276.

Laughery, K.R., Young, S.L., Vaubel, K.P., & Brelsford, J.W. (1993). The noticeability of warnings on alcoholic beverage containers. *Journal of Public Policy & Marketing, 12,* 38-56.

Leigh, J.H. (1992). Modality congruence, multiple resource theory and intermedia broadcast comparisons: An elaboration. *Journal of Advertising, 21(2),* 55-62.

Leigh, J.H., & Menon, A. (1986). A comparison of alternative recognition measures of advertising effectiveness. *Journal of Advertising, 15(3),* 4-20.

Lexchin, J., & Mintzes, B. (2002). Direct-to-consumer advertising of prescription drugs: The evidence says no. *Journal of Public Policy & Marketing, 21,* 194-201.

Logie, R.H. (1995). Visuo-spatial working memory. Hove, UK: Lawrence Erlbaum Associates.

Luce, R.D. (1959). *Individual choice behavior.* New York: Wiley.

Luce, R.D. (1963). Detection and recognition. In R.D. Luce, R.R. Bush, & E. Galanter (Eds.), *Handbook of mathematical psychology: Vol. 1* (pp. 103-189). New York: Wiley.

Lyles, A. (2002). Direct marketing of pharmaceuticals to consumers. *Annual Review of Public Health, 23,* 73-91.

Macmillan, N.A., & Kaplan, H.L. (1985). Detection theory analysis of group data: Estimating sensitivity from average hit and false-alarm rates. *Psychological Bulletin, 98,* 185-199.

Massaro, D.W., & Warner, D.S. (1977). Dividing attention between auditory and visual perception. *Perception & Psychophysics, 21,* 569-574.

Mayer, R.E. (1997). Multimedia instruction: Are we asking the right questions. *Educational Psychologist, 31,* 1-19.

Mayer, R.E. (1999). Instructional technology. In F. Durso (Ed.) *Handbook of Applied Cognition.* Cambridge University Press.

Mayer, R.E., & Anderson, R.B. (1991). Animations need narrations: An experimental test of dual-coding hypothesis. *Journal of Educational Psychology, 83,* 484-490.

Mayer, R.E., & Anderson, R.B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology, 84,* 444-452.

Mayer, R.E., & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology, 2,* 312-320.

Mayer, R.E., & Sims, V.K. (1994). For whom is a picture worth a thousand words? Extensions of a dual-coding theory of multimedia learning. *Journal of Educational Psychology, 86,* 389-401.

Miller, K. (1991). Channel interaction and the redundant-targets effect in bimodal divided attention. *Journal of Experimental Psychology: Human Perception and Performance, 17,* 160-169.

Moreno, R., & Mayer, R.E. (1999). Cognitive principles of multimedia learning: The role of modality and contiguity. *Journal of Educational Psychology, 91,* 358-368.

Morris, L.A., Brinberg, D., Klimberg, R., Millstein, L., & Rivera, C. (1986). Consumer attitudes about advertisements for medical drugs. *Social Sciences & Medicine, 22,* 629-638.

Morris, L.A., Mazis, M.B., & Brinberg, D. (1989). Risk disclosures in television prescription drug advertising to consumers. *Journal of Public Policy & Marketing, 8,* 64-80.

Mousavi, S., Low., R., & Sweller, J. (1995). Reducing cognitive load by mixing auditory and visual presentation modes. *Journal of Educational Psychology, 87,* 319-334.

Murray, N.M., Manrai, L.A., & Manrai, A.K. (1993). Public policy relating to consumer comprehension of television commercials: A review and some empirical results. *Journal of Consumer Policy, 16,* 145-170.

Murray, N.M., Manrai, L.A., & Manrai, A.K. (1998). How super are video supers? A test of communication efficacy. *Journal of Public Policy & Marketing, 17,* 24-34.

National Health Council. (2002, January). Direct-to-consumer prescription drug advertising: Overview & recommendations. Retrieved on December 23, 2002, from http://www.nationalhealthcouncil.org/advocacy/DTC_paper.pdf

National Institute for Health Care Management [NIHCM]. (2001, May). Prescription drug expenditures in 2000: The upward trend continues. Retrieved on December 23, 2002, from http://www.nihcm.org/spending2000.pdf

National Institute for Health Care Management [NIHCM]. (2001, November). Prescription drugs and mass media advertising, 2000. Retrieved on December 23, 2002, from http://www.nihcm.org/DTCbrief2001.pdf

National Institute for Health Care Management [NIHCM]. (2002, May). Prescription drug expenditures in 2001: Another year of escalating costs. Retrieved on December 23, 2002, from http://www.nihcm.org/spending2001.pdf

Navon, D., & Gopher, D. (1979). On the economy of the human-processing system. *Psychological Review, 86,* 214-255.

Nilsson, L.G., Ohlsson, K., & Ronnberg, J. (1977). Capacity differences in processing and storage of auditory and visual input. In S. Dornick (Ed.), *Attention and Performance, VI* (pp. 629 – 645). Hillsdale, NJ: Lawrence Erlbaum.

Norman, D.A., & Bobrow, D.G. (1975). On data-limited and resource-limited processes. *Cognitive Psychology, 7,* 44-64.

Orne, M.T. (1962). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist, 17,* 776-783.

Penney, C.G. (1975). Modality effects in short-term verbal memory. *Psychological Bulletin, 82,* 68-84.

Penney, C.G. (1989a). Modality effects and the structure of short-term verbal memory. *Memory & Cognition, 17,* 398-422.

Penney, C.G. (1989b). Modality effects in delayed free recall and recognition: Visual is better than auditory. *Quarterly Journal of Experimental Psychology, 41A,* 455-470.

Petty, R.E., & Caccioipo, J.T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change.* New York: Springer-Verlag.

Petty, R.E., & Wegener, D.T. (1999). The elaboration likelihood model: Current status and controversy. In S. Chaiken & Y.Trope (Eds.), *Dual-process theories in social psychology* (pp. 41-72). New York: Guilford.

Pharmaceutical Research and Manufacturers of America [PHRMA] (2002). Direct-to-consumer advertising strengthens our health care system. Retrieved December 23, 2002, from http://www.phrma.org/publications/quickfacts//2002-10-04.581.pdf

Pines, W.L. (1999). A history and perspective on direct-to-consumer promotion. *Food and Drug Law Journal, 54,* 489-518.

Pinto, M.B., Pinto, J.K., & Barber, J.C. (1998). The impact of pharmaceutical direct advertising: Opportunities and obstructions. *Health Marketing Quarterly, 15,* 89-101.

Polson, M.C., & Friedman, A. (1988). Task-sharing within and between hemispheres: A multiple-resource approach. *Human Factors, 30,* 633-643.

Posner, M.I., Nissen, M.J., & Klein, R.M. (1976). Visual dominance: An information-processing account of its origins and significance. *Psychological Review, 83,* 157-171.

Prescription Drug Advertising, 21 C.F.R. 202.1 (2001).

Redmond, K. (2002, June). Direct-to-consumer advertising: A powerful communication tool or an exploitive marketing strategy? *CancerFutures, 1,* 177-178.

Reese, S.D. (1984). Visual-verbal redundancy effects on television news learning. *Journal of Broadcasting, 28,* 79-87.

Rollins, R.A., & Hendricks, R. (1980). Processing of words presented simultaneously to eye and ear. *Journal of Experimental Psychology: Human Perception & Performance, 6,* 99-109.

Rosenthal, M.B., Berndt, E.R., Donohue, J.M., Frank, R.G., & Epstein, A.M. (2002). Promotion of prescription drugs to consumers. *New England Journal of Medicine, 346,* 498-505.

Roth, M.S. (1996). Patterns in direct-to-consumer prescription drug print advertising and their public policy implications. *Journal of Public Policy & Marketing, 15,* 63-75.

Smith, S.J. (1990). The impact of product usage warnings in alcoholic beverage advertising. *Journal of Public Policy & Marketing, 9,* 16-29.

Sojourner, R.J., & Wogalter, M.S. (1997). The influence of pictorials on evaluations of prescription medication instructions. *Drug Information Journal, 31,* 963-972.

Solso, R.L. (2001). *Cognitive psychology* (6th ed.). Boston: Allyn and Bacon.

Tindall-Ford, S., Chandler, P., & Sweller, J. (1997). When two sensory modes are better than one. *Journal of Experimental Psychology: Applied, 3,* 257-287.

Treisman, A.M., & Davies, A. (1973). Divided attention to ear and eye. In S. Kornblum (Ed.), *Attention and Performance IV* (pp. 101-117). New York: Academic Press.

Vidulich, M.A. (1988). Speech responses and dual-task performance: Better time-sharing or asymmetric transfer? *Human Factors, 30,* 517-529.

Vigilante, W.J., & Wogalter, M.S. (1997). The preferred order of over-the-counter (OTC) pharmaceutical label components. *Drug Information Journal, 31,* 973-988.

Vigilante, W.J., & Wogalter, M.S. (1999). Over-the-counter (OTC) drug labeling: Format preferences. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 43,* 103-107.

Ward, L.M. (1994). Supramodal and modality-specific mechanisms for stimulus-driven shifts of auditory and visual attention. *Canadian Journal of Experimental Psychology, 48,* 242-259.

Wickens, C.D. (1980). The structure of attentional resources. In R. Nickerson (Ed.), *Attention and Performance VIII* (pp. 239 – 257). Hillsdale, NJ: Lawrence Erlbaum Associates.

Wickens, C.D. (1984). Processing resources in attention. In R. Parasuraman & D.R. Davies (Eds.), *Varieties of attention* (pp. 63-102). Orlando, FL: Academic Press.

Wickens, C.D. (1991). Processing resources and attention. In D.L. Damos (Ed.), *Multiple-task performance* (pp. 3-34). London: Taylor & Francis.

Wickens, C. D., & Hollands, J.G. (2000). *Engineering psychology and human performance (3rd ed)*. Upper Saddle River, New Jersey: Prentice Hall.

Wickens, C.D., & Liu, Y. (1988). Codes and modalities in multiple resources: A success and a qualification. *Human Factors, 30,* 599-616.

Wickens, C.D., Sandry, D.L., & Vidulich, M. (1983). Compatibility and resource competition between modalities of input, central processing, and output. *Human Factors, 25,* 227-248.

Wickens, C.D., Vidulich, M., & Sandry-Garza, D. (1984). Principles of s-c-r compatibility with spatial and verbal tasks: The role of display-control location and voice-interactive display-control interfacing. *Human Factors, 25,* 533-543.

Wilkes, M.S., Bell, R.A., & Kravitz, R.L. (2000). Direct-to-consumer prescription drug advertising: trends, impact, and implications. *Health Affairs, 19,* 110-128.

Wogalter, M.S., Allison, S.T., & McJenna, N.A. (1989). Effects of cost and social influence on warning compliance. *Human Factors, 31,* 133-140.

Wogalter, M.S., & Barlow, T. (1990). Injury severity and likelihood in warnings. *Proceedings of the Human Factors Society Annual Meeting, 34,* 580-583.

Wogalter, M.S., Godfrey, S.S., Fontenelle, G.A., Desaulniers, D.R., Rothstein, P.R., & Laughery, K.R. (1987). Effectiveness of warnings. *Human Factors, 29,* 599-612.

Wogalter, M.S., Magurno, A.B., Dietrich, D.A., & Scott, K.L. (1999). Enhancing information acquisition for over-the-counter medications by making better use of container surface space. *Experimental Aging Research, 25,* 27-48.

Wogalter, M.S., Paine, C.S., Mills, B.J., & Smith-Jackson, T.L. (1999). Application of cognitive principles to the design of direct-to-consumer advertising of prescription medications. In *Proceedings of the Human Factors and Ergonomics Society 43rd Annual Meeting* (pp. 515-519). Santa Monica, CA: The Human Factors and Ergonomics Society.

Wogalter, M.S., Rashid, R., Clarke, S.W., & Kalsher, M.J. (1991). Evaluating the behavioral effectiveness of a multi-modal voice warning sign in a visually cluttered environment. *Proceedings of the Human Factors Society Annual Meeting, 35,* 718-722.

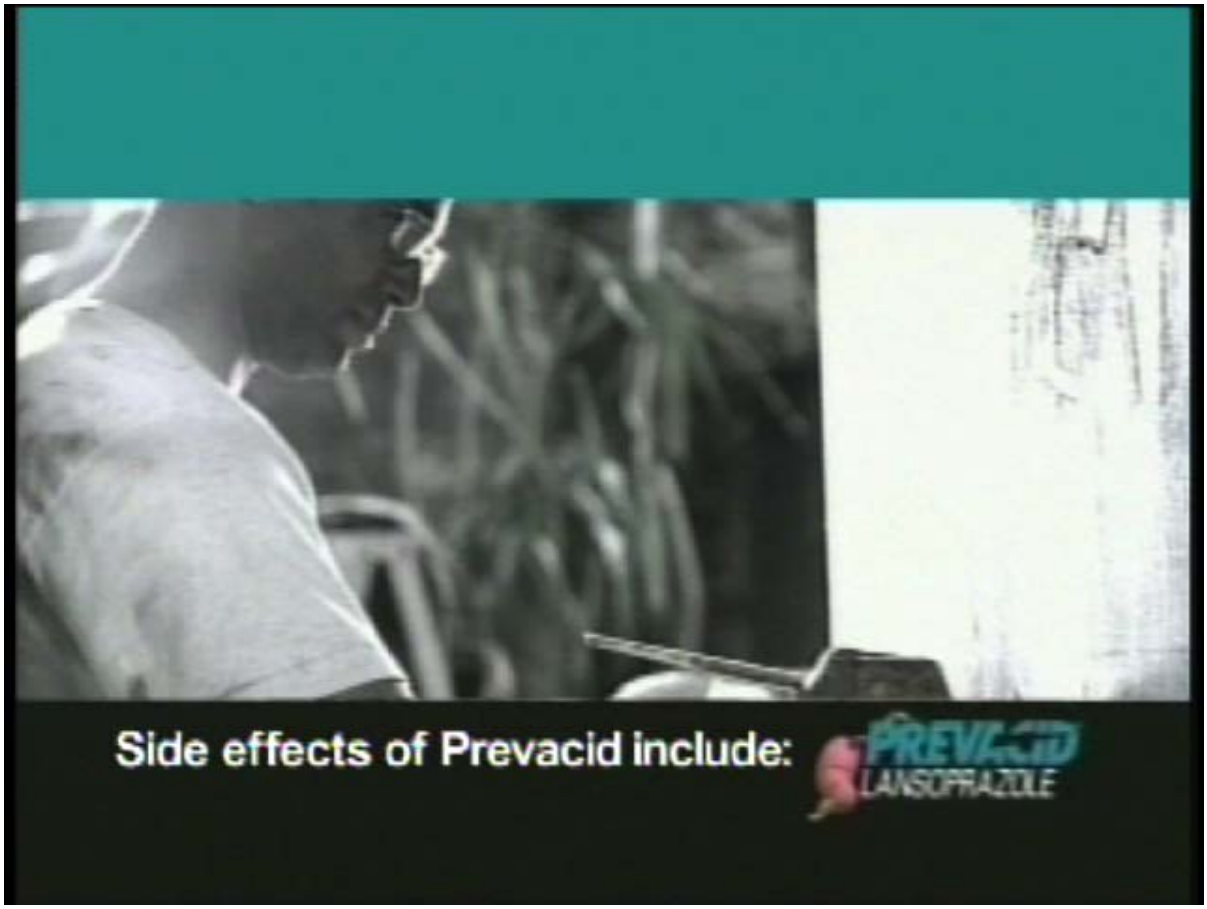
Wright, P. (1979). Concrete action plans in tv messages to increase reading of drug warnings. *Journal of Consumer Research, 6,* 256-269.

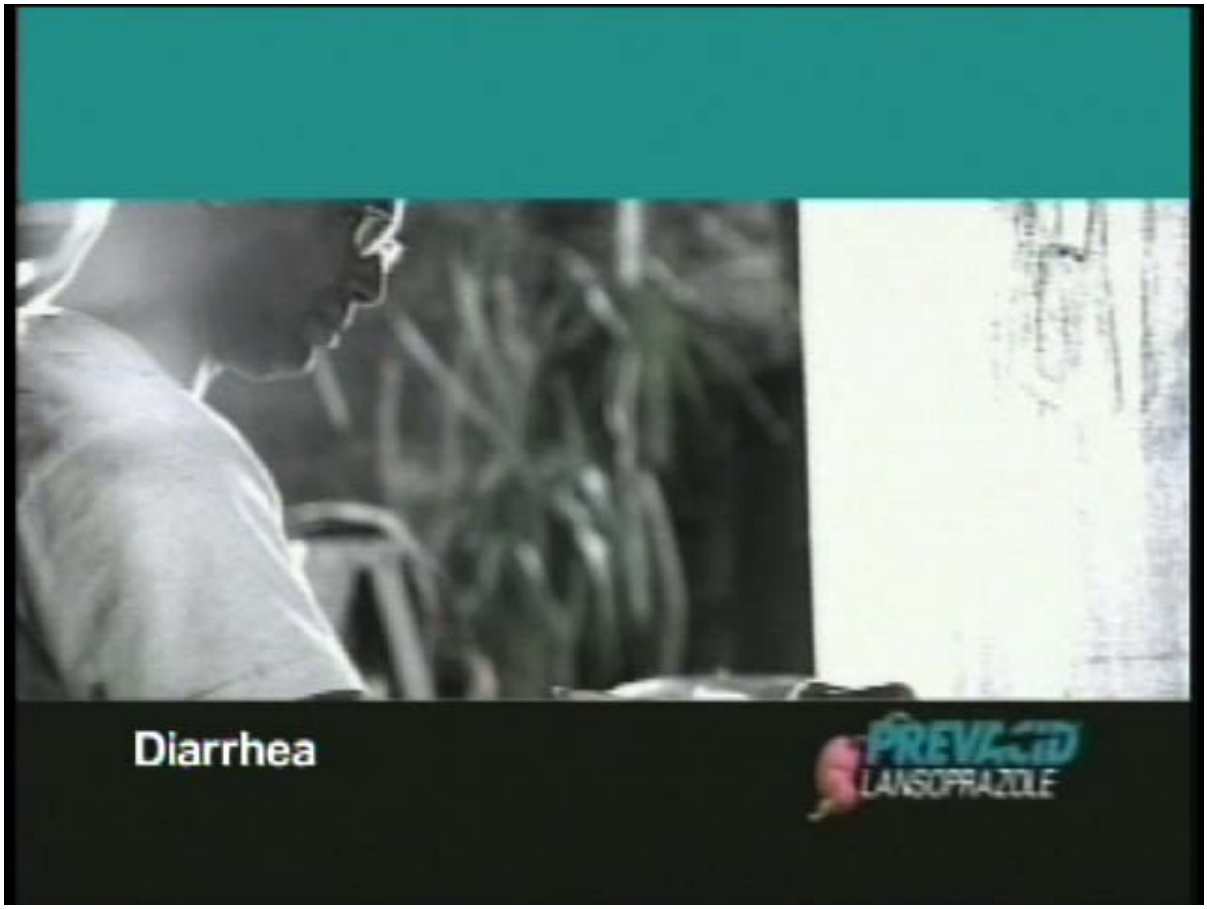
Young, S.L., & Wogalter, M.S. (1990). Comprehension and memory of instruction manual warnings: Conspicuous print and pictorial icons. *Human Factors, 32,* 637-649.

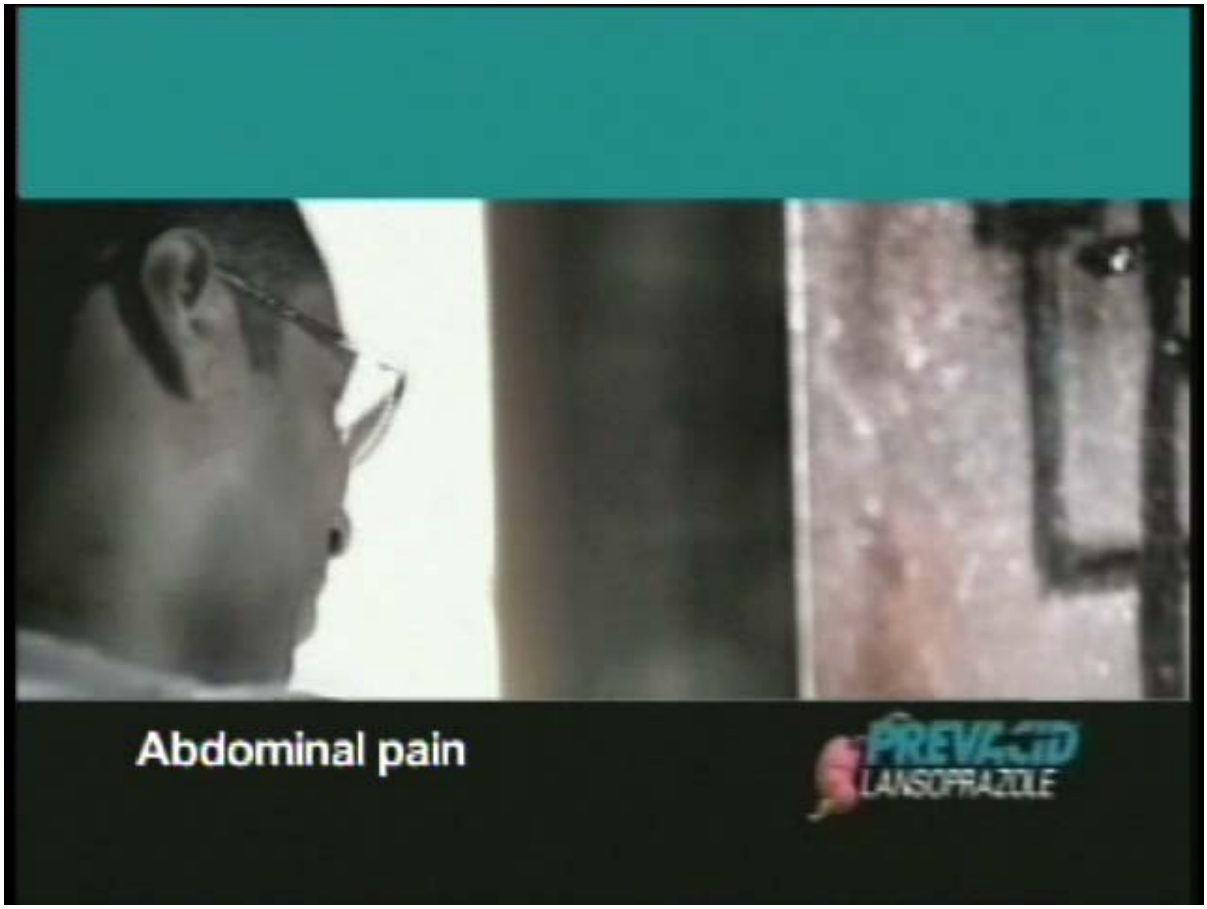
Zachery, W.M., Shepherd, M.D., Hinich, M.J., Wilson, J.P., Brown, C.M., & Lawson, K.A. (2002). Relationship between direct-to-consumer advertising and physician

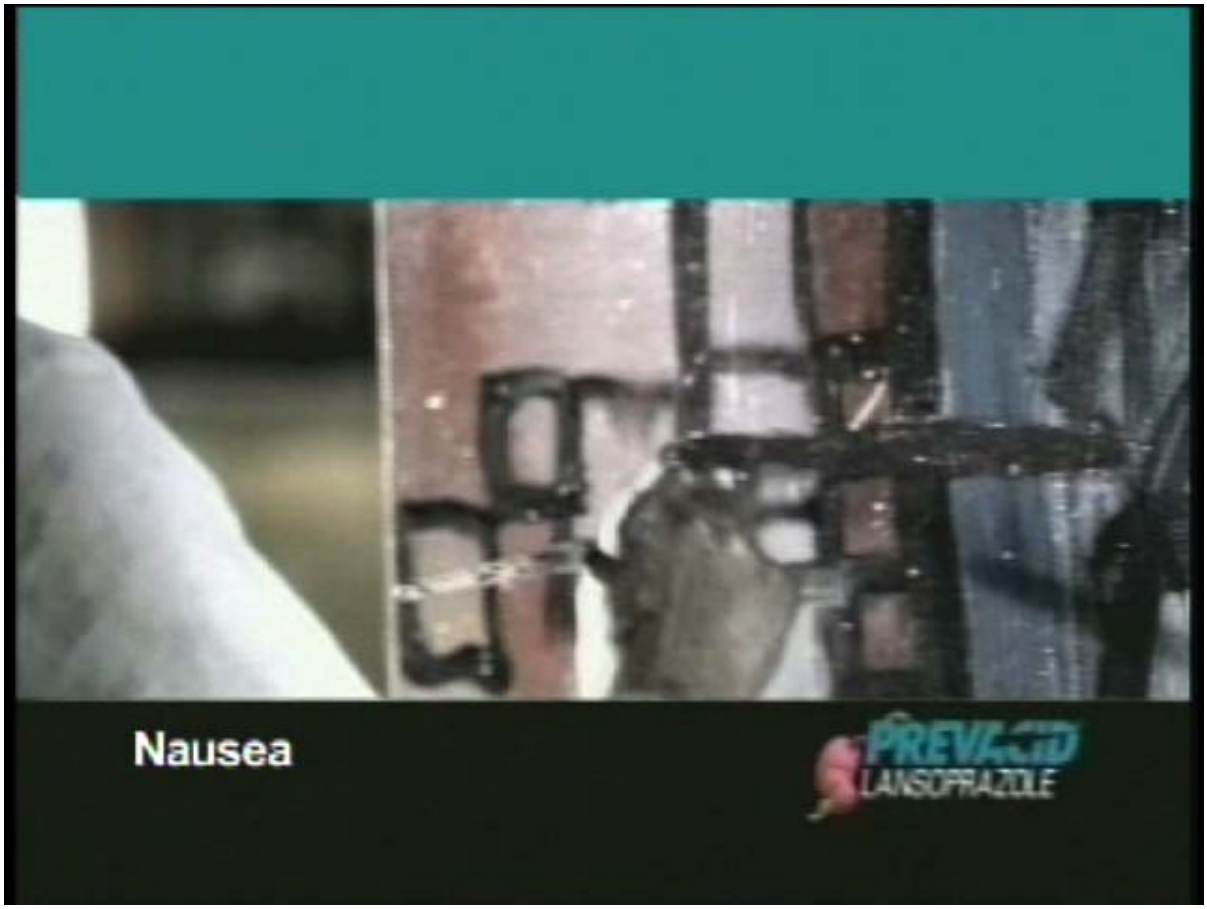
diagnosing and prescribing. *American Journal of Health-System Pharmacy, 59,* 42-49.

Appendix A: Screenshots of Visual Risk Disclosures

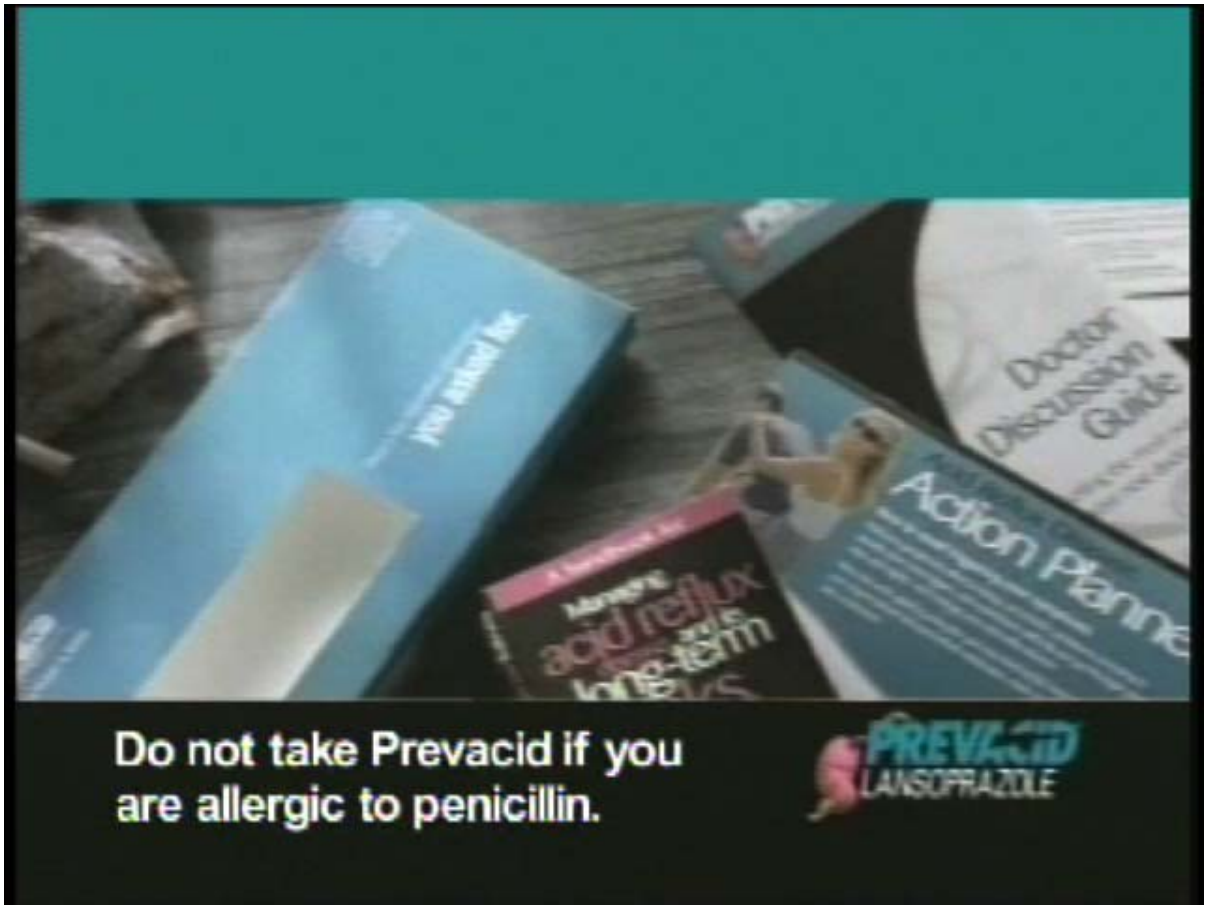

Side effects of Prevacid include:
PREVACID
LANSOPRAZOLE


Diarrhea
PREVACID
LANSOPRAZOLE


Abdominal pain
PREVACID
LANSOPRAZOLE


Nausea
PREVACID
LANSOPRAZOLE


Vertigo
PREVACID
LANSOPRAZOLE


Doctor Discussion Guide
Action Plan
Do not take Prevacid if you are allergic to penicillin.
PREVACID
LANSOPRAZOLE


Women who are pregnant or
nursing should not take Prevacid.
PREVACID
LANSOPRAZOLE

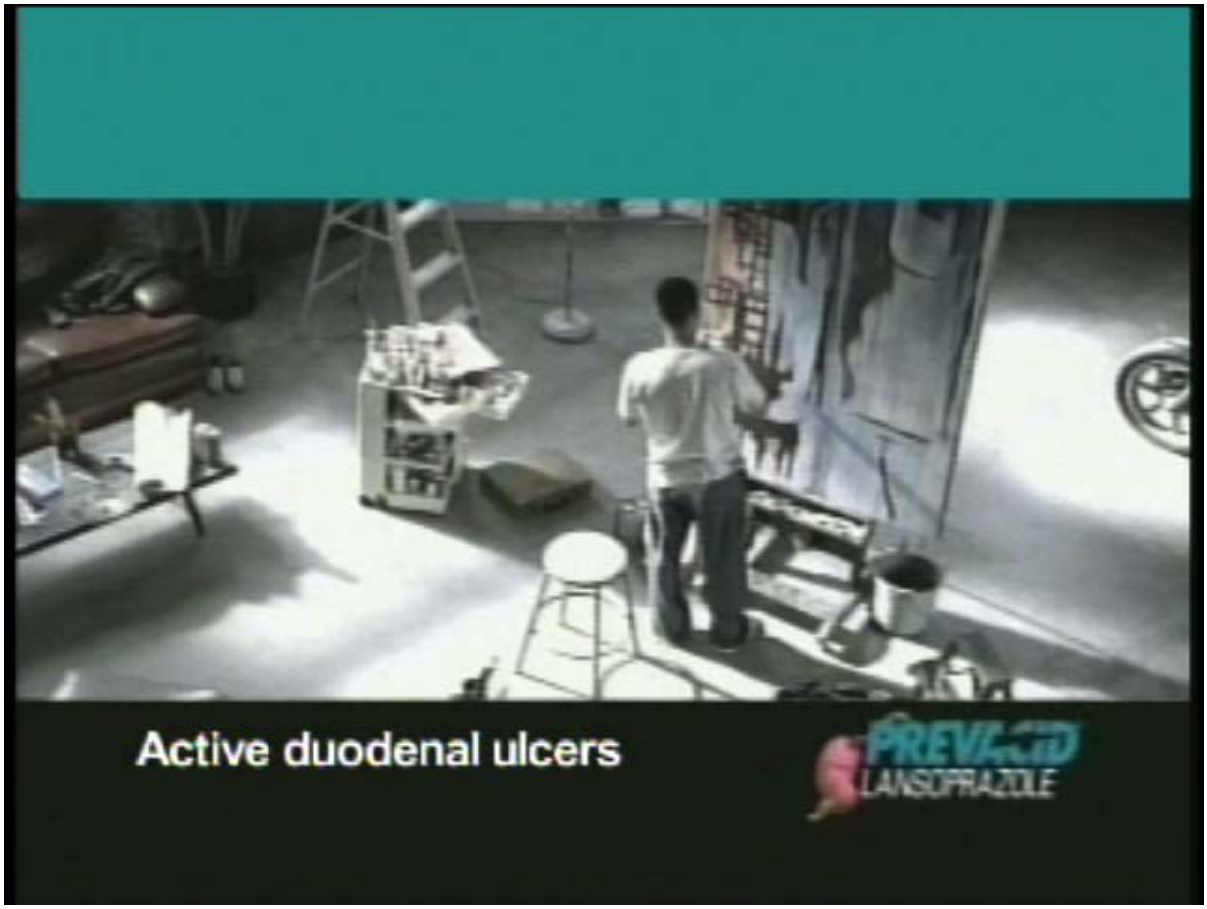
Appendix B: Screenshots of Visual Non-Risk Disclosures

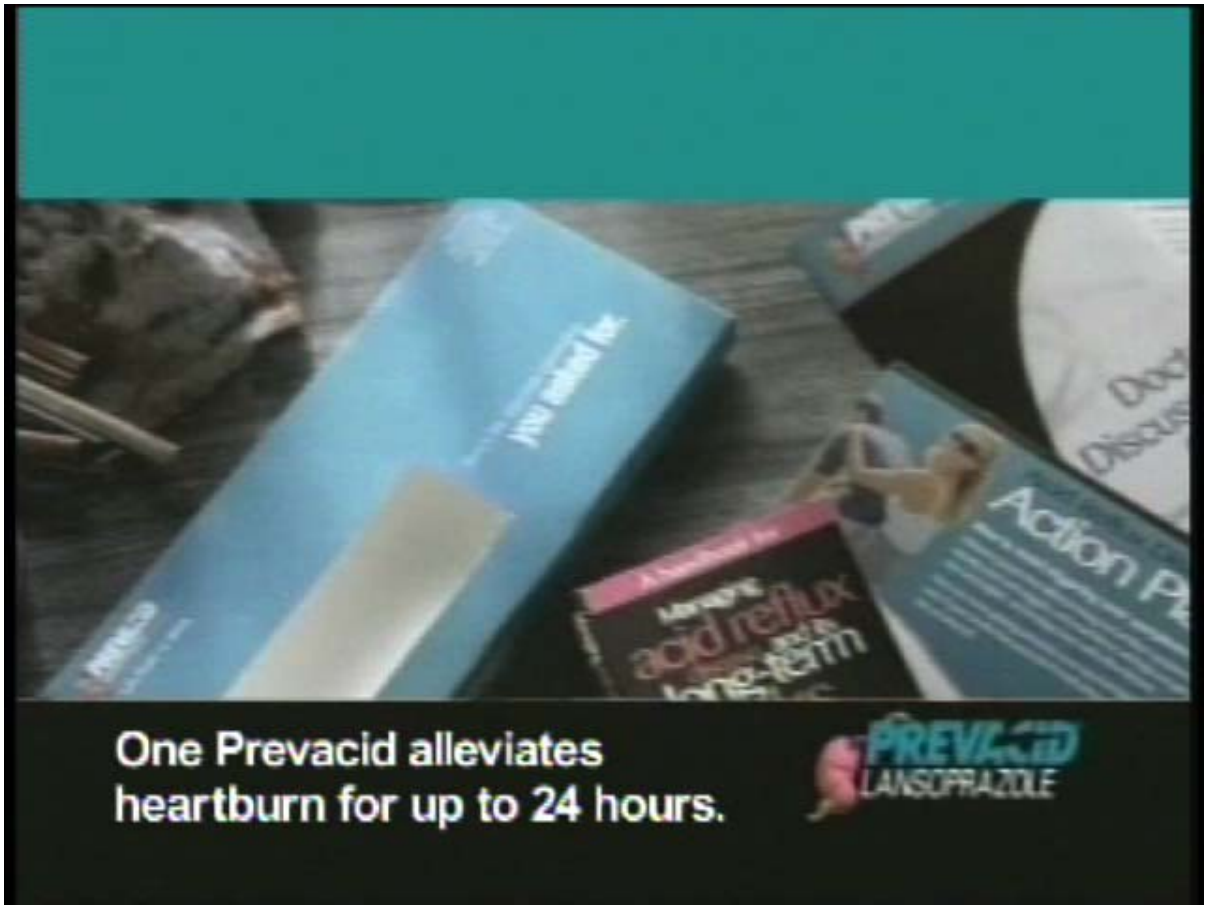

Prevacid is a prescription
drug that treats:
PREVACID
LANSOPRAZOLE


Heartburn
PREVACID
LANSOPRAZOLE


Acid reflux disease
LANSOPRAZOLE


Upset stomachs
LANSOPRAZOLE


Active duodenal ulcers
LANSOPRAZOLE


One Prevacid alleviates
heartburn for up to 24 hours.
PREVACID
LANSOPRAZOLE


Ask your doctor for more
information about Prevacid.
PREVACID
LANSOPRAZOLE

Appendix C: Program Content and Order

Program 1

Commercials 1	Glad Elidel - Visual (print) risk disclosures and auditory (voice) non-risk disclosures Quaker
Excerpt 1	Down the Drain - Dateline
5 second blackout	
Commercials 2	Suave Clorox Zyrtec - Auditory (voice) risk disclosures
Excerpt 2	Colin Powell - 20/20
5 second blackout	
Commercials 3	Ambien - Auditory (voice) risk disclosures and visual (print) non-risk disclosures Merita Charmin
Excerpt 3	Moving Violations - Dateline
5 second blackout	
Commercials 4	Gain Stouffer Advair - No visual (print) or auditory (voice) disclosures [control]
Excerpt 4	Lional Tate - 20/20
5 second blackout	

Commercials 5	Colgate Paxil - Visual (print) risk disclosures and auditory (voice) risk disclosures Pledge
Excerpt 5	Top Cop - 60 Minutes
5 second blackout	
Commercials 6	Prevacid - Visual (print) risk disclosures Equal Visine
Excerpt 6	Dr. Sharistani - 60 Minutes

Program 2

Commercials 1	Paxil - Auditory (voice) risk disclosures Visine Equal
Excerpt 1	Top Cop - 60 Minutes
5 second blackout	
Commercials 2	Pledge Colgate Advair - Visual (print) risk disclosures and auditory (voice) non-risk disclosures
Excerpt 2	Lional Tate - 20/20
5 second blackout	
Commercials 3	Stouffers Elidel - Visual (print) risk disclosures Gain
Excerpt 3	Down the Drain - Dateline
5 second blackout	
Commercials 4	Charmin Ambien - Visual (print) risk disclosures and auditory (voice) risk disclosures Merita
Excerpt 4	Moving Violations - Dateline
5 second blackout	
Commercials 5	Prevacid - No visual (print) or auditory (voice) disclosures [control] Clorox Suave

Excerpt 5	Dr. Sharistani - 60 Minutes
5 second blackout	
Commercials 6	Quaker Glad Zyrtec - Auditory (voice) risk disclosures and visual (print) non-risk disclosures
Excerpt 6	Colin Powell - 20/20

Program 3

Commercials 1	Suave Glad Ambien - No visual (print) or auditory (voice) disclosures [control]
Excerpt 1	Moving Violations - Dateline
5 second blackout	
Commercials 2	Prevacid - Visual (print) risk disclosures and auditory (voice) risk disclosures Quaker Clorox
Excerpt 2	Dr. Sharistani - 60 Minutes
5 second blackout	
Commercials 3	Merita Advair - Auditory (voice) risk disclosures Colgate
Excerpt 3	Lional Tate - 20/20
5 second blackout	
Commercials 4	Zyrtec - Visual (print) risk disclosures Charmin Pledge
Excerpt 4	Colin Powell - 20/20
5 second blackout	
Commercials 5	Stouffers Visine Elidel - Auditory (voice) risk disclosures and visual (print) non-risk disclosures

Excerpt 5	Down the Drain - Dateline
5 second blackout	
Commercials 6	Equal Paxil - Visual (print) risk disclosures and auditory (voice) non-risk disclosures Gain
Excerpt 6	Top Cop - 60 Minutes

Program 4

Commercials 1	Pledge Suave Elidel - Visual (print) risk disclosures and auditory (voice) risk disclosures
Excerpt 1	Dr. Sharistani - 60 Minutes
5 second blackout	
Commercials 2	Visine Zyrtec - No visual (print) or auditory (voice) disclosures [control] Quaker
Excerpt 2	Moving Violations - Dateline
5 second blackout	
Commercials 3	Ambien - Visual (print) risk disclosures and auditory (voice) non-risk disclosures Equal Glad
Excerpt 3	Top Cop - 60 Minutes
5 second blackout	
Commercials 4	Charmin Advair - Auditory (voice) risk disclosures and visual (print) non-risk disclosures Stouffers
Excerpt 4	Down the Drain - Dateline
5 second blackout	

Commercials 5	Colgate Clorox Paxil - Visual (print) risk disclosures
Excerpt 5	Colin Powell - 20/20
5 second blackout	
Commercials 6	Prevacid - Auditory (voice) risk disclosures Merita Gain
Excerpt 6	Lional Tate - 20/20

Program 5

Commercials 1	Advair - Visual (print) risk disclosures Equal Charmin
Excerpt 1	Lional Tate - 20/20
5 second blackout	
Commercials 2	Suave Paxil - Auditory (voice) risk disclosures and visual (print) non-risk disclosures Gain
Excerpt 2	Top Cop - 60 Minutes
5 second blackout	
Commercials 3	Merita Clorox Zyrtec - Visual (print) risk disclosures and auditory (voice) risk disclosures
Excerpt 3	Colin Powell - 20/20
5 second blackout	
Commercials 4	Stouffers Glad Prevacid - Visual (print) risk disclosures and auditory (voice) non-risk disclosures
Excerpt 4	Dr. Sharistani - 60 Minutes
5 second blackout	
Commercials 5	Ambien - Auditory (voice) risk disclosures Visine Pledge

Excerpt 5	Moving Violations - Dateline
5 second blackout	
Commercials 6	Colgate Elidel - No visual (print) or auditory (voice) disclosures [control] Quaker
Excerpt 6	Down the Drain - Dateline

Program 6

Commercials 1	Merita Prevacid - Auditory (voice) risk disclosures and visual (print) non-risk disclosures Pledge
Excerpt 1	Colin Powell - 20/20
5 second blackout	
Commercials 2	Ambien - Visual (print) risk disclosures Glad Colgate
Excerpt 2	Down the Drain - Dateline
5 second blackout	
Commercials 3	Equal Charmin Paxil - No visual (print) or auditory (voice) disclosures [control]
Excerpt 3	Dr. Sharistani - 60 Minutes
5 second blackout	
Commercials 4	Elidel - Auditory (voice) risk disclosures Clorox Visine
Excerpt 4	Top Cop - 60 Minutes
5 second blackout	
Commercials 5	Quaker Zyrtec - Visual (print) risk disclosures and auditory (voice) non-risk disclosures Gain

Excerpt 5	Lional Tate - 20/20
5 second blackout	
Commercials 6	Stouffers Suave Advair - Visual (print) risk disclosures and auditory (voice) risk disclosures
Excerpt 6	Moving Violations - Dateline

Appendix D: Risk and Non-Risk Commercial Disclosures

Advair

Non-risk disclosures

Advair is a prescription drug that treats:

- airway constrictions
- wheezing
- airway inflammations
- acute bronchospasms

Advair is clinically proven to increase symptom free days.

Contact your doctor to learn more about Advair.

Risk disclosures

Side effects include:

- halitosis
- elevated blood pressure
- blurred vision
- smelly stool

Advair should not be used as a replacement for fast-acting inhalers.

Do not take Advair more than two times a day.

Ambien

Non-risk disclosures

Ambien is a prescription drug that treats:

- insomnia
- restlessness
- sleep apnea
- waking too early

#1 prescribed sleep aid in America.

Visit Ambien.com to learn more about Ambien.

Risk disclosures

Side effects include:

- drowsiness
- sore throat
- peripheral edema
- flatulence

Do not take Ambien after consuming two or more alcoholic beverages.

Individuals taking Ambien should not drive or operate machinery.

Elidel

Non-risk disclosures

Elidel is a prescription drug that treats:

- mild or moderate eczema
- itchy rashes
- flaky skin
- skin redness

Elidel is a different way to control mild to moderate eczema.

Talk to your doctor for more information about Elidel.

Risk disclosures

Side effects include:

- excessive perspiration
- headaches
- malaise
- lethargy

Do not use Elidel if you are sensitive to pimecrolimus.

Individuals taking Elidel should avoid unprotected exposure to the sun.

Paxil

Non-risk disclosures

Paxil is a prescription drug that treats:

- depression
- irritability
- anxiety
- muscle tension

Paxil can help restore the serotonin levels in your body.

Visit Paxil.com for more information about Paxil.

Risk disclosures

Side effects include:

- decreased libido
- impotence
- gastric ulcers
- seizures

Do not take Paxil if you have hypersensitivity to paroxetine.

Individuals currently taking MAOIs should not take Paxil.

Prevacid

Non-risk disclosures

Prevacid is a prescription drug that treats:

- heartburn
- acid reflux disease
- upset stomachs
- active duodenal ulcers

One Prevacid alleviates heartburn for up to 24 hours.

Ask your doctor for more information about Prevacid.

Risk disclosures

Side effects include:

- diarrhea
- abdominal pain
- nausea
- vertigo

Do not take Prevacid if you are allergic to penicillin.

Women who are pregnant or nursing should not take Prevacid.

Zyrtec

Non-risk disclosures

Zyrtec is a prescription drug that treats allergies to:

- grass pollen
- molds
- dust
- pet dander

Zyrtec is FDA-approved to treat indoor and outdoor allergies.

Call 1-800-4ZYRTEC for more information about Zyrtec.

Risk disclosures

Side effects include:

- fatigue
- hearing loss
- constipation
- dry mouth

If you are sensitive to hydroxyzine do not take Zyrtec.

Do not take more than two tablets in a 24 hour period.

Appendix E: Informed Consent Form

North Carolina State University
INFORMED CONSENT FORM

TITLE OF STUDY: **Evaluating the Importance and Appeal of Primetime News Programs**

PRINCIPLE INVESTIGATOR: **Eric Shaver**

You are invited to participate in a research study. The purpose of this study is to evaluate exerpts from several primetime news programs to determine their importance and appeal.

INFORMATION
The study should take less than 1.5 hours to complete.

RISKS
There are no known risks associated with this study.

BENEFITS
The only direct benefit the participant can expect to receive is experimental credit.

CONFIDENTIALITY
The information in the study records will be kept strictly confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study.

COMPENSATION
For participating in this study you will receive **3 credit**. If you withdraw from the study prior to its completion, you will receive **1 credit**.

CONTACT
If you have questions at any time about the study or the procedures, you may contact the researcher, **Eric Shaver,** at **POE 740**, or **515-8260**. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148)

PARTICIPATION
Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed.

CONSENT
I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Participant's signature_____ Date _____

Print Name_____

Investigator's signature_____ Date _____

Appendix F: Study Instructions

Instructions

Part 1

Thank you for taking part in this study. This study consists of several different parts.

First, you will complete a demographics form and television viewing habits survey.

Second, you will view some primetime news excerpts that have been combined to create a 28-minute program. The program will be stopped several times to allow you to rate the excerpts on how important and appealing you believe they are compared to similar programs you have viewed in the past? After you have completed the ratings for a segment, please turn the sheet over in the packet and do not look back at your ratings. I will stop the program long enough for you to complete each of the ratings for a given segment. Please do not talk to other participants while viewing the programs.

Third, after you have viewed the entire program, you will be asked to complete three surveys about the program and a follow-up questionnaire.

Do you have any questions?

****

Part 2

Now you will complete three surveys. Please read the instructions before completing each survey. Make sure that you complete each page of the survey before turning it over and do not look back at previous pages once you have completed them. After you have completed the last page of the survey, please turn it over and wait until the other participants are done and I will have some follow-up questions for you. Please do not talk to other participants while completing the surveys.

Do you have any questions?

Appendix G: Demographics Form

Demographics

Age: _____

Gender: ____ Male
____ Female

Ethnicity: ____ African
____ African-American
____ Asian
____ Caucasian
____ East Indian
____ Hispanic or Latino
____ Native American
____ Middle Eastern
____ Mixed Race
____ Pacific Islander
____ Other (please specify): _____

Are you a full-time student? ____No ____ Yes

If "Yes," what is you major area of study? _____

If "No," what is your current occupation? _____

Last or highest year of school completed (please circle a number):

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 or more
---Grade School----------High School-- ---Technical/College/University---

Appendix H: Television Viewing Habits Questionnaire

Do you watch television? ____No ____Yes

Approximately how many hours of television do you watch per week (excluding movies that you own or rent): ____ hours per week

What type of television programs do you watch (please check all that apply)?

___Action/Adventure
___Cartoon/Animated
___Children's
___Comedy/Sitcoms
___Courtroom
___Drama
___Educational
___Game Show
___Medical
___Music
___News
___Reality
___Science Fiction
___Sports
___Soap Opera
___Talk Shows
___Other (please specify): _____

What is your favorite category of television program (please choose only one)?

___Action/Adventure
___Cartoon/Animated
___Children's
___Comedy/Sitcoms
___Courtroom
___Drama
___Educational
___Game Show
___Medical
___Music
___News
___Reality
___Science Fiction
___Sports
___Soap Opera
___Talk Shows
___Other (please specify): _____

Appendix I: Television Excerpts Ratings Form

Segment #:_____ P #:_____

How **important** did you find this segment to be compared to similar programs you have watched in the past? (Please circle one of the numbers on the following line to indicate your response.)

1	2	3	4	5	6	7
Extremely Important	Very Important	Important	Neither Important Nor Unimportant	Unimportant	Very Unimportant	Extremely Unimportant

How **appealing** did you find this segment to be compared to similar programs you have watched in the past? (Please circle one of the numbers on the following line to indicate your response.)

1	2	3	4	5	6	7
Extremely Appealing	Very Appealing	Appealing	Neither Important Nor Unappealing	Unappealing	Very Unappealing	Extremely Unappealing

Appendix J: Drug Name Recall Questionnaire

Questionnaire 1 P#:_____

Instructions: Please answer the following questions as specifically as you can. If you are unsure about an answer, please give your best possible guess. Be sure to answer every question. If a question asks for more than one answer, try to fill in all the blanks.

1. What type of television programs did you watch? _____ program type

2. How many television program excerpts did you watch? _____ # of programs

3. How many of the anchors were males? females? _____ males
   _____ females

4. What were the names of the anchors? (Spell their names as best as possible.)
   _____ name
   _____ name
   _____ name
   _____ name
   _____ name
   _____ name
   _____ name
   _____ name

5. Name the companies or corporations that advertised products during the programs.
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company
   _____ company

6. List the types of products that were advertised in the commercials.

_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product

7. Did any of the commercials for the advertised products contain warnings statements (e.g., potential hazards or risks, side effects, contraindications, etc.)?

_____ no _____ yes

8. If you answered "Yes" to the question above, please list the products.

_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product

9. Did any of the commercials for the advertised products contain other statements not dealing with risks, hazards, or warnings?

_____ no _____ yes

10. If you answered “Yes” to the question above, please list the products.

_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product
_____ product

Appendix K: Risk Recall Questionnaire

Questionnaire 2 P#:_____

Instructions: Please answer the following questions as specifically as you can. If you are unsure about an answer, please give your best possible guess. Be sure to answer every question. If a question asks for more than one answer, try to fill in all the blanks.

1. What were the names of the anchors? (Spell their names as best as possible.)

   Jane _____
   Stone _____
   Barbara _____
   Peter _____
   Ed _____
   Diane _____
   Charles _____
   Steve _____

2. What were the names of the program segments?

   Life for _____
   _____ Cop
   Moving _____
   _____ the Drain

3. What (if any) household product companies advertised? (If none were advertised, mark an "X" in the following blank space.)

   _____company
   _____company
   _____company
   _____company
   _____company
   _____company
   _____ None

4. What (if any) drug companies advertised? (If none were advertised, mark an "X" in the following blank space.)

   _____company
   _____company
   _____company
   _____company
   _____company
   _____company
   _____ None

5. What (if any) food companies advertised? (If none were advertised, mark an "X" in the following blank space.)

_____company
_____company
_____company
_____company
_____company
_____company
_____ None

6. What (if any) personal care product companies advertised? (If none were advertised, mark an "X" in the following blank space.)

_____company
_____company
_____company
_____company
_____company
_____company
_____ None

7. If you saw or heard any *warning statements* (e.g., potential risks or hazards, side effects, contraindications etc.) in the commercials, please write them on the lines below. Be as specific as possible. Also, provide the brand name and product that is associated with the warning statement.

a. Brand: _____

Product: _____

Warning statement:_____

b. Brand: _____

Product: _____

Warning statement:_____

c. Brand: _____

Product: _____

Warning statement:_____

d. Brand: _____

Product: _____

Warning statement:_____

e. Brand: _____

Product: _____

Warning statement:_____

f. Brand: _____

Product: _____

Warning statement:_____

8. If you saw or heard any *other statements* in the commercials that did not deal with risks, hazards, or warnings, please write them on the lines below. Be as specific as possible. Also, provide the brand name and product that is associated with the information statement.

a. Brand: _____

Product: _____

Other statement:_____

b. Brand: _____

Product: _____

Other statement:_____

c. Brand: _____

Product: _____

Other statement:_____

d. Brand: _____

Product: _____

Other statement:_____

e. Brand: _____

Product: _____

Other statement:_____

f. Brand: _____

Product: _____

Other statement:_____

Appendix L: Risk Recognition Questionnaire

Questionnaire 3 P#:_____

Instructions: Please answer the following questions as best you can. For each question, make sure to check all the answers that apply. If you are unsure about an answer, please give your best possible guess by checking all that you believe you saw in the program. Some questions may have no correct answers.

1. Which of the following primetime news programs did you watch? (Please check all that apply.)
   - ___ 20/20
   - ___ 60 Minutes
   - ___ Dateline
   - ___ 48 Hours

2. Which of the following program excerpts were presented? (Please check all that apply.)
   - ___ American Beauty
   - ___ Lionel Tate
   - ___ Colin Powell
   - ___ Dr. Shahristani
   - ___ Top Cop
   - ___ Crowd Safety
   - ___ Down the Drain
   - ___ Moving Violations
   - ___ Defending Clara Harris

3. Which of the following household products were advertised? (Please check all that apply.)
   - ___ Glad trash bags
   - ___ Dawn dishwashing liquid
   - ___ Clorox clean-up spray
   - ___ Gain liquid detergent
   - ___ Ziplock bags
   - ___ Pledge wipes

4. Which of the following prescription drug commercials were advertised? (Please check all that apply.)
   - ___ Advair
   - ___ Ambien
   - ___ Detrol LA
   - ___ Paxil
   - ___ Zyrtec
   - ___ Celebrex
   - ___ Prevacid
   - ___ Elidel
   - ___ Viagra

5. Which of the following food products were advertised? (Please check all that apply.)
   - ___ Campbell's soup
   - ___ Quaker oatmeal
   - ___ Merita bread
   - ___ Stouffers entrée
   - ___ Equal sweetener
   - ___ Doritos chips

6. Which of the following personal care products were advertised? (Please check all that apply.)

___ Suave lotion
___ Charmin toilet paper
___ Speed Stick deodorant
___ Head & Shoulders shampoo
___ Colgate toothpaste
___ Visine eye drops

7. Which of the following *information statements* were provided in the **Prevacid** commercial? (Please check all that apply.)

_____ Prevacid heals the damage.
_____ One Prevacid alleviates heartburn for up to 24 hours.
_____ Ask you doctor for more information about Prevacid.

8. Which of the following *symptoms* does **Prevacid** treat? (Please check all that apply.)

_____ active duodenal ulcers
_____ heartburn
_____ gastro-intestinal burning
_____ upset stomachs
_____ inflamed esophageal lining
_____ acid reflux disease

9. Which of the following *information statements* were provided in the **Ambien** commercial? (Please check all that apply.)

_____ #1 prescribed sleep aid in America.
_____ See our ad in Marie Claire.
_____ Visit Ambien.com to learn more about Ambien.

10. Which of the following *symptoms* does **Ambien** treat? (Please check all that apply.)

_____ Drowsiness
_____ Insomnia
_____ Restlessness
_____ Sleep apnea
_____ Waking too early
_____ Narcolepsy

11. Which of the following *information statements* were provided in the **Paxil** commercial? (Please check all that apply.)

_____ Talk to your doctor to learn more about Paxil.
_____ Paxil can help restore the serotonin levels in your body.
_____ Visit Paxil.com for more information about Paxil.

12. Which of the following *symptoms* does **Paxil** treat? (Please check all that apply.)
    _____ Muscle tension
    _____ Depression
    _____ Anxiety
    _____ Irritability
    _____ Emotional outbursts
    _____ Sleep problems

13. Which of the following *information statements* were provided in the **Zyrtec** commercial? (Please check all that apply.)
    _____ Zyrtec is FDA-approved to treat indoor and outdoor allergies.
    _____ Call 1-800-4ZYRTEC for more information about Zyrtec.
    _____ Not all allergy medicines are approved for indoor and outdoor allergies.

14. Which of the following *allergies* does **Zyrtec** treat? (Please check all that apply.)
    _____ Dust
    _____ Grass pollen
    _____ Food
    _____ Pet dander
    _____ Feathers
    _____ Molds

15. Which of the following *information statements* were provided in the **Advair** commercial? (Please check all that apply.)
    _____ Advair is clinically proven to increase symptom free days.
    _____ Contact your doctor to learn more about Advair.
    _____ The first asthma product to treat both airway and inflammation.

16. Which of the following *symptoms* does **Advair** treat? (Please check all that apply.)
    _____ Asthma
    _____ Wheezing
    _____ Airway inflammations
    _____ Laryngeal spasm
    _____ Shortness of breath
    _____ Airway constrictions

17. Which of the following *information statements* were provided in the **Elidel** commercial? (Please check all that apply.)
    _____ Talk to your doctor for more information about Elidel.
    _____ Call 1-800-4ELIDEL or visit Elidel.com to learn more.
    _____ Elidel is a different way to control mild to moderate eczema.

18. Which of the following *symptoms* does **Elidel** treat? (Please check all that apply.)
_____ Burning
_____ Flaky skin
_____ Itchy rashes
_____ Skin redness
_____ Dryness
_____ Mild or moderate eczema

19. Which of the following are *side effects* of **Prevacid**? (Please check all that apply.)
_____ Vertigo
_____ Incontinence
_____ Diarrhea
_____ Blurred vision
_____ Nausea
_____ Abdominal pain

20. Which of the following *warning statements* were provided in the **Prevacid** commercial? (Please check all that apply.)
_____ Prevacid should not be taken by children less than 8 years of age.
_____ Women who are pregnant or nursing should not take Prevacid.
_____ Do not take Prevacid if you are allergic to penicillin.

21. Which of the following are *side effects* of **Ambien**? (Please check all that apply.)
_____ Decreased inhibitions
_____ Flatulence
_____ Sore throat
_____ Drowsiness
_____ Peripheral edema
_____ Photosensitivity

22. Which of the following *warning statements* were provided in the **Ambien** commercial? (Please check all that apply.)
_____ Do not take Ambien after consuming two or more alcoholic beverages.
_____ Do not take Ambien is you are currently on anti-psychotic medications.
_____ Individuals taking Ambien should not drive or operate machinery.

23. Which of the following are *side effects* of **Paxil?** (Please check all that apply.)
_____ Decreased libido
_____ Seizures
_____ Impotence
_____ Gastric ulcers
_____ Excessive perspiration
_____ Peripheral edema

24. Which of the following *warning statements* were provided in the **Paxil** commercial? (Please check all that apply.)
    _____ Individuals currently taking MAOIs should not take Paxil.
    _____ Do not take Paxil if you have hypersensitivity to paroxetine.
    _____ Do not take Paxil if you consume 3 or more alcoholic beverages a day.

25. Which of the following are *side effects* of **Zyrtec?** (Please check all that apply.)
    _____ Alopecia
    _____ Vertigo
    _____ Dry mouth
    _____ Constipation
    _____ Hearing loss
    _____ Fatigue

26. Which of the following *warning statements* were provided in the **Zyrtec** commercial? (Please check all that apply.)
    _____ Individuals who have severe reactions to NSAIDs.
    _____ If you are sensitive to hydroxynine do not take Zyrtec.
    _____ Do not take more than two tablets in a 24 hour period.

27. Which of the following are *side effects* of **Advair?** (Please check all that apply.)
    _____ Halitosis
    _____ Sterility
    _____ Smelly stool
    _____ Blurred vision
    _____ Elevated blood pressure
    _____ Hypertension

28. Which of the following *warning statements* were provided in the **Advair** commercial? (Please check all that apply.)
    _____ Do not take Advair more than two times a day.
    _____ Individuals with high blood pressure should avoid using Advair.
    _____ Advair should not be used as a replacement for fast-acting inhalers.

29. Which of the following are *side effects* of **Elidel?** (Please check all that apply.)
    _____ Excessive perspiration
    _____ Malaise
    _____ Skin infections
    _____ Headaches
    _____ Skin papilloma
    _____ Lethargy

30. Which of the following *warning statements* were provided in the **Elidel** commercial? (Please check all that apply.)

_____ Individuals who have Netherton's Syndrome should not use Elidel.

_____ Do not use Elidel if you are sensitive to pimecrolimus.

_____ Individuals taking Elidel should avoid unprotected exposure to the sun.

Appendix M: Follow Up Questionnaire

Follow Up Questions

1. Have you seen any of the following commercials in the past? (Please check all that you have seen).
   _____ Advair
   _____ Ambien
   _____ Elidel
   _____ Paxil
   _____ Prevacid
   _____ Zyrtec

2. Have you ever been prescribed any of the following prescription drugs? (Please check all that you have been prescribed).
   _____ Advair
   _____ Ambien
   _____ Elidel
   _____ Paxil
   _____ Prevacid
   _____ Zyrtec

3. Do you have any comments or thoughts that you would like to provide about prescription drug commercials? If so, please list them below.
   a)

   b)

   c)

   d)

Appendix N: Debriefing Form

Debriefing Form

The present study included two forms of deception. First, you were told that the purpose of the study was to evaluate exerpts from several primetime news programs to determine their importance and appeal. This was not the actual purpose of the study. Instead, the purpose was to determine how different types of prescription drug commercials affect your ability to recall and recognize risk (side effects) and non-risk (indicated uses) information. It was necessary to provide you with a cover story to prevent you from focusing solely on the prescription drug commercials.

Second, fictitious content was included in the six prescription drug commercials (Advair, Ambien, Elidel, Paxil, Prevacid, and Zyrtec) that presented potential side effects via print or voice. This fake information was included to prevent prior knowledge you might have about the prescription drugs from influencing your ability to recall or recognize the side effects. The actual and true information about the six prescription drugs intended use and side effects are:

Advair (asthma)
- Chest pain
- Rapid heart rate
- Tremors
- Nervousness

Ambien (sleep aid)
- Headache
- Drowsiness
- Dizziness
- Diarrhea

Elidel (eczema)
- Burning
- Headaches
- Cold symptoms
- Viral skin infections

Paxil (generalized anxiety disorder)
- Abnormal dreams
- Nausea
- Numbness
- Dizziness

Prevacid (acid reflux)
- Diarrhea
- Abdominal pain
- Nausea
- Constipation

Zyrtec (allergies)
- Headache
- Abdominal pain
- Drowsiness
- Nausea

If you have any further questions or comments, please contact Eric Shaver at 515-8260. Thank you for participating in this study. If, after reading this form, you no longer want to be a part of the study, please tell the researcher, and he will destroy your data.

Appendix O: Study Data

subject	program	age	gender	ethnic	student	school	tv	hours	seenadv	seenamb
1	1	21	1	4	1	15	1	20	1	1
2	1	22	1	9	0	12	1	50	0	0
3	1	32	1	4	0	16	1	5	1	0
4	2	20	2	4	1	12	1	20	1	1
6	2	20	1	4	1	14	1	24	0	0
7	5	25	2	4	0	16	1	10	0	1
8	5	19	2	4	1	14	1	15	0	1
9	5	22	1	8	1	15	1	10	1	0
10	3	26	1	4	1	14	1	25	1	1
11	3	23	1	2	1	16	1	4	0	0
12	3	20	1	4	1	14	1	5	0	0
13	6	16	2	3	1	12	1	8	1	1
14	6	19	1	8	0	12	1	12	1	0
15	6	21	1	4	0	13	1	1	0	1
16	1	28	1	4	0	12	1	21	1	0
17	1	19	2	2	1	13	1	15	1	0
18	4	24	1	4	0	12	1	10	1	1
19	4	19	1	4	1	13	1	30	1	1
20	4	19	1	4	1	13	1	25	1	1
21	4	21	2	4	1	15	1	21	0	1
22	4	19	1	4	1	13	1	20	0	1
23	2	20	1	4	1	13	1	8	0	1
24	2	19	1	4	1	13	1	15	0	0
25	2	19	1	4	1	13	1	12	1	1
26	3	20	1	4	1	14	1	14	0	0
27	3	25	2	4	1	14	1	3	0	0
28	3	20	2	2	1	15	1	20	1	1
29	3	20	2	4	1	14	1	5	1	1
30	3	21	2	4	1	15	1	10	0	0
31	5	21	1	4	0	15	1	12	0	0
32	6	18	1	4	1	13	1	14	0	0
33	6	21	1	4	1	15	1	4	0	0
34	6	20	1	4	1	14	1	15	0	0
35	5	25	1	4	1	15	1	10	1	0
36	5	19	1	4	1	13	1	10	1	0
38	1	21	2	4	1	15	1	27	1	1

39	1	18	1	3	1	12	1	4	0	0
40	1	20	1	5	1	14	1	18	1	0
41	2	19	1	2	1	13	1	1.5	0	1
42	2	20	1	4	1	14	1	15	0	0
43	4	18	2	4	0	12	1	21	0	0
44	4	19	1	1	1	14	1	30	0	1
45	4	19	2	4	1	14	1	14	1	1
46	5	18	2	4	1	13	1	9	0	1
47	5	22	1	3	1	14	0	0	0	0
48	5	44	2	4	0	13	1	2	0	1
49	2	19	1	4	1	13	1	0.5	0	1
50	6	18	2	4	1	12	1	1	1	1
51	6	27	1	4	1	14	1	20	0	0
52	6	24	1	4	0	14	1	14	0	0
53	2	20	1	4	1	14	1	20	0	0
54	2	20	1	4	1	14	1	2	0	0
55	3	18	2	3	0	12	1	7	0	0
56	3	21	2	4	1	15	1	4	1	1
57	1	22	1	4	1	15	1	1	0	0
58	1	19	2	4	1	14	1	20	1	0
59	4	22	1	4	1	16	1	5	1	1
60	4	19	2	9	1	13	1	7	1	0
61	4	19	1	1	1	13	1	2	0	1
62	5	33	2	4	1	14	1	27	1	1
63	5	19	1	4	1	13	1	20	1	1
64	6	18	1	8	1	12	1	12	1	1
65	6	18	2	4	1	12	1	2	1	0
66	6	21	2	4	1	15	1	3	1	1
67	5	21	1	11	0	13	1	1	0	0
68	2	21	1	4	1	15	1	3	0	1
69	2	26	1	4	0	14	1	10	0	1
70	2	31	1	9	0	12	1	35	1	1
71	3	42	1	1	0	15	1	30	1	0
72	3	37	2	4	0	13	1	6	0	0
73	3	23	1	4	1	17	1	5	0	1
74	1	23	1	11	1	15	1	14	0	1
75	1	22	1	3	0	12	1	10	0	0
76	1	20	1	4	1	14	1	8	1	0

77	4	25	1	4	0	15	1	12	1	1
78	4	21	2	4	1	16	1	20	1	1
79	4	19	1	4	1	13	1	3	0	0
80	5	20	2	4	1	14	1	5	0	0
81	6	19	1	5	1	14	1	20	0	1
82	6	42	2	4	0	19	1	21	1	1
83	5	24	2	4	1	15	1	11	1	1
84	5	20	2	2	1	14	1	5	1	1
85	2	26	1	3	1	14	1	7	1	0
86	2	23	1	2	1	15	1	18	1	1
87	2	28	2	2	0	19	1	5	0	1
88	2	22	1	4	1	14	1	10	0	0
89	3	18	1	4	1	13	1	6	0	1
90	3	28	1	4	1	15	1	14	1	0
91	3	16	2	3	1	12	1	4	0	0
92	4	18	1	4	1	12	1	3	0	0
94	4	21	1	4	1	14	1	8	0	0
95	6	31	1	4	1	16	1	10	1	1
96	6	18	2	4	1	12	1	8	0	0
97	6	19	1	4	1	13	1	3.5	1	0
98	6	19	1	11	1	13	1	2.5	0	0
99	1	18	2	4	1	12	1	12	1	1
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101	1	18	1	4	1	12	1	2	0	1
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106	5	18	2	4	1	12	1	6	1	1
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113	2	20	1	2	1	13	1	24	0	0
114	2	18	2	7	1	13	1	5	1	1
115	4	18	2	4	1	12	0	0	0	0

116	4	18	1	4	1	12	1	3	0	1
117	4	18	1	4	1	12	1	14	0	0
118	4	18	2	4	1	12	1	2.5	0	0
119	4	19	1	2	1	13	1	7	0	0
120	6	18	2	4	1	12	1	1	1	0
121	6	18	1	4	1	12	1	5	0	0
122	6	18	1	4	1	12	1	3	1	1
123	6	18	1	2	1	12	1	3	1	0
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125	1	17	1	4	1	12	1	1.5	0	1
126	1	17	1	4	1	12	1	2	0	1
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128	1	19	1	4	1	13	1	8	0	1
129	5	18	2	4	1	12	1	15	1	1
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131	5	18	1	4	1	12	1	1	0	1
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133	2	19	2	4	1	13	1	10	1	0
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147	1	18	2	4	1	12	1	10	1	1
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153	1	18	1	4	1	12	1	10	0	0

155	4	20	2	4	1	14	1	15	1	0
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157	4	19	2	8	1	13	1	2	0	0
158	4	18	2	4	1	12	1	2	0	0
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162	3	18	1	4	1	12	1	8	0	0
163	6	19	1	2	1	13	1	28	0	0
164	6	18	2	3	1	12	1	1	0	0
165	6	19	2	4	1	13	1	14	1	1
167	6	26	1	4	0	16	1	12	1	1
168	6	18	2	4	1	12	1	10	1	1
169	2	18	2	2	1	12	1	30	1	1
170	2	18	1	4	1	12	1	2	0	0
171	2	21	1	2	1	15	1	40	0	0
173	2	18	2	4	1	12	1	2	0	1
174	2	18	2	4	1	13	1	7	1	1
175	4	19	1	4	1	13	1	10	1	1
176	4	19	2	2	1	13	1	10	1	1
177	4	21	1	4	1	15	1	4	0	0
178	4	18	1	4	1	12	1	3	0	0
179	5	18	1	4	1	12	1	5	1	0
180	5	19	1	4	1	12	1	3	0	0
181	5	18	1	4	1	12	1	3	0	1
182	5	18	2	4	1	12	1	6	1	0
184	3	18	1	4	1	12	1	14	1	1
185	3	18	2	4	1	12	1	10	1	1
186	3	19	2	4	1	13	1	20	1	1
187	3	18	2	4	1	12	1	5	0	0
188	4	18	1	4	1	12	1	3	1	0

seenelid	seenpax	seenprev	seenzyr	prescadv	prescamb	prescelid	prescpax
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	1
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
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0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	1
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	1	0	1
0	1	0	1	0	0	0	0
1	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0
1	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	0	0	0	0	0	0
0	1	1	1	0	1	1	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	1	1
0	0	1	1	0	0	0	0

1	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	1	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	0	0	0	0	0
1	1	1	1	0	0	0	0
1	1	1	1	0	1	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
1	1	1	0	0	0	0	0
0	1	0	1	0	0	0	0
1	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0

0	0	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	0	0	0	0	0
1	1	0	1	0	0	1	0
0	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	0	0	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	0	0	1	0	0	0	0

0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	0	0	0	0	0
1	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	1	0	1
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	0	0	0	0
0	1	1	1	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0

prescprev	presczyr	Q1(7)warn	Q1(8response)	Q1_HR1	Q2_HR1	Q3_HR1
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
1	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00

0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	0	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00

1	0	1	1	0.00	0.00	0.00
1	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
1	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	0	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
1	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00

0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
1	1	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00

0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	0	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00
0	0	1	1	0.00	0.00	0.00
0	1	1	1	0.00	0.00	0.00
0	0	1	0	0.00	0.00	0.00

Q1_HR2	Q2_HR2	Q3_HR2	Q1_HR3	Q2_HR3	Q3_HR3	Q1_HR4	Q2_HR4
0.00	0.00	0.33	0.00	0.00	0.83	1.00	0.00
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	1.00	0.00	0.50	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.83	1.00	0.00
1.00	0.00	0.17	0.00	0.00	0.17	1.00	0.00
0.00	0.00	0.67	1.00	0.00	0.50	1.00	0.00
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00
1.00	0.00	0.33	0.00	0.00	0.83	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.17	1.00	0.17	0.33	1.00	0.33
0.00	0.00	0.17	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.33	1.00	0.33	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	1.00	0.17	0.67	0.00	0.00
1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.17
1.00	0.00	0.17	0.00	0.00	0.33	1.00	0.17
1.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	1.00	0.33	0.50	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	1.00	0.00	0.50	1.00	0.00
1.00	0.17	0.67	1.00	0.00	0.50	1.00	0.00

0.00	0.00	0.33	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.83	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	1.00	0.17
1.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.50	1.00	0.00
1.00	0.00	0.83	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	1.00	0.00
1.00	0.17	1.00	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.33	0.00	0.00	0.67	1.00	0.17
0.00	0.00	0.00	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.67	0.00	0.00
1.00	0.17	0.67	0.00	0.00	0.50	1.00	0.17
0.00	0.00	0.50	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	1.00	0.17
0.00	0.00	0.33	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.67	1.00	0.67
1.00	0.17	0.50	1.00	0.00	0.83	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.17	0.00	0.00
1.00	0.17	0.67	1.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00

1.00	0.00	0.83	1.00	0.17	0.67	0.00	0.00
1.00	0.00	0.67	0.00	0.00	0.67	1.00	0.00
1.00	0.00	0.33	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	1.00	0.00	0.67	0.00	0.00
1.00	0.00	0.17	1.00	0.17	0.33	1.00	0.00
0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.33
0.00	0.00	0.33	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	1.00	0.33
1.00	0.00	0.17	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	1.00	0.00	0.67	0.00	0.00
0.00	0.17	0.83	0.00	0.00	0.67	1.00	0.00
1.00	0.00	0.33	1.00	0.33	0.50	1.00	0.33
0.00	0.00	0.67	1.00	0.00	0.67	1.00	0.17
0.00	0.00	0.50	1.00	0.00	0.33	0.00	0.00
1.00	0.00	0.17	0.00	0.00	0.67	1.00	0.17
0.00	0.00	0.33	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.17	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.67	1.00	0.17	0.67	0.00	0.00
0.00	0.00	0.67	1.00	0.17	0.83	0.00	0.00
0.00	0.00	0.67	0.00	0.00	1.00	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.83	1.00	0.00	0.83	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	1.00	0.00	0.33	1.00	0.00
0.00	0.00	0.50	1.00	0.00	0.67	1.00	0.00
0.00	0.00	0.83	1.00	0.33	0.83	0.00	0.00
1.00	0.00	0.50	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.17
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.17	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.67	0.00	0.00	0.17	0.00	0.00

0.00	0.00	0.83	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.17
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.83	1.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	1.00	0.17	0.83	0.00	0.00
0.00	0.00	0.17	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
1.00	0.17	0.50	0.00	0.00	0.33	1.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.67	0.00	0.00
1.00	0.17	0.33	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.67	0.00	0.00
1.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.83	1.00	0.00	0.67	1.00	0.00
1.00	0.17	1.00	0.00	0.00	0.83	1.00	0.00
0.00	0.17	0.83	1.00	0.17	0.67	1.00	0.33
0.00	0.17	0.67	0.00	0.00	0.50	0.00	0.00
1.00	0.33	0.50	1.00	0.17	0.67	1.00	0.00
0.00	0.00	0.67	1.00	0.00	0.50	0.00	0.17
0.00	0.00	0.33	0.00	0.00	0.83	0.00	0.33
0.00	0.00	0.67	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	1.00	0.00
1.00	0.00	0.33	0.00	0.00	0.50	1.00	0.17
0.00	0.00	0.50	0.00	0.17	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	1.00	0.17
1.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.67	0.00	0.00

1.00	0.00	0.50	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.83	0.00	0.50	0.67	1.00	0.00
1.00	0.00	0.67	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	1.00	0.33
0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.33	1.00	0.17	0.67	1.00	0.50
0.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
1.00	0.17	0.50	0.00	0.00	1.00	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.33	0.00	0.17
0.00	0.00	0.83	1.00	0.17	0.83	0.00	0.00
1.00	0.00	0.50	1.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.83	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.67	1.00	0.00	0.67	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
1.00	0.17	0.50	1.00	0.17	0.83	0.00	0.00
1.00	0.00	0.50	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.83	0.00	0.00

Q3_HR4	Q1_HR5	Q2_HR5	Q3_HR5	Q1_HR6	Q2_HR6	Q3_HR6	Q1_DR1
0.50	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.33	0.00	0.00	0.17	1.00	0.00	0.17	0.00
0.50	1.00	0.00	0.17	0.00	0.00	0.67	-1.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.67	0.00	0.00	0.50	1.00	0.17	0.67	-1.00
0.50	0.00	0.00	0.67	1.00	0.17	0.83	-1.00
0.67	0.00	0.00	0.67	1.00	0.00	0.33	-1.00
0.33	1.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.67	1.00	0.00	0.50	0.00	0.00	0.50	-1.00
0.83	0.00	0.00	0.83	0.00	0.00	0.67	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.33	1.00	0.00	0.33	1.00	0.00	0.33	-1.00
0.00	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.00	0.00	0.17	0.33	0.00	0.00	0.33	0.00
0.50	0.00	0.00	0.50	1.00	0.17	0.50	-1.00
0.50	0.00	0.00	0.33	0.00	0.00	0.33	-1.00
0.83	1.00	0.00	0.50	0.00	0.00	0.33	-1.00
0.67	0.00	0.00	0.17	0.00	0.00	0.67	0.00
0.50	1.00	0.00	0.00	0.00	0.17	0.67	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.33	-1.00
0.50	0.00	0.17	0.50	1.00	0.00	0.50	0.00
0.50	1.00	0.00	0.50	0.00	0.00	0.33	0.00
0.50	1.00	0.00	0.33	0.00	0.00	0.17	0.00
0.50	0.00	0.00	0.33	1.00	0.00	0.33	-1.00
0.67	0.00	0.00	0.17	0.00	0.00	0.33	0.00
0.33	1.00	0.17	0.67	0.00	0.00	0.17	0.00
0.67	0.00	0.00	1.00	0.00	0.00	0.67	0.00
0.33	0.00	0.00	0.67	0.00	0.00	0.83	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	1.00	0.00	0.67	0.00	0.00	0.50	0.00
0.17	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.67	1.00	0.33	0.67	0.00	0.00	0.67	0.00
0.83	0.00	0.00	0.33	0.00	0.00	0.67	0.00

0.83	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.67	-1.00
0.67	1.00	0.00	0.00	0.00	0.00	0.17	0.00
0.33	0.00	0.00	0.50	0.00	0.00	0.67	0.00
0.33	1.00	0.00	0.50	0.00	0.00	0.50	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.83	0.00	0.00	0.83	0.00	0.00	0.67	0.00
0.33	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.83	0.00	0.00	0.50	1.00	0.17	0.50	0.00
0.33	1.00	0.00	0.50	0.00	0.00	0.50	0.00
0.83	0.00	0.00	0.67	1.00	0.00	1.00	0.00
0.33	1.00	0.00	0.33	0.00	0.00	0.17	0.00
0.33	1.00	0.17	0.00	0.00	0.00	0.17	0.00
0.33	0.00	0.00	0.17	0.00	0.00	0.50	0.00
0.83	1.00	0.00	0.17	0.00	0.00	0.67	-1.00
0.33	0.00	0.00	0.33	0.00	0.00	0.33	0.00
0.83	1.00	0.00	0.17	1.00	0.00	0.50	-1.00
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	1.00	0.00	0.50	0.00	0.00	0.67	0.00
0.17	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.50	0.00	0.00	0.67	0.00	0.17	0.17	0.00
0.33	1.00	0.00	0.50	0.00	0.00	0.50	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.17	-1.00
0.67	0.00	0.17	0.67	0.00	0.00	0.67	0.00
0.83	1.00	0.00	0.50	1.00	0.17	0.67	0.00
0.17	1.00	0.17	0.33	0.00	0.00	0.50	0.00
0.50	1.00	0.00	0.50	0.00	0.00	1.00	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.17	0.00
1.00	0.00	0.00	0.67	0.00	0.00	0.83	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.67	0.00
0.67	0.00	0.00	0.50	0.00	0.00	0.67	0.00
0.33	1.00	0.00	0.33	0.00	0.00	0.33	0.00
0.50	1.00	0.00	0.50	0.00	0.00	0.33	0.00
0.50	1.00	0.00	0.33	0.00	0.00	0.33	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.33	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00

0.17	1.00	0.17	0.67	0.00	0.00	0.17	0.00
0.33	1.00	0.17	0.50	0.00	0.00	0.33	0.00
0.67	0.00	0.00	0.50	0.00	0.00	0.67	0.00
0.67	0.00	0.00	0.83	1.00	0.00	0.50	-1.00
0.17	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.67	0.00
0.67	0.00	0.00	1.00	0.00	0.00	0.33	0.00
0.83	0.00	0.00	0.50	0.00	0.00	0.33	0.00
0.50	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.17	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.83	0.00	0.00	0.17	0.00	0.00	0.33	0.00
0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
0.33	0.00	0.00	0.17	0.00	0.00	0.17	-1.00
0.50	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.50	1.00	0.00	0.33	0.00	0.00	0.33	-1.00
0.50	0.00	0.00	0.83	0.00	0.00	0.83	-1.00
0.17	1.00	0.00	0.33	0.00	0.00	0.00	-1.00
0.83	0.00	0.00	0.67	0.00	0.00	0.67	-1.00
0.83	0.00	0.00	0.50	0.00	0.00	0.50	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.50	1.00	0.17	0.50	0.00	0.00	0.67	0.00
0.67	0.00	0.00	0.83	1.00	0.00	0.50	-1.00
0.17	0.00	0.00	0.00	0.00	0.00	0.50	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.67	0.00
0.33	0.00	0.00	0.50	0.00	0.00	0.33	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.33	0.00
1.00	0.00	0.00	0.83	0.00	0.00	0.67	-1.00
0.83	0.00	0.00	0.67	0.00	0.00	0.00	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.17	0.00
0.83	1.00	0.00	0.50	1.00	0.00	0.33	-1.00
0.83	1.00	0.00	0.83	0.00	0.00	0.17	0.00
0.33	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.67	1.00	0.00	0.67	0.00	0.00	0.33	0.00
0.83	0.00	0.00	0.67	0.00	0.00	0.50	-1.00
0.50	1.00	0.00	0.33	0.00	0.00	0.33	0.00
0.17	0.00	0.00	0.17	0.00	0.00	0.00	-1.00
0.83	0.00	0.00	0.83	0.00	0.00	0.67	0.00
0.67	0.00	0.00	0.67	0.00	0.00	0.33	0.00

0.33	1.00	0.00	0.50	0.00	0.00	0.33	-1.00
0.33	0.00	0.00	0.83	0.00	0.00	0.83	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00
0.83	1.00	0.00	0.33	0.00	0.00	0.50	0.00
0.50	1.00	0.00	0.50	0.00	0.00	0.67	-1.00
0.67	0.00	0.00	0.33	0.00	0.00	0.67	0.00
0.83	0.00	0.00	0.50	0.00	0.17	0.67	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.83	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.50	0.00
0.50	0.00	0.00	0.17	0.00	0.00	0.50	0.00
0.17	0.00	0.00	0.17	0.00	0.00	0.33	0.00
0.83	0.00	0.00	0.67	0.00	0.00	0.33	-1.00
0.17	0.00	0.00	0.17	0.00	0.00	0.33	0.00
0.67	0.00	0.00	0.67	0.00	0.00	0.67	0.00
0.33	0.00	0.00	0.33	0.00	0.00	0.17	-1.00
0.50	0.00	0.00	0.50	1.00	0.00	0.17	0.00
0.33	0.00	0.00	0.50	0.00	0.00	0.33	0.00
0.50	1.00	0.17	0.83	1.00	0.17	0.67	0.00
0.50	1.00	0.00	0.17	0.00	0.00	0.50	0.00
0.67	0.00	0.00	0.50	0.00	0.00	1.00	0.00
0.50	1.00	0.17	1.00	0.00	0.00	0.33	0.00
0.50	0.00	0.00	1.00	1.00	0.00	0.17	-1.00
0.00	1.00	0.17	0.67	0.00	0.17	0.67	0.00
0.50	0.00	0.00	0.67	1.00	0.00	0.50	0.00
1.00	0.00	0.00	0.67	0.00	0.17	0.83	0.00
0.83	1.00	0.17	0.67	1.00	0.00	0.50	0.00
0.17	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.67	0.00	0.00	0.00	0.00	0.00	0.17	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.33	0.00	0.00	0.33	1.00	0.00	0.67	0.00
0.67	0.00	0.00	0.00	0.00	0.00	0.83	0.00
0.33	0.00	0.00	0.67	0.00	0.00	0.50	-1.00
0.67	0.00	0.00	0.33	1.00	0.17	0.33	-1.00
0.33	0.00	0.00	0.17	0.00	0.00	0.33	-1.00
0.50	0.00	0.00	0.17	1.00	0.00	0.50	-1.00
0.33	0.00	0.00	0.17	1.00	0.00	0.33	-1.00
0.33	0.00	0.00	0.33	0.00	0.00	0.50	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.50	0.00

0.50	0.00	0.00	0.33	0.00	0.00	0.83	0.00
0.67	0.00	0.00	0.67	0.00	0.00	0.67	0.00
0.50	0.00	0.00	0.17	0.00	0.00	0.17	0.00
0.67	0.00	0.00	0.67	0.00	0.00	0.33	-1.00
0.50	0.00	0.00	0.50	0.00	0.00	0.33	0.00
1.00	1.00	0.00	0.67	1.00	0.00	0.50	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.83	0.00
0.67	0.00	0.00	0.33	0.00	0.00	0.50	0.00
1.00	1.00	0.00	0.67	0.00	0.00	0.67	0.00
0.83	0.00	0.00	0.83	1.00	0.17	0.83	0.00
0.33	1.00	0.00	0.50	0.00	0.00	0.50	0.00
1.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00
0.50	1.00	0.00	0.17	1.00	0.00	0.67	0.00
0.67	0.00	0.00	0.50	0.00	0.00	0.83	0.00
0.50	0.00	0.00	0.67	0.00	0.00	0.50	0.00
0.67	1.00	0.00	0.17	0.00	0.00	0.50	0.00
0.33	0.00	0.00	0.33	1.00	0.00	0.17	-1.00
0.50	0.00	0.00	0.83	1.00	0.33	0.83	0.00
0.33	0.00	0.00	0.50	0.00	0.33	0.83	0.00
0.50	0.00	0.00	0.50	0.00	0.00	0.33	-1.00
0.67	0.00	0.00	0.67	1.00	0.00	0.67	-1.00
0.67	1.00	0.17	0.50	1.00	0.00	0.50	0.00
0.50	0.00	0.00	0.00	1.00	0.00	0.83	0.00
0.83	0.00	0.00	0.67	0.00	0.00	0.83	0.00
0.67	1.00	0.17	0.83	0.00	0.00	0.67	0.00
0.50	1.00	0.00	0.17	0.00	0.00	0.00	0.00
0.67	0.00	0.00	1.00	0.00	0.00	0.33	0.00
0.83	0.00	0.00	0.83	0.00	0.00	0.50	0.00
0.50	1.00	0.00	0.50	1.00	0.00	0.33	0.00
0.67	0.00	0.00	0.17	0.00	0.00	0.17	0.00

Q2_DR1	Q3_DR1	Q1_DR2	Q2_DR2	Q3_DR2	Q1_DR3	Q2_DR3	Q3_DR3
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.83
0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.50
0.00	-0.33	0.00	0.00	0.50	0.00	0.00	0.67
0.00	-0.22	0.00	0.00	0.00	0.00	0.00	0.00
-0.33	-0.22	1.00	0.00	0.83	0.00	0.00	0.50
0.00	-0.22	1.00	0.00	-0.17	0.00	0.00	-0.50
0.00	-0.33	0.00	0.00	0.33	1.00	0.00	0.17
0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.33	0.00	0.00	-0.17
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.67
0.00	-0.44	0.00	0.00	0.33	0.00	0.00	0.33
0.00	-0.44	1.00	0.00	-0.33	0.00	0.00	0.83
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.33
0.00	0.00	0.00	0.00	0.17	1.00	0.17	0.33
0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.50
0.00	-0.11	1.00	0.00	0.33	1.00	0.33	0.67
0.00	-0.22	0.00	0.00	0.50	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.67	0.00	0.00	0.00
0.00	-0.33	0.00	0.00	0.33	1.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.67	1.00	-0.17	0.33
0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	1.00	0.00	0.17	0.00	0.00	0.33
0.00	-0.44	1.00	0.00	-0.17	0.00	0.00	0.50
0.00	-0.33	1.00	0.00	0.50	0.00	0.00	0.50
0.00	-0.11	1.00	0.00	0.83	0.00	0.00	0.17
-0.33	-0.22	0.00	0.00	0.00	0.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.50	0.00	0.00	0.67
0.00	-0.22	0.00	0.00	0.50	1.00	0.33	0.50
0.00	-0.44	0.00	0.00	0.17	0.00	0.00	0.00
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	-0.17
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	-0.33	0.00	0.00	0.17	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	-0.17	0.00	0.00	0.33
0.00	0.00	0.00	0.00	0.33	1.00	-1.00	0.17
0.00	-0.33	1.00	-0.50	0.67	1.00	-1.00	0.50

0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.50
-0.67	-0.44	0.00	0.00	0.83	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.50
0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.17
-0.33	-0.44	0.00	0.00	0.83	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.50	1.00	0.00	0.50
0.00	-0.22	1.00	0.00	0.50	1.00	-0.67	0.50
0.00	-0.33	0.00	0.00	0.67	0.00	0.00	0.00
0.00	-0.22	0.00	0.00	0.50	0.00	0.00	0.33
0.00	-0.22	1.00	-0.50	1.00	0.00	0.00	0.67
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.22	1.00	0.00	0.33	0.00	0.00	0.33
0.00	0.00	0.00	0.00	0.00	1.00	-0.33	0.50
0.00	0.00	0.00	0.00	0.50	0.00	0.00	-0.17
0.00	-0.22	0.00	0.00	-0.17	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.33	0.00	0.00	0.17
0.00	-0.22	0.00	0.00	0.50	1.00	0.00	0.67
0.00	-0.11	1.00	0.17	0.67	0.00	-0.33	0.50
0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.83
0.00	-0.44	0.00	0.00	0.83	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	-0.67
0.00	-0.22	0.00	0.00	0.67	0.00	0.00	-0.17
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	-0.17
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.00
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.17
0.00	-0.56	0.00	0.00	-0.50	0.00	0.00	0.50
0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.11	0.00	0.00	0.33	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.50	0.00	0.00	0.33
0.00	-0.44	1.00	-0.17	-0.17	1.00	0.00	0.83
0.00	-0.44	0.00	0.00	0.17	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.17	0.00	0.00	0.33
0.00	-0.11	0.00	0.00	0.50	0.00	0.00	-0.17
0.00	-0.22	1.00	0.17	0.33	1.00	0.00	0.50
0.00	-0.11	0.00	0.00	0.00	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.50	0.00	0.00	0.33
0.00	0.00	0.00	0.00	0.00	0.00	-0.33	0.50

0.00	0.00	1.00	0.00	0.83	1.00	-0.50	0.33
0.00	-0.22	1.00	-0.33	0.67	0.00	0.00	0.67
0.00	-0.33	1.00	-0.33	0.33	1.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.33	1.00	0.00	0.33
0.00	0.00	1.00	0.00	0.17	1.00	0.17	0.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.33	0.00	0.00	-0.17	0.00	0.00	-0.67
0.00	-0.33	0.00	0.00	0.17	0.00	0.00	0.33
0.00	-0.22	0.00	0.00	0.50	0.00	0.00	0.33
0.00	0.00	1.00	-0.67	0.17	0.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.33	1.00	0.00	0.33
0.00	-0.11	0.00	0.17	0.83	0.00	-0.33	0.67
0.00	-0.44	1.00	0.00	0.00	1.00	-0.33	0.17
-0.67	-0.56	0.00	0.00	0.67	1.00	-0.33	0.00
0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.00
0.00	-0.11	1.00	-0.33	0.17	0.00	0.00	0.67
0.00	-0.33	0.00	0.00	0.33	0.00	0.00	0.67
0.00	-0.22	0.00	0.00	0.17	0.00	0.00	0.17
0.00	-0.56	0.00	0.00	0.00	0.00	0.00	0.17
0.00	-0.33	1.00	-0.33	0.67	1.00	-0.17	0.67
0.00	-0.44	0.00	0.00	0.67	1.00	0.17	0.83
0.00	-0.44	0.00	0.00	0.33	0.00	0.00	1.00
0.00	-0.11	1.00	-0.67	0.50	0.00	0.00	0.33
0.00	-0.44	0.00	0.00	0.83	0.00	0.00	0.50
0.00	-0.56	1.00	0.00	0.17	1.00	0.00	0.17
0.00	0.00	1.00	-0.67	0.50	0.00	0.00	0.50
0.00	-0.22	0.00	0.00	0.33	1.00	0.00	0.33
0.00	0.00	0.00	0.00	0.17	1.00	0.00	0.33
0.00	-0.44	0.00	0.00	0.83	1.00	0.00	0.83
0.00	-0.11	1.00	0.00	0.50	1.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.33	0.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.00	0.00	0.00	0.17
0.00	-0.56	0.00	0.00	0.33	0.00	0.00	0.33
0.00	-0.11	0.00	0.00	0.17	1.00	0.00	0.33
0.00	-0.56	0.00	0.00	0.17	0.00	0.00	0.00
0.00	-0.22	0.00	0.00	0.67	0.00	0.00	-0.17

0.00	-0.33	0.00	0.00	0.83	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.83	0.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.17	0.00	0.00	0.00
0.00	-0.33	0.00	0.00	0.67	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.17	0.00	0.00	0.17
0.00	-0.22	0.00	0.00	0.00	0.00	0.00	0.83
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.67
0.00	-0.33	0.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.11	0.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.44	1.00	-1.00	0.50	0.00	0.00	0.83
0.00	-0.22	0.00	0.00	-0.17	0.00	0.00	0.33
-0.33	-0.56	0.00	0.00	-0.33	1.00	0.17	0.83
0.00	-0.11	0.00	0.00	0.17	1.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.50	0.00	0.00	0.67
0.00	-0.22	1.00	-0.17	0.17	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.17
0.00	-0.11	0.00	0.00	-0.50	0.00	0.00	0.67
0.00	-0.33	1.00	0.17	-0.33	0.00	0.00	0.83
0.00	-0.33	0.00	0.00	-0.17	0.00	0.00	0.67
0.00	-0.33	1.00	0.00	0.33	0.00	0.00	0.50
0.00	-0.11	0.00	0.00	0.50	0.00	0.00	0.33
0.00	-0.56	0.00	0.00	0.83	1.00	0.00	0.33
0.00	0.00	1.00	0.17	1.00	0.00	0.00	0.83
0.00	0.00	0.00	-0.17	0.83	1.00	0.17	0.67
0.00	-0.11	0.00	0.17	0.67	0.00	-0.33	0.17
0.00	-0.44	1.00	0.33	0.17	1.00	0.17	0.33
0.00	-0.44	0.00	0.00	0.67	1.00	0.00	0.17
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
0.00	-0.33	0.00	0.00	0.67	0.00	0.00	0.33
0.00	-0.44	0.00	0.00	0.50	0.00	0.00	0.17
0.00	-0.33	0.00	0.00	0.50	0.00	0.00	0.67
0.00	-0.33	0.00	0.00	-0.17	0.00	0.00	0.00
0.00	-0.33	1.00	0.00	0.00	0.00	0.00	0.50
0.00	-0.11	0.00	0.00	0.50	0.00	0.17	0.50
0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.17
0.00	-0.11	1.00	0.00	0.33	0.00	0.00	0.00
0.00	-0.67	1.00	-0.33	0.83	0.00	0.00	0.67
0.00	-0.56	0.00	0.00	0.83	0.00	0.00	0.33

0.00	-0.22	1.00	-0.33	0.50	0.00	0.00	-0.17
0.00	-0.67	0.00	0.00	0.67	0.00	0.00	0.00
0.00	-0.22	0.00	0.00	0.33	0.00	0.00	0.33
0.00	-0.44	0.00	0.00	0.50	1.00	0.00	-0.17
0.00	-0.33	0.00	0.00	0.33	1.00	0.00	0.00
0.00	-0.11	0.00	0.00	0.83	0.00	0.50	0.33
0.00	-0.33	1.00	0.00	0.67	1.00	0.00	0.50
0.00	-0.22	0.00	0.00	-0.17	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.00	0.00	0.00	0.67
0.00	-0.56	0.00	0.00	0.17	0.00	0.00	-0.17
0.00	-0.33	0.00	0.00	0.50	1.00	-0.33	0.50
0.00	0.00	0.00	0.00	0.33	1.00	0.17	0.67
0.00	-0.44	0.00	0.00	0.50	0.00	0.00	0.00
0.00	-0.56	1.00	-0.50	-0.17	0.00	0.00	1.00
0.00	-0.22	0.00	0.00	0.17	0.00	0.00	0.83
0.00	-0.33	0.00	0.00	-0.33	0.00	0.00	0.17
0.00	-0.33	1.00	-0.33	0.50	0.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.83	1.00	-0.17	0.83
0.00	-0.22	1.00	0.00	0.50	1.00	-0.33	0.67
-0.33	-0.56	0.00	0.00	0.50	1.00	-0.33	0.83
0.00	-0.33	0.00	0.00	0.33	0.00	0.00	0.83
0.00	0.00	0.00	0.00	0.67	1.00	0.00	0.33
0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.17
0.00	-0.44	0.00	0.00	-0.17	0.00	0.00	0.17
0.00	-0.78	0.00	0.00	0.33	0.00	0.00	0.00
0.00	-0.11	0.00	0.00	0.50	0.00	0.00	0.17
-0.33	-0.33	0.00	0.00	0.00	0.00	0.00	0.17
0.00	-0.33	1.00	0.17	0.17	1.00	0.17	0.83
0.00	-0.11	1.00	0.00	0.50	1.00	0.00	0.33
0.00	-0.33	0.00	0.00	0.67	0.00	0.00	0.83

Q1_DR4	Q2_DR4	Q3_DR4	Q1_DR5	Q2_DR5	Q3_DR5	Q1_DR6	Q2_DR6
1.00	0.00	0.50	0.00	0.00	-0.17	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.33	0.00	0.00	0.17	1.00	0.00
0.00	0.00	0.50	1.00	0.00	-0.50	0.00	-0.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.33	0.00	0.00	0.17	1.00	-0.50
1.00	0.00	0.50	0.00	0.00	0.33	1.00	-0.17
1.00	-0.67	0.33	0.00	0.00	0.33	1.00	0.00
0.00	0.00	0.33	1.00	0.00	0.00	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	-0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	1.00	0.00	0.50	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
1.00	0.33	0.33	1.00	0.00	0.33	1.00	0.00
0.00	0.00	-0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.00	0.00	0.17	0.33	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.50	1.00	0.17
0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.83	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	-0.50	0.00	0.00
1.00	0.17	0.50	1.00	0.00	0.00	0.00	0.17
1.00	0.17	0.50	0.00	0.00	-0.33	0.00	0.00
0.00	0.00	0.50	0.00	0.17	0.17	1.00	0.00
0.00	0.00	0.17	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	1.00	-0.33	0.00	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.33	1.00	-0.33
0.00	0.00	0.67	0.00	0.00	-0.50	0.00	0.00
0.00	0.00	0.33	1.00	0.17	0.67	0.00	0.00
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.50	1.00	-1.00	0.67	0.00	0.00
0.00	0.00	-0.17	0.00	0.00	-0.17	0.00	0.00
1.00	0.00	0.67	1.00	0.33	0.67	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.33	0.00	0.00

1.00	-0.67	0.83	0.00	0.00	0.33	0.00	0.00
0.00	0.00	-0.17	0.00	0.00	-0.17	0.00	0.00
1.00	0.17	0.67	1.00	0.00	-0.33	0.00	-0.67
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	-0.33	1.00	-0.33	0.50	0.00	0.00
1.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.33	0.00	0.00	-0.17	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.17	1.00	-0.17
0.00	0.00	0.33	1.00	0.00	0.17	0.00	0.00
1.00	-0.17	0.83	0.00	0.00	0.67	1.00	0.00
0.00	0.00	0.33	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.33	1.00	0.17	0.00	0.00	0.00
0.00	0.00	0.33	0.00	0.00	-0.17	0.00	0.00
0.00	0.00	0.83	1.00	0.00	0.17	0.00	-0.33
0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
1.00	0.17	0.83	1.00	-0.33	0.17	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.50	1.00	0.00	0.50	0.00	0.00
0.00	0.00	-0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.67	0.00	0.17
0.00	0.00	0.33	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.33	0.00	0.17	0.33	0.00	0.00
0.00	0.00	0.50	1.00	-0.67	0.50	1.00	0.17
1.00	0.17	0.17	1.00	0.17	0.33	0.00	0.00
1.00	0.00	0.50	1.00	-0.33	0.50	0.00	0.00
0.00	0.00	0.33	0.00	-1.00	0.33	0.00	0.00
1.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.33	0.00	0.00	-0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.33	1.00	0.00	0.00	0.00	0.00
0.00	0.00	0.50	1.00	-0.33	0.50	0.00	0.00
1.00	0.00	0.17	1.00	0.00	0.00	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

0.00	0.00	0.17	1.00	-0.83	0.67	0.00	0.00
1.00	-0.33	0.33	1.00	0.17	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.83	1.00	-0.67
1.00	0.00	-0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.33	0.50	0.00	0.00	0.50	0.00	0.00
1.00	-1.00	0.33	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.17	0.00	0.00	-0.33	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
1.00	0.33	0.83	0.00	0.00	-0.17	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
0.00	0.00	0.00	0.00	0.00	-0.17	0.00	0.00
1.00	-0.33	0.50	0.00	0.00	0.17	0.00	0.00
1.00	0.33	0.17	1.00	-0.33	0.00	0.00	0.00
1.00	-0.17	0.17	0.00	-0.33	0.50	0.00	0.00
0.00	0.00	0.17	1.00	0.00	0.33	0.00	0.00
1.00	-0.17	0.83	0.00	0.00	0.67	0.00	0.00
1.00	0.00	0.83	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.17	1.00	-0.17	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.83	1.00	0.00
0.00	0.00	-0.17	0.00	0.00	0.00	0.00	0.00
0.00	0.00	-0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	1.00	0.00	0.00	-0.17	0.00	0.00
1.00	0.00	0.50	0.00	0.00	0.33	0.00	0.00
1.00	0.00	0.67	0.00	-0.33	0.33	0.00	0.00
1.00	0.00	0.83	1.00	0.00	0.50	1.00	0.00
0.00	0.00	0.83	1.00	0.00	0.83	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	1.00	-0.33	0.67	0.00	0.00
0.00	0.17	0.83	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.00	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.17	0.00	0.00
1.00	-0.67	0.83	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	0.00	0.00

0.00	0.00	0.33	1.00	0.00	0.50	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.17	0.00	0.00	0.50	0.00	0.00
0.00	0.17	0.83	1.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.17	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00
1.00	-0.33	0.50	0.00	0.00	0.50	0.00	0.17
0.00	0.00	0.17	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
1.00	0.00	0.17	0.00	0.00	-0.17	0.00	0.00
0.00	0.00	-0.17	0.00	0.00	-0.17	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.67	0.00	0.00
0.00	0.00	-0.17	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	-0.33	0.67	0.00	0.00
1.00	-0.33	0.33	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.50	1.00	0.17	0.83	1.00	0.17
0.00	0.00	0.50	1.00	0.00	-0.17	0.00	-1.00
0.00	0.00	0.67	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.17	1.00	0.17	0.67	0.00	0.00
1.00	0.00	-0.17	0.00	0.00	0.67	1.00	0.00
1.00	0.00	-0.67	1.00	0.17	0.67	0.00	0.17
1.00	0.33	0.17	0.00	0.00	0.67	1.00	-0.67
0.00	0.00	1.00	0.00	0.00	0.67	0.00	0.17
1.00	-0.67	0.83	1.00	0.17	0.67	1.00	0.00
0.00	0.17	-0.50	0.00	0.00	0.00	0.00	0.00
0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00
1.00	-0.33	0.67	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.33	0.00	0.00	0.00	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
1.00	0.17	0.67	0.00	0.00	0.00	1.00	0.17
1.00	0.00	0.33	0.00	0.00	-0.17	0.00	0.00
1.00	0.17	0.50	0.00	0.00	0.17	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.17	1.00	0.00
0.00	0.00	-0.33	0.00	0.00	-0.33	0.00	0.00
0.00	0.00	-0.50	0.00	0.00	-0.17	0.00	0.00

0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
1.00	0.00	1.00	1.00	-0.67	0.67	1.00	0.00
0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.00
1.00	0.33	0.67	0.00	0.00	0.33	0.00	0.00
0.00	0.00	1.00	1.00	0.00	0.67	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.50	1.00	0.17
0.00	0.00	0.33	1.00	-0.33	0.50	0.00	0.00
1.00	0.50	0.67	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.17	1.00	-1.00	-0.50	1.00	-1.00
0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
0.00	0.00	0.50	0.00	0.00	0.67	0.00	0.00
0.00	0.00	0.67	1.00	0.00	-0.50	0.00	-0.67
0.00	0.17	0.00	0.00	0.00	0.33	1.00	0.00
0.00	0.00	0.50	0.00	0.00	0.83	1.00	0.33
0.00	0.00	0.33	0.00	0.00	0.50	0.00	0.33
0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00
0.00	0.00	0.67	0.00	0.00	0.33	1.00	0.00
0.00	0.00	0.33	1.00	0.17	0.50	1.00	0.00
1.00	0.00	0.50	0.00	0.00	0.00	1.00	0.00
0.00	0.00	0.50	0.00	0.00	-0.33	0.00	0.00
1.00	-0.67	0.00	1.00	0.17	0.50	0.00	0.00
1.00	0.00	0.50	1.00	0.00	0.17	0.00	0.00
0.00	0.00	0.33	0.00	-0.33	1.00	0.00	0.00
0.00	0.00	0.83	0.00	0.00	0.83	0.00	0.00
0.00	0.00	0.50	1.00	0.00	0.50	1.00	0.00
0.00	0.00	0.33	0.00	0.00	-0.17	0.00	0.00

Q3_DR6
0.17
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0.83
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0.83
0.33
0.00
0.00
0.17
0.33
-0.17

Appendix P: Hits MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.08619	116.624	15	165	**0.00**

Appendix Q: Corrected Hits MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.12383	77.8288	15	165	**0.00**

Appendix R: Drug Name Recall (Hits) ANOVA Table

	df Effect	MS Effect	Df Error	MS Error	F	p-level
1	5	2.386111	895	0.151102	15.79141	**0.000000**

Appendix S: Drug Name Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	7.217778	895	0.188355	38.32006	**0.000000**

Appendix T: Risk Recall (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.02037	895	0.003673	5.546479	**0.000049**

Appendix U: Risk Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.021728	895	0.024936	0.871384	0.499704

Appendix V: Risk Recognition (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	6.93251	895	0.033866	204.7068	**0.000000**

Appendix W: Risk Recognition (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	10.50376	895	0.085372	123.0349	**0.000000**

Appendix X: Program x Risk Disclosure Condition (Hits) MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.855777	1.838775	15	475	**0.027345**
2	0.082516	118.6007	15	160	**0.000000**
12	0.255029	3.391779	75	770	**0.000000**

Appendix Y: Program x Risk Disclosure Condition (Corrected Hits) MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.83902	2.079753	15	475	**0.009858**
2	0.12064	77.75043	15	160	**0.000000**
12	0.28256	3.102392	75	770	**0.000000**

Appendix Z: Gender x Risk Disclosure Condition (Hits) MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.930421	4.387247	3	176	**0.005262**
2	0.082072	122.2837	15	164	**0.000000**
12	0.838899	2.099619	15	164	**0.012196**

Appendix AA: Gender x Risk Disclosure Condition (Corrected Hits) MANOVA Table

	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	0.954408	2.802506	3	176	**0.041377**
2	0.110489	88.02095	15	164	**0.000000**
12	0.788366	2.935022	15	164	**0.000381**

Appendix BB: Program x RDC - Drug Name Recall (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.499444	174	0.203033	2.459915	**0.034982**
2	5	2.386111	870	0.14311	16.67328	**0.000000**
12	25	0.429222	870	0.14311	2.99925	**0.000001**

Appendix CC: Program x RDC - Drug Name Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.546667	174	0.197126	2.773178	**0.019468**
2	5	7.217778	870	0.181341	39.80224	**0.000000**
12	25	0.432444	870	0.181341	2.384703	**0.000172**

Appendix DD: Program x RDC - Risk Recall (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.003272	174	0.004568	0.716272	0.612010
2	5	0.020370	870	0.003535	5.762167	**0.000030**
12	25	0.008457	870	0.003535	2.392173	**0.000163**

Appendix EE: Program x RDC - Risk Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.025	174	0.026123	0.957018	0.445746
2	5	0.021728	870	0.024128	0.900534	0.480045
12	25	0.053025	870	0.024128	2.197609	**0.00067**

Appendix FF: Program x RDC - Risk Recognition (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.287942	174	0.10736	2.682039	**0.023110**
2	5	6.93251	870	0.030114	230.2098	**0.000000**
12	25	0.164424	870	0.030114	5.46007	**0.000000**

Appendix GG: Program x RDC - Risk Recognition (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	5	0.22423	174	0.110031	2.037871	0.075609
2	5	10.50376	870	0.075286	139.5182	**0.000000**
12	25	0.436374	870	0.075286	5.796213	**0.000000**

Appendix HH: Gender x RDC - Drug Name Recall (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	1.044434	178	0.206632	5.054553	**0.025788**
2	5	2.40027	890	0.151042	15.89141	**0.000000**
12	5	0.161752	890	0.151042	1.070906	0.374961

Appendix II: Gender x RDC - Drug Name Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	0.483003	178	0.205339	2.352225	0.12688
2	5	7.451235	890	0.187153	39.81363	**0.000000**
12	5	0.402346	890	0.187153	2.149824	0.057604

Appendix JJ: Gender x RDC - Risk Recall (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	0.010091	178	0.0045	2.242434	0.136041
2	5	0.020743	890	0.003683	5.631618	**0.000040**
12	5	0.001772	890	0.003683	0.481083	0.790548

Appendix KK: Gender x RDC - Risk Recall (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	0.067079	178	0.025861	2.593811	0.109054
2	5	0.021587	890	0.024933	0.865783	0.503538
12	5	0.025332	890	0.024933	1.015978	0.406919

Appendix LL: Gender x RDC - Risk Recognition (Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	1.02451	178	0.10728	9.54991	**0.002321**
2	5	6.941825	890	0.033289	208.5308	**0.000000**
12	5	0.136455	890	0.033289	4.099073	**0.001099**

Appendix MM: Gender x RDC - Risk Recognition (Corrected Hits) ANOVA Table

	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	0.598002	178	0.110498	5.411898	**0.021126**
2	5	10.59278	890	0.084293	125.6666	**0.000000**
12	5	0.277518	890	0.084293	3.292315	**0.005941**