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Effect of presentation modality in direct-to-consumer (DTC) prescription drug television advertisements

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ABSTRACT

Direct-to-consumer (DTC) drug advertising markets medications requiring a physician's script to the general public. In television advertising, risk disclosures (such as side effects and contraindications) may be communicated in either auditory (voice) or visual (text) or both in the commercials. This research examines presentation modality factors affecting the communication of the risk disclosures in DTC prescription drug television commercials. The results showed that risk disclosures presented either visually only or both visually and auditorily increased recall and recognition compared to no presentation. Risk disclosures presented redundantly in both the visual and auditory modalities produced the highest recall and recognition. Visual only produced better performance than auditory only. Simultaneous presentation of non-risk information together with risk disclosures produced lower recall and recognition compared to risk disclosures alone—without concurrent non-risk information. Implications for the design of DTC prescription drug television commercials and other audio-visual presentations of risk information including on the Internet, are discussed.

1. Introduction

Effective warnings and labeling are essential for pharmaceutical products. These products need warnings because the characteristics and effects are not readily determined from examination of the products themselves. Without labeling information, health care professionals and consumers would not likely know very much about the drug, and thus not having important information about the potential risks, side effects, and contraindications. The benefits of medications are usually well presented in a short indications section, but the risks are generally less well conveyed in the labeling (e.g., Kaiser Family Foundation, 2001). Given the serious consequences that may result from inappropriate and potentially dangerous use of prescription drugs, there is a need to systematically investigate the factors that facilitate or hinder effective communication of risk information.

Historically, information about prescription drugs was directed to physicians and other health care professions. Yet despite the importance of drug information for health and safety, there have been relatively few experimental studies manipulating factors that could facilitate or hinder the communication of prescription drug information to consumers. Determining what laypersons understand from exposure to drug advertisements could benefit knowledge towards improving risk communication.

In recent years, drug information is being provided through popular media such as television (TV), radio, and the World Wide Web (WWW). The purpose of direct-to-consumer (DTC) prescription drug advertising is to market a prescription drug directly to the public even though users cannot purchase it directly. To purchase a prescription drug, users must get a script from a licensed provider who has determined that the drug is needed. In the United States (U.S.), the Food and Drug Administration's (FDA) prescription drug regulations require that DTC prescription drug television ads giving benefit information must include also information relating to the major side effects and contraindications. According to the FDA, there must be a balanced presentation of benefit and risk information in DTC prescription drug advertisements (U.S. FDA, 2011).

Few countries allow DTC prescription drug advertisements. Currently only the U.S. and New Zealand allow presentation of DTC prescription drug advertising (Frosch et al., 2010; Mintzes et al., 2002). Other countries are considering allowing them (e.g., Canada) but others have explicitly prevented their use (e.g., in the

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European Union). Moreover, some countries are considering allowing some DTC advertising for certain kinds of drugs (e.g., diabetes, asthma, AIDs) (Frosch et al., 2010).

Advocates of DTC prescription drug advertising argue that this communication through manufacturer-paid advertising can be a useful way to provide prescription drug information to the public. DTC ads can alert people to new treatment options and newly marketed prescription drugs and encourage them to talk to their physician or pharmacist about drugs they have seen advertised (Pharmaceutical Research and Manufacturers of America, 2002; Redmond, 2002; Rosenthal et al., 2002). Proponents further posit that DTC prescription drug advertising can enhance the patient–physician relationship by encouraging people to take an active role in their own health. However, some physicians and insurance companies criticize DTC advertisements for potentially being harmful. For example, the commercials could negatively influence the patient–physician relationships. Physicians must spend time dissuading patients that they do not need an advertised drug (Calfee, 2002; Lyles, 2002; Pinto et al., 1998). As a result, physicians need to resist patients' pressure to prescribe patient-suggested drug products (Reissman, 1998), which could put a strain on the relationship. A related problem is that DTC prescription drug advertising may inadvertently increase the number of unnecessary physician visits (Redmond, 2002). Also, advertised drugs likely cost more than comparable, less advertised drugs. With greater use of medications, some people may be helped but some may be led to take medications unnecessarily and others may be harmed.

Another argument leveled against DTC prescription drug advertising is that the ads do not adequately communicate the risks of the advertised drug (National Health Council, 2002). This negative aspect is supported by research findings. For example, using trained pharmacists to assess 39 DTC prescription drug ads given in the print modality, Roth (1996) determined that one-third of the DTC prescription drug ads did not present a fair balance of risk and benefit information. Other research has shown an imbalance of risk information versus benefits in DTC drug advertisements on the web (Hicks et al., 2005). Exposure to advertisements that do not present a fair balance of a drug's risks and benefits could lead people to believe that a drug is safer to use than it is in actuality.

Since risk information may not be communicated well, it is important to find ways to enhance communication. Current U.S. law restricts certain ways to communicate risk information. According to the U.S. FDA regulations (U.S. FDA, 2011), "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. 98). Thus, this rule restricts the method of presentation of risk information. It does not allow risk information to be presented only in the visual modality, but it allows auditory-only presentation or both modalities. It is not clear whether FDA's guidance about presentation methods is optimal for conveying risk information. Current U.S. FDA policy has no requirement that manufacturers demonstrate the efficacy of their risk disclosures in DTC drug ads or even have them be approved by government authorities. Thus, simple adherence to legal requirements governing the content and format of these ads may not translate into effectiveness.

Existing evidence from the warning literature casts doubt on FDA guidance of the relative effectiveness of auditory-only presentation (e.g., see review in Cohen et al., 2006). Some research indicates that auditory-only presentation would be better than visual-only presentation (e.g. Wogalter and Young, 1991; Conzola and Wogalter, 1999). However, when presented in a context of watching television programming, research suggests the opposite. For example, visual (print) warnings presented in television ads for alcoholic beverages are better remembered than the same information presented auditorily (spoken)(e.g., Barlow and Wogalter, 1993). Other research on modality differences suggests that when the information is complex and difficult to process, information given in visual print is better than auditorily, possibly due to the ability to review the material more than once in the former than in the latter modality (see e.g., Wickens et al., 2012). However, when presenting a short simple message, the auditory channel appears to be more effective than the visual channel (Penny, 1989). Investigated in the present research was whether visually presented risk information in television drug ads produces better memory than auditorily presented risk information, or the reverse. Given that the FDA allows auditory only presentation, one expectation is that auditory only would be better than visual only presentation. But as note above, the opposite would be predicted from previous research (Barlow and Wogalter, 1993).

Using both visual and auditory modalities to communicate risk information would likely be better than just one modality (e.g., see Cohen et al., 2006; Glinert and Schommer, 2005). If dual modality is better than either modality individually then this pattern would support two well-known theoretical frameworks. One is Paivio's (1975) Dual-Code theory which says that presentation formats that result in two different codes (e.g., modalities) available at encoding improves retrieval from long-term memory. Another major framework is the redundant coding principle (Wickens et al., 2012), which says presentation in more than one modality forms a stronger signal for conceptual awareness and understanding. Additionally, if dual-modality presentation is better than single modality presentation then this finding could inform future rule making in the U.S. and other countries.

Another important issue investigated in this research concerns the potential for interference when non-risk information is given simultaneously with the risk information. This might occur when non-risk information is given in one modality and the risk information in the other modality (e.g., visual non-risk information presented concurrently with auditorily presented risk information, or vice versa). This is commonly done in practice in real DTC drug commercials where considerable non-risk information may be given in the visual modality while the risk information is concurrently presented in the auditory modality. Thus, a main question in the present research is whether concurrently presenting non-risk information in one modality negatively affects risk communication by distracting people from focusing on concurrently presented risk information.

Cross modal risk versus non-risk information has been investigated in some early research by Morris and colleagues (e.g., Morris et al., 1989). They found a reduction in risk communication when non-risk information is simultaneously presented with the risk information. Glinert and Schommer (2005) found that when pharmacy school students were presented redundant risk information in both print and voice *after* the commercial was over (i.e., following it) produced higher risk recall than when the risk information was integrated into the commercial (where other non-risk information was concurrently presented). In the Glinert and Schommer study the best risk information condition was presented after the commercial was over. This separate presentation does not reflect current practice of integrating the risk information within the television advertisements. Also, the general public (most users) is less knowledgeable on the topic of prescription drugs than pharmacy school students, the group of participants that Glinert and Schommer used.

In the present research, persons without specialized training are exposed to systematically-manipulated risk presentations integrated within television advertisements. Redundant presentation of risk information in both modalities is compared to only one