

CHAPTER 2

LITERATURE REVIEW

Contents of reviewing literature related to concept of the study were presented, separating into 7 parts as follows:

- Part I. Concepts of advertising
- Part II. Drug advertisement regulation;
- Part III. Consumer information processing (CIP) theory;
- Part IV. Concepts of consumer involvement;
- Part V. Concepts of recall and recognition;
- Part VI. Concepts of risk perception; and
- Part VII. Research related to warning.

Part I Concepts of Advertising

In this part, advertising concepts which include definition, six components of advertising, roles of advertising, functions of advertising, and advertising media are provided.

Definition and advertising components

Advertising is paid nonpersonal communication from an identified sponsor using mass media to persuade or influence an audience (Wells, Burnett & Moriarty, 2003). Regarding to the advertising definition, advertising has six elements. First, advertising is a paid form of communication, although some forms of advertising,

such as public service announcements used donated space and time. Second, not only is the message paid for, but the sponsor is identified. Third, most advertising tries to persuade or influence the consumers to do something, although in some cases the point of the message is simply to make consumers aware of the product or company. Fourth, the message is conveyed through many different kinds of mass media, and fifth, advertising reaches a large audience of potential consumers. Finally, because advertising is a form of mass communication, it is also nonpersonal.

Roles of advertising

Advertising also can be explained in terms of the four roles it plays in business and in society: marketing, communication, economic, and societal roles (Wells, Burnett & Moriarty, 2003; Weilbacher, 1979).

The marketing role: marketing communication consists of several related communication techniques, including advertising, sales promotion, public relations, and personal selling. The role of advertising, within marketing, is to carry persuasive messages to actual and potential customers.

The communication role: advertising is a form of mass communication. It transmits different types of market information to match buyers and sellers in the marketplace. Advertising both informs and transforms the product by creating an image that goes beyond straightforward facts.

The economic role: advertising is vehicle for helping consumers assess value, through price as well as other elements such as quality, location, and reputation.

The societal role: advertising also has a number of social roles. It informs consumers about new and improved products and helps consumers compare products

and features and make informed consumer decisions. It mirrors fashion and design trends and adds to consumers' aesthetic sense.

Functions of advertising

Advertising performs three basic functions (Wells, Burnett & Moriarty, 2003). First, advertising provides product and brand information. Although many advertisements are lack of information, providing the consumers with relevant information that will aid decision making is still the main function of advertising. The information given depends on the needs of the target audience. Second, advertising provides incentives to take action. In most instances, consumers are reluctant to change their buying behavior. Even if they are somewhat dissatisfied with their current product, a habit has been established and learning a new product is difficult. Advertising sometimes gives the consumer reasons to switch brands, if that's the goal. Convenience, high quality, lower price, warranties-these all might be stressed in advertising. Finally, advertising provides reminders and reinforcement. Much advertising is directed at keeping current customers. For example, consumers forget why they bought a particular brand of drugs for their self-medication. Advertising must constantly remind the consumer about the name of the brand, its benefits, its value, and so forth. These same messages help reinforce the consumers' decision. Most television advertising provides this function.

Advertising media

Advertising can be communicated the messages in several media such as print, radio, and television media. Different kinds of information are better suited for each

medium. The print medium lends itself to longer, more complex verbal information, as it usually allows readers to review the information at their own pace (Barlow & Wogalter, 1993). Since the presentation speed of information on television is not under the viewer's control, complex information may not be communicated by voice (Bettman, Payne, & Staelin, 1986). Each medium have different advantages and disadvantages as following (Wells, Burnett & Moriarty, 2003):

The benefits of print media include the ability to reach specialized audiences, providing more detailed information, a longer time the information is available, and the assurance that the information is unlikely to change. Print media is also an excellent medium for carrying supplemental elements, such as coupons, samples, and access to contact information that may lead to action. The most prominent disadvantages are lack of immediacy, high cost, and difficult distribution. Some readers do not look at an issue of a magazine until long after it comes to them, therefore, the ad may take a long time to have an effect on the readers.

The radio has several key advantages for advertisers. First, the most important advantage radio offers is its ability to reach specific audiences through specialized programming. In addition, radio can be adapted for different parts of the country and can reach people at different times of the day. Second, radio may be the least expensive of all media. Third, radio allows the listener to imagine. Radio uses words, sound effects, music, and tonality to enable listeners to create their own pictures. For this reason, radio is sometimes called the theater of the mind. The final advantage is radio's high acceptance at the local level. Partly because of its passive nature, radio normally is not perceived as an irritant. People have their favorite radio stations and radio personalities, which they listen to regularly. Messages delivered by these

stations and personalities are likely to be accepted and retained. Not only advantages of radio media, radio also have disadvantages. First, because radio is strictly a listening medium, radio messages are fleeting, and listeners may miss or forget commercials. Second, radio media is lack of visuals. Being restricted to using sound can hamper a person's creativity. Finally, radio media is lack of control. A large percentage of radio is talk shows, and most of radio's recent growth has come through talk shows. There is always the risk that a radio personality will say something that offends the audience, which would in turn hurt the audience's perception of an advertiser's product.

Television has two key advantages. First, many advertisers view television as the most cost-effectiveness way to deliver a commercial message because it has such a wide reach. Millions of people watch some television regularly. Not only does television reach a large percentage of the population, but it also reaches people that print media misses. Second, television makes a strong impact. The interaction of sight, sound, color, motion, and drama creates a level of consumer involvement that often approximates the shopping experience itself. It can make mundane products appear important, exciting, and interesting. Despite the effectiveness of television advertising, it has several problems. The most serious limitation of television advertising is the extremely high cost of producing and running commercials. In addition, television media is nonselective audience. Television advertising includes a great deal of waste coverage: communication directed at an unresponsive (and often uninterested) audience that may not fit the advertiser's target market characteristics.

Televised advertisements were used to be a media of this study because television media can reach a large audience in a cost-efficient manner (Boyd, Walker

& Larreche, 1995). Its sound and moving images can create a strong impact to consumers.

Part II Drug Advertisement Regulation (“Drug Act,” B.E.2510; Thai FDA 2004)

Drug information available to health-care professionals and consumers is as important as drug quality for the safe use of drugs. Drug advertisements and other promotional materials need to ensure truthfulness and non-exaggeration. Advertisements through any means must be approved by the authorities before actually being disseminated. Drug Act B.E. 2510 is a major act for regulation drug advertisement. It divided drug advertisement regulation into 2 groups: drug advertisements directly to general public and drug advertisements directly to a professional. Advertisements of prescription or pharmacy-dispensed medicines are permitted only to professionals but prohibited to the general public. This part focuses on only the regulation of drug advertisements directed to general public. Examples of drugs which can be advertised directly to consumers or the general public are the household remedy and ready-packed drug category.

The advertisement to sell drugs through every medias must receive permission for the text, sound, or picture used in the advertisement from the licensor and must follow the conditions set by the licensor. There are several provisions to regulate drug advertisement. It can be summarized as following:

1. No sale of drugs shall be advertised impolitely, or by means of singing and dancing, or by showing the distress on suffering of a patient, or by means of a gift or lottery drawing.

2. An advertisement must not encourage inappropriate or excessive consumption.

3. An advertisement must not compare with other products.

4. Concept of OTC drug advertisement should be clear and must not lead persons to believe that this advertisement is cosmetic, food supplement, etc.

5. An advertisement must not be boastful of its therapeutic properties or of its ingredients as being miraculously or completely capable of curing, mitigating, treating or preventing a disease or illness, nor shall any other wording of similar meaning be used.

6. An advertisement must not falsely or exaggeratedly show its therapeutic properties.

7. An advertisement must not cause to be understood that it has a substance as its chief or component ingredient, which in fact it has not or does have but less than the quantity as caused to be understood.

8. An advertisement must not cause to be understood that it is an abortifacient or a strong emmenagogue.

9. An advertisement must not cause to be understood that it is an aphrodisiac or a birth control drug.

10. An advertisement must not show the therapeutics properties of a dangerous or a specially-controlled drug.

11. An advertisement must not contain or imply endorsement by any government agency, hospitals and other facilities providing health care services, or individual health care professionals.

12. Any scientific information in an advertisement should be presented in a manner that is accurate, balanced and not misleading. The scientific information should be published in separate place from the ad.

13. An advertisement for a traditional drug should be indicated that this drug is “traditional drug”.

14. An advertisement of a ready-packed drug, analgesic drug, or drug mandated to show warning statement in the label should be presented the following warning mandated by the regulation:

Warning message must be presented as “read the warning in the label before taking the drug”. In case of media which contains both of audio and visual forms, Warning messages in advertisements must be conspicuously presented in both audio and visual forms.

This study was performed in two drug categories, pain relief (Paracetamol) and mixed formula of cold medication (Paracetamol and Chlorpheniramine). Warning messages mandated in the label for Paracetamol and mixed formula of cold medication are presented differently.

Warning messages in the label for Paracetamol are:

- 1) Take the medicine by the indicated dosage and do not continue using the drug for more than 5 days;
- 2) Patients who have liver or kidney diseases should consult a physician or pharmacist before using this medicine;
- 3) Do not use this medicine for relief of muscle pain which is caused by strenuous working; and
- 4) While using the medicine, alcoholic beverage should not be drunk.

Warning messages in the label for mixed formula of cold medication are:

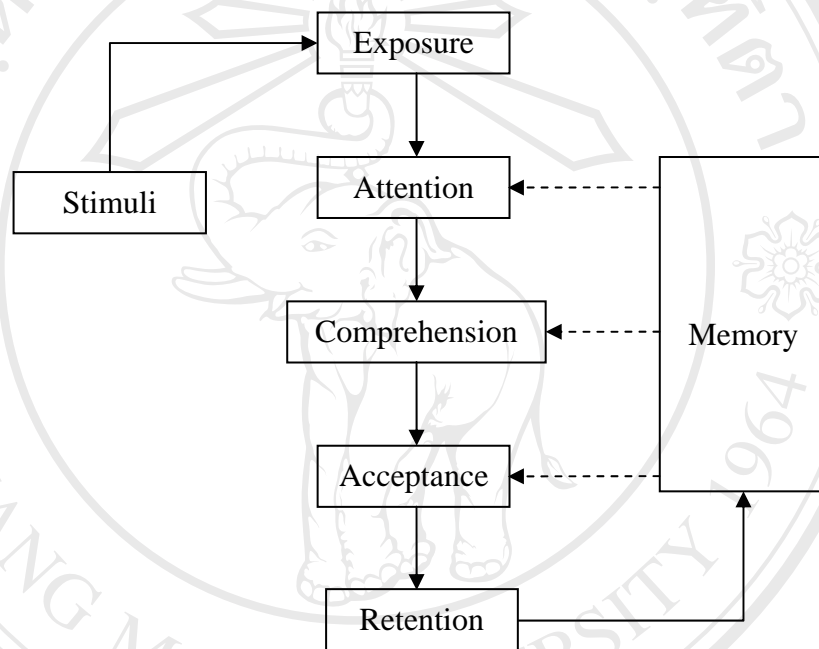
- 1) The medicine may cause drowsiness; consequently, do not drive or operate machinery;
- 2) Overusing the medicine may lead to liver damage;
- 3) Avoid taking the medicine with alcoholic beverages;
- 4) Do not give to children <1 year old, do not give to asthmatic patients, glaucoma patients, patients with prostatic hypertrophy, or patients with urinary problems;
- 5) To be careful when taking the medicine in the first period of pregnancy and lactation; and
- 6) Patients who have liver or kidney diseases should consult a physician or pharmacist before using this medicine.

Part III Consumer Information Processing

According to the information-processing model developed by William McGuire, information processing can be broken down into five basic stages; 1) exposure, 2) attention, 3) comprehension, 4) acceptance, and 5) retention (Engel, Blackwell, & Miniard, 1990). These processes are represented in Figure 2.1. The first stage of information processing occurs when consumers are exposed to a stimulus. Following the exposure, consumers may pay attention to or “process” the stimulus. During this processing, consumers will attach meaning to the stimulus, which is called the comprehension stage. The next stage, acceptance, is of critical concern in the realm of persuasive communication. Although consumers may accurately understand what an advertisement is saying, the critical question addressed

at this stage is whether the consumer actually believes this information. The final stage, retention, involves the transfer of information into a long term memory. However, that memory also influences the prior stages as well.

Figure 2.1. Stages of information processing

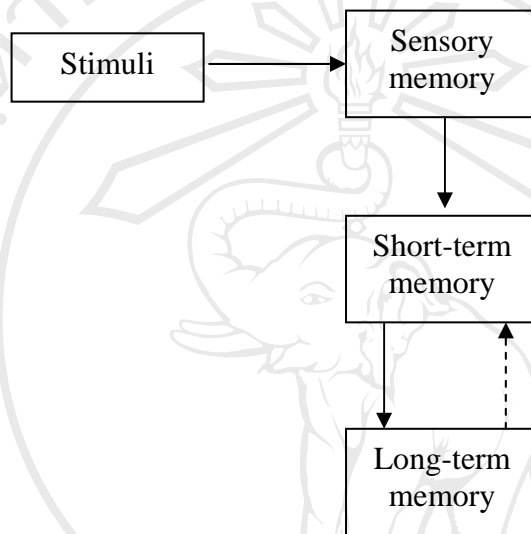


A memory consists of three different storage systems: 1) sensory memory, 2) short-term memory, and 3) long-term memory. This is shown graphically in Figure 2.2. Briefly, memory is assumed to work in this way:

1. The stimulus enters and is processed first in sensory memory. Information is extracted about color, contour, and so on. No meaning is attributed at this stage.
2. The input then goes to short-term memory, where it is held briefly and analyzed for meaning. Unless rehearsed, it will then fade from short-term storage.

3. Rehearsed information is then transferred to long-term memory where it is stored permanently and may be retrieved later if certain conditions are met.

Figure 2.2. The multiple-store model of memory: the three storage systems



Other approach of information processing memory theories focus on three processing issues: 1) encoding (the formation of mental events to represent the information entering the system; 2) storage (retaining the encoded image over time); and 3) retrieval (the process of bringing the stored memory into current consciousness) (Solomon, 1999). All individuals process information differently.

There are several factors, which can certainly influence the way that individuals process information in advertisements; for example, the attention devoted to the advertisement, the degree of involvement, the environment factors, and the content and format of the message (Gildin, 2002). According to information-processing theory, an individual's level of involvement can influence attention, comprehension

(Celsi & Olson, 1988), and the level of elaboration about information presented in an advertisement (Petty, Cacioppo, & Schumann, 1983).

Rogers, Lamson, and Rousseau (2000) have suggested four components of the warning process. Four broad components were identified: 1) notice the warning-attention is directed to the warning; 2) encode the warning-external information is translated into some internal representation through reading words, processing symbols, and so on; 3) comprehend the warning-the meaning of the warning is understood; and 4) comply with the warning-behavior is in accordance with the warning. For example, for a warning to be effective for an individual applying a paint-stripping product to a piece of furniture, the person must first notice the warning on the label. Next, he or she must encode the information on the warning. This might involve reading about the potential dangers of using the product in an enclosed, unventilated area. It is important that the user also comprehends the meaning or intent of the warning (e.g., understand what unventilated means). The warning might also provide instructions for how to minimize the danger, such as “Best if used outdoors.” The user must then comply with the warning.

Other researchers have suggested slightly different conceptualizations and divisions of the warning process. For example, Wolgalter and Laughery (1996) discussed stages of attention, comprehension, beliefs/attitudes, and motivation. Laughery and Brelsford (1991) discussed the components of looking for the warning, noticing the warning, and complying with warning. Lehto and Miller (1986) described eight sequential human information-processing steps that they deemed important for a warning to be effective: 1) exposing to the warning, 2) attending to the warning, 3) actively processing the warning, 4) comprehending and agreeing with the

warning, 5) storing the warning in memory and doing search and retrieval as necessary, 6) selecting the appropriate response, 7) performing the response, and 8) responding adequately.

Failures at any of these stages will decrease the effectiveness of the warning. For example, if a warning is small in size, it might not be noticed, and consequently, the user would not encode the warning information. A different problem occurs when a warning label is written in technical language that is unfamiliar to a user; he or she may not understand the contents of the warning. For example, contraindications on a medicine bottle may be read but may contain technical jargon that the product user does not comprehend. Moreover, even after noticing, encoding, and comprehending a warning, a user may fail to comply with the warning information for a variety of reasons e.g., compliance behavior might be too time consuming or expensive (Rousseau, Lamson, & Rogers, 1998).

Several variables were mentioned to have an influence for warning process (Rogers, Lamson, & Rousseau, 2000). The variables were classified by separating them into two broad categories: person variables and warning variables. Person variables refer to those factors that are specific to the individual(s) who interacts with the warning. These include demographic variables such as age and gender, cognitive variables such as familiarity, and personality variables such as risk-taking style. Warning variables refer to the characteristics of the warning itself or the context in which the warning appears. These include physical features such as color, layout, type style, and signal words (e.g., *danger*, *warning*, and *caution*) as well as more abstract characteristics such as tone and explicitness.

Consumer information processing theory has been applied in many consumer research. Especially attention has been given to research on warnings in advertisements, which are presented in the last part.

Part IV Concepts of Consumer Involvement

The information processing and information search are affected by the consumer's involvement. Involvement is defined as the consumer's perception of the importance of a person, object, or situation (Engel et al., 1990). It describes an internal state of arousal, and attention. Involvement is an indicator of motivation because it signals personal relevance. For example, sick people pay more attention to health messages than healthy people do, because the messages are more relevant to their personal situation. Involved consumers spend more time and effort searching for information that relates to purchase and consumption. They are more thoughtful in their actions, understand information better, and have greater ability to recall details later. In addition, people who are involved are more likely to listen to persuasive arguments. The degree of consumer involvement can change from moment to moment, depending on a person's changing situation.

Involvement is an important concept for pharmacists, because consumers who are interested in their health and health care behave differently from those who are not (Holdford, 2003). Interested consumers are more alert to health information, committed to their therapeutic plan, and likely to work with professionals to achieve good therapeutic outcomes. Moreover, involvement is necessary for thoughtful behavior, which is needed when dealing with important, complex decisions such as those about health care (Holdford, 2003). Participant in health care decision-making

requires that consumers fully understand their choices and the consequences. This means consumers should be attentive to information and thoughtful in their choices. Consumers who are not thoughtful are more likely to make decisions on the basis of emotions, through habit, or randomly.

A person's involvement with something like pharmacy services is influenced by three factors, personal, product or service, and situation factors (Engel et al., 1990; Holdford, 2003). The personal factor, although pharmacists may perceive their services as critically important, patients may not consider these services crucial. The relevance of anything is determined by the perspective of the individual. The product or service factor, some things are inherently more important to people than others. For example, health care is considered a high-involvement activity in comparison with the purchase of laundry detergent. Involvement with an object is related to the perceived risk associated with its purchase and consumption and the potential benefit it can provide to meet personal needs. When people realize the potential benefit or risk associated with specific health care decisions, they become more involved and attentive. The situation factor, many healthy people ignore health care issues until they get sick. Then they become actively involved in finding a way to treat their illness. Their involvement is situation dependent. When the illness is resolved, the need for involvement changes and the person often falls back to his or her previous low level of involvement.

Part V Concepts of Recall and Recognition

Recall and recognition are often used to evaluate advertising's effectiveness (Engel et al., 1990; Wells, Burnett, & Moriarty, 2003). Memory for product

information can be measured through either recognition or recall technique. Recall measures are measures of cognitive learning that do not provide cues to prompt memory whereas recognition measures provide the person with some types of cue to prompt memory (Engel et al., 1990).

There are several techniques to measure recall (Norris & Colman, 1992; Wells et al., 2003). For example, the first technique is called unaided recall (free recall) because the particular information is not mentioned. Subjects were asked to write down all information they could remember. The second technique is aided recall (cued recall), in which the specific information such as brand name, product types is mentioned. The subjects then were asked to try to recall the corresponding specific information.

Another way to measure memory is called recognition test. In the test, the information is shown to people and ask them whether they remember having seen it before. Recognition scores are almost always better than recall scores because recognition is a simpler process and more retrieval cues are available to the consumer (Solomon, 1999).

Both types of retrieval, recall and recognition, play important roles in purchase decisions (Solomon, 1999). Recall tends to be more important in situations in which consumers do not have product data at their disposal, so they must rely on memory to generate this information. On the other hand, recognition is more likely to be an important factor in a store, where consumers are confronted with thousands of product options and information and the task may simply be to recognize a familiar package.

Recall and recognition measurable techniques have been applied to evaluate the effectiveness of health warnings in several product advertisements. One study was

to compare the communication effectiveness of new warnings with a mandated warning (Fisher, Krugman, Fletcher, Fox, & Rojas, 1993). This was done using sequential timed exposures to a cigarette print advertisement, followed by masked recall, and aided recognition tests. These three techniques are commonly used by market researchers to test the communication effectiveness of print advertisements. Immediately after each sequential exposure, subjects were asked to write down what was seen. Masked recall involves covering parts of an advertisement after an exposure and requesting that the subject recall what was in the masked area. This technique reveals which information has been seen and stored in the subject's short-term memory. Aided recognition involved requesting subjects to identify information to which they had been previously exposed from a list that included other similar items.

Smith (1990) investigated communication capabilities of warnings in alcoholic beverage television advertising by measuring warning recall. Warning recall was measured through both unaided and aided techniques, using open- and closed-ended questions including: "Please write down everything you can remember about each of the commercials you saw" (unaided), "There was an ad for beer in the program. Please write down all information you remember from this ad" (aided with ad prompt), and "Did the beer ad contain a warning message? If so, what did it say?" (aided with warning prompt).

Barlow and Wogalter (1993) examined the effects of alcoholic beverage warnings in television advertisements. The effects of warnings were measured through both free recall and cued recall techniques. The first test measured free recall of warning content. In this test, participants were asked to write, as specifically as

possible, any product-related warnings that they saw or heard during the program. The second test measured cued recall of warning content with open-ended and multiple-choice questions.

To evaluate warning effectiveness in this study, memory of warnings were one important dependent variable that has to be measured. Therefore, recall and recognition techniques from previous studies were applied to measure warning memory.

Part VI Concepts of Risk Perception

In the marketing literature, the concept of risk perception has been applied to various aspects of consumer behavior. Reviews of risk perception illustrate a variety of conceptualizations of the risk perception construct. Bauer (1960) defined perceived risk as a two-dimensional construct, uncertainty and consequences. Consumer behavior involves risk in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximately certainty, and some of which at least are likely to be unpleasant. Dowling and Staelin (1994) defined perceived risk in terms of the consumer's perceptions of the uncertainty and adverse consequences of buying a product (or service). Other researchers have conceptualized risk perception as a function of two different components: the probability of loss occurring and the severity of loss (Bettman, 1973; Ganther & Kreling, 2000).

Regardless of different operational definitions of risk perception, it is generally thought to have multiple dimensions. Many researchers have suggested that risk perception should be considered a multidimensional construct entailing multiple types

of risk, including financial, performance, physical, psychological, and social risk (Holdford, 2003; Jacoby & Kaplan, 1972). Furthermore, several studies have formulated a model of perceived risk which includes six different dimensions of risk (Bearden & J.B., 1978; Lively, Baldwin, Carlton, & Riley, 1981). The first five dimensions of risk were the same as those used by Jacoby and Kaplan (1972), while the sixth risk, time risk, was introduced. Operational definitions for the six types of risks are as follows.

1. Financial risk refers to financial losses that might occur as a result of a bad purchase, such as overpaying for a prescription drug.
2. Performance risk is the possibility that a purchase will not achieve the intended outcome. For example, a drug might not achieve the desired clinical outcome.
3. Physical risk is the potential for injury resulting from consumption. For drugs, this might refer to adverse effects or drug interactions.
4. Social risk refers to loss of personal social status associated with a purchase. Some drugs, such as those used to treat urinary incontinence or AIDS, can carry a stigma.
5. Psychological risk refers to the impact of a purchase on a person's self esteem. Some drugs have potentially embarrassing adverse effects, such as impotence or flatulence, that can negatively affect self-esteem.
6. Time risk refers to loss of time or convenience. For example, more time needed to seek the proper drugs.

Perception of risk is probably the most salient psychodynamic feature in the leading models of health behavior. It is a fundamental component of the health belief model (HBM), theory of reasoned action, and PRECEDE model (Prohaska, Albrecht,

Levy, Sugrue, & Kim, 1990). Perceived risk can be implied both the perceived susceptibility to an adverse effect as well as perceived severity of the adverse effect in HBM (Agrawal, 1995).

In the area of pharmacy, the risk perception concept has not been focused on extensively. However, concepts of risk perception have been discussed in several studies. For example, Bearden and Mason (1978) used six dimensions of risk perception to determine why pharmacists, physicians, and consumers were reluctant to use generic medications. Six dimensions of risk perception were: 1) performance; 2) financial; 3) social; 4) physical (safety); 5) psychological; and 6) time. Results indicated that those opposed to generic substitution perceived more risk on each risk dimension and considered those risks more important than those who favored the idea of generic substitution.

In Carroll et al.'s study (1986), they used the same six dimensions of risk to determine whether pharmacists' perceptions of the risks associated with generic substitution behavior. Results indicated a statistically significant inverse relationship between risk and substitution rate.

Only one dimension of risk was used in Lively et al.'s study (1981). Physical risk was used to determine the relationship of knowledge to perceived benefits and risks of oral contraceptives. Results indicated that oral contraceptive users had significantly higher relative perceived benefit and significantly lower relative perceived risk than did nonusers.

Charupatanapong (1989) applied the concept of risk perception to investigate Thai consumer's risk perceptions of their self-treatment behavior. In this study, the six dimensions of perceived risk (performance, safety, time, financial, social, and

psychological) were used. This study found that performance risk was the most influential risk components in cough and diarrhea symptoms. Concerning respondents' demographic factors, higher income Thai consumers were more likely to perceive higher overall risk and higher performance risk than lower income Thai consumers. Higher educated Thai consumers were more likely to perceive higher overall risk and higher performance risk than lesser educated Thai consumers.

Perceived risk may be derived from one or from a combination of risk dimensions. The importance of various perceived risk dimensions varies widely across different products. According to the study of Charupatanapong (1989), who found that the performance risk was the most powerful risk to self-medication and the study of Lively et al. (1981), who used only physical risk determined risk perception toward drug products. Uncertainty about effectiveness of drugs, adverse effects, and drug interaction may increase risk perception. Therefore, risk perception of OTC drugs in this study could be defined from two dimensions, performance risk and physical risk. These two dimensions were used for constructing questionnaire.

Part VII Research Related to Warning

Several studies have examined the impact of risk disclosure variations in health product advertisements. Risk disclosures were varied in both format and content of these warnings. For example, format of warnings were varied by transmission mode, type size, and message contrast background. Content of warnings were varied by warning specificity and amount of statements. Previous warning research divided by content and format of warnings are shown belows.

Content of warnings

Warning transmission modes

Previous research has found the impact of mode of transmission on recall, risk awareness, and knowledge of risks. Morris, Mazis, and Brinberg (1989) examined consumer risk awareness and knowledge of risks relating to a hypothetical arthritis drug after viewing a television commercial for this drug. The risk information was presented either audibly (by the announcer), or audibly and visually (with written warnings on the television screen). They found that participants in the combined mode were more knowledgeable about product risks than participants in the audio-only condition. Several studies (Barlow & Wogalter, 1993; Smith, 1990) examined the impact of variation in transmission mode of warning on recall. These studies found that the dual-modality of risk messages produced greater recall than the conditions, which had only either audio or visual form. Houston and Rothschild (1980) also found audio-visual warnings in antacid advertisements were more effective than visual-only warnings.

Type size and message contrast background

Studies of the impact of warnings in alcoholic beverage advertising (Barlow & Wogalter, 1993) and tobacco product advertising (Popper & Murray, 1989) indicate that increasing the type size and message contrast background for warnings increases communications. Furthermore, another study suggests that increased size and contrasting colors can add to the communication effectiveness of health warnings/disclosures (Bettman, Payne, & Staelin, 1986).

Format of warnings

Warning specificity

The specificity of the product warnings can also influence information processing. Studies have shown that concrete, vivid, or specific information can be better recalled than abstract, pallid, or general information (Houston & Rothschild, 1980; Kisielius & Sternthal, 1986). According to this “context-availability” model, a warning that has an unambiguous or distinctive meaning (e.g. “a side effect of the drug is gout”) has an available context that is easily elaborated. An ambiguous or vague warning (e.g. “the drug causes serious side effects”) does not have an easily available context, making it difficult for the consumer to form a distinctive memory trace (Schwanenflugel & Shoben, 1983). Moreover, a study of risk disclosures in televised prescription drug advertising to consumers indicates that disclosures of specific risks produced greater risk information awareness and knowledge than disclosures of general risks (Morris, Mazis, & Brinberg, 1989). Tucker and Smith (1987) evaluated the cognition reactions of a sample of adults to different formats of warning information disclosures in printed drug advertisements. They found that drug products whose advertisements contained either no risk information or a general risk disclosure were judged as more “safe” than those products whose advertisements contained disclosure formats with detailed precautionary information. The higher the perceived risk for a given product, the lower the probability the product will be used (Carroll, Siridhara, & Fincham, 1986).

These previous findings indicated that specific messages should be easily elaborated whereas general risk messages should be more difficult to elaborate.

Number of warning statements

When more risk information is presented (up to some limit), an increase in the elaborative processing of the risk is expected. The study of Morris, Mazis, and Brinberg (1989) indicated that the disclosure of longer (four) risk messages produced greater risk awareness than the disclosure of shorter (two) risk messages.

The findings from previous research indicated that both content and format of the messages have certainly influence the way that individuals process warning information. Therefore, factors that have an effect to warning effectiveness in this study were divided into two groups, format and content of warnings. Two experiments were conducted in this study. First experiment examined the effects of format of warning. Second experiment examined the effects of both content and format of warning. The findings from previous warning research were also used to set study hypotheses. Conceptual framework of this study is shown in Figure 2.3.

Figure 2.3. Conceptual framework

