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The role of personal relevance and mood on the persuasive impact of gain and loss frames in advertising messages about a vaccine against alcohol addiction

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**The role of personal relevance and mood on the persuasive impact of gain and loss frames
in advertising messages about a vaccine against alcohol addiction**

by

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A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
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TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM.....	1
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CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK	6
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2.1 Goal framing	7
2.2 Framing health messages	8
2.3 Effects of message framing.....	9
2.4 Framing and mood effects	11
2.5 Personal relevance	13
2.6 Mood as a resource in goal pursuit	15
2.7 Mood as information.....	16
2.8 The Heuristic-Systematic Model and hypotheses.....	17

CHAPTER 3

METHODOLOGY	22
--------------------------	-----------

3.1 Design and participants	22
3.2 Mood induction procedure	23
3.3 Materials: Stimuli and message framing	25
3.4 Measurements: Dependent measures	26
3.4.1 Behavioral intent	26
3.4.2 Judgment	26
3.4.3 Perceived knowledge.....	26
3.4.4 Ad evaluation	27
3.5 Independent measures	27
3.5.1 Personal relevance.....	27
3.5.2 Mood	27
3.5.3 Framing measure	28

3.6 Summary of procedure	28
CHAPTER 4	
RESULTS	31
4.1 Manipulation checks.....	31
4.2 Hypothesis testing	33
4.2.1 Hypothesis 1	33
4.2.2 Hypothesis 2	37
CHAPTER 5	
DISCUSSION	41
CHAPTER 6	
CONCLUSION	46
6.1 Limitations and suggestions for further study	48
REFERENCES.....	51
APPENDIX.....	59
Appendix A	59
Appendix B	60
Appendix C	64

CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

Recognized as a primary chronic disease by the American Medical Association in 1957, alcohol addiction has been known to be influenced by genetic, psychosocial, and environmental factors. The disease, often progressive and fatal, is characterized by impaired control over drinking, preoccupation with alcohol, consumption of alcohol despite adverse consequences, and distortions in thinking, most notably denial. Each of these symptoms may be continuous or periodic (Morse and Flavin, 1992).

It is estimated that about 22 million Americans are addicted to alcohol. A 2007 report by the Centers for Disease Control (CDC) says there are 11 million underage drinkers in the US. In 2005, among drinkers who are 18 years old and over, about one-third reported consuming five or more alcoholic drinks a day during the past year, with the highest proportion among young adults 18-24 years of age (55%). This is classified as “heavy drinking,” defined as five or more drinks per day for men and four or more drinks per day for women (Alkermes, n.d.). From 2002 to 2004, there were, on average, more than 230,000 alcohol-related hospital emergency room visits by adolescents 14-20 years of age (CDC, 2007).

Most addiction treatment involves long-term rehabilitation because relapses can occur anytime.

Advances in brain science, however, have produced innovative ways of treating addiction to alcohol. The latest of these, now under development, are vaccines that would train the immune system to recognize the presence of psychoactive substances, such as alcohol, in the blood stream. Once identified, these substances can be destroyed before they reach the brain and create

the addictive effect (Alkermes, n.d.). The idea is that if a substance does not provide the desired feeling, there is no use for it, and the craving for it ceases.

Vaccines that offer what others call a “quick fix” will have to be marketed effectively through commercial advertisements (Valkenburg, 2003) and through social marketing efforts (“Social Marketing Program Takes on Costly Immunization Issue,” 1998). In cases like these, social marketing principles call for “designing strategies based on [target] audiences’ wants and needs, rather than what good health practice directs they ‘should’ do” (US Department of Health and Human Services, 1992, p.1).

Research in marketing as well as social and cognitive psychology suggests that health messages can be framed either as loss or gain messages (Meyer-Levy and Maheswaran, 2003; Rothman et al., 1999). These studies highlight the effectiveness of loss (i.e., cost) versus gain (i.e., related benefits) frames in messages delivered to audiences under different mood states. Keller et al. (2003) point out that the main effect of loss-framed and gain-framed messages may depend on individual differences in prior behavior (Block and Keller, 1995), prior attitudes (Levin and Chapman, 1983) and level of involvement (Maheswaran and Meyers-Levy, 1990), all of which combine to indicate personal relevance.

These studies suggest that mood states (positive or negative moods) can influence framing effects. But in the case of messages designed for anti-alcohol addiction vaccines using loss and gain frames, level of relevance due to prior personal experience may strengthen persuasive effects irrespective of people’s mood states. For instance, a more meaningful loss could vary persuasion patterns (Isen et al., 1988).

Mood tends to affect the amount of total cognitive elaboration, bias the evaluation of argument quality, and peripherally affect brand attitudes (Batra and Stayman, 1990) and

behavior. Numerous studies show that incidental mood states generally have mood-congruent effects on perception and object valuation. Risks are perceived to be higher under negative moods than under positive moods (Johnson and Tversky 1983; Wright and Bower 1992).

Using an experimental design, this study aims to determine if the impact of gain and loss messages about anti-alcohol addiction vaccines is mitigated by the extent to which the topic is relevant to the audience member. The study examines the interactive effect of framing, mood states (positive or negative mood) and the perceived relevance of the recommended practice to the individual. Specifically, this study investigates how loss and gain frames interact with positive and negative mood and level of personal relevance (low or high).

A communicator “frames” a message in an attempt to persuade a target audience through carefully selected wording of content (Lee and Chang, 2005). This effort is directed at inducing a specific behavior from the audience. Prospect theory holds that people evaluate information regarding uncertain (risky) alternatives in terms of either potential gains (gain framing) or potential losses (loss framing) and that personal preferences can be altered by changing the way information is presented (Smith and Petty, 1996).

People often use their affective state as a source of information when they perceive the world around them. They ask themselves, “How do I feel about it?” (e.g., Schwarz and Clore, 1983, 1988). Then, they infer their liking or disliking of it from their feelings (Forgas, 1995, 2000). The informative role of affect has been shown to influence decision-making (Schwarz and Clore, 1988; Hullet, 2005). In particular, a happy mood informs individuals that the environment is safe and thus may cause them to reduce their motivation to monitor the environment. This may lead to motivational deficits that lessen consumers’ motivation to process a persuasive message

systematically (Bohner et al., 1992). In contrast, the hedonic contingency framework suggests that a positive mood state induces systematic processing of positive information and heuristic processing of negative information. Thus, a person's mood state and how the message was framed can affect message processing.

The extent to which the information is seen as relevant to the individual is another factor that may have a bearing on how information is processed. Information is considered relevant to an individual if it pertains to the self and may prove valuable to a person's well being in the long run (Wegener, Petty, and Smith, 1995). A person's mood state plays a congruent role in formulating judgments based on the perceived relevance of a topic. This is referred to as mood congruency (Mayer et al., 1992).

Mood congruent judgment or evaluations have been examined from two perspectives. One view of the mood-congruent judgment effect is that it is a narrow influence occurring only under some circumstances. According to this view, the effect may be fairly specific to probabilities and evaluations (Johnson and Tversky, 1983) and to self-relevant judgments (Forgas, Bower, and Krantz, 1984; Pietromonaco and Marcus, 1985).

In summary, this study intends to contribute toward clarifying the relationship between and among mood states, the relevance of the issue to the individual, and message frames so as to deploy more persuasive health-related messages and to more effectively communicate health risks.

So far, there has been a lack of solid evidence regarding the interactive effects of mood states, self-relevance and message valence on information processing (Raghunathan and Trope,

2002). This study attempts to explore the interaction of these factors to better understand how risk information is processed.

To better understand the idea, a review of the past literature is best warranted.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Alcohol addiction is a chronically relapsing brain disorder. During the past decade, many have explored the feasibility of using intervention methods, including rehabilitation, to remedy alcohol addiction, There is an urgent need for new treatment options for this disease because the relapse rate among alcoholics seeking treatment is quite high (Foster, 2009). Vaccines, a relatively new mode of treatment, work by inducing drug-specific antibodies in the bloodstream that bind with alcohol and prevent its entry into the brain (Kantak, 2003). This study examines how people in a positive and negative mood state process advertisements that emphasize either the benefits of taking some action or the losses due to inaction based on the extent to which they consider alcohol addiction relevant to their lives.

Media practitioners have long argued that health-related messages have different impact on people depending on how they are framed. Scholars such as Rothman et al. (2006) postulate that gain-framed appeals are more effective when targeting behaviors that suggest the prevention of something bad coming out of it, whereas loss-framed appeals are more effective when targeting behaviors that emphasize the loss of something valuable because of unhealthy behavior (Rothman et al., 2006). Through these findings, we consider how message frames may affect anti-alcohol related types of health behaviors and identify the need to understand better the processes that shape how people construe the recommended behavior. Alcohol addiction exposes individuals to health risks. This health-risk behavior, like smoking and excessive dieting, can be changed (Minugh et al., 1998) through preventive health practices such as getting vaccinated.

Message framing is usually goal driven. The goal is to induce a suggested action or behavior from the target audience.

2.1 Goal Framing

Advertisements that aim to persuade audiences to practice recommended behaviors might frame their messages in two ways. According to Levin (1987), these frames can focus on positive product or practice attributes or the benefits that can be gained from product use (gain frames). Frames can also focus on negative product attributes or the benefits lost by not using the product or not practicing the recommended behavior (loss frames). This practice is called goal-framing.

In goal framing, the focus is on how the presence or absence of behaviors relate to the attainment or non-attainment of goals (Krishnamurthy, Carter, and Blair, 2001). Goal framing is in effect when a persuasive message can stress the positive consequences of performing an act to achieve a particular goal or the negative consequences of not performing the act (Levin et al., 2002). For example, when patients are told that mammograms are the best method for early detection of breast cancer, they are shown how getting a mammogram is related to the goal of early cancer detection (Rothman and Salovey, 1997). When patients are told that not getting a mammogram fails to take advantage of the best method for early detection of breast cancer, they are shown how not following this recommendation leads to a lost opportunity to reach a healthy goal (Krishnamurthy, Carter and Blair, 2001). A common finding in literature is that negative or loss frames are more effective than positive or gain frames although the evidence to support such a contention is not very strong (Krishnamurthy et al., 2001). Levin, Schneider and Gaeth (1998) cite studies that attribute greater effectiveness of loss frames in the context of breast self-examination (Meyerowitz and Chaiken, 1987), evaluation of prizes or jobs (Tversky and

Kahneman, 1991), and mammography screening (Banks et al., 1995). The observation that the negative message (loss frame) is more persuasive has been linked to "loss aversion," a phenomenon whereby most people are more motivated to avoid a loss than to achieve a gain of the same magnitude (Levin et al., 2002). But other studies failed to find such effects in the areas of breast self-examination (Lalor and Hailey, 1989 and 1990), treatment of breast cancer (Siminoff and Fetting, 1989), and follow-ups for abnormal pap-smear test results (Lauver and Rubin, 1990).

The majority of studies that examine the impact of message framing on knowledge, attitude and behavior can be found in the health area (e.g., for AIDS, see Levin and Chapman, 1983; for breast self-examination, Meyerowitz and Chaiken, 1987 and Meyerowitz, Wilson, and Chaiken, 1991; for coronary heart disease, Maheswaran and Meyers-Levy, 1990; for skin cancer, Block and Keller, 1995; and for mammography, Banks et al., 1995).

2.2 Framing Health Messages

Health behavior-related communication can emphasize the benefits of taking an action (gain-framed appeal) or the costs of failing to take an action (loss-framed appeal). Rothman et al. (2006) suggest that gain-framed messages can refer to both—the good things that can happen and the bad things that will not happen—whereas loss-framed statements can refer to bad things that will happen and good things that will not happen. A series of reviews by Levanthal (1970) and Witte (1992) have explored the impact of fear appeals on health-related behavior. However, the framing postulates of prospect theory (Kahneman and Tversky, 1981) motivated the concentration on how framed information can affect people's behavioral decisions.

According to prospect theory, people's preferences are sensitive to how information is framed (Rothman et al., 2006). The theory posits that people tend to avoid risks when considering potential gains afforded by a decision (risk averse behavior), but are willing to take risks when considering the potential losses afforded by their decision (risk-seeking behavior).

The empirical basis for this postulate rests primarily on responses to hypothetical decision scenarios framed in terms of gains or losses (Rothman et al., 2006). Rothman and Salovey (1997) proposed a link between prospect theory and the framing of messages. They suggested that predictions regarding the relative influence of gain-framed and loss-framed messages on health behavior could be derived from the conceptual framework outlined in prospect theory. Traditionally, research that applied prospect theory as the framework has operationalized risk as the probability that a particular outcome might occur (Rothman et al., 2006). In this scenario, people are forced to choose between the two alternatives—one that offers a certain outcome and one that offers an uncertain outcome. Health messages typically do not contest choices between two different behavioral options but instead advocate either engaging or not engaging in a given behavior. The resultant outcome of this behavior, which is classified as risk-seeking or risk-averse, is of primary concern. Such postulates can be used to predict if gain-framed or loss-framed messages are more persuasive.

2.3 Effects of message framing

O'Keefe and Jensen (2007) observed that there are differences in how certain types of disease prevention behaviors are interpreted. Consequently, gain-framed messages may be differentially effective. For example, they suggest that dental hygiene behaviors may be construed as a prevention behavior with more certain outcomes (the conditions under which a

gain-framed message will be most persuasive), whereas getting a flu shot may be construed as a prevention behavior with less certain outcomes (conditions under which a loss-framed message may be most persuasive). These findings suggest that risk implications are an important consideration when framing messages. Research in this area, however, indicates that these implications should be considered at the level of the individual rather than at the level of behavior type (Latimer, Salovey and Rothman, 2007). Specifically, the effectiveness of framed messages hinges on how the individual thinks and feels about the behavior. In a nutshell, effective health messages should communicate information relevant to the behavioral issue at hand, and there is a growing consensus that there is value to improving the correspondence between the content of a health message and an individual's prevailing concerns (Prochaska, DiClemente, and Norcross, 1992).

Rothman and Salovey (1997) suggest that predictions regarding the relative influence of gain- and loss-framed messages on health behavior can be derived from the axioms of prospect theory. If people are more willing to take risks when faced with loss-framed information, but are more risk averse when faced with gain-framed information, the influence of a given frame on consequent behavior is perceived to reflect a risk averse or risk-seeking course of action (Rothman et al., 2006). Based on prospect theory, a behavior is determined as risk seeking or risk averse depending on the choice a person makes when confronted with two alternatives—one that offers a more certain outcome and one that offers an uncertain outcome (Rothman et al., 2006). Based on whether a health-related behavior decision is risk seeking or risk averse, Rothman and Salovey (1997) and Rothman et al. (2003) offer predictions as to when gain-framed or loss-framed health appeals are most persuasive. According to them, when people are considering a behavior they perceive as involving some risk of an unpleasant outcome (e.g., the detection of a

health problem), loss-framed appeals should be more persuasive. When people are considering a behavior they perceive as involving a relatively low risk of an unpleasant outcome (e.g., the prevention of a health problem), gain-framed appeals should be more persuasive.

A series of studies has shown that loss-framed appeals are more effective than gain-framed appeals in promoting interest in and the utilization of screening mammography and breast self-examination (Banks et al., 1995; Cox and Cox, 2001; Finney and Iannotti, 2002; Meyerowitz and Chaiken, 1987; Schneider et al., 2001) as well as colorectal cancer screening (Myers et al., 1991; see Edwards et al., 2001 for a review). To date, no study has shown gain-framed appeals to be more effective than loss-framed appeals in promoting cancer-screening behaviors. Because of the emphasis on the behavior's ability to inform people about the effects, choosing to initiate the behavior maybe considered a risky decision. Hence, most effects of message framing are directed toward the way decisions are made and the way behaviors are influenced by these decisions.

2.4 Framing and Mood Effects

Research on message framing suggests that audience response depends on the way an argument is posed as much as on the objective features of the argument (Tversky and Kahneman, 1981). Gain-framed messages emphasize the benefits and advantages of performing a suggested behavior. Conversely, loss-framed messages emphasize the harmful effects and disadvantages of not performing the suggested behavior. As such, loss-framed messages focus on adverse consequences and forgone benefits. Most studies about the effects of message framing in health communication suggests that when people process messages systematically, loss frames, which highlight the undesirable consequences of not practicing the recommended behavior, seem less

effective than gain frames (Keller et al., 2003; LaTour and Rotfeld, 1997). This maybe because messages reach people who are either in a positive or negative state of mind, and this state of mind seems to mitigate the impact of framed messages. The terms “positive” and “negative” describe two ways of representing peoples’ emotional states (Block and Keller, 1995) that are instrumental in determining the way in which the message is evaluated cognitively.

In general, according to Schaller and Cialdini (1990), people in a positive mood will choose to attend to information likely to maintain their positive mood, whereas people in a negative mood will be motivated to repair their mood by attending to information that will uplift them. Schaller and Cialdini (1990) call this the mood-maintenance/mood-repair explanation. This explanation agrees with the axioms of the hedonic contingency theory, which suggests that people in a positive mood will be motivated to process uplifting messages and avoid depressing or negative information (Wegner and Petty, 1994). The hedonic contingency framework predicts that people in a positive mood prefer gain-framed messages to loss-framed messages, but that framing effects are weaker or become insignificant when people are in a negative mood (Keller et al., 2003).

Previous studies (Isen and Geva, 1987; Isen and Patrick, 1983) have produced compelling evidence that people in a positive mood consider negative information carefully as demonstrated by the prudent risk-related decisions they often make after exposure to such messages. Along the same lines, a study by Wegener, Petty and Smith (1995) also suggests that loss frames have the ability to uplift people in a positive mood if these people are more concerned about maintaining their mood state in the long run rather than just their immediate positive mood. Negative mood, however, has been shown to promote systematic processing of information that, in turn,

decreases stereotypic judgments (Lambert et al., 1997). Moreover, people in a positive mood who typically engage in heuristic processing are able to process information systematically when instructed to do so (Queller, Mackie and Stroessner, 1996) or when counter-stereotypic information motivates them to do so (Bless, Schwarz and Wieland, 1996). In short, message framing can be operationalized either by focusing on positive product attributes or benefits gained through product use or by focusing on negative product attributes or benefits lost by not using the product (Levin, 1987).

Which of these two frames—the loss frame or the gain frame—is more effective in persuading people to practice a recommended healthy behavior? A study by Maheswaran and Meyers-Levy (1990) suggests that motivation comes from involvement and that negative (loss-framed) information is perceived to be more informative than a comparable positive (gain-framed) information. The central idea is that a positive mood serves as a resource when information is diagnostic of an important aspect relating to the self (i.e., the information is highly self-relevant). Hence, individuals in positive moods elaborate more on negative but self-relevant information compared with those in a negative mood (Raghunathan and Trope, 2002).

2.5 Personal Relevance

Personal relevance in an attitude object is “the extent [to which] consumers perceive the object/objective to be self-related or in some way instrumental in achieving their personal goals and values” (Celsi and Olson, 1988). Personal relevance is an essential characteristic of involvement which has commonly been examined in attitude research (Petty and Cacioppo, 1981; Zaichkowsky 1985) and in studies of argument-based persuasion (Claypool et al., 2004; Petty et al., 1981).

The extent to which information is perceived as relevant to one's personal condition can also influence the persuasiveness of a message under different mood states. Several studies (e.g., Linville, Fischer, and Fischhoff, 1993; Banks et al., 1995; Jones, Sinclair, and Courneya, 2003; Rothman and Salovey, 2006) suggest that a person's involvement with a health issue may affect the impact of message framing on behavior. In accordance with the dual process models of persuasion (Eagly and Chaiken, 1993; Petty and Wegener, 1998), Rothman and Salovey (1997) proposed that framing effects may only be obtained when people care about a health issue and are thus systematically processing the message. Consistent with this perspective, several studies have found framing effects only when people are involved with the issue (e.g., Millar and Millar, 2000). This self-relevance of an issue can influence the process of evaluation, and consequently, a person's response to the message. Thus, those who are highly involved with an issue are likely to process relevant messages in detail (Petty and Cacioppo, 1983). They carefully scrutinize message content to increase their knowledge of the merits of the issue and equip them with a greater ability to judge the validity of an advocated plan of action (Maheswaran and Meyers-Levy, 1990). Atkin (1979) posits, however, that such a contention is tenuous because researchers still lack a thorough understanding of the basic processes that mediate persuasion and adaptive responses (Kirscht, 1983). The question then becomes—does positive mood affect the processing of high or low self-relevant information?

The persuasion literature offers insights into this area of information processing. For example, Chaiken (1980) and Petty and Cacioppo (1983) suggest that under low involvement conditions, people are unlikely to scrutinize message arguments diligently and integrate their related thoughts and beliefs into an overall attitude toward the message and hence, toward the purpose of the product. Wright (1981) explains this idea more precisely: "Greater weight and

influence may only occur when an audience member is sufficiently concerned about the message content to bother generating reactions and integrating those into an overall impression, and to worry about making errors” (pp. 279-280).

Personal relevance can hence be a motivating factor that can influence a message’s persuasive effects. That is, the level of personal relevance (high or low) can define the level of influence the framed message can have on people.

2.6 Mood as a Resource in Goal Pursuit

The mood-as-a-resource theory suggests that happy people rely on positive moods as a resource to help them deal with aversive but potentially useful negative feedback (Trope and Neter, 1994). However, when feedback is uninformative or unreliable, a happy mood produces the opposite reaction as people become more protective of their positive moods (Aspinwall, 1998; Nygren et al., 1996).

Positive mood may serve as a resource in a way that a threshold of positive feelings about oneself should be reached in order to pursue goals in the face of a threat to self-esteem (Aspinwall, 1998; Aspinwall and Burnhart, 1996; Reed and Aspinwall, 1998; Trope and Neter, 1994; Trope and Pomerantz, 1998). Trope and Neter (1994) found that positive mood enhanced their participants’ interest in weakness-related feedback compared to strength-related feedback. They see these results as evidence that positive mood states serve as resources or means for coping with the immediate mood costs of feedback about weaknesses, thus increasing individuals’ interest in valuable information for future improvement. Similarly, Raghunathan and Trope (2002) investigated how positive mood serves as a resource when individuals are

confronted with persuasive messages. They found that positive mood enhanced the effect of negatively framed messages on individuals' memory and attitudes when those messages were relevant to strong caffeine consumers, but less so when the messages were not relevant to modest caffeine consumers.

These studies on mood-as-a-resource suggest that positive mood increases an individual's interest in information that serves learning goals such as self-assessment and self-improvement. The findings suggest, however, that the effect of positive mood is more pronounced when information is relevant to the self (Reed and Aspinwall, 1998). Thus, it can be surmised that positive mood may serve as a resource or as a goal, depending on the usefulness of the available means. When people are in a positive mood, they may be particularly sensitive to the usefulness of the means to achieve their goals (Trope, Igou and Burke, 2006).

2.7 Mood as Information

Cialdini, Darby and Vincent (1973) proposed that individuals experiencing sad moods are motivated to relieve their unpleasant mood state and, therefore, engage in activities capable of relieving their sad mood. Such attempts at affect repair have been found to involve not only behavioral strategies (Cialdini et al., 1973; Schaller and Cialdini, 1990), but also cognitive strategies (Boden and Baumeister, 1997). In an extension of this study, Lassiter, Koenig and Apple (1996) suggested that sad individuals may evoke a cognitive strategy in which they are motivated to effortfully process positive (i.e., mood-elevating), but not neutral or negative (i.e., non-mood-elevating) behavioral information. Specifically, if sad participants are shown a positive behavioral sequence, they extract as much positive information from this sequence as possible because doing so could potentially enhance their mood. However, if sad participants are

shown a neutral or negative behavioral sequence, they are not particularly motivated to attend to the presented information because doing so would not readily elevate their mood. Therefore, sad participants have little motivation to seriously process non-positive information (Hertel and Hardin, 1990).

A study by Schwarz (1998) highlighted that human judgment is not always based on accessible declarative information, but on the experienced ease or difficulty of recalling an issue, thus establishing subjective accessibility experiences as a distinct source of information. However, bringing examples to mind can be influenced by the mood. The effects of pre-existing moods can influence judgment and thus induce a feeling of effort in processing a message (Schwarz and Clore, 2003)

2.8 The Heuristic-Systematic Model and Hypotheses

Goal framing studies that involve persuasive communication generally examine how people's judgments of an advocated position, act or object may differ as a function of how the message is framed (Meyers-Levy and Maheswaran, 2004). Maheswaran and Meyers-Levy (1990) proposes that messages expressed using gain versus loss frames can differ in their persuasiveness depending on whether individuals employ systematic or heuristic methods to process messages. In the current study, messages that are gain-framed stress the benefits that can be gained if one accepts a suggested course of action. Loss-framed messages stress either the negative consequences that can be incurred or the benefits that can be lost if one does not accept or follow the suggested course of action. Hence, negative or positive information is received by audience members depending on how it is framed. How the receiver processes this message based on personal relevance also determines the persuasiveness of the message. Thus, it is hypothesized that:

H1(a): *To those for whom the message is of high personal relevance, a loss-framed message is more effective than a gain-framed message if they are in a positive mood than in a negative mood.*

According to the mood-as-a-resource hypothesis (Raghunathan and Trope, 2002), positive moods may act as a buffer against the mood costs of negative information, enabling individuals to focus on the knowledge they gain from the information. As a result, the weight of long-term information gains relative to the weight of immediate mood costs conveyed by the information should be greater when people are in a positive mood rather than in a negative mood (Raghunathan and Trope, 2002). Previous research (e.g., Estrada et al., 1994; Isen and Reeve, 1992) also suggest that positive-affect conditions appeared relatively less influenced by the extrinsic motivator and was ignited more by the intrinsic motivator (interest). Personal relevance can be said to be an intrinsic motivator. That is, the level of personal relevance (high or low) can determine the level of interest in the task. Hence, high personal relevance (high interest) can be more effective when one is in a positive mood (affect state).

According to the mood-as-a-resource hypothesis, a positive mood facilitates elaborate processing of negative self-relevant information. This indicates that the effectiveness of a loss-framed message can be higher when the message is better processed, and that this processing of the loss-framed message is more likely to occur when a person is in a positive mood. Thus, to those for whom alcohol addiction is a relevant issue, a message with a loss frame will be more effective if they are in a positive mood at the time of message exposure. Thus, it is hypothesized that:

H1 (b): *To those for whom the message is of low personal relevance, gain-framed messages are more effective than loss-framed messages when they are in a negative mood than in a positive mood.*

Negative mood, which signals that something is wrong or amiss, motivates an individual to process information more elaborately (Raghunathan and Trope, 2002) and hence lead to behavior which is a result of evaluating the information thoroughly.

Evaluating the information thoroughly can happen even in case of low personal relevance. Taylor (1991) suggests that negative mood causes systematic processors to assign greater weight to information during judgment formation. In such a case, messages are elaborately processed even if the issue is of low personal relevance. Regardless of personal relevance, however, mood determines which type of information is processed better, consistent with mood-as-a-resource hypothesis. That is, gain-framed information is processed better because positive mood is still the goal. Meyers-Levy and Maheswaran (2004) support the theory by showing that when personal relevance of a message is low, gain- versus loss-framed message is likely to be more persuasive. A negative (loss-framed) message can cause further depletion of mood; hence, a positive (gain-framed) message is likely to be preferred by those in a negative mood.

Thus, when the information is not perceived to be self-relevant, a gain-framed message will be preferred to repair the mood and for the information to be processed elaborately. This, in turn, makes it more likely for receivers to follow the suggested course of action. It is therefore hypothesized that:

H2(a): *To those for whom the message has high personal relevance, gain-framed messages are more effective than loss-framed messages when they are in a negative mood.*

Although mood is affected by other factors, positive and negative moods may be the dominant motivators of various types of behavior. Literature suggests that this can be tapped by providing different kinds of information to individuals experiencing a particular mood state (e.g., Lazarus, 1991 and Schwartz, 1990). Raghunathan and Trope (2002) suggest that negative mood depletes the resources needed to cope with information related to health risks, thus leading consumers for whom an issue is highly relevant to focus on the benefits of the issue, perhaps in an attempt to improve their mood. This idea is consistent with the mood-as-information hypothesis which Raghunathan and Trope suggest is a derivative of the mood-as-resource hypothesis. In both instances, mood serves as a goal. According to mood-as-information hypothesis, negative mood induces elaborate information processing.

As mentioned, people in a negative mood lack the resources needed to cope with the mood costs of negative information. Hence, people in negative mood may want to repair their mood by following the gain-framed information rather than spoiling their mood further by focusing on the loss of benefits often found in loss-framed information. Thus, because negative mood decreases the confidence to deal with the harmful impact of negative self-relevant information, those in a negative mood tend to concentrate on positive information. This idea is also supported by the findings of Reed and Aspinwall (1998), which suggest that the effect of negative mood is more pronounced when information is seen as relevant to the self.

Thus, it can be surmised that to those for whom alcohol addiction is a relevant issue, a gain-framed message will cause them to adopt the suggested behavior if they are in a negative mood state when they are exposed to the message. It is therefore hypothesized that

H2(b): *To those for whom the message has low personal relevance gain-framed messages are just as effective as loss-framed messages if they are in a positive mood.*

The mood-as-a-resource hypothesis proposes that mood may determine how the self-control dilemma is resolved (Aspinwall, 1998; Trope and Neter, 1994). Self-control dilemma involves resolution of a decision which is determined based on the appraised value of an object/objective. Scarcer the object/objective, the more value it has (Cialdini, 1984). The perceived relevance of the information determines how individuals use it to assess their current status and to guide future decisions and improvement efforts (Dunning, 1995; Trope, 1975 and 1986; Trope and Neter, 1994). Highly relevant information may uncover liabilities and thus threaten self-esteem and people's sense of adequacy (Brown, 1990; Dunning, 1995; Raghunathan and Trope, 2002). Hence, behavior that results from the processing of highly relevant information brings into play other factors such as mood effects and message frame effects. Negative mood, according to the mood-as-a-resource hypothesis, is a significant driving factor, an idea that is consistent with the mood repair theory.

To those for whom the message has low personal relevance, the above-mentioned risks (i.e., liabilities consciousness, self esteem loss, etc.) do not drive information processing. This is supported by the mood-as-a-resource hypothesis, which suggests that positive mood acts as a buffer against the mood costs of loss-framed information (Raghunathan and Trope, 2002).

Thus, when the relevance of a message or issue is low among those in a positive mood, the frame of the message will not have a significant impact on the way they process the message. In such a case, how the message was framed will not be a influential factor in the determining whether a person follows the recommended practice.

A comprehensive study was required to assess the effects through interaction of the relevance of a message in a particular frame to a subject in a certain mood condition. Experimental study was one way to create suitable conditions required to drive the independent variables. The methodology thus follows.

CHAPTER 3

METHODOLOGY

Data for this study were gathered by conducting an experiment the purpose of which was to examine the impact of mood state and personal relevance on risk message framing (i.e., gain vs. loss frame). The idea was to test how positive and negative mood states influence how the message has been framed when the message is seen as having either low or high personal relevance.

3.1 Study Design and Participants

The experiment utilized a 2 (mood states: positive vs. negative) x 2 (message frame: gain vs. loss) x 2 (personal relevance: low vs. high personal relevance) between-subject factorial design.

To test the hypotheses outlined in Chapter 2, 242 undergraduate students (N = 242) were recruited for the study. They were informed that the experiment aims to determine the acceptability of an upcoming vaccine for alcohol addiction. They were told that their participation should be voluntary. The students signed an informed consent form before participating in the actual experiment. How the study perceives alcohol addiction was defined to the subjects so as to ensure uniformity in the understanding of the term “addiction.” Then, they were randomly assigned to the experimental treatments. Each cell size for the moderated conditions was ≥ 30 subjects.

Table 1. Condition diagram of the study's 2 x 2 x 2 factorial design

	HIGH RELEVANCE		LOW RELEVANCE	
	GAIN FRAME	LOSS FRAME	GAIN FRAME	LOSS FRAME
POSITIVE MOOD	I	II	III	IV
NEGATIVE MOOD	V	VI	VII	VIII

Hypotheses representation:

H1(a): II > I and **H1(b):** VII > VIII

H2(a): V > VI and **H2(b):** III = IV

3.2 Mood Induction Procedure

The mood induction process was adopted from the procedure applied by Raghunathan and Trope (2002), which is similar to the one used by Trope and Neter (1994). To induce the participants' mood state, they were first told they had to take the Lateral Thinking Ability Test (LTAT) for a university study. They were then told that people with greater lateral thinking ability tend to be more successful in their work and thus tend to achieve greater success in life. The students were given five minutes to complete the Lateral Thinking Ability Test (LTAT) questionnaire. The items in this test were randomly chosen from various laterally challenging

questions available on the Internet.

Upon finishing the test, the participants were asked to wait for five minutes while their responses were checked. Once randomly assigned into positive and negative mood conditions, they were informed of their test scores. Those assigned to the positive mood condition were given high LTAT random scores; those assigned to the negative mood condition were given low LTAT random scores. The assumption is that those who received low scores will go into a negative mood state, whereas those who received high LTAT scores will have a positive mood.

To ensure that this mood manipulation procedure worked, a pre-test was conducted. To measure the participants' mood, a question item adopted from Raghunathan and Trope (2002) was used. Here, participants were asked estimate of their current feeling ("happy," "sad," "pleasant" and "bad") on a seven-point Liker scale in which 1 means "very slightly" and 7 means "extremely." This question was asked at the end of the questionnaire so that direct mood states due to any framing effect can be discounted. Following Schwarz and Clore (1983), to assess the causal attributions for their momentary mood, students were asked after the main experiment if their current mood was because of the LTAT test result or if it was because of the advertising brochure.

After taking the LTAT test, the students were told to participate in a second study in which they were required to present their opinions on an advertising study for the university's Student Health Center.

3.3 Materials: Experimental Stimuli and Message Framing

The experimental stimulus was an advertising brochure prepared for an anti-alcohol addiction vaccine. To ensure authenticity, the brochure was designed by an advertising

professional (Appendix 3). The brochure contained information about the vaccine. The call-for-action content was phrased in gain and loss frames.

Two versions of the advertisement brochure were created. One version had the gain-framed message and the other featured a loss frame message. Four message frame / mood state conditions (gain framed message positive mood vs. gain framed message negative mood vs. loss framed message positive mood vs. loss framed message negative mood) were tested.

The gain and loss message framing manipulation was based on how messages were framed in Keller's (2003) study. Information containing the gain frame stressed the following benefits accruing to those who elect to be vaccinated: (1) regained confidence, (2) regained important relationships, (3) freedom from guilt caused by dependence on alcohol; (4) reduced reasons and excuses to resort to alcohol.

The loss-frame message emphasized the disadvantages of not taking the vaccine. Specifically, these messages stressed that not getting vaccinated will lead to (1) further erosion of confidence, (2) more troubled relationships, (3) greater feelings of guilt because of uncontrolled dependence on alcohol, and (4) more rationalization for resorting to alcohol.

The framed information shown on page 3 of the brochure's inside panel and was the only information that was different in the two versions of the brochure. Students were given five minutes to read the brochure. after which they were asked to return the brochures to the experimenter before answering the questionnaire.

After completing this task, the students were debriefed and thanked for their participation. During the debriefing, they were told that the results of the Lateral Thinking

Ability Test were manipulated to induce mood and are therefore not valid representations of their lateral thinking potential.

3.4 Dependent Measures

3.4.1 Behavioral intent: The key dependent variables in this study were behavioral intention and message judgment. Behavioral intention was measured by asking study participants to indicate their agreement with each of the following statements: “I intend to try the vaccine” and “I would recommend the vaccine to others.” They were asked to rate their responses on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). These items were used to measure behavioral intent (“do not intend to try and/or recommend the vaccine,” “intend to try and/or recommend the vaccine”) (Cronbach’s alpha $\alpha = 0.86$) (Keller et al., 2003).

3.4.2 Judgment: Message judgment was measured similarly on a seven-point scale ranging from “strongly disagree” to “strongly agree” as adapted from Keller, Lipkus and Rimer (2003). The participant’s response was noted for the statement “I think *Addictocure* can be effective in curing alcohol addiction.” This was measured for two items on message judgment (“The vaccine cannot cure alcohol addiction” and “The vaccine can cure alcohol addiction”).

3.4.3 Perceived knowledge: Perceived knowledge was measured by asking participants to estimate whether the vaccine is a possible cure for alcohol addiction and the perceived effectiveness of the vaccine in curing alcohol addiction on seven-point scales where 1 meant “strongly disagree” and 7 meant “strongly agree” (Cronbach’s alpha $\alpha = 0.84$) (Trope and Neter, 1994).

3.4.4 Ad evaluation: Participants were asked if the advertisement brochure caught their attention. Their understanding of the message was checked based on their perception.

Participants also evaluated whether the message was accurate, credible, and trustworthy on a seven-point scale, whether they thought the brochure was convincing, and whether they thought the brochure contained an important message (1 = “strongly disagree” and 7 = “strongly agree”).

3.5 Independent Measures

3.5.1 Personal relevance: Personal relevance was measured by the students’ responses to the following questions: “I know someone who could use this vaccine,” “I am addicted to alcohol,” “I think I am addicted to alcohol,” “I know someone who is addicted to alcohol,” and “I think I know someone who is addicted to alcohol.” The response range to these items was 1 to 7 in which 1 means “strongly disagree” and 7 means “strongly agree.” In this study, responses 3, 4 and 5 were not considered valid measures of personal relevance. Scores 1 and 2 towards “strongly disagree” were seen as perceptions of low personal relevance, whereas scores 6 and 7 towards “strongly agree” qualified as indicating high personal relevance.

3.5.2 Mood: Mood was measured right after the results of the LTAT test were announced. They were measured based on the participants’ self-evaluation of their mood. This was measured using four seven-point Likert scales ranging from “very slightly” to “extremely”. The points of measure were “happy, sad, pleasant and bad.” Mood state was verified on the main questionnaire with participants responding to the same scale and points of measures. Students whose responses matched on both evaluations qualified for final data analysis. Source of mood was validated by asking participants the extent to which they agree whether their mood was due to the LTAT test

or their exposure to the advertisement brochure. The response items to these seven-point Likert scale items ranged from 1 “strongly agree” to 7 “strongly disagree.”

3.5.3 Framing: On the questionnaire, participants were asked to indicate whether the information they received emphasized the advantages of taking the vaccine, the disadvantages of not taking the vaccine, or neither the advantages nor the disadvantages of taking the vaccine. The idea is to understand the underlying process of framing effects for those in influential mood states.

3.6 A Summary of Procedures

Two hundred and forty two undergraduate students were recruited for this experiment. They were invited to an experimental room and were asked to take the LTAT test. Because participation should be voluntary, those who wished to withdraw from the test were allowed to do so. Those who stayed were asked to sign an informed consent form before the experiment.

The purpose of the LTAT, supposedly a measure of lateral thinking ability, was to induce a mood state among the participants, a process adopted from Raghunathan and Trope (2002). The results are supposed to indicate the extent to which they will succeed in their chosen careers. The process involves using a LTAT to measure lateral thinking ability of a participant. Depending on the randomly allocated test results, the participants were told if they can succeed in career or not. Those who were given low scores on this test were expected to have a negative mood; high test scores are supposed to place student-participants in a positive mood.

Based on their assumed mood states, the students were invited to participate in a second experiment in which they were asked to evaluate an advertising brochure developed for a vaccine

that is supposed to cure alcohol addiction. They were asked to read the brochure two versions of which were prepared. The first version contains a message framed using the gains or benefits accruing from getting vaccinated. The other version contains a message framed using the losses one might incur from not using the advertised vaccine.

In the second experiment, participants were randomly assigned to eight experimental conditions. Then, they were asked to look read the brochure assigned to them according to their assigned experimental condition. They were given some time to study the brochure which they returned later to the experimenter. The participants were then administered a common questionnaire which measured framing effect, level of personal relevance, behavioral intent, perceived knowledge about the vaccine, message credibility, and mood state.

Basic demographic data were also collected from the participants. Then, they were debriefed about the experiment. During the debriefing session, they were informed that the Lateral Thinking Ability Test scores were manipulated to induce specific moods, and hence should not be considered as valid measures of their actual potential. The participants were thanked for their participation before they were allowed to leave.

Analysis of results from the above experiment revealed some interesting data which is presented in the following chapter.

CHAPTER 4

RESULTS

This study aims to determine the impact of gain- and loss-framed messages about an anti-alcohol addiction vaccine as influenced by the extent to which the topic is perceived as relevant to the audience member. The study examines the influence of framing depending on mood states (positive or negative mood) and the extent to which the message is considered to be personally relevant.

The experiment utilized a 2 (mood states: positive vs. negative mood) x 2 (message frame: gain vs. loss) x 2 (personal relevance: low personal relevance vs. high personal relevance) between-subject factorial design.

Two hundred and forty two students ages 18 to 21 were asked to volunteer for this study. The sample size was almost equally distributed across gender ($M = 0.51$, $SD = 0.53$). A study by Raghunathan and Trope (2002) showed no effects based on gender, the reason why this variable was dropped from the analyses.

4.1 Manipulation Checks

A reliability analysis was performed on pre-measured mood vs. induced mood.¹ The analysis revealed a main effect for mood states [positive mood: $M = 5.92$, $SD = 0.60$; negative mood: $M = 2.51$, $SD = 0.59$]; $F(1, 241) = 3.84$, $p < 0.05$], suggesting that the mood that was

¹ *Pre-measured mood* was the pre-assigned mood to participants and was presumed that a *pass* in LTAT would induce a positive mood and a *fail* would induce a negative mood.

Induced mood was the self-evaluation by the participant when they responded to the questions asking them of their mood state.

induced through the results of LTAT test matched the actual mood intended to be induced among the participants. When the participants were told of positive test results, their mood was raised ($M = 5.75$, $SD = 1.0$), indicating a strong inclination towards feeling “extremely positive.” When informed of bad test results, participants experienced a low mood [$M = 1.38$, $SD = 0.54$]²; $F(1, 241) = 10.98$, $p < 0.01$]. This suggests that the negative mood condition is more associated with a stronger behavioral intention than the positive mood condition. The results were consistent with the mood manipulation.

Participant’s evaluation of the advertising brochure was examined to confirm that brochures differed only in terms of how the health information was framed. Analyses revealed that participants’ ratings of the quality of the brochure were affected by the framing manipulation [$F(1, 241) = 10.36$, $p = 0.01$], by the type of frame emphasized in the brochure ($F < 1$) and / or by the interaction between these two factors ($F < 1$).

To assess whether the framing manipulation was perceived as intended, participants rated whether the brochure emphasized the benefits associated with following the suggested behavior or the costs associated with not following the suggested behavior. Participants in the loss-framed condition judged the brochure as emphasizing costs more than the benefits ($M = 4.32$, $SD = 0.56$), whereas participants in the gain-framed condition judged the brochure as emphasizing benefits over costs [$M = 1.21$, $SD = 0.51$]; $F(1, 241) = 10.11$, $p < 0.01$]. No other effects on these measures were found to be statistically significant.

Personal relevance check

Reliability analysis was performed to analyze if alcohol addiction was of personal relevance to the participants. The results revealed significant main effects. That is, the

² The mean for negative mood was reverse coded for items *Sad* and *Bad*.

participants assigned personal relevance to the issue based on whether they judged themselves as addicted to alcohol or whether they knew someone addicted to alcohol. Those who said they did not know anyone addicted to alcohol ($M = 1.69$, $SD = 0.57$) saw the topic as having low relevance, whereas those who agreed to knowing someone with alcohol addiction ($M = 5.96$, $SD = 0.56$); $F = 11.01$, $p < 0.01$ found the topic to be highly relevant.

4.2 Hypothesis Testing

Univariate analysis was used to examine the between subject effects for frame x mood state x self-relevance in the given conditions.

4.2.1 Hypothesis 1

H1(a): *To those for whom the message is of high personal relevance, a loss-framed message is more effective than a gain-framed message if they are in a positive mood than in a negative mood.*

H1 (b): *To those for whom the message is of low personal relevance, gain-framed messages are more effective than loss-framed messages when they are in a negative mood than in a positive mood.*

Behavioral intentions

Using behavioral intentions as the dependent variable, the between-subject effects for the above conditions were analyzed. An analysis of variance (ANOVA) test was used for this measure. Behavioral intention was a combined measure of propensity to recommend the vaccine and an inclination to seek more information about the vaccine.

To assess if mood state and message frame varied in terms of the degree to which they were associated with self-relevance, a 2 (positive/negative mood state) x 2 (gain/loss message frame) x 2 (low/high self-relevance), an ANOVA was performed. The results revealed a significant main effect of self-relevance on behavioral intention. Specifically, high self-relevance ($M = 5.68$, $SD = 0.51$) led to a stronger behavioral intention than low self-relevance [$M = 4.32$, $SD = 0.52$; $F(1, 241) = 3.88$, $p < 0.05$]. There was a significant interaction between message frame and self-relevance [$F(1, 241) = 8.94$, $p < 0.01$]. Under a condition of high self-relevance, a loss message frame ($M = 5.85$, $SD = 0.55$) led to a stronger behavioral intention than a gain message frame ($M = 5.29$, $SD = 0.55$).

Furthermore, there was a significant three-way interaction among message frame, mood states, and self-relevance, $F(1, 241) = 10.30$, $p < 0.01$. The analyses revealed that the loss framed message/positive mood state led to a stronger behavioral intention under conditions of perceived high self-relevance ($M = 5.21$, $SD = 0.58$) than under low self-relevance [$M = 4.23$, $SD = 0.53$; $F(1, 241) = 3.65$, $p < 0.05$]. Thus, H1(a) was supported. Moreover, the gain-framed message/negative mood state led to a stronger behavioral intention under conditions of perceived low self-relevance ($M = 5.76$, $SD = 0.57$) than under high self-relevance [$M = 4.51$, $SD = 0.59$; $F(1, 241) = 3.81$, $p < 0.05$]. Thus, H1 (b) was also supported.

Table 2. Effects of mood and message framing as a function of personal relevance

Personal Relevance	High Personal Relevance				Low Personal Relevance			
Mood State	Positive Mood		Negative Mood		Positive Mood		Negative Mood	
Types of Message Frame	Gain Frame	Loss Frame	Gain Frame	Loss Frame	Gain Frame	Loss Frame	Gain Frame	Loss Frame
Behavioral Intention	4.76	5.84	5.89	4.52	5.22	5.23	5.81	4.91
Message Judgment	4.88	5.71	5.90	4.26	5.28	4.01	4.51	3.68
Perceived Knowledge	4.22	5.43	5.91	4.64	5.67	4.34	5.65	4.46
Ad Evaluation	4.23	5.65	5.65	4.71	5.81	5.39	5.90	4.52

Additional Analyses

Additional analyses revealed significant main effects and interaction effects. First, there were significant main effects for the mood states [$F(1, 241) = 3.72, p < 0.05$] and message frame [$F(1, 241) = 11.98, p < 0.01$]. Specifically, the positive mood condition was associated with a stronger behavioral intention ($M = 5.86, SD = 0.57$) than the negative mood condition [$M = 3.98, SD = 0.58; F(1, 241) = 3.86, p < 0.05$]. In addition, behavioral intention was stronger in the loss frame condition ($M = 5.90, SD = 0.53$) than the gain frame condition [$M = 5.01, SD = 0.57; F(1, 241) = 3.69, p < 0.05$], indicating that the study participants found the loss frame message more persuasive.

Additional analyses also showed a significant two-way interaction [$F(1, 241) = 3.82, p < 0.05$]. Under the positive mood condition, a loss-framed message ($M = 5.84, SD = 0.59$) was more persuasive than a positive message [$M = 4.76, SD = 0.54; F(1, 241) = 3.56, p < 0.05$]. Under the negative mood condition, a gain-framed message ($M = 5.81, SD = 0.50$) was more persuasive than the one with a loss frame [$M = 4.91, SD = 0.51; F(1, 241) = 3.83, p < 0.05$].

Message judgments

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as the independent variables and message judgment as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frame [$F(1, 241) = 8.92, p < 0.01$], and a significant main effect of mood states, [$F(1, 241) = 3.61, p < 0.05$]. The loss frame was significantly associated with better message judgment ($M = 5.65, SD = 0.53$) than the gain frame condition [$M = 4.27, SD = 0.50; F(1, 241) = 3.64, p < 0.05$]. The results indicate that the positive mood state was associated with a significantly better message judgment in the loss frame condition ($M = 5.71, SD = 0.53$) than the gain frame condition [$M = 4.88, SD = 0.53; F(1, 241) = 3.59, p < 0.05$]. In addition, the negative mood state led to a significantly better message judgment in the gain frame condition ($M = 4.51, SD = 0.54$) than the loss frame condition [$M = 3.68, SD = 0.54; F(1, 241) = 3.75, p < 0.05$].

Perceived knowledge

An ANOVA was conducted with mood state (positive/negative) and message frame (gain/loss) as the independent variables and perceived knowledge as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frame, with $F(1, 241) = 10.40, p < .01$, and a significant main effect of mood states, $F(1, 241) = 9.21, p < 0.01$. Analysis indicated that the positive mood state was associated with a significantly better message judgment in the loss frame condition ($M = 5.43, SD = 0.53$) than the gain frame condition [$M = 4.22, SD = 0.56; F(1, 241) = 3.72, p < 0.05$]. In addition, the negative mood state led to a significantly better message judgment in the gain frame condition ($M = 5.65, SD = 0.54$) than the loss frame condition [$M = 4.46, SD = 0.54; F(1, 241) = 3.83, p < 0.05$].

Ad evaluation

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as the independent variables and ad evaluation as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frame, with $F(1, 241) = 3.86, p < 0.05$, and a significant main effect of mood states, $F(1, 241) = 3.81, p < 0.05$. Analysis indicated that the positive mood state was associated with a significantly positive ad evaluation in the loss frame condition ($M = 5.65, SD = 0.53$) than the gain frame condition [$M = 4.23, SD = 0.54; F(1, 241) = 3.66, p < 0.05$]. In addition, the negative mood state led to a significantly better message judgment in the gain frame condition ($M = 5.90, SD = 0.53$) than the loss frame condition [$M = 4.52, SD = 0.54; F(1, 241) = 3.79, p < 0.05$].

4.2.2 Hypothesis 2

H2(a): *To those for whom the message has high personal relevance, gain-framed messages are more effective than loss-framed messages when they are in a negative mood.*

H2(b): *To those for whom the message has low personal relevance gain-framed messages are just as effective as loss-framed messages if they are in a positive mood.*

Behavioral intentions

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as independent variables and behavioral intention as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there were significant

main effects of the mood states $F(1, 241) = 3.64, p < 0.05$ and message frame [$F(1, 241) = 3.71, p < 0.05$]. Specifically, the negative mood condition was associated with stronger behavioral intentions ($M = 5.82, SD = 0.51$) than the positive mood or mood condition [$M = 3.91, SD = 0.51; F(1, 241) = 3.87, p < 0.05$]. In addition, behavioral intention was stronger in the gain frame condition ($M = 5.62, SD = 0.53$) than the loss frame condition [$M = 4.01, SD = 0.53; F(1, 241) = 3.80, p < 0.05$], indicating that the study participants found the gain-framed message more persuasive.

More relevant to this study, a significant two-way interaction was observed [$F(1, 242) = 3.88, p < 0.05$]. Under the negative mood condition, a gain-framed message ($M = 5.89, SD = 0.51$) was more persuasive than a loss frame message [$M = 4.52, SD = 0.53; F(1, 241) = 3.82, p < 0.05$]. Under the positive mood condition, the gain-framed information ($M = 5.85, SD = 0.50$) was almost as persuasive as the loss framed message [$M = 5.81, SD = 0.51; F(1, 241) = 3.69, p < 0.05$].

To assess if the mood states and message frame varied with perceived self-relevance, a 2 (positive/negative mood states) x 2 (gain/loss message frame) x 2 (low/high self-relevance) mixed analysis of variance was performed. Mood states and message frame served as the between-subjects factors and self-relevance was the within-subjects factor. The results suggest a significant main effect of self-relevance on behavioral intention [$F(1, 241) = 10.21, p < 0.01$]. There was a significant interaction between message frame and self-relevance [$F(1, 241) = 10.30, p < 0.01$]. Under high self-relevance, a gain-framed message ($M = 5.81, SD = 0.52$) led to stronger behavioral intentions than a loss-framed message [$M = 4.20, SD = 0.55; F(1, 241) = 3.62, p < 0.05$] in a negative mood state.

Furthermore, there was a significant three-way interaction among message frame, mood states, and self-relevance [$F(1, 241) = 11.01, p < 0.01$]. Thus, H2 (a) was supported. However, under low self-relevance, there was no significant difference between the gain and loss frames ($M_{\text{gain}} = 5.22$ vs. $M_{\text{loss}} = 5.23$, n.s.) under a positive mood condition. H2 (b) was thus supported by the data.

Message judgments

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as independent variables and message judgment as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frames [$F(1, 241) = 3.82, p < 0.05$] and a significant main effect of mood states [$F(1, 241) = 3.80, p < 0.05$]. The gain frame was significantly associated with better message judgment ($M = 5.90, SD = 0.51$) than the loss frame condition [$M = 4.26, SD = 0.52; F(1, 241) = 3.76, p < 0.05$] when people are in a negative mood and see the message as having high personal relevance. The analysis indicated that the positive mood state was associated with a significantly better message judgment in the gain frame condition ($M = 5.28, SD = 0.53$) than in the loss frame condition $M = 4.01, SD = 0.51, p < 0.05$ for participants who reported that the message had low personal relevance.

Perceived knowledge

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as independent variables and perceived knowledge as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frame [$F(1, 241) = 3.84, p < 0.05$] and a significant main effect of mood states [$F(1, 241) = 3.81, p < 0.05$]. The gain-framed message was significantly associated with

better perceived knowledge ($M = 5.91$, $SD = 0.58$) than the loss-framed message [$M = 4.64$, $SD = 0.58$; $F(1, 241) = 3.78$, $p < 0.05$] for those in the positive mood and who saw the message as having low personal relevance. The analysis indicated that the negative mood state was associated with a significantly better perceived knowledge in the gain frame condition ($M = 5.67$, $SD = 0.51$) than in the loss frame condition [$M = 4.34$, $SD = 0.52$; $F(1, 241) = 3.82$, $p < 0.05$].

Ad evaluation

An ANOVA test was conducted with mood states (positive/negative) and message frame (gain/loss) as independent variables and ad evaluation as the dependent measure. The analysis revealed significant main effects and interaction effects. First, there was a significant main effect of message frame [$F(1, 241) = 3.83$, $p < 0.05$] and a significant main effect of mood states [$F(1, 241) = 3.79$, $p < 0.05$]. The gain frame was significantly associated with better ad evaluation ($M = 5.65$, $SD = 0.59$) than the loss frame condition [$M = 4.71$, $SD = 0.51$; $F(1, 241) = 3.92$, $p < 0.05$]. The analysis indicated that the positive mood state was associated with a non-significant ad evaluation in the gain frame condition ($M = 5.81$, $SD = 0.52$) than in the loss frame condition [$M = 5.39$, $SD = 0.51$; $F(1, 241) = 3.68$, $p < 0.05$].

These results revealed some interesting ideas which found congruence with previous research. The findings also led to some fascinating observations which are discussed in the following chapter.

CHAPTER 5

DISCUSSION

The results of this experiment demonstrated that positive mood may act as a resource, enabling people to elaborate more on the information they think can be useful to them.

Hypothesis 1

The results suggest that when the student-participants saw the message as having high personal relevance, and when they are in a positive mood, the loss-framed message was more effective than the gain-framed message in persuading them to try and/or recommend the vaccine to others. When the message was deemed as having low personal relevance, the gain-framed message was more effective than the loss-framed message among participants who were in a negative mood as compared to those in a positive mood.

This finding is reflected in the resulting behavioral intention, which showed a stronger intent to follow up on the advertising message by seeking more knowledge or information about the vaccine. Behavioral intent was also stronger in participants who were inclined to suggest the vaccine to someone they thought was addicted to alcohol.

Participants also showed positive judgment toward the gain-framed message when they see the information as high in personal relevance and when they are in a positive mood. Under such conditions, they judged the vaccine to be effective in curing alcoholism. Participants who perceived the message as having low personal relevance and are in a negative mood, however, the loss framed message was more favored.

Hypothesis 2

The results suggest that when personal relevance is high, gain-framed messages are more likely to be effective than loss-framed messages for people in a negative mood compared to those in a positive mood. When perceived personal relevance is low among those in a positive mood, gain-framed messages are just as effective (or not effective) as a loss-framed message.

This finding is echoed in terms of the impact on behavioral intention. In this study, there was a stronger intent to follow up on the message by seeking more information about the vaccine. Behavioral intent was also stronger among participants inclined toward suggesting the vaccine to someone they thought could use the vaccine.

Participants also showed more positive judgment toward the gain-framed message when they consider the information to be of high personal relevance and when they are in a negative mood. Under these conditions, they judged the vaccine to be effective in curing the disease. For participants for whom the message has low personal relevance and are in a positive mood, however, the effects were the same regardless of how the message was framed.

The results suggest that mood states can mitigate the impact of a framed message. The results support Isen's (1993) proposed framework over the hedonic contingency framework suggested by Wegener and Petty (1994). The findings also suggest that participants in a negative state respond better to gain-framed messages. Based on the results, it can be surmised that the previous main effect of higher persuasion for loss-framed messages depends on the positive affective state (Keller et al., 2003).

Like previous studies, the findings of this study also illustrate the important moderating role played by self-relevance in the information-processing task. In particular, this study found that the induction of a positive mood state resulted in the adoption of highly favorable attitudes and intentions toward *Addictocure* as a possible cure for alcohol addiction when this problem was considered a personally relevant issue and when the message was presented in a loss frame. Thus, the experiment finds support for the contention that loss-framed messages that are considered highly relevant are elaborated on and may result in constructive behavioral intentions when audience members are in a positive mood state.

The results demonstrate that the persuasiveness of a message frame is dependent on people's mood and the extent to which they consider the topic as relevant to their personal lives. This is associated with the people's judgment of potential loss (Keller et al., 2003). Participants who were in a positive mood were more persuaded by the loss-framed message than the gain-framed message when the issue was seen as personally relevant, whereas those who were in a negative mood were more persuaded by the gain-framed message than the loss-framed message when the topic is considered to be high in personal relevance.

Previous studies have demonstrated that a positive mood state promotes increased attendance to self-threatening information (Gervy, Igou, and Tope, 2005). Apparently, these findings appear at odds with the postulates of the hedonic contingency perspective. Because there is less hedonic reward in accepting negative information, these findings indicate that there are instances in which a positive mood state does not promote the pursuit of pleasure, but rather attunes participants to attend to self-relevant negative information. This particular function of the mood state seems to be more pronounced when individuals feel personally involved with an issue. Also, the results indicate that inducing a negative mood state may result in the adoption of

highly favorable attitudes and intentions toward a possible cure for alcohol addiction when addiction is considered a highly relevant issue, but the message was presented in a gain frame. Hence it can be said that in negative mood state, behavioral and attitudinal changes are observed in favor of the suggested course of action when the message is framed by emphasizing gain and the relevance of the issue is high.

Additionally, it was observed that among the high self-relevance negative mood participants, there was a tendency to focus more on positive information, which suggests the process of mood repair (Clark and Isen, 1982).

Overall, the results were consistent with the axiom of the mood-as-a-resource hypothesis (Trope and Neter, 1994) that positive mood enhances elaborate processing of negative but useful information and the integration of this information into one's attitudes and behavioral intentions. The findings also demonstrate the self-regulatory function of positive mood states, especially their ability to facilitate elaborate processing and revision of prior information in light of emotionally negative but potentially useful information. The positive mood participants were more attentive to loss-framed information. They were thus able to adopt a healthier understanding of the purpose of the vaccine and its ability to cure alcohol addiction. The results also show that the processing of suggested actions regarding the vaccine was indeed high when alcohol addiction was seen as a personally relevant issue. In a negative mood state however, it appears that people lack the resources needed to cope with loss-framed message (Trope and Neter, 1994). Hence, in such state, elaborate processing and integration of negative self-relevant information is too difficult. Thus, the participants in the negative mood were more attentive to the gain-framed message. They were thus able to improve their mood.

When an issue is of low relevance, the mood-as-a-resource hypothesis continues to play its role, with the participants displaying favorable behavioral intentions and attitudes after processing gain-framed messages to repair their mood. However, for participants in a positive mood but considers the topic as low in relevance, behavioral intentions and attitudes were unaffected by message frame. These findings appear at odds with the hedonic contingency perspective which suggests that happy people prefer positively-framed health information.

The findings are thus important in two regards. First, the results show that negative message framing has a predictable interactive effect with mood state, which contributes to research on the interactive effects between mood and health message reception (e.g., Hullett, 2005; Raghunathan and Trope, 2002; Wegener, Petty, and Smith, 1995). Second, in the context of health promotion messages, this research provided preliminary evidence addressing the underlying mechanism why and how concern about losses (Isen and Geva, 1987) may be contingent on the salience of negative thoughts.

These findings do not just provide congruence with previous research, but also allow scope for further research and applications. Implications derived from the results of this study can put to application in the area of mass risk communication.

CHAPTER 6

CONCLUSIONS

Many recent theories applied in advertising studies have made some key predictions regarding the intensity and direction of one's involvement after exposure to an advertised message. Many lament that the often conflicting conceptual definitions and measures of involvement make it quite difficult for advertising researchers to examine this construct. The findings of this study can have implications for designing effective communication messages to market a vaccine intended to reduce alcohol-related illnesses.

The study sought to contribute to the understanding of the effects of message framing based on the extent to which audiences find health communication messages to be personally relevant. The study does not argue that framing may have other effects. For example, when comparing uncertain and cautious choices, it seems reasonable to suggest that message framing can affect the relative attractiveness of these alternatives, as suggested by prospect theory (Rothman et al.,1993). The study expects to demonstrate that the persuasiveness of a message frame is dependent on people's mood and mitigated by the extent to which the message is perceived to be personally relevant.

The study provides compelling evidence that self-relevance moderated the interaction of mood state and gain-loss message frame. In particular, under high self-relevance conditions, negative message frame / positive mood state and negative message frame / negative mood state led to stronger behavioral intentions and better message judgment. These findings support the notion that happy people are more receptive to self-relevant threatening information (Raghunathan and Trope, 2002).

A key assumption underlying the major hypothesis of the interaction between mood state and message framing was related to the mental salience of self-relevant meaningful loss (Raghunathan and Trope, 2002; Isen and Geva, 1987). Happy people were more concerned about losses, especially when the loss was meaningful (Isen, Nygren, and Asby, 1988; Isen and Geva, 1987). Thus, the persuasiveness of a loss frame will increase in combination with a positive mood state and a negative mood state when there is high personal relevance, whereas the persuasiveness of a loss frame will decrease in combination with positive mood state and a negative mood state when there is low personal relevance.

The findings of this study imply several ways to improve communication and garner compliance toward a recommended behavior: (1) When discussing a health issue with people who may find the topic low in relevance, physicians may talk about the bad consequences of not complying with the recommended behavior before presenting the health message. This measure should provide enough threat to motivate actions and enhance patients' receptivity to health messages. (2) Individuals who find a topic highly relevant to their lives should be more receptive to persuasive health communication than those for whom the topic is of low relevance. For this type of patients, physicians may offer reassurances about the recommended behavior before presenting the health information. In particular, inducing either a happy or a sad mood among patients may enhance the salience of the negative outcomes of not adhering to the recommended behavior, and may thus promote patients' compliance with the physicians' advice.

The findings of this study are expected to contribute significantly to the marketing of health products and in the communication of health risks. In marketing, positive mood has been induced among consumers in a variety of ways, some of them through subtle (e.g., through program and editorial environments as analyzed by Yuspeh, 1979) and others through more

obvious means (e.g., receiving a free sample or coupon as examined by Kahn and Isen, 1993 and Keller et al., 2003). This study hypothesizes that advertising effectiveness depends not only on the message frame but also on mood states and judgments of personal relevance. In other words, pre-message exposure affect can be added to the list of contextual factors that can determine advertising effectiveness. Other contextual factors previously analyzed were arousal (Kennedy, 1971), involvement (Soldow and Principe, 1981) and distraction (Wright, 1981).

6.1 Limitations and Suggestions for Further Study

The study was constrained by the following factors:

Generalizing results of this study that involved only college students as participants will not provide accurate information on how information processing happens across various age demographics. Also, laboratory conditions, in this case a classroom, can be a moderating factor in how the immediate environment plays a part in governing the mood and information processing.

This study involved message framing in print media. Effects when message is framed in various other media – radio, television, digital; can differ in terms of a message is processed.

A future study can be developed to measure cognitive responses. Cognitive responses could provide deeper insight into how consumers from each mood state with high / low personal relevance process gain / loss frame messages.

This study is limited to anti-alcohol vaccine. Pharmaceutical products have a high-risk perception and hence results can be different for advertising messages for products on other risk perception scales.

This study did not have a control mood (neutral) to fully understand the effect of mood state on message framing. Thus, a control group is encouraged in future studies to provide more stringent tests of differentiated effects involving mood states.

The medium used in this experiment was print. Studies can be conducted using other media to determine differences in user reaction. For example, the digital media, which provides a greater scope for user-engagement, can have a substantial difference in user reaction to these messages. Future research is needed to test these assumptions.

Another area worth considering is the practical application arena of advertising. While most advertising campaigns are built on thorough consumer research, marketers and advertising agencies alike have for long now, displayed use of convenient research techniques – standards in the industry are survey and focus group methods. The point in question arises because we haven't seen much thought put behind the psychology of how an advertisement or a message in an advertisement will be evaluated by a consumer. If a thoughtful provocation is incited off the consumer towards the message, the results arising out of this engagement on a psychological level will provide stronger brand interaction / involvement from the consumer end.

Given the myriad research techniques available today, one might question whether experimental research has become an outdated technique of limited value. Quite the opposite would seem to be true. A bigger question comes from the more practical aspect of implementing findings from a research in real world scenario. Marketing and advertising agencies mostly rely on survey and focus group method of research. A comprehensive and thorough research in an appropriate form can play a defining role in how a consumer reacts to an advertising message. Advertising professionals/agencies could look at theoretical framework and results of this study

to develop strategic research methods. Results from these researches can be used to develop briefs that could help copywriters develop more influential and targeted creatives.

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APPENDIX A

Lateral Thinking Ability Test (LTAT)

1. A man and his family lay out blankets and lie down, watching the sky for hours even though explosions can be heard nearby. Why?

Hint: The date is important.

2. Can you name three consecutive days without using the words Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday?

Hint: The names of days are in a different language.

3. A man leaves home one night and drives over a mile to meet a friend for a drink. When the man arrives home, the clock shows it was only five minutes later than when he left. How is this possible?

Hint: There is nothing wrong with the clock; it consistently shows the correct time.

4. A man died and went to heaven. There were thousands of people there, all naked and all looked as they did at the age of 21. He looked around to see if there was anyone he recognized. He saw a couple and knew immediately that they were Adam and Eve. How did he know that?

5. Why is it better to have round manhole covers than square ones?

6. A woman bets her friends that she can grab the bare wire on a high voltage electric cable and not be injured. How could she possibly do this?

Hint: Electricity of extremely high voltage is flowing through the cable and cannot be turned off. The cable cannot be cut or removed from the source of electricity.

2. Rehabilitation is an effective way to control alcohol addiction.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

3. A vaccine to cure alcohol addiction is needed.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

4. After reading about *Addictocure*, I feel alcohol addiction now has a definite cure.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

5. I will talk to friends and/or family about this vaccine.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

V. To what extent do you agree with the following statements? (*Please circle one*)

1. I think *Addictocure* can be effective in curing alcohol addiction.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

VI. Reading about this vaccine reminded me of someone who could use this vaccine. (*Please check one*)

Yes _____

No _____

VII. Given the following statements, please circle the number that best describes your condition, feelings and/or opinion. (*Please be assured that this information is strictly confidential and will not be used beyond the scope of this research*).

1. I am addicted to alcohol.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

2. I think I am addicted to alcohol.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

3. I know someone who is addicted to alcohol.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

4. I think I know someone who is addicted to alcohol.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

VIII. Please circle the number that best describes your intention regarding the vaccine.

1. I intend to try the vaccine.

Strongly agree 1 2 3 4 5 6 7 **Strongly disagree**

2. I would recommend the vaccine to others who may be afflicted with alcoholism.

Strongly agree 1 2 3 4 5 6 7 **Strongly disagree**

IX. After reading the brochure, please indicate the extent do you agree with the following statements. (*Please circle one*)

1. The advertisement brochure was convincing.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

2. The advertisement brochure was attention grabbing.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

3. The advertisement brochure contains information that is important to me.

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

X. Please circle the number that best corresponds with how much you currently feel regarding the following.

Happy

Very Slightly 1 2 3 4 5 6 7 **Extremely**

Sad

Very slightly 1 2 3 4 5 6 7 **Extremely**

Pleasant

Very slightly 1 2 3 4 5 6 7 **Extremely**

Bad

Very slightly 1 2 3 4 5 6 7 **Extremely**

XI. Do you think your current feeling is due to the LTAT test result or is it because of the advertising brochure? (*Please check one*)

LTAT test

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

Strongly disagree 1 2 3 4 5 6 7 **Strongly agree**

XII. Please complete the following questions:

1. What is your age? _____ years.

2. Please indicate your gender.

Female: 1

Male: 2

Neither: 3

3. Which one of these groups would you say *best* represents your race?

- White..... 1
 Black or African American 2
 Asian 3
 Native Hawaiian or other
 Pacific Islander..... 4
 American Indian or Alaska
 Native..... 5
 Cannot choose a race 6
-

Thank you for your participation.

APPENDIX C

The Brochures

A) Advertising brochure front cover (used in both gain- and loss-framed messages)

ADDICTOCURE[®]
Naltrexone (Injection)
Is an injection administered by your physician once every four weeks.

To Cure Addiction
consult your physician or health practitioner regarding
ADDICTOCURE[®]
Naltrexone (Injection)
TODAY

to treat alcohol addiction.

Side effects may occur
All medications may cause side effects, but many people have no, or minor, side effects. Check with your doctor if any of these most common side effects persist or become bothersome: Diarrhea, dizziness, drowsiness, headache, joint pain or stiffness, loss of appetite, mild nausea, muscle cramps, pain, swelling or redness at the injection site, sore throat, stomach pain, vomiting, weakness.

Seek immediate medical attention if any of these SEVERE side effects occur. Severe allergic reactions (rash; hives; itching; difficulty breathing; tightness in the chest; swelling of the mouth, face, lips or tongue; anxiety; chest pain; dizziness; depression; fainting; fever; mental or mood changes; pale bowel movements; severe or persistent coughing; severe or persistent stomach pain; shortness of breath; suicidal thoughts or actions; wheezing; yellowing of the eyes.

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B) Advertising brochure that uses the gain frame

Here's how it works.

Alcohol floods the brain with the neurotransmitter dopamine, a chemical that induces a strong sensation, either pleasure or pain depending on your mood.

Dopamine is also naturally produced in the human body and it conditions us to carry out activities necessary for our species survival - eat, have sex, form emotional attachments and other related activities.

Alcohol causes the release 2-10 times this natural dopamine. Constant consumption of alcohol causes the brain and hence, the body to become dependent on this dose of dopamine for normal functioning.

There are five receptors of dopamine.



Using ADDICTOCURE® will provide you with the benefits of the curative properties and with benefits far beyond healthy living.

- Effect on self – You will gain back your confidence.
- Effect on others – You gain back all your happy relationships.
- Effect on conscious – You will be free from guilty dependence on alcohol.
- Long term effectiveness – You will have no reasons and excuses to get back to alcohol.

Who Wouldn't Want That?




ADDICTOCURE®
Naltrexone (Injection)

is a new drug in an injection form which is used to treat alcohol addiction.



ADDICTOCURE®
BLOCKS
the effects of alcohol

C) Advertising brochure that uses the loss frame



ADDICTOCURE[®]
Naltrexone (Injection)

is a new drug in an injection form which is used to treat alcohol addiction.

ADDICTOCURE[®]
BLOCKS
the effects of alcohol


Here's how it works.

Alcohol floods the brain with the neurotransmitter dopamine, a chemical that induces a strong sensation, either pleasure or pain depending on your mood.

Dopamine is also naturally produced in the human body and it conditions us to carry out activities necessary for our species survival - eat, have sex, form emotional attachments and other related activities.

Alcohol causes the release 2-10 times this natural dopamine. Constant consumption of alcohol causes the brain and hence, the body to become dependent on this dose of dopamine for normal functioning.

There are five receptors of dopamine.



Naltrexone in **ADDICTOCURE** blocks these receptors beyond the normal dosage of dopamine and hence does not allow it to get use to the additional dopamine from alcohol, thus failing alcohol to cause any effect.



Not using **ADDICTOCURE[®]** will cause loss of the curative properties and will decrease the benefits of healthy living.

- Effect on self – You will keep losing your confidence.
- Effect on others – Your relationships will deteriorate.
- Effect on conscious – You will feel guilty because of uncontrolled dependence on alcohol.
- Long term losses – You will look for reasons and excuses to get back to alcohol.

THINK ABOUT IT!

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