



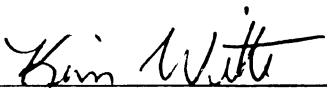
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THE INFLUENCE OF SENSATION-SEEKING AND
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TO FEAR APPEALS

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**THE INFLUENCE OF SENSATION-SEEKING AND MESSAGE CHOICE ON
RESPONSES TO FEAR APPEALS**

By

Judith M. Berkowitz

A DISSERTATION

Submitted to

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ABSTRACT

THE INFLUENCE OF SENSATION-SEEKING AND MESSAGE CHOICE ON RESPONSES TO FEAR APPEALS

By

Judith M. Berkowitz

The purpose of this investigation is to examine the influence of sensation seeking and message choice on responses to fear appeals. It is argued that sensation seeking will be positively associated with an individual's desire to view a high threat fear appeal and that exposure to an optimal threat level will result in more positive attitudes and intentions. A factorial design with an immediate post-test and two-week follow-up was employed. There were two message threat level conditions (high or low) and two choice conditions (received choice/did not receive choice). In addition, a forced exposure (high threat/low threat) group was employed. Analyses indicate no relationship between sensation seeking and message choice. Further, results indicate that exposure to a non-desired message resulted in more positive behaviors than did exposure to a desired message. The implications of these findings are discussed.

Dedication

To Robin, for courage and confidence;

To my family, for sustenance and faith;

To Brian and Evan, may you soar peacefully to new heights

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There are many people to whom I offer my gratitude for their assistance in completion of this project. I am especially grateful for the patience, suggestions, and advice provide by members of my committee: Dr. Frank Boster who is credited with the ideas contained within this project; Dr. Bradley Greenberg for insight into alternative hypotheses; Dr. Jim Dearing (who missed the proposal defense just because Sam went into labor with Spike) for his direction and encouragement; and to Dr. Kim Witte whose pragmatic approach to the process made the project bearable.

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CHAPTER 1

INTRODUCTION

In order to promote health protective behaviors, campaigners commonly attempt to arouse fear in audiences. Indeed, Freimuth, Hammond, Edgar, and Monahan (1990) found that 26 percent of all AIDS public service announcements utilized fear appeals to promote health protective behavior. Fear appeals are messages designed to arouse fear in the receiver by describing the terrible consequences associated with non-compliance with the message recommendations (O'Keefe, 1990). It is presumed that these messages instill fear in the audience and spur members to modify their behaviors and to undertake the recommended beneficial health behaviors.

In general, fear appeals have been found to be an effective means of gaining compliance with a message's recommendations. Meta-analytic results indicate that a positive relationship exists between fear level and attitudes, intentions, and behaviors, such that strong fear appeals are more persuasive than weak fear appeals (Boster & Mongeau, 1984; Hale & Dillard, 1995; Sutton, 1982; Witte & Allen, 1996). Thus, we would expect messages which instill greater fear arousal would result in more behavior change.

A number of models have arisen which suggest reasons why fear appeals are successful in gaining compliance. One model in particular, the Extended Parallel Process Model (EPPM) (Witte, 1992b), suggests the conditions under which risk messages are likely to be accepted and result in health protective behaviors. The EPPM posits that when individuals believe themselves to be at-risk for a serious health threat and believe that they can easily and effectively avert the threat, they change their attitudes, intentions, and

behaviors to conform with the position advocated. However, if individuals do not believe that the recommended response will be effective or they believe that they are unable to perform it, then they are motivated to take action to reduce their fear.

Although the EPPM explains when a fear appeal message is likely to be accepted or rejected, it has two shortcomings. One shortcoming of the model is the lack of attention given to individual difference variables. Although the EPPM suggests that individual differences indirectly influence the likelihood of engaging in health protective action through perceptions of threat and efficacy, it does not specify the manner in which it occurs. One variable in particular, sensation seeking, has been shown to influence reactions to fear appeals in unexpected ways and is in need of further study. Second, the fear appeal literature fails to take into account that people selectively expose themselves to information. In reality, people seek out and pay attention to information which is consistent with their beliefs and which does not exceed their desired arousal level; however, the vast majority of fear appeal studies force exposure to high or low threat fear appeal messages. These issues will be addressed in the study.

One health concern which has been the focus in persuasion research is dental hygiene. Proper dental care has been used in tests of inoculation theory (e.g., McGuire, 1961; McGuire, 1962; McGuire & Papageorgis, 1961), theory of reasoned action and theory of planned behavior (e.g., McCaul, O'Neill, & Glasgow, 1988; McCaul, Sandgren, O'Neill, & Hinsz, 1993), and fear appeal research (e.g., Beck & Lund, 1981; Dembrowski, Lasater, & Ramirez, 1978; Evans, Rozelle, Noblitt, & Williams, 1975; Janis & Feshbach, 1953; Janis & Feshbach, 1954).

Proper dental hygiene (e.g., a diligent regimen of brushing and flossing) aids in the prevention of periodontal (gum) disease. A proper regimen will remove the bacteria which cause plaque and can lead to periodontal disease. Without proper removal, bacteria-laden plaque builds up and may cause infections in the natural v-shaped gaps (called the sulcus) between teeth and the gum line. Untreated, the depth of the sulcus increases, allowing the gum line to recede from the teeth. Additional symptoms of early stages of gum disease include redness, swelling and tenderness of the gums, and bleeding when pressure is applied (Carranza, 1990; Cross, 1977). It is estimated that up to 75 percent of us have bacterial infections associated with periodontal disease (Schlosberg, 1996). When treated early, most cases of periodontal disease are reversible; however, diligent dental hygiene is necessary to prevent the onset or recurrence of periodontal disease (Carranza, 1990; Schlosberg, 1996).

Although most people know the importance of proper dental hygiene, many do not floss on a regular basis (Camner, Sandell, Sarhed, 1994). The development and evaluation of fear appeals intended to induce behavioral compliance with dental hygiene regimens will benefit from the incorporation of knowledge based on current theoretical work and research findings regarding fear appeals.

In sum, the purpose of this thesis is to extend the EPPM to incorporate the influences of sensation seeking, selective exposure, and message choice in order to prevent periodontal disease. Integrating these factors into the EPPM should increase the predictive utility of the model and provide a stronger understanding of the influence of sensation seeking on the desire to engage in health protective action. The next chapter

describes the EPPM, selective exposure, sensation seeking, and expectancy theory and offers hypotheses. Chapter 3 presents the methodology for the experiment and describes the health domain for the study. Chapter 4 presents results of the analyses. Finally, Chapter 5 includes discussion and implications for the theory and for practitioners.

CHAPTER 2

LITERATURE REVIEW

Instilling fear in an audience in order to promote behavior change is a technique which is commonly used (Atkin, 1994; Dillard, 1994; O'Keefe, 1990). The use of fear has been the focus of numerous research projects in order to gain a greater understanding of when and why fear appeals are effective in gaining attitude or behavior change (Boster & Mongeau, 1984; Dillard, 1994; O'Keefe, 1990; Witte, 1992b). Fear appeals are persuasive messages which are designed to frighten the audience through the use of vivid, gruesome language regarding the consequences of not performing the advocated behaviors (Boster & Mongeau, 1984; O'Keefe, 1990; Witte, 1992b). Meta-analyses have demonstrated that fear appeals have a small but consistent impact on behavior (Boster & Mongeau, 1984; Mongeau, 1994; Witte & Allen, 1996).

In their meta-analysis, Witte and Allen (1996) found that stronger fear appeals were consistently more persuasive than weaker fear appeals. Stronger fear appeals are characterized by their ability to create greater perceptions of the severity of the threat and one's susceptibility to it. Boster and Mongeau (1984) noted that the size of the correlation between fear manipulations and perceived fear was relatively small ($r = .36$), suggesting that experimental inductions have been weak. This finding suggests that larger discrepancies between high threat and low threat fear appeals would increase the correlation between fear manipulations and perceived fear. The creation of a stronger fear appeal, theoretically, would instill greater perceptions of severity and susceptibility.

In addition, Witte and Allen (1996) noted that the messages which were most successful in promoting message acceptance were stronger fear appeals which contained stronger efficacy messages. Thus, the success of a fear appeal is linked to its ability to create perceptions that the individual may easily and effectively avert a severe threat despite one's susceptibility to it.

Recently, in an attempt to reconcile inconsistencies within the fear appeal literature, Witte (1992b) proposed a model which attempted to explain when and why fear appeals are likely to succeed in promoting attitude and behavior change. This chapter begins with a discussion of a recent fear appeal theory, the Extended Parallel Process Model (Witte, 1992b). Next, the EPPM's shortcomings are presented and discussed. These shortcomings are addressed in reviews of selective exposure and sensation seeking. Finally, hypotheses are offered.

The Extended Parallel Process Model

Witte (1992b) developed the Extended Parallel Process Model (EPPM) in order to detail more explicitly when and why fear appeals are effective in gaining attitude and behavior change. As an extension of Leventhal's (1970) parallel process model, the EPPM differentiates between two responses to a fear appeal message: fear control and danger control (see Figure 1). The EPPM suggests that individuals exposed to external stimuli (e.g., a fear appeal message) will make judgments on the threat of the hazard and the efficacy of the recommended response. Threat motivates action; therefore, if people do not believe themselves to be at-risk to a severe threat, no further processing of the message occurs. Thus, threat appraisal determines whether or not individuals will respond

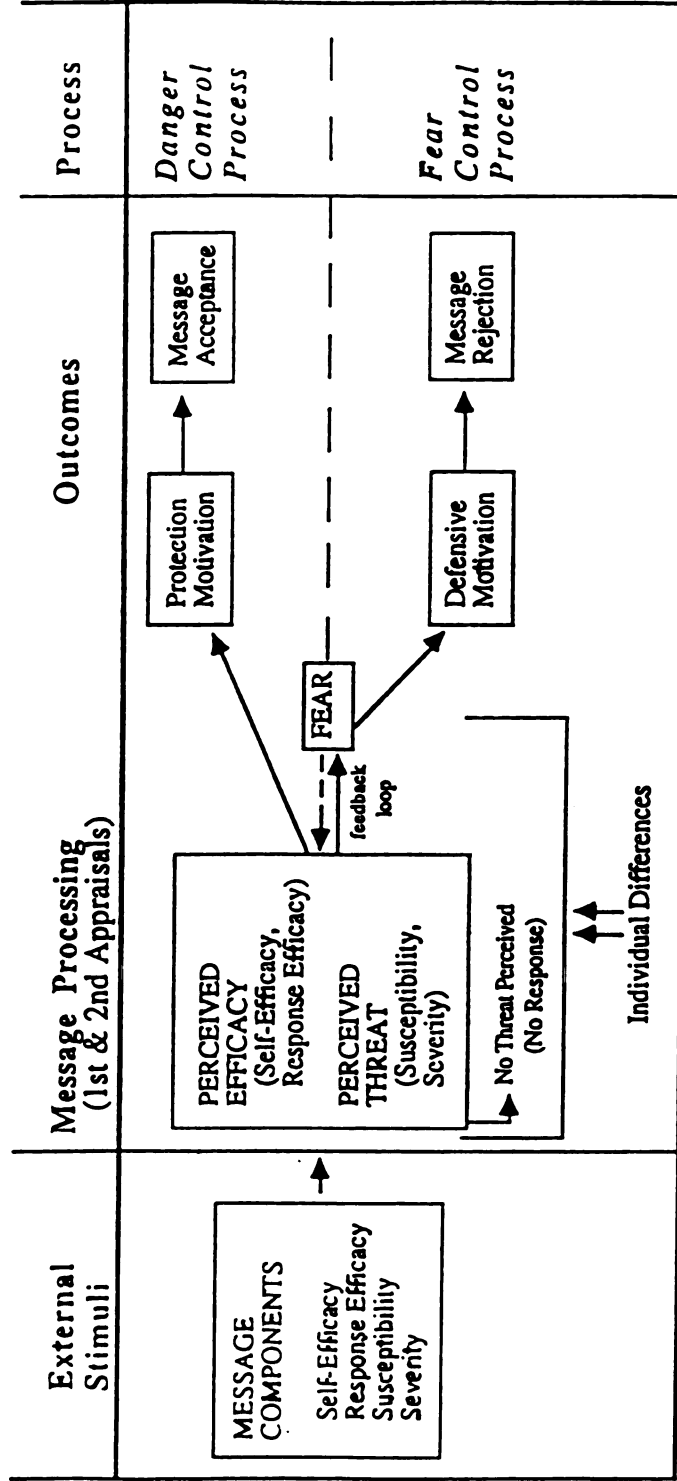


Figure 1. The Extended Parallel Process Model (EPPM) (Witte, 1992a)

to the fear appeal message. If the individuals perceive low threat, the EPPM suggests that the individuals will not respond to the fear appeal; they will merely ignore the message. However, if the individuals perceive the threat to be high, the appraisal of efficacy will determine the nature of their action. When individuals believe that they may easily and effectively avert the threat, they engage in health protective action (i.e., danger control). In contrast, when they believe that the recommended responses will be ineffective to avert the threat or that they are unable to perform the response, they will engage in actions designed to reduce their fear (i.e., fear control).

Fear appeals, by definition, are designed to arouse fear within the audience members; performance of the fear appeals' recommended course of action (i.e., the recommended response) should lead to the reduction of fear level. This desire to reduce the negative feelings associated with the fear are believed to result in behavioral modification (O'Keefe, 1990). When individuals believe themselves to be at-risk for a severe threat, fear is aroused and they are motivated to take any action which is capable of reducing that arousal. However, there is no guarantee that the actions undertaken will reduce the risk associated with the threat described in the fear appeal. If the individuals believe themselves capable of performing the recommended course of action, then they are motivated to control the danger. This process, termed danger control, results in a cognitive processing of the threat which leads to attitude, intention and behavior change directed at averting the threat. However, when individuals believe that either the recommended response will be ineffective in preventing harm or that they are unable to perform that response, then they are motivated to take actions which will reduce their fear.

This process, termed fear control, results in processes designed to control the emotional arousal caused by the threat. Individuals control their fear by rejecting the recommended responses through defensive avoidance or denial of the threat (e.g., I'm just not going to think about it) or through reactance.

In sum, appraisals of threat determine whether or not action will be taken while appraisals of efficacy determine the nature of the responses. Danger control processes dominate when individuals believe they may perform actions to avert the threat. In contrast, fear control processes dominate when individuals believe they are unable to avert the threat.

Empirical tests of the EPPM have garnered mixed results. Three studies are of particular interest. First, Witte (1994) found partial support for the model. Specifically, the results suggested separate fear control and danger control processes, such that emotional arousal was associated with fear control and cognitive processes were associated with danger control. She found that those engaged in defensive avoidance and message minimization experienced less fear, suggesting that these processes enable individuals to reduce the arousal produced by the fear appeal. Furthermore, the results indicated that higher degrees of perceived efficacy lead to more positive attitude, intention and behaviors (i.e., danger control outcomes).

In a different study, Witte, Berkowitz, Cameron, and McKeon (1996) utilized a modified Solomon four design to test the effectiveness of a fear appeal given existing perceptions of efficacy. They found that respondents exposed to a high threat fear appeal whose existing efficacy perceptions outweighed their threat perceptions had more positive

attitudes, stronger intentions to engage in the recommended response, and were more likely to engage in the recommended behavior and undergo behavioral changes. For this group, the fear appeal worked; they responded by controlling the danger. Conversely, those people who saw the campaign but had low efficacy perceptions, were more likely to engage in fear control responses such as issue derogation, defensive avoidance and perceived manipulation.

Lastly, Rodriguez (1995) examined the interaction between perceived threat and perceived efficacy and its influence on attitude change. He tested the EPPM across several different health messages (e.g., bicycle helmets, alcohol consumption, and tetanus). He did not find a significant amount of the variance in attitude change accounted for due to perceptions of threat and efficacy, with eta squared no larger than .03 across the various messages.¹ His analyses failed to find support for the EPPM or any other fear appeal model tested (i.e., Protection Motivation Theory).

Overall, these research results suggest that the model's predictive ability may be improved. Respecification of the model and incorporation of specific individual difference variables may lead to greater predictive utility. Moreover, understanding the interplay of individual difference and message components will provide a basis from which practitioners may develop more effective campaigns. The next section addresses several shortcomings of the model and provides suggestions as to additional factors to consider.

¹ These analyses were based on individual's perceptions of threat and efficacy and not on the traditional high versus low threat message groups.

Shortcomings of the EPPM

Researchers have found the EPPM to have various degrees of predictive utility concerning when and why individuals engage in fear or danger control. However, results indicate that the model is incomplete and that respecification may improve its predictive abilities. This section will address several shortcomings of the model.

One shortcoming of the model surrounds the treatment of fear appeals as external stimuli. As such, the audience members are viewed as passive recipients of the message. However, individuals are much more active in seeking out information and exposing themselves to messages. The EPPM does not account for this attribute of human behavior. The EPPM's treatment of a fear appeal as an external stimulus in combination with experimental methods where exposure to the message is determined by the researcher not by the participant create circumstances which may not adequately reflect non-experimental conditions. Thus, consideration of how selective exposure influences acceptance of a fear appeal's recommendations would enhance the predictive utility of the model.

Second, in her explication of the model, Witte suggests that individual differences will indirectly affect the relationship among perceived threat, perceived efficacy, and fear arousal and the likelihood of engaging in health protective action.

Several personality traits have been examined in terms of their influence on reactions to fear appeals. Most of the studies examining individual differences have yielded mixed findings. For example, research has found that greater levels of anxiety are associated with less attitude change than are lower levels of anxiety (Boster & Mongeau,

1984; Witte & Allen, 1996). With regard to locus of control, Rosenstock, Strecher, and Becker (1988) suggest that one's locus of control coupled with perceptions of self-efficacy will influence the likelihood of performing health protective behaviors. Specifically, they suggest that individuals with high internal locus of control and high self-efficacy are most likely to engage in the recommended response health protective action while those with high external locus of control and low self-efficacy are least likely to perform the recommended response. However, other research on locus of control has found that those with external locus of control are more likely to engage in health protective action (Beck & Lund, 1981; Burnett, 1981).

Casey (1995) found that a fatalistic mentality prevalent within a community of low-socio-economic status African-American gay males diminished the relationship between perceptions of threat and actual health protective behaviors as posited by the EPPM. Despite the fact that members of this community believed that they could effectively and easily use condoms to avert the threat of AIDS, they did not engage in safer sex practices (i.e., use of a condom).

Thus, depending on the character of the population, individual differences can affect greatly the predictive utility of the model. However, these individual differences do not suggest why a person would selectively expose himself/herself to a fear appeal nor do they consider the consequences of such exposure. One personality trait that has found to be associated with willingness to view a fear appeal and acceptance of a fear appeal's recommended response is sensation seeking. Indeed, researchers have found that high sensation seekers are more likely to want to view a high threat fear appeal than are low

sensation seekers (Donohew, Lorch, & Palmgreen, 1991; Everett & Palmgreen, 1995; Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991; Palmgreen, Lorch, Donohew, Harrington, Dsilva, & Helm, 1995; Sheer & Cline, 1994; Zuckerman, 1988). Although high sensation seekers may be prone to seek out a high threat fear appeal, the fear appeal may have a limited impact on behavior. Several studies have found that low sensation seekers are more likely to engage in the recommended responses than are high sensation seekers (Clayton, Cattarello, & Walden, 1991; Harrington & Donohew, 1996; Horvath & Zuckerman, 1993; Kalichman, Heckman, & Kelly, 1996; Sheer & Cline, 1994; Sheer & Cline, 1995; Witte & Morrison, 1995). Whereas high sensation seekers, because of their propensity to engage in high risk activities, may be at greater risk for the health threat, exposure to a fear appeal may spur them to take additional risks regardless of their perceptions of threat and efficacy (e.g., Witte & Morrison, 1995). Consequently, we might expect that high threat, high efficacy messages would not produce danger control responses for high sensation seekers; rather, they might increase the likelihood of high sensation seekers to engage in the risky behavior. This contradicts the predictions of the EPPM.

The EPPM treats fear appeals as external stimuli whose influences are limited to their linguistic components (e.g., severity, susceptibility, response efficacy, and self-efficacy). The EPPM suggests that high threat, high efficacy messages will always be the most effective fear appeals. However, it ignores individuals' propensity to seek out information and their expectations about the level of threat a message might induce as they affect message acceptance. Some people may be more inclined to view stronger fear

appeals. For instance, high sensation seekers are more likely to desire vivid, graphic depictions contained within high threat messages (Everett & Palmgreen, 1995; Lorch, Palmgreen, Donohew, Helm, Baer, & Dsilva, 1994). Yet, high sensation seekers are also less likely to be persuaded by them (Witte & Morrison, 1995). While the EPPM suggests that high threat, high efficacy messages lead to danger control, this may not be the case for high sensation seekers. It is possible that high sensation seekers exposed to high threat, high efficacy messages will engage in more risky activities (i.e., less danger control). To this end, the EPPM may inadequately represent how the segment of the population most likely to selectively expose themselves to high threat fear appeals are likely to respond to them.

In sum, the characteristics of individual audience members and their tendency to seek out information consistent with their predispositions is overlooked in the current explication of the EPPM. Inclusion of these factors (selective exposure and sensation seeking) into the EPPM might provide new insight into when and why fear appeals will be successful in securing attitude and behavior change by mimicking more closely how individuals act under real-life conditions.

Selective Exposure

In order for a campaign to be effective, individuals must first be exposed to the message (Atkin & Freimuth, 1989; McGuire, 1989). McGuire (1989) believes that attitude change occurs in stages which must occur in sequence. First, one must be exposed to the message and pay attention to it. Even if one is exposed, no change may take place if attention is not given. If one attends to the message, then it may be

processed. Processing the message, however, does not ensure that it will be comprehended or interpreted in the manner intended by the researcher (Berkowitz, Lapinski, Liu, Cameron, McKeon, & Witte, 1996; Covello, von Winterfeldt, & Slovic, 1987; McCallum, Hammond, & Covello, 1991). Unless it is processed, the individual may not proceed to the next stage, learning. In this stage, individuals acquire the beliefs and skills which are necessary for performing the advocated behaviors. Once learned, then modification of beliefs and behaviors may ensue. At this stage, the individual yields to the information contained within the message. Finally, the individual may be called upon to utilize this newly acquired or redefined information at a later date (Fiske & Taylor, 1991; McGuire, 1989; Olson, 1993; Smith, 1995).

Thus, as a precursor to any action, members of the target audience must be exposed to a message. Typically, fear appeal studies utilize experimental methodology in which participants are given a message to read (Boster & Mongeau, 1984; Mongeau, 1994; Witte & Allen, 1996). Under these conditions, exposure may be regarded as forced. While these procedures provide necessary experimental control, they are not isomorphic with the ways in which individuals are naturally exposed to messages. Finnegan (1994) suggests that exposure has a variety of dimensions. Overall, these dimensions point to a definition of exposure which encompasses the various “conditions and processes through which individuals, groups, and populations come into contact with information in the context of social systems and social relations” (p. 76). Exposure is typically manipulated in terms of its amount (number of times a message is seen) or its duration (length of the message) (O’Keefe, 1990). However, exposure to campaign materials does not

necessarily ensure that the individual will be persuaded to engage in the recommended health protective behaviors.

The reasons why individuals will expose themselves to different mass media channels and context are varied. Some exposure is intentional; individuals actively seek out information to fulfill certain needs (Atkin, 1985; Johnson & Meischke, 1993; Olson, 1993). One may seek information in order to find novel solutions to problems, obtain background information about unknown events, or to help one cope with uncertainty. Atkin (1985) suggests that intentional exposure depends on both receiver needs and message attributes. When the receivers perceive that the benefits of acquiring and processing information outweigh the effort needed to obtain and process it, they will seek out the information. This search continues up until the point where economies of scale associated with the search are insufficient to produce significant increases in desired rewards. That is, one will halt the search once the effort required to continue exceeds the perceived utility of acquiring additional information.

Aside from intentional exposure, one may be exposed to information unintentionally. Olson (1993) terms this “accidental,” or non-intentional exposure. This type of exposure occurs when an individual encounters stimuli or information but did not seek it out actively. Examples of this type of exposure include: information on health issues contained in entertainment programming; commercials viewed while channel surfing; and advertisements in magazines, in newspapers, or on billboards. While information is not sought actively and the individual may have no immediate use for it, it is likely that the information may still be stored in memory for use at a later date. However,

because this information was not actively sought, the individual is unlikely to expend the effort to evaluate the information critically prior to storing it in memory. Consequently, subsequent use of the information may have serious ramifications for future behaviors if that information was (a) misinterpreted; (b) inaccurate; or (c) utilized under unwarranted conditions (see Chanowitz & Langer, 1981 for a description of the model).

It has been suggested that individuals naturally expose themselves to messages which are consistent with their prior beliefs and which meet, but do not exceed, their needs for emotional arousal (Donohew, Finn, & Christ, 1988; Donohew, Palmgreen & Duncan, 1980; Donohew & Tipton, 1973; Lorch, Palmgreen, Donohew, Helm, Baer, & Dsilva, 1994; Palmgreen, Donohew, Lorch, Rogus, Helm, & Grant, 1991). Donohew and his colleagues (1973; 1980; 1988) have posited a model of information exposure in which individuals seek pleasure through both variety and consistency in their experiences. When information becomes monotonous, individuals seek change which will provide additional stimulation. Likewise, when the information exceeds the threshold of stimulation (i.e., it becomes too arousing or threatening), they seek change which will reduce the arousal or avoid the perceived cause of the threat. Through this process, individuals strike a balance point of stimulation. It must be noted that not all audience members desire the same amount of emotional arousal. Fear appeals have the potential to create emotional arousal in excess of that desired by some individual audience members (Donohew, Lorch, & Palmgreen, 1991; Palmgreen, Donohew, Lorch, Rogus, Helm, & Grant, 1991). When designing a campaign, it is important to understand the dynamic of audience members' fear-level preferences and their reactions when the campaign message either exceeds or

does not meet their predispositions. Incorporating this factor may augment the predictive utility of the EPPM.

Sensation Seeking

As mentioned above, one personality trait that researchers have found to be associated with an individual's preference for high fear appeals is sensation-seeking. The need for sensation refers to an individual's preferences for arousal related to novel, ambiguous, and complex stimuli (Zuckerman, 1971; Zuckerman, Kolin, Price, & Zoob, 1964). High sensation seekers are more receptive to these types of stimuli and seek out experiences which will provide high levels of arousal. Low sensation seekers, on the other hand, prefer stimuli which do not provide such high levels of arousal. High sensation seekers exposed to a fear appeal may be intrigued by the "thrill" associated with engaging in the very activity the campaign is designed to prevent. Instead of promoting health protective action, the fear appeal may serve to increase the likelihood of certain individuals engaging in the discouraged activity. Sensation seeking, accordingly, may be at the root of why a campaign fails to promote health behaviors effectively. An audience analysis which considers this personality trait will provide a stronger base from which to gauge the campaign's effectiveness (Atkin & Freimuth, 1989; Donohew, Lorch, & Palmgreen, 1991; Lorch, Palmgreen, Donohew, Helm, Baer, & Dsilva, 1994; Palmgreen, Lorch, Donohew, Harrington, Dsilva, & Helm, 1995; Sheer & Cline, 1994; Sheer & Cline, 1995). If, after exposure to a message, an individual engages in the risky behavior, it may be due to the propensity to engage in high risk behaviors as predicted by sensation seeking rather than the campaign's inability to deliver its message effectively. In other words, the message

may be crafted in a way which has been shown to work theoretically, but the campaign may fail to promote health protective behavior because of the audience's desire to engage in risky activities. Moreover, this audience analysis may suggest that different approaches to phrasing message contents be utilized in order to appeal to the varying needs of both high and low sensation seekers.

The Sensation Seeking Scale was developed in an attempt to measure a personality trait related to the optimal level of stimulation at which a person is comfortable (Zuckerman, 1994). Zuckerman (1971, 1994) suggested that individuals, throughout the course of a day, strive to find a balance point between overstimulation and understimulation. Beyond this optimal level, extreme anxiety may be felt; below this level, the individual may experience boredom. This tolerance point is considered to be lower for low sensation seekers than it is for high sensation seekers.

In addition, this personality trait is presumed to be related to an individual's propensity to engage in risky behavior. Risky behaviors are likely to induce anxiety and arousal. This personality difference would be reflected in risk appraisals. Given the lower tolerance level for low sensation seekers, they are presumed to be more likely to avoid risky behaviors. High sensation seekers, on the other hand, are presumed to be more likely to seek out such behaviors. Horvath and Zuckerman (1993) suggest that this difference may be due to either (a) perceptions of rewards from having engaged in the activity, or (b) an optimistic bias. It is possible that the value of the physiological arousal derived from participating in risky activities (e.g., sky diving, gambling, drug use, etc.) outweighs the perceived risks, and this serves as the impetus for high sensation seekers.

Alternatively, high sensation seekers may believe that they are less likely to be harmed by engaging in a risky activity than are low sensation seekers. In either case, sensation seeking would be predictive of one's propensity to engage in risky behavior.

Since its original inception, Zuckerman's sensation seeking scale has undergone several revisions in order to update the phrasing of questionnaire items, to apply it to diverse populations, and to address several measurement issues (Zuckerman, 1994). However, through various versions and scale validation studies, four main subscales have emerged: Thrill and Adventure Seeking; Experience Seeking; Disinhibition; and Boredom Susceptibility. Zuckerman (1994) notes that these subscales have emerged with various degrees of reliability in validation studies. (See Zuckerman, 1994, for a complete review of the development of the scale). The first three factors tend to emerge more consistently and with greater degrees of reliability than does the Boredom Susceptibility factor (Zuckerman, 1971).

Thrill and Adventure Seeking refers to an individual's desire to engage in risky and unusual physical activities, such as sky diving, parasailing, mountain climbing, etc. Second, Experience Seeking refers to the desire to encounter new sensations through lifestyle choices. This may be accomplished through association with diverse groups of unconventional individuals (e.g., hippies, artists, etc.) or through unconventional art, music, or travel. The third subscale, Disinhibition, refers to unconventional social activities and social stimulation. Included in this factor are activities such as wild parties, drugs, alcohol consumption, and sex. The fourth subscale, Boredom Susceptibility, refers to an intolerance of monotony in either the types of activities in which one engages or the

people with whom one associates. This intolerance leads to restlessness and a desire for novel activity.

In general, males tend to exhibit higher levels of sensation than do females (Arnett, 1994; Newcomb & McGee, 1991; Sheer & Cline, 1995; Zuckerman, Eysenck, & Eysenck, 1978). Sensation seeking has also been found to be negatively related to age (Zuckerman, 1971; Zuckerman, Eysenck, & Eysenck, 1978); and negatively related to anxiety (Zuckerman & Link, 1968). Sensation seeking is positively related to the likelihood of engaging in illicit drug use, sexual behavior, criminal activity, and other delinquent activities (Clayton, Cattarello, & Walden, 1991; Clayton, Leukefeld, Donohew, Bardo, & Harrington, 1995; Kalichman, Heckman, & Kelly, 1996; Kalichman & Rompa, 1995; Newcomb & McGee, 1991). In addition, sensation seeking has been found to be negatively related to risk appraisal (Horvath & Zuckerman, 1993; Keinan, Meir, & Gome-Nemirovsky, 1984). That is, individuals high in sensation seeking are more likely to perceive a lower degree of risk involved with an activity than low sensation seekers. However, Horvath and Zuckerman (1993) found that risk appraisal is a consequence, rather than a mediator, of the relationship between sensation seeking and risky activities. Moreover, this relationship is dependent upon the risky activity in question. Zuckerman, Ball, & Black (1990) found that high and low sensation seekers had equivalent risk perceptions of smoking. Thus, risk appraisals may be dependent upon the type of activity being appraised.

Overall, high sensation seekers are likely to desire greater levels of arousal, such as those offered by a high threat fear appeal. As mentioned previously, high sensation

seekers are likely to desire to expose themselves to a message with high sensation value, such as high threat fear appeals (Donohew, Lorch, & Palmgreen, 1991; Everett & Palmgreen, 1995; Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991; Palmgreen, Lorch, Donohew, Harrington, Dsilva, & Helm, 1995; Sheer & Cline, 1994; Zuckerman, 1988). Moreover, they are also more likely to volunteer for activities which produce such arousal, especially those which offer novel and unique experiences (Zuckerman, 1994). If given a choice between receiving a high threat and a low threat fear appeal, it is expected that high sensation seekers will choose the high threat fear appeal more often than low sensation seekers. Similarly, when given a choice of messages, low sensation seekers will choose the low threat fear appeal more often than high sensation seekers. Thus,

H 1: The likelihood of choosing a high threat message will be positively related to sensation seeking level.

Most investigations of the effect of sensation seeking on health behaviors and reactions to messages has looked at sensation seeking as a composite of its four factors rather than examining the effect due to each factor separately. Although most research has examined sensation seeking as a general trait, this procedure is appropriate only when the factors reflect the same underlying latent trait (Hunter & Gerbing, 1982). If the factors reflect the same underlying trait, then their relationships with other variables will be identical (i.e., within sampling error). If the factors do not reflect the same underlying trait, then it is possible that there will be different causal relationships between dependent variables and the factors (i.e., Thrill and Adventure Seeking; Experience Seeking; Disinhibition; and Boredom Susceptibility). Thus, we might expect one or more factors

may predict a behavior (e.g., desire to expose oneself to a high threat fear appeal) while the other factors do not. Indeed, studies which have examined the four factors separately have found differential relationships between each factor and different behaviors. For example, disinhibition and boredom susceptibility to be predictive of the number of sexual partners while the other factors are unrelated (Newcomb & McGee, 1991; Sheer & Cline, 1995). Sheer (1995) found that different message appeals to get a sexual partner to use a condom were more effective for different types of sensation seekers. Specifically, she found that individuals high on disinhibition were more likely to intend to use pleasure or threat appeals than were those low in disinhibition. Thus, we might expect one or more of the sensation seeking factors to be stronger predictors of exposure to a high threat fear appeal while the other factors are not predictors. The question is posed:

RQ 1: Which, if any, of the sensation seeking factors (Thrill and Adventure Seeking; Experience Seeking; Disinhibition, and Boredom Susceptibility) are related to choosing a high threat message?

In addition to its relationship with arousing stimuli, sensation seeking has also been found to be related to an individual's propensity to engage in health protective action after exposure to a fear appeal. In a study examining the effectiveness of an intervention campaign designed to curb the adolescents' use of drugs, tobacco, and alcohol, Harrington and Donohew (1996) found that low sensation seekers were more likely to abstain from partaking in alcohol, drugs and tobacco. On the other hand, during the first year immediately following the intervention campaign, high sensation seekers were more likely to engage in the discouraged activities. However, at the follow-up interview two years

after the intervention campaign, the high sensation seeking students were less likely to have engaged in the discouraged activities than were high sensation seekers who did not participate in the intervention.

In a similar study, Clayton, Cattarello, and Walden (1991) examined the impact of a drug prevention program on adolescents. They found that high sensation seekers would engage in the discouraged activities within a short time period after the intervention. After this period, high sensation seekers exposed to the intervention would be less likely to engage in the discouraged activities than would similar individuals within a control group. Thus, it appears that high sensation seekers exposed to the fear appeal were more likely to perform the discouraged activities in the time period immediately following their exposure to the information. In the subsequent time period (two years later), however, they were less likely to engage in the same activities. For high sensation seekers, the campaign's effectiveness was not immediate; rather, it precipitated experimentation with the discouraged activity. Once the individuals had achieved the experience, they followed the intervention campaign's advice. However, this change in behavior may be attributable to other factors besides the campaign. For example, it is possible that the high sensation seekers had become bored with the activities and moved on to other novel and unique activities which would produce the arousal levels desired.

Similar to these two studies, Witte and Morrison (1995) found that low sensation seekers were more likely to be persuaded by the intervention than were high sensation seekers. In addition, they found that the low threat fear appeal was more effective than the high threat fear appeal regardless of the sensation seeking level. This finding is in stark

contrast to other fear appeal studies which, overall, have consistently found the high threat message to induce greater attitude change than the low threat message (Boster & Mongeau, 1984; Witte & Allen, 1996). They suggested these findings may be due to several reasons, including (a) the use of extremely graphic pictures throughout the presentation which may have proved distracting; (b) an optimistic bias on the part of the adolescent participants; or (c) lack of adequate substitutable behaviors (e.g., other activities which provide the desired stimulation without the risk of harm).

Given the research described above, we would expect that high sensation seekers will have less positive attitudes and intentions to engage in the recommended response than low sensation seekers and be less likely to perform the recommended response; conversely, low sensation seekers will have more positive attitudes and intentions to perform the recommended response than high sensation seekers and be more likely to perform the recommended response. Thus, it is hypothesized that:

H 2: Sensation seeking level will be negatively related to attitudes, intentions, and behaviors.

Further, main effects are expected for sensation seeking and message threat level, such that:

H 3: The strong fear appeal will produce more positive attitudes, intentions, and behaviors toward the recommended response than will the low fear appeal regardless of sensation seeking level.

Graphically, the relationships are expected to resemble those depicted in Figure 2.

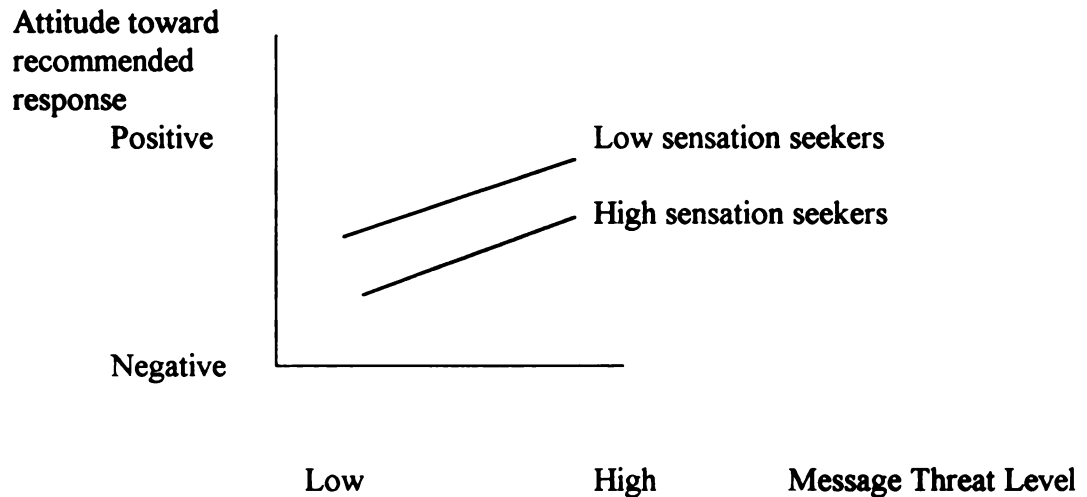


Figure 2. Main effects predicted for sensation seeking and message threat level.

Again, we might expect that attitudes and intentions towards engaging in a particular behavior may differ across the sensation seeking factors. Although research has examined the relationship between sensation seeking factors and attitudes and intentions towards religion, licit and illicit drug use, sexual experiences, and general deviance (e.g., Arnett, 1994; Newcomb & McGee, 1991; Sheer, 1995), no research has focused on oral hygiene. Therefore, the question is posed:

RQ 2: How are attitudes about, intentions to engage in the recommended response of proper oral hygiene (i.e., flossing on a regular basis), and actual behaviors related to each of the four sensation seeking factors?

Summary. Incorporation of sensation seeking into the EPPM as an individual difference has two benefits. First, it enables the message itself to be more than an external stimulus whose influence is limited to its linguistic components (e.g., severity, susceptibility, response efficacy and self-efficacy). Sensation seeking provides an

explanation for when and why individuals will seek out a fear appeal. Second, sensation seeking provides further clarification for why individuals will have more positive attitudes toward engaging in health protective action.

Choice and Volunteerism in Fear Appeal Research

Although sensation seeking provides further conceptual explanation for when and why a individuals may seek out a fear appeal, this only addresses intentional exposure. As discussed above, exposure is not always intentional. At times, we are exposed to information which we did not actively seek out. While sensation seeking provides an explanation for intentional exposure, it alone is insufficient to explain the impact of non-intentional exposure. Moreover, under real life conditions, one may seek out one type of information (e.g., a low threat fear appeal) but be exposed to another (e.g., a high threat fear appeal) during the search. Accordingly, research on volunteerism may aid in further clarification of the EPPM.

As mention previously, high sensation seekers are predisposed to engage in activities which offer heightened states of arousal (Zuckerman, 1994). Among these activities are experiments which offer novel and unique experiences, such as hypnosis, sensory deprivation, or the risk of physical harm (e.g., electric shock learning experiments). Coupled with a desire to view arousing stimuli, it would be expected that high sensation seekers would be more likely to choose (i.e., “volunteer”) to see high threat fear appeals (Donohew, Lorch, & Palmgreen, 1991; Everett & Palmgreen, 1995; Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991; Palmgreen, Lorch, Donohew, Harrington, Dsilva, & Helm, 1995; Sheer & Cline, 1994; Zuckerman, 1988). However,

most studies which suggest this tendency focused on how the “sensation value” of the content attracts attention. As Witte and Morrison (1995) noted, attention does not necessarily lead to attitude, intention or behavior change. Thus, further explication of the relationship between exposure and sensation seeking must address research findings on volunteerism. In the fear appeal literature, there are three notable experiments on the impact of volunteerism on attitude change.

First, Horowitz (1969) randomly assigned volunteers and non-volunteers to read either a high fear or low fear appeal message. He found that volunteers had more positive attitudes and attitude change than did non-volunteers. In addition, for volunteers, the relationship between fear and attitude change was positive. Conversely, for non-volunteers, the relationship between fear and attitude change was negative. Analyses revealed that non-volunteers felt more coerced than did volunteers.

In a similar experiment, Horowitz and Gumenik (1970) had volunteers and non-volunteers choose the experiment in which they preferred to participate. They found that volunteers who chose the experiment in which to participate exhibited the most positive attitude. Overall, volunteers exhibited more positive attitudes than did non-volunteers. Within each group, those who had a choice of experiments had more positive attitudes than did those who did not. In addition, high fear messages promoted greater positive attitudes under all conditions except for non-volunteers who did not have a choice of experiments.

Third, Horowitz (1972) sought to determine how volunteerism affects attitude change based on the level of arousal. Rather than rely on two levels of arousal (high or

low), Horowitz randomly assigned subjects to one of five arousal conditions. He found that volunteers exhibited more positive attitudes than did non-volunteers. In addition, he found that attitude change for non-volunteers peaks at intermediate levels of arousal while for volunteers, it peaks at higher levels of arousal.

Thus, voluntary participation in an experiment has a positive effect on attitude change. However, none of the three experiments reported above allowed the participants to choose which message (high or low threat) they received; subjects only volunteered to participate in the experiment itself. If allowed to choose between a high threat and a low threat message, it is expected that:

- H 4: Individuals who receive the message that they chose will have more positive attitudes, intentions, and behaviors than those who receive the message they rejected regardless of sensation seeking level.

Message Choice, Sensation Seeking, and the EPPM

In order to improve the predictive utility of the EPPM, it was suggested that the individual differences which indirectly affect the relationship between the threat and efficacy perceptions and danger and fear control outcomes be specified explicitly.

Sensation seeking was identified as one factor to be incorporated as an individual difference variable. Drawing on previous research, it was hypothesized that individuals with high need for sensation would be more likely to choose a high threat fear appeal than would those with low need for sensation. Furthermore, it was hypothesized that individuals with lower needs for sensation would be more likely to engage in health

protective action while high sensation seekers would be more likely to engage in the discouraged activities.

In addition to sensation seeking, volunteerism was considered as a means to increase the predictive utility of the EPPM. However, it was noted that the explanation surrounding sensation seeking as a predictor of exposure encompassed only intentional exposure. In order to account for non-intentional exposure, consideration of volunteerism was necessary. Drawing on previous research, it was hypothesized that volunteers (i.e., those receiving the message they chose) were more likely to exhibit more positive attitudes and greater attitude change than were non-volunteers (i.e., those who do not receive the message they chose).

Finally, it was noted that high threat fear appeals resulted in greater attitude, intention, and behavior change under all circumstances except when an individual neither volunteers to participate in an experiment nor receives a choice of which experimental activity is undertaken. In addition, it was noted that high threat fear appeals are most successful when efficacy is held constant at a high level.

Integrating these three streams of research (i.e., sensation seeking, message choice, and message threat level in a fear appeal), the following relationships are expected for attitudes, intentions, and behaviors when efficacy is held constant at a high level (where the most positive attitudes, intentions, and behaviors are marked “A”, and the least positive attitudes, intentions, and behaviors are marked “D”):

H 5:	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	A	B	B	C
Low Threat Message	B	C	C	D

Thus, the condition in which the most positive attitudes, intentions, and behaviors are expected is when low sensation seekers choose and receive a high threat message.

The conditions with the second most positive attitudes, intentions, and behaviors are expected to be exhibited within the following three conditions: (a) low sensation seekers who choose and receive the low threat message; (b) high sensation seekers who choose and receive the high threat message; and (c) low sensation seekers who choose the low threat message but receive the high threat message. The third most positive attitudes, intentions, and behaviors are expected to be exhibited within the following three conditions: (a) high sensation seekers who choose and receive the low threat message; (b) high sensation seekers who choose the low threat message but receive the high threat message; and (c) low sensation seekers who choose the high threat message but receive the low threat message. The least positive attitudes, intentions, and behaviors are expected when high sensation seekers choose the high threat message but receive the low threat message.

In combination, integration of these three streams of research (i.e., sensation seeking, message choice, and message threat level in a fear appeal) may improve the EPPM by providing greater detail as to when and why fear appeals are likely to result in

danger control outcomes (i.e., attitude, intention, and behavior change). Moreover, the treatment of fear appeals as more than simply external stimuli provides the fear appeal research with a novel means to begin to explore how individuals might act under conditions which more closely mimic non-experimental settings. While previous research has addressed (a) how sensation seeking influences message choice; (b) how sensation seeking impacts behavior; (c) how message choice impacts attitude change; and (d) how message threat level impacts the effectiveness of a fear appeal, this thesis attempts to integrate these findings as a whole.

CHAPTER 3

METHOD

Design

The focus of the experiment is to examine the impact of message choice on responses to a fear appeal. The experiment employed a factorial design with a control group. The design is as follows:

	High Threat Message			Low Threat Message		
Choice of Message - Received	X	O 1	O 2	X	O 1	O 2
Choice of Message - Not Received	X	O 1	O 2	X	O 1	O 2
No Choice Given	X	O 1	O 2	X	O 1	O 2

where “X” represents the fear appeal message; “O1” represents the immediate post-test; and “O2” represents the two-week follow-up. There were two choice conditions (choice of a high threat or low threat message); and two received conditions (received choice yes/no). A traditional forced exposure control group (randomly assigned a high threat or low threat message) was also employed. Participants were randomly assigned to conditions with the constraint that comparable numbers of participants be included in each cell ($n = 25$). An immediate post-test in the form of fifteen minute questionnaire was conducted. Participants completed a two-week follow-up questionnaire to assess behavior changes.

Participants

Two-hundred sixty-one students enrolled in summer courses at several universities participated in the research project. Thirty-eight percent of the participants were male; 62% were female. The majority (72%) were Caucasian; 15% were African American; 6.5% were Asian, and 1.5% were Hispanic. Nearly all of the participants (87%) were

between the ages of 18 and 24 ($\bar{x} = 22$). One quarter of the participants reported that they currently smoke cigarettes; an additional 8% classified themselves as former smokers. Almost half (45%) said they flossed their teeth at least once or twice per week (median = once every two or three weeks) while 9% said they never floss their teeth. Fifty-four percent said they go to the dentist twice a year; another 24% said they go once a year. Although 93% had never been diagnosed with periodontal disease, 75% reported experiencing at least one symptom of periodontal disease (e.g., bleeding gums; red, tender, or swollen gums; or sensitivity to hot or cold foods). Participants received credit for their participation in the study.

Procedure

Participants were told that the researchers were interested in “designing more effective health communication campaigns.” Participants were assured that their answers would be anonymous. Participants were randomly assigned to condition (forced exposure or choice). Participants in the forced exposure condition were randomly assigned to read either the high threat or the low threat message.

Prior to completing the questionnaire, individuals assigned to the choice conditions were asked if they would prefer to see “an explicit and scary message or one designed to arouse curiosity.” The wording was chosen such that both messages would seem equally interesting and appealing to the participants. Half of the participants received the message they chose (e.g., the explicit and scary message). The other half was told that “the message you requested is not available”. Participants were then asked if they were willing to read the other message (e.g., the message designed to arouse curiosity). Of the

participants assigned to receive the message they did not choose, only one refused to read the message she had rejected (i.e., the explicit and scary message).

After participants read the message, they completed a fifteen minute questionnaire. They were informed that they would be asked to complete an additional questionnaire in two weeks. They were asked to write their name on an envelope which was attached to the Time 1 questionnaire. The envelope was marked with a respondent identification number so that Time 1 and Time 2 questionnaires could be matched while retaining respondent anonymity.

Two hundred ten of the 261 participants completed the questionnaire two weeks later resulting in a 20% attrition rate. Attrition appeared to be random across cells ($X^2 (5, N = 261) = 7.32, p > .10$).

Messages

A single message was varied across levels for this study. Although multiple message designs are preferred to increase generalizability, a single message design was chosen because the main purpose of this study is to examine relations among theoretical variables (e.g., sensation seeking, threat, and efficacy). A high threat and low threat message were developed by compiling verbatim passages from several periodontal disease textbooks, brochures, and other sources (Beck & Lund, 1981; Bhaskar, 1986; Carranza, 1990; Cross, 1977; Dembrowski, Lasater, & Ramirez, 1978; Lamey & Lewis, 1988; Schlosberg, 1996; Wilson, 1989; Wilson, & Kornman, 1996). The messages were validated in a separate study described in the next section. Efficacy was held high at a constant level ($M = 5.78, sd = .70, N = 83$ for response efficacy and $M = 5.26, sd = .87, N$

= 82 for self-efficacy on a 7-point Likert type scale). Following the format used by Beck and Lund (1981) and Dembrowski, Lasater, and Ramirez (1978), the messages stated the cause of periodontal disease; the areas of the gum affected by it; the progression of the disease; its eventual outcome; and a recommended response (brushing and flossing) to avoid its onset. The high threat message was developed based on Witte's (1993) guidelines and focused on (a) individual's susceptibility to periodontal disease and (b) the severity of the disease. Additionally, the high threat message contained vivid, personalistic, and graphic language. All of the information in the message was accurate. Each message was accompanied by four pictures obtained from periodontal textbooks. Pictures accompanying the low threat message depicted healthy gums, plaque build-up, and a mild case of gingivitis (an early stage of periodontal disease). Pictures accompanying the high threat message depicted plaque stained with blue food dye, chronic inflammatory gingival enlargements, gingival recession, and soft-tissue swelling.

Message Validation Study

To ensure the messages differed in the degree of threat and fear they produce, the fear appeal messages were subjected to pilot-testing and validation in accordance with procedures found in the fear appeal literature. A separate study was undertaken to validate the high threat message in fact acted as a fear appeal to produce stronger threat perceptions and fear when compared to the low-threat message. Eighty-three students were recruited from a mid-sized university in southern New England and were randomly assigned to read versions of the high threat or low threat message. Participants were asked to carefully read their message and then complete a 64 item questionnaire that

determined perceptions of threat (i.e., severity and susceptibility), efficacy (i.e., response efficacy and self-efficacy) and fear. Specifically, 7-point Likert-type scales (ranging from “strongly disagree” to “strongly agree”) were used to assess: (a) severity (harmful; bad for my health; have negative consequences; dangerous; serious; severe); (b) susceptibility (likely; possible; at-risk; probably); (c) response efficacy (works; effective; adequately prevents; reduce my chances; worthwhile); (d) self-efficacy (able to floss; easy to do; convenient; does not take too much effort; not difficult; simple); and (e) fear (uncomfortable; frightens; scares; anxious; nervous; tense).

The validation study results indicated that the high threat message produced significantly stronger severity and susceptibility perceptions and significantly greater fear than the low threat message. After confirmatory factor analyses, items for each factor were combined to form an index for that factor. The high threat message produced significantly more severity perceptions ($M = 6.22$, $sd = .73$, $N = 40$ on a 7 point Likert-type scale) than the low threat message ($M = 4.79$, $sd = 1.06$, $N = 43$ on a 7 point Likert-type scale), $t = -7.11$, $df = 81$, $p < .001$ ($r = .61$, $p < .001$, $N = 81$). The high threat message also produced significantly more susceptibility perceptions ($M = 4.63$, $sd = 1.37$, $N = 40$, on a 7 point Likert-type scale) than the low threat message ($M = 3.02$, $sd = 1.10$, $N = 43$, on a 7 point Likert-type scale), $t = -5.92$, $df = 81$, $p < .001$ ($r = .56$, $p < .001$, $N = 81$). Similarly, the high threat message aroused significantly greater levels of fear ($M = 5.11$, $sd = 1.15$, $N = 39$, on a 7 point Likert-type scale) than the low threat message ($M = 4.07$, $sd = 1.38$, $N = 43$, on a 7 point Likert-type scale), $t = -3.69$, $df = 80$, $p < .001$ ($r = .38$, $p < .001$, $N = 81$).

Both high and low threat messages were compared to versions without the efficacy component. No significant differences were revealed for perceptions of response efficacy ($F(3, 79) = .45, p = ns$) or for self-efficacy ($F(3, 78) = 1.26, p = ns$). Overall, efficacy perceptions were high ($M = 5.78, sd = .70, N = 83$ for response efficacy and $M = 5.26, sd = .87, N = 82$ for self-efficacy on 7-point Likert type scales).

Measures

All scales were measured using 7 point Likert-type scales unless otherwise noted. All measures were developed based on Ajzen and Fishbein's (1977) guidelines for measures to correspond in specificity. Scales were developed using the confirmatory factor analysis subroutine of Hunter's (1988) Package. Confirmatory factor analyses (Hunter & Gerbing, 1982) were employed to test the dimensionality of the measures. At the end of this section, two tables have been included. Table 2 summarizes the variables measured in the study. Table 3 summarizes the independent and dependent variables for the manipulation checks, hypotheses, and research questions.

Threat

The two components of threat, severity and susceptibility were measured with five items each. Perceived severity of periodontal disease was assessed with such questions as: (a) "I believe periodontal disease is bad for my health"; (b) "I believe periodontal disease has negative consequences"; (c) "I believe that periodontal disease is dangerous"; (d) "I believe periodontal disease is serious"; and (e) "I believe periodontal disease is severe". After confirmatory factor analysis were performed, the scale items were summed and

averaged to create an overall index for perceived severity. Cronbach's alpha for perceived severity at Time 1 was .88 and at Time 2 was .94.

Perceived susceptibility was assessed with such questions as: (a) "I am likely to get periodontal disease"; (b) "It is possible that I will get periodontal disease"; (c) "I am at-risk for periodontal disease"; (d) "I probably will get periodontal disease"; and (e) "Chances are I will get periodontal disease". The scale items were summed averaged to create an overall index for perceived susceptibility. Cronbach's alpha for perceived susceptibility at Time 1 was .91 and at Time 2 was .92.

Efficacy

The two components of efficacy, response efficacy and self-efficacy were assessed with four and six items, respectively. Perceived response efficacy was assessed with such questions as: (a) "I believe that flossing on a regular basis works in preventing periodontal disease"; (b) "I believe that flossing on a regular basis will be effective in preventing periodontal disease"; (c) "I believe that flossing on a regular basis will adequately prevent periodontal disease"; and (d) "I believe that flossing on a regular basis will reduce my chances of getting periodontal disease". The scale items were summed averaged to create an overall index for perceived response efficacy. Cronbach's alpha for perceived response efficacy at Time 1 was .78 and at Time 2 was .87.

Perceived self-efficacy was assessed with such questions as: (a) "I am able to floss on a regular basis to reduce my chances of getting periodontal disease"; (b) "Flossing on a regular basis to prevent periodontal disease is easy to do"; (c) "Flossing on a regular basis to prevent periodontal disease is convenient"; (d) "Flossing on a regular basis to prevent

periodontal disease does not take too much effort”; (e) “Flossing on a regular basis to prevent periodontal disease is not difficult”; and (f) “Flossing on a regular basis to prevent periodontal disease is simple”. The scale items were summed and averaged to create an overall index for perceived response efficacy. Cronbach’s alpha for perceived self-efficacy at Time 1 was .87 and at Time 2 was .90

Fear

Fear arousal was measured by having participants rate the following mood adjectives (“strongly disagree” to “strongly agree”): anxious; nervous; scares; frightens; and uncomfortable. The scale items were summed and averaged to create an overall index for perceived fear. Cronbach’s alpha for fear at Time 1 was .87 and at Time 2 was .91.

Danger control outcomes

Attitude. Attitudes toward flossing on a regular basis were assessed with three seven-point semantic differential scales (e.g., good/bad, beneficial/not beneficial, and favorable/unfavorable). Cronbach’s alpha for these items at Time 1 was .68 and at Time 2 was .73.

Intentions. Intentions to floss on a regular basis were measured with seven questions on a seven-point Likert type scale. These questions included:
(a) “I plan to floss on a regular basis to prevent periodontal disease”; (b) “I intend to floss on a regular basis to prevent periodontal disease”; (c) “I am going to floss on a regular basis to prevent periodontal disease”; (d) “I expect to floss on a regular basis to prevent periodontal disease”; (e) “I intend to buy dental floss”; and (f) “I intend to use dental floss

on a regular basis”. Cronbach’s alpha for intentions at Time 1 was .97 and at Time 2 was .96.

Behaviors. Current behavioral practices were assessed for everyone during the initial interview. Participants were asked how often they flossed their teeth. In addition, self-report measures of behavioral performance were asked. These questions included: (a) “I currently floss on a regular basis”; (b) “I consistently floss on a regular basis”; and (c) “I regularly floss”. Cronbach’s alpha for this index at Time 1 was .97 and at Time 2 was .98.

Fear control measures

Defensive Avoidance. Participants will be asked to respond to the following question in four ways, “When I first heard about periodontal disease, my first instinct was to”: (a) “Want to think about/not want to think about my health risk”; (b) “Want/Not want to protect myself from periodontal disease”; (c) “Think about it a lot/Put problem out of my mind”; and (d) “Think about the problem/Try to forget the problem”.

Cronbach’s alpha at Time 1 was .85 and at Time 2 was .88.

Perceived Manipulation. The perceived manipulation questions asked if the participants felt that the message was: manipulative, misleading, or distorted. Cronbach’s alpha at Time 1 was .82.

Issue Derogation. The issue derogation questions asked whether the participants thought the reports of periodontal disease were: overblown, overstated, exaggerated, or overestimated. Cronbach’s alpha at Time 1 was .97 and at Time 2 was .96.

Sensation seeking

Sensation seeking was measured using Form V of Zuckerman's Sensation Seeking Scale Form V (1979). This instrument includes forty forced choice questions.

Zuckerman's measurement scale was chosen based on its extensive validation and the replication of its factors across a variety of topics with multiple populations.

Confirmatory factor analyses were performed in order to distinguish among the four factors (i.e., Thrill and Adventure Seeking; Experience Seeking; Disinhibition; and Boredom Susceptibility). Table 1 shows the items which met the criteria for internal consistency and parallelism (Hunter & Gerbing, 1982). In addition, the four sub-factors were analyzed in order to determine if they were second-order unidimensional according to the procedures outlined by Hunter and Gerbing (1982). The four factors failed to meet the criteria for second order unidimensionality; thus, analyses were conducted for the factors only. In addition to correlational tests, subsequent analyses participants in the upper tertile of each factor were classified as high sensation seekers for that dimension while those in the lower tertile were classified as low sensation seekers for that dimension.

Table 1. Items used to measure Sensation Seeking factors based on Form V of Zuckerman's Sensation Seeking Scale (1979)

<u>Factor</u>	<u>No. Items</u>	<u>Items</u>
Thrill and Adventure Seeking	10	3A 11B 16A 17A 20B 21B 23A 28A 38B 40B
Experience Seeking	5	4B 6A 19B 22A 26B
Disinhibition	7	1A 13B 29B 30B 33B 35B 36A
Boredom Susceptibility	6	5A 7B 8A 31B 34A 39A

Cronbach's alpha for the four factors were as follows: Thrill and Adventure Seeking, $\alpha = .81$; Experience Seeking $\alpha = .36$; Disinhibition $\alpha = .71$; and Boredom Susceptibility $\alpha =$

.54. Given the low reliabilities for experience seeking and boredom susceptibility, caution should be used in interpreting the results from tests with those factors. The reduced reliability indicates a potential lack of consistency and stability in the measures. It should be noted however, that the reliability obtained for boredom susceptibility is approximately that obtained in other studies which used this scale (e.g., Zuckerman, Eysenck, & Eysenck, 1978; Zuckerman, 1971).

Threshold questions

Because it is possible for the high threat fear appeal to exceed the optimal level of arousal of participants, five questions were asked to determine if the threshold was exceeded. Questions using a seven point Likert-type scale included: (a) “This poster is too scary; it should be milder”; (b) “This poster was too mild; it should be scarier”; (c) “This poster was not as scary as I thought it would be”; (d) “This poster was too extreme; it should be toned down”; and (e) “This poster was too serious; it should be milder”.

Confound Checks

Participants’ beliefs about and their perceived comprehension of the message were assessed. Participants responded to the question “This message was. . . .” on a seven point Likert-type scale: boring, exciting, interesting, offensive, and easy to understand. In addition, participants will be asked to evaluate how much they learned from reading the message (e.g., “I learned a lot from reading this message”). Finally, respondents will evaluate the quality of the arguments presented on a seven-point semantic differential scale (e.g., strong/weak; outstanding/poor; superior/inferior; great/lousy; marvelous/terrible; impressive/unimpressive).

Demographic Variables

Sex, age, ethnicity, current flossing behavior, current brushing behavior, smoking, family history of diabetes, and history of periodontal disease were assessed for use as control variables when needed.

Table 2. Variables measured in the study**Extended Parallel Process Measures****Perceived threat: perceived severity and perceived susceptibility****Perceived efficacy: perceived response efficacy and perceived self-efficacy****Fear****Danger control: attitudes, intentions, and behaviors****Fear control: defensive avoidance, issue derogation, perceived manipulation****Sensation Seeking (Zuckerman's Form V)****Thrill and adventure seeking****Experience seeking****Disinhibition****Boredom susceptibility****Message choice:****Choice: traditional "forced" exposure or allowed to choose (high threat or low threat message)****For those allowed to choose, received choice or received the message they did not choose****Threshold questions****Confound checks****Demographic variables**

Table 3. List of independent and dependent variables for the manipulation checks, hypotheses, and research questions.

Manipulation Check, Hypothesis or Research Question	Independent Variable(s)	Dependent Variable(s)
Manipulation check	Message threat level (high or low)	Perceived severity, perceived susceptibility, perceived fear
Manipulation check	Message efficacy level	Perceived response efficacy, perceived self-efficacy
Hypothesis 1	Sensation Seeking (overall)	Message choice (high threat or low threat)
Research Question 1	Sensation Seeking (by factor)	Message choice (high threat or low threat)
Hypothesis 2	Sensation seeking (overall and by factor)	Danger control outcomes (attitudes, intentions, behaviors)
Hypothesis 3	Message threat level (high or low)	Danger control outcomes (attitudes, intentions, behaviors)
Research question 2	Sensation seeking (by factor)	Danger control outcomes (attitudes, intentions, and behaviors)
Hypothesis 4	Message choice (received choice versus received message rejected)	Danger control outcomes (attitudes, intentions, and behaviors)
Hypothesis 5	Message choice, Sensation Seeking, and Message threat level	Danger control outcomes (attitudes, intentions, and behaviors)

CHAPTER 4

RESULTS

Overview

The purpose of this study was to examine the effect of sensation seeking and message choice on responses to fear appeals. Results of the manipulation and confound checks are presented followed by results for the hypotheses presented in Chapter 2. A complete description of the message validation study procedures and results appear in Chapter 3.

Manipulation Checks -- High versus Low Threat Message

Manipulation checks were conducted using one-tailed t-tests to determine if the high threat message produced stronger perceptions of threat and fear than the low threat message. In addition, two-tailed t-tests were employed to ensure that efficacy was held constant across both messages. To ensure that no self-selection features were factored into the manipulation checks, the analyses were performed with the 75 individuals who were randomly assigned to the forced exposure condition (i.e., they were not asked to choose between the two fear appeal messages).

Perceived threat. The high threat message produced significantly more severity perceptions ($M = 6.05$, $sd = .78$, $N = 38$, on a 7 point Likert-type scale) than the low threat message ($M = 5.48$, $sd = .85$, $N = 37$, on a 7 point Likert-type scale), $t = 3.04$, $df = 73$, $p < .05$ ($r = .34$, $p < .01$, $N = 75$). The high threat message produced significantly greater perceptions of susceptibility ($M = 3.45$, $sd = 1.14$, $N = 38$, on a 7 point Likert-type scale) than the low threat message ($M = 2.96$, $sd = 1.23$, $N = 37$, on a 7 point Likert-type scale), $t = 1.83$, $df = 72$, $p < .05$ ($r = .21$, $p < .05$, $N = 74$).

Fear. The high threat message produced significantly greater fear ($M = 5.47$, $sd = 1.20$, $N = 38$, on a 7 point Likert-type scale) than the low threat message ($M = 4.95$, $sd = 1.33$, $N = 37$, on a 7 point Likert-type scale), $t = 1.79$, $df = 73$, $p < .05$ ($r = .20$, $p < .05$, $N = 75$).

Perceived efficacy. No significant differences were revealed for perceptions of response efficacy ($t = -.87$, $df = 72$, $p = ns$) or for self-efficacy ($t = -1.25$, $df = 72$, $p = ns$). Overall, efficacy perceptions were high ($M = 5.81$, $sd = .73$, $N = 74$ for response efficacy and $M = 5.47$, $sd = .97$, $N = 74$ for self-efficacy on 7-point Likert type scales).

Confound Checks. No significant differences were found between the high and low threat messages on their descriptive qualities (e.g., excitement, interest, etc.), the amount of information learned from the message, or argument quality.

Manipulation Checks -- Choice Conditions

Additional analyses were conducted to rule out any effects choice versus no choice might have had on threat perceptions for the high versus low threat messages. For example, we were interested in assessing whether or not the high threat message produced the same degree of severity, susceptibility and fear for those in the choice vs. no choice conditions. No significant differences emerged between the two groups of individuals who read the high threat message only (choice versus no choice) on perceived severity ($t = -.12$, $df = 88$, $p = ns$), perceived susceptibility ($t = .69$, $df = 88$, $p = ns$), fear ($t = .36$, $df = 87$, $p = ns$), perceived response efficacy ($t = -1.89$, $df = 88$, $p = ns$), or perceived self-efficacy ($t = .96$, $df = 88$, $p = ns$). Similarly, no significant differences emerged between the two groups of individuals who read the low threat message only (choice versus no

choice) on perceived severity ($t = .41$, $df = 89$, $p = ns$), perceived susceptibility ($t = -1.87$, $df = 89$, $p = ns$), fear ($t = -1.24$, $df = 89$, $p = ns$), perceived response efficacy ($t = -.79$, $df = 89$, $p = ns$), or perceived self-efficacy ($t = -1.42$, $df = 89$, $p = ns$).

Sensation Seeking and Message Choice

Hypothesis 1, that the likelihood of choosing a high threat message will be positively related to sensation seeking level, was tested using correlational analyses. This technique is appropriate when assessing the relationship between an intervally scaled independent variable and a dichotomous dependent variable (Watt & van den Berg, 1995). Similar to other sensation seeking studies, analyses using the upper and lower tertiles of sensation seeking were also performed (e.g., Clayton, Cattarello, & Walden, 1991; Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991; Witte & Morrison, 1995). Hypothesis 1 was not supported. There was no relationship between sensation seeking and message choice whether a total sensation seeking score was used ($r = -.09$, $N = 177$, $p = ns$) or if the effect of all four factors was considered independently ($R = .12$, $N = 177$, $p = ns$). In total, 34.5% of all subjects chose the high threat fear appeal while 64.5% chose the low threat message. Analyses using only the upper and lower tertiles ($X^2 (1, N = 139) = .15$, $p = ns$) yielded similar results.²

Research Question 1 asked if there was any relationship between the individual sensation seeking factors' levels and the likelihood of choosing a high threat message. Table 4 summarizes the mean, standard deviation, and cell counts by message choice (high

² The break point for sensation seeking tertiles were calculated using the entire sample, regardless of condition. Respondents whose scores fell on the cut off point for the upper and lower tertile were classified in that group.

or low threat). Individuals high in thrill and adventure seeking were not more likely to choose the high threat fear appeal than were individuals low in thrill and adventure seeking ($r = -.04$, $N = 177$, $p = ns$). Analyses using only the upper and lower tertiles ($X^2 (1, N = 106) = .03$, $p = ns$) yielded similar results.

Individuals high in boredom susceptibility were not more likely to choose the high threat fear appeal than were individuals low in boredom susceptibility. Although no overall relationship was found, ($r = -.07$, $N = 177$, $p = ns$), analyses using only the upper and lower tertiles revealed that those highest in the upper tertile for boredom susceptibility were more likely to choose the message low threat message (“designed to arouse curiosity”) than the high threat message (“explicit and scary”) ($X^2 (1, N = 141) = 4.70$, $p < .05$).

Experience seeking and disinhibition were also unrelated to a person’s likelihood of choosing a high threat fear appeal was supported. No relationship was found between experience seeking and message choice ($r = .02$, $N = 177$, $p = ns$) or disinhibition and message choice ($r = -.11$, $N = 177$, $p = ns$). Analyses using only the upper and lower tertiles for experience seeking ($X^2 (1, N = 119) = .19$, $p = ns$) and for disinhibition ($X^2 (1, N = 136) = 2.19$, $p = ns$) yielded similar results.

Table 4. Means, standard deviations, and cell counts for overall Sensation Seeking level and each sensation seeking factor by Message Choice.

	Chose High Threat Message	Chose Low Threat Message	
Thrill and Adventure Seeking	<u>M</u> = 6.78 out of 10* sd = 2.93 <u>N</u> = 64	<u>M</u> = 6.94 out of 10* sd = 2.55 <u>N</u> = 118	t = .38 df = 180** p = ns
Experience Seeking	<u>M</u> = 2.16 out of 5* sd = 1.00 <u>N</u> = 64	<u>M</u> = 2.11 out of 5* sd = 1.20 <u>N</u> = 117	t = -.21 df = 179** p = ns
Disinhibition	<u>M</u> = 3.06 out of 7* sd = 2.12 <u>N</u> = 65	<u>M</u> = 3.58 out of 7* sd = 2.06 <u>N</u> = 118	t = 1.63 df = 181** p = ns
Boredom Susceptibility	<u>M</u> = 1.74 out of 6* sd = 1.44 <u>N</u> = 66	<u>M</u> = 2.03 out of 6* sd = 1.49 <u>N</u> = 120	t = 1.29 df = 184** p = ns
Overall Sensation Seeking	<u>M</u> = 13.87 out of 28* sd = 5.02 <u>N</u> = 62	<u>M</u> = 14.76 out of 28* sd = 4.44 <u>N</u> = 115	t = 1.21 df = 175** p = ns

*Number of items per scale

**Cell counts differ by factor due to missing data

Sensation Seeking, Attitudes, Intentions, and Behaviors

Hypothesis 2 posited that sensation seeking would be negatively related to attitudes, intentions, and behaviors toward engaging in health protective action. Specifically, high sensation seekers would have more positive attitudes, intentions, and behaviors toward engaging in the risky behavior and, conversely, that low sensation seekers would have more positive attitudes, intentions and behaviors towards performing the recommended response of flossing. Research Question 2 sought to determine how each of the sensation seeking factors were related to attitudes, intentions, and behaviors. To test this hypothesis research question, correlation analyses were performed. Most participants at the time of the initial interview had positive attitudes towards flossing ($\bar{X} = 6.28$, $sd = .83$, $N = 256$). The overall sensation seeking factor was unrelated to attitudes

at the time of the initial interview or at the two week follow-up. None of the four sensation seeking factors was related to attitudes at Time 1. Only individuals low in boredom susceptibility had more positive attitudes toward engaging in the recommended response at Time 2 ($r = -.14$, $N = 209$, $p < .05$).

Intentions at Time 1 were negatively related to overall sensation seeking ($r = -.10$, $N = 237$, $p < .05$), though they were unrelated at Time 2. Individuals low in disinhibition and individuals low in boredom susceptibility expressed greater intention to floss on a regular basis initially ($r = -.13$, $N = 246$, $p < .05$, and $r = -.16$, $N = 251$, $p < .05$, respectively).

The overall sensation seeking factor was unrelated to behaviors at Time 1 and Time 2.

However, individuals low in sensation seeking reported brushing more regularly ($r = -.14$, $N = 201$, $p < .05$), brushing more carefully ($r = -.18$, $N = 201$, $p < .01$), brushing longer ($r = -.16$, $N = 201$, $p < .01$), brushing more often ($r = -.19$, $N = 201$, $p < .01$), as well as talking with someone else about brushing one's teeth ($r = -.14$, $N = 200$, $p < .05$).

Individuals low in disinhibition also reported initially regular flossing ($r = -.11$, $N = 247$, $p < .05$). Individuals low in boredom susceptibility also reported flossing more carefully ($r = -.14$, $N = 211$, $p < .05$), brushing more often ($r = -.13$, $N = 210$, $p < .05$), and talking with someone else about brushing ($r = -.16$, $N = 210$, $p < .05$) at Time 2. In addition, those low in thrill and adventure seeking reported that since participating in the study, they brushed their teeth more regularly ($r = -.16$, $N = 206$, $p < .05$), more carefully, ($r = -.23$, $N = 205$, $p < .05$), more often ($r = -.21$, $N = 205$, $p < .05$), and for longer periods of time ($r = -.19$, $N = 206$, $p < .05$) as well as talking with someone else about brushing one's teeth ($r = -.13$, $N = 205$, $p < .05$). Thus, Hypothesis 2 received partial support; though few

significant differences emerged, intentions and behaviors were negatively related to sensation seeking level.

Message Threat Level, Attitudes, Intentions, and Behaviors

Hypothesis 3 posited that the high threat message would produce more positive attitudes, intentions, and behaviors regardless of sensation seeking level. This hypothesis was assessed using an independent sample t-test. Although the high threat message did not produce more positive attitudes and intentions either at the immediate post test or at the two-week follow-up, behaviors were affected. Specifically, individuals who read the high threat message reported flossing more often ($t = -2.22$, $df = 210$, $p < .05$); flossing more carefully ($t = -3.10$, $df = 210$, $p < .05$); flossing more regularly ($t = -2.56$, $df = 209$, $p < .05$); brushing more regularly ($t = -2.52$, $df = 210$, $p < .05$); brushing more carefully ($t = -2.85$, $df = 210$, $p < .05$); brushing for longer periods of time ($t = -3.59$, $df = 210$, $p < .05$); and brushing more often ($t = -2.58$, $df = 209$, $p < .05$). Thus, Hypothesis 3 was supported for behaviors, but not for attitudes or intentions.

Choice, Attitudes, Intentions, and Behaviors

Hypothesis 4, that individuals receiving the message they chose would have more positive attitudes, intentions, and behaviors than those who received the message they rejected regardless of sensation seeking level, was partially supported. Although no differences emerged for attitudes or intentions, behaviors were affected. Individuals who received the message they rejected reported flossing their teeth more often ($t = -2.50$, $df = 146$, $p < .05$); flossing more carefully ($t = -2.03$, $df = 146$, $p < .05$); flossing more regularly ($t = -2.60$, $df = 145$, $p < .05$) and brushing longer ($t = -1.94$, $df = 210$, $p < .05$). Moreover,

those individuals who chose the low threat but received the high threat message reported flossing more often ($t = -2.64$, $df = 74$, $p < .01$) and flossing more regularly ($t = -2.57$, $df = 74$, $p < .01$) than those who chose and received the high threat message.

Choice. Post-hoc sub-analyses were conducted on the choice-only condition to determine the perceptions of those who might choose the high threat message versus the low threat message, as it was thought these perceptions might be related to attitudes, intentions, and behaviors. Of the 186 participants given the choice of which message they preferred to read, 66 chose the high threat message (35.5%) while 120 chose the low threat message (64.5%). Interestingly, analyses revealed that individuals who chose the high threat message, regardless of message received, had significantly greater perceived susceptibility ($M = 3.32$, $sd = 1.15$, $N = 66$, on a 7 point Likert-type scale) than those who chose the low threat message ($M = 3.00$, $sd = 1.24$, $N = 120$, on a 7 point Likert-type scale), $t = -1.75$, $df = 179$, $p < .05$.

Choice, Message Threat Level, Sensation Seeking and Attitudes, Intentions and Behaviors

Hypothesis 5 predicted main effects for sensation seeking, message choice, and message threat level for attitudes, intentions, and behaviors. Tables 5 to 13 show the adjusted means, standard deviations, and cell sizes for attitudes, intentions, and behaviors at Time 1 and Time 2 by message threat level, message choice, and sensation seeking level. Only subjects who were not in the forced exposure conditions were included in the following analyses.³ First, analysis of variance was performed in order to determine if there were any interaction effects among the factors and attitudes, intentions, and flossing

³ Degrees of freedom differ due to missing data. No variable had more than five percent of the data missing.

behaviors. No interactions were revealed. Thus, sensation seeking was treated as a covariate and analysis of covariance was performed.

Analyses revealed no significant effects for the sensation seeking factors ($F(4, 164) = .53, p = ns$), message choice, ($F(1, 164) = .51, p = ns$), or message threat level ($F(1, 164) = .15, p = ns$) on attitudes at the immediate post-test ($F(7, 164) = .53, p = ns$). Similarly at the two-week follow-up, no significant effects on attitudes emerged ($F(7, 132) = .94, p = ns$). Analyses revealed no significant effects for the sensation seeking factors ($F(4, 132) = 1.29, p = ns$), message choice, ($F(1, 132) = .70, p = ns$), or message threat level ($F(1, 132) = .18, p = ns$). Thus, Hypothesis 5 was not supported for attitudes.

With respect to intentions at the immediate post-test ($F(7, 160) = 2.12, p < .05$), no effects for message choice ($F(1, 160) = .58, p = ns$) or message threat level ($F(1, 160) = .94, p = ns$) emerged. Although none of the sensation seeking factors had a significant effect on intentions individually, they did have a significant effect on intentions when combined ($F(4, 160) = 2.84, p < .05$). At the two-week follow-up, no significant effects for the sensation seeking factors ($F(4, 133) = 1.00, p = ns$), message choice, ($F(1, 133) = 1.25, p = ns$), or message threat level ($F(1, 133) = .21, p = ns$) emerged. Overall, at the two-week follow-up, there was no effect on intentions ($F(7, 133) = .87, p = ns$). Again, Hypothesis 5 was not supported for intentions.

With respect to current behavioral practices at the immediate post-test, no significant effects emerged for either message choice ($F(1, 161) = .13, p = ns$) or message threat level ($F(1, 161) = .22, p = ns$). However, significant effects emerged for the

sensation seeking factor of disinhibition ($F(1, 161) = 6.23, p < .05$) and for the four factors in combination ($F(1, 161) = 2.81, p < .05$). At the two-week follow-up, no significant effects for the sensation seeking factors ($F(4, 133) = 1.93, p = ns$), message choice, ($F(1, 133) = .81, p = ns$), or message threat level ($F(1, 133) = .03, p = ns$) emerged. Overall, at the two-week follow-up, there was no effect on current behavioral practices ($F(7, 133) = .87, p = ns$).

With respect to actual flossing behaviors at the two-week follow-up, although no significant effects emerged overall ($F(7, 134) = 1.51, p = ns$), individuals who received the message they rejected reported flossing more often than those individuals who received the message they chose ($F(1, 134) = 5.32, p < .05$). Yet, no differences emerged due to message threat level ($F(1, 134) = .01, p = ns$) or due to the sensation seeking factors ($F(4, 134) = .55, p = ns$). Similarly, although no significant effects emerged overall ($F(7, 133) = 1.71, p = ns$), individuals who received the message they rejected reported flossing more regularly than those individuals who received the message they chose ($F(1, 133) = 5.16, p < .05$). Again, no differences emerged due to message threat level ($F(1, 133) = .20, p = ns$) or due to the sensation seeking factors ($F(4, 133) = .75, p = ns$). However, individuals who received the message they rejected did not report flossing more carefully than those individuals who received the message they chose ($F(1, 134) = 2.30, p = ns$). Again, no differences emerged due to message threat level ($F(1, 134) = 2.54, p = ns$) or due to the sensation seeking factors ($F(4, 134) = 1.28, p = ns$), or for the model overall ($F(7, 134) = 1.53, p = ns$). Thus, Hypothesis 5 was not supported for behaviors.

Overall, the best predictor of behavior at the two-week follow-up was an individual's flossing behavior at the immediate post-test ($r = .71$, $N = 206$, $p < .01$). Those who flossed more frequently at the beginning of the study had more positive attitudes towards flossing ($r = .22$, $N = 252$, $p < .01$); more positive intentions to floss both at Time 1 ($r = .41$, $N = 248$, $p < .01$) and Time 2 ($r = .34$, $N = 206$, $p < .01$); and reported flossing more often ($r = .17$, $N = 208$, $p < .05$), more carefully ($r = .19$, $N = 208$, $p < .01$), and more regularly ($r = .24$, $N = 207$, $p < .01$).

Table 5. Means, standard deviations, and cell counts for *Attitude at Time 1* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 6.39$ $sd = .88$ $n = 17$	$\bar{x} = 6.46$ $sd = .65$ $n = 16$	$\bar{x} = 6.14$ $sd = .83$ $n = 20$	$\bar{x} = 6.31$ $sd = .84$ $n = 33$
Low Threat Message	$\bar{x} = 6.18$ $sd = .72$ $n = 31$	$\bar{x} = 6.40$ $sd = .88$ $n = 26$	$\bar{x} = 6.27$ $sd = .51$ $n = 14$	$\bar{x} = 6.40$ $sd = .74$ $n = 15$

Table 6. Means, standard deviations, and cell counts for *Intentions at Time 1* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 5.55$ $sd = .94$ $n = 17$	$\bar{x} = 5.46$ $sd = 1.07$ $n = 16$	$\bar{x} = 5.34$ $sd = 1.63$ $n = 19$	$\bar{x} = 5.51$ $sd = .87$ $n = 30$
Low Threat Message	$\bar{x} = 5.55$ $sd = .77$ $n = 31$	$\bar{x} = 4.56$ $sd = 1.53$ $n = 26$	$\bar{x} = 5.68$ $sd = .78$ $n = 14$	$\bar{x} = 5.49$ $sd = 1.03$ $n = 15$

Table 7. Means, standard deviations, and cell counts for *Behavior at Time 1* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 4.38$ $sd = 1.70$ $n = 17$	$\bar{x} = 4.01$ $sd = 1.65$ $n = 16$	$\bar{x} = 4.35$ $sd = 1.91$ $n = 19$	$\bar{x} = 3.58$ $sd = 1.80$ $n = 31$
Low Threat Message	$\bar{x} = 4.41$ $sd = 1.98$ $n = 31$	$\bar{x} = 3.06$ $sd = 2.01$ $n = 26$	$\bar{x} = 4.41$ $sd = 1.77$ $n = 14$	$\bar{x} = 3.64$ $sd = 1.95$ $n = 15$

Table 8. Means, standard deviations, and cell counts for *Attitudes at Time 2* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 5.64$ $sd = .93$ $n = 14$	$\bar{x} = 6.05$ $sd = 1.07$ $n = 12$	$\bar{x} = 5.85$ $sd = .76$ $n = 17$	$\bar{x} = 6.25$ $sd = .82$ $n = 30$
Low Threat Message	$\bar{x} = 5.93$ $sd = .67$ $n = 27$	$\bar{x} = 6.12$ $sd = .94$ $n = 22$	$\bar{x} = 5.91$ $sd = .74$ $n = 10$	$\bar{x} = 6.28$ $sd = 1.21$ $n = 8$

Table 9. Means, standard deviations, and cell counts for *Intentions at Time 2* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 5.07$ $sd = 1.26$ $n = 14$	$\bar{x} = 4.67$ $sd = 1.05$ $n = 12$	$\bar{x} = 5.13$ $sd = 1.35$ $n = 17$	$\bar{x} = 4.80$ $sd = 1.11$ $n = 30$
Low Threat Message	$\bar{x} = 4.83$ $sd = 1.34$ $n = 27$	$\bar{x} = 4.47$ $sd = 1.61$ $n = 22$	$\bar{x} = 5.62$ $sd = 1.10$ $n = 11$	$\bar{x} = 4.76$ $sd = 1.35$ $n = 8$

Table 10. Means, standard deviations, and cell counts for *Behaviors at Time 2* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 4.46$ $sd = 2.10$ $n = 14$	$\bar{x} = 3.91$ $sd = 1.80$ $n = 12$	$\bar{x} = 4.92$ $sd = 1.88$ $n = 17$	$\bar{x} = 3.81$ $sd = 1.74$ $n = 30$
Low Threat Message	$\bar{x} = 4.39$ $sd = 1.88$ $n = 27$	$\bar{x} = 3.42$ $sd = 1.82$ $n = 22$	$\bar{x} = 5.39$ $sd = 1.58$ $n = 11$	$\bar{x} = 3.57$ $sd = 2.23$ $n = 8$

Table 11. Means, standard deviations, and cell counts for *"Flossing more often"* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 3.32$ $sd = 2.11$ $n = 14$	$\bar{x} = 3.01$ $sd = 1.53$ $n = 12$	$\bar{x} = 5.01$ $sd = 1.83$ $n = 17$	$\bar{x} = 3.97$ $sd = 1.88$ $n = 30$
Low Threat Message	$\bar{x} = 3.73$ $sd = 1.88$ $n = 27$	$\bar{x} = 3.32$ $sd = 2.02$ $n = 22$	$\bar{x} = 4.43$ $sd = 1.79$ $n = 11$	$\bar{x} = 3.09$ $sd = 1.79$ $n = 9$

Table 12. Means, standard deviations, and cell counts for *"Flossing more carefully"* by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 3.47$ $sd = 2.17$ $n = 14$	$\bar{x} = 3.57$ $sd = 1.61$ $n = 12$	$\bar{x} = 4.73$ $sd = 1.90$ $n = 17$	$\bar{x} = 3.81$ $sd = 1.83$ $n = 30$
Low Threat Message	$\bar{x} = 3.57$ $sd = 1.77$ $n = 27$	$\bar{x} = 3.02$ $sd = 1.75$ $n = 22$	$\bar{x} = 4.10$ $sd = 1.41$ $n = 11$	$\bar{x} = 3.10$ $sd = 1.45$ $n = 9$

Table 13. Means, standard deviations, and cell counts for “*Flossing more regularly*” by message choice, message threat level, and sensation seeking.

	Choice of Message		No Choice of Message	
	Low Sensation Seekers	High Sensation Seekers	Low Sensation Seekers	High Sensation Seekers
High Threat Message	$\bar{x} = 3.65$ $sd = 2.24$ $n = 14$	$\bar{x} = 2.67$ $sd = 1.51$ $n = 12$	$\bar{x} = 4.93$ $sd = 1.80$ $n = 17$	$\bar{x} = 3.81$ $sd = 1.73$ $n = 30$
Low Threat Message	$\bar{x} = 3.69$ $sd = 1.77$ $n = 26$	$\bar{x} = 2.97$ $sd = 1.83$ $n = 22$	$\bar{x} = 4.36$ $sd = 1.70$ $n = 11$	$\bar{x} = 2.76$ $sd = 1.58$ $n = 9$

CHAPTER 5

SUMMARY AND CONCLUSIONS

Overview

This study investigated the influence of sensation seeking and message choice on responses to fear appeals. It was expected that (a) individuals who read a high threat message; (b) who are low sensation seekers; and (c) who received a preferred message would be more likely to have positive attitudes, to intend to engage in, and to perform a recommended response advocated in a fear appeal.

Overall, the pattern of findings reveal that attitudes and intentions were seldom affected by sensation seeking or message choice; however, behaviors were affected. The lack of attitude change in this study may be due to the overall highly positive attitudes held initially by the participants. Initial attitudes towards flossing as a preventive measure were extremely positive and there was little variance in attitudes. Thus, the creation of more positive attitudes would need to be measured on a more sensitive scale than was utilized.

In addition, these highly positive attitudes may be attributable to a prevailing understanding of the benefits associated with proper dental hygiene. The benefits of a regimen of proper brushing and flossing may be considered a cultural truism; that is, knowledge of these benefits is accepted and unquestioned by the vast majority of people within society (McGuire, 1961, 1962; McGuire & Papageorgis, 1961). Under this circumstance, strengthening already strong attitudes may be both difficult to achieve and unnecessary in order to produce behavior change.

The remainder of this chapter discusses the main findings for each of the independent variables: message threat level, sensation seeking, and message choice. Next, implications of these findings in addressing the EPPM's shortcomings are discussed. Finally, implications for health communicators based on the findings of this investigation are presented.

Message Threat Level

Consistent with previous fear appeal research, the high threat fear appeal message was more effective in producing the advocated behavior than the low threat message. The message in this investigation was a high threat, high efficacy message which would motivate people to control the danger posed by the health threat. This finding is in contrast to the findings of an investigation of dental hygiene compliance by Janis and Feshbach (1953). They found that the low threat fear appeal was more effective in producing compliance than was the high threat message. One explanation for these seemingly inconsistent results rest with the efficacy level conveyed by the message. Whereas the messages used in this investigation contained high efficacy components, the efficacy level conveyed by the messages in the Janis and Feshbach investigation is unknown. As Witte and Allen (1996) point out, high threat fear appeals are most effective when they are coupled with high efficacy components.

Although attitudes were unaffected (most likely due to a ceiling effect), individuals who read the high threat message were more likely to engage in the recommended response (i.e., floss their teeth) than were individuals who read the low threat message.

Again, this lack of attitude change may be due to the strong positive attitudes people held initially and may be attributed to the reasons discussed in the previous section.

Although the high threat message did not produce attitude change, it did lead individuals to follow proper dental hygiene suggestions more closely. The high threat message may have been a stronger reminder than the low threat message and served as an impetus to establish a efficacious habit or as an impetus to re-establish a lapsed habit.

Sensation Seeking

Sensation Seeking and Choice. Contrary to expectations, high sensation seekers were no more likely to choose to view the high threat message than were low sensation seekers. Thus, we may expect the majority of the population, regardless of sensation seeking level, to prefer messages which are unlikely to arouse high levels of fear. However, although individuals may not prefer high threat messages, these messages are the ones which are more effective in promoting compliance with behavioral recommendations.

Sensation seeking, as a general trait, was unrelated to choice of either a high threat or a low threat message. However, analyses suggest that two of the four factors which comprise sensation seeking -- boredom susceptibility and disinhibition -- may be related to message threat level preference. First, those individuals in the upper tertile of boredom susceptibility were more likely to choose the low threat message. This may be due to the options provided. The low threat message was described as a "message designed to arouse curiosity". This finding may indicate a tendency for those high in boredom susceptibility to desire more mental stimulation associated with cognitive, rather than

emotional, arousal. When posed with a choice between explicit and scary material and material designed to arouse curiosity, those high in boredom susceptibility may be attracted to a message which may pique interest and stimulate thought rather than one which invokes fear.

Similarly, those who may be more likely to choose a high threat message described as “explicit and scary” may be those who are high in disinhibition. This group, aside from describing individuals who seek unconventional social activities, and social stimulation associated with drugs, alcohol, and sex, may also include those who are intrigued by gruesome, graphic media depictions. They may also be more likely to desire to view graphic horror films, pornographic material, or extreme violence. Although the relationship between disinhibition and choice was not statistically significant, this may be due to the weak reliability of the items measuring disinhibition.

Sensation Seeking, Attitudes, Intentions, and Behaviors. Previous research has shown that low sensation seekers have more positive attitudes and intentions and would be more likely to engage in the recommended response than high sensation seekers (Clayton, Cattarello, & Walden, 1991; Harrington & Donohew, 1996; Witte & Morrison, 1995). Although few significant differences emerged for attitudes and intentions across the four sensation seeking factors, those that did were consistent with previous research (i.e., individuals low in that sensation seeking factor had more positive attitudes and intentions). It is important to note that, although attitudes were not related to sensation seeking (except for boredom susceptibility at the two-week follow-up), behaviors were.

Sensation seeking may affect attitudes, intentions, and behaviors only when the activity has high sensation value (i.e., able to elicit strong sensory, affective reactions). The relationship between sensation seeking and engaging in an activity may depend upon the type and general riskiness of the activity involved such that only those risk activities with high perceived risk are likely to result in differential attitudes, intentions, and behaviors across sensation seeking levels. Activities such as bungee jumping, sky diving, drugs, travel to exotic places, unprotected sex, or other high risk activities may provide the biologically based stimulation desired by the high sensation seekers. Activities such as flossing one's teeth, taking vitamins, and wearing sunscreen daily may be beneficial to one's health but not provide enough stimulation such that high sensation seekers might be more likely to engage in the risky behavior. Moreover, different activities may not satisfy different biologically driven needs as reflected in the four factors which comprise sensation seeking. For example, a roller coaster ride may satisfy a need to engage in frightening experiences and be related to an individuals' inclination toward thrill and adventure seeking; however, it may not satisfy an inclination toward experience seeking and a desire to engage in novel experiences.

Message Choice

Counter to what was expected, individuals who received the message they preferred did not have more positive attitudes, intentions, and behaviors than those who did not receive the message they preferred. To the contrary, those who received the message they rejected had more positive behaviors. (As mentioned previously, attitudes and intentions were unaffected.) This may be due to the effectiveness of the high threat

message producing more positive behaviors in general as compared to the low threat message. In this study, participants received one of two messages: a high threat or low threat message. Those who chose to view the low threat message, but did not receive it, were exposed to the high threat message. As discussed above, the high threat message produced more positive behaviors. Moreover, this group (which requested the low threat but received the high threat message) reported flossing more often and more regularly than the group which chose and received the high threat message. Thus, it appears that individuals who desire low threat messages but are exposed to high threat messages are still more likely to change their behaviors, even though their “choice” has, in effect, been taken away. It appears that if individuals have a choice initially, even if that preference cannot be satisfied, will lead to positive behaviors.

Interestingly, individuals who chose the high threat message reported greater susceptibility to the health threat than did those who chose the low threat message. It may be that those who believe themselves to be at greater risk to harm from a health threat search for information which will be more likely to affirm this belief. To the extent that high threat fear appeals, messages which are “explicit and scary,” are likely to confirm this belief, individuals who believe themselves to be at greater risk will seek out health messages, especially those which have the potential to confirm their beliefs about their susceptibility to the threat. Because they already have high perceived susceptibility, we might expect that this group to have more positive attitudes and intentions to engage in health protective behaviors when exposed to high threat messages containing strong efficacy messages.

Message Threat Level, Sensation Seeking, and Message Choice

The expected additive effects for choice, threat level, and sensation seeking were not found; rather, more positive attitudes, intentions, and behaviors were found for those individuals who chose the low threat but received the high threat message. Again, this may be attributed to the greater effectiveness of a high threat, high efficacy fear appeal.

The influence of sensation seeking may have been absent due to the relatively low degree of risk associated with not engaging in the recommended response to prevent periodontal disease. However, if sensation seeking is truly a personality trait, then its effects should be observed regardless of the health topic chosen. The results within this study suggest that the utility of sensation seeking as an individual difference variable is limited by the behavior under investigation. In addition, given the results of this investigation, it is noted that the four factors which constitute sensation seeking (e.g., Thrill and Adventure Seeking; Experience Seeking; Disinhibition; and Boredom Susceptibility) represent different aspects of personality and do not necessarily reflect the same underlying latent personality trait. The analyses conducted suggest that, although the four factors are related, each is conceptually distinct and may be indicative of different underlying biologically based needs. In other words, each factor reflects desires for different types of stimulation and each factor may have a different relationship with the outcome under investigation. This suggests that, in the future, analyses by each factor separately may be more illuminating and provide more insight about the relationship among the theoretical constructs than would analysis by the sensation seeking factor as a whole.

Implications for the Extended Parallel Process Model

The EPPM served as the theoretical basis for this investigation. The EPPM suggests that perceptions of threat determine if an individual will be motivated to take health protective action while perceptions of efficacy determine the nature of that action. According to the EPPM, high threat, high efficacy messages will be the most effective in gaining compliance. Two shortcomings of the EPPM were identified: (a) the lack of attention given to individual difference variables and their potential impact on message acceptance; and (b) individuals' propensity to selectively expose themselves to information. Sensation seeking was examined because it has been found to influence desire for high threat messages as well as to reduce the likelihood of engaging in health protective action.

Results of this study suggest that, with efficacy held constant at a high level, high threat messages are more effective in gaining behavioral compliance than are low threat messages. These results are consistent with previous fear appeal studies. This study also demonstrated that most people prefer to expose themselves to low threat messages. Thus, although high threat messages will be more effective in promoting behavioral change, there exists a need to address the role of selective exposure in the EPPM.

Sensation seeking was identified as an individual difference variable which might explain selective exposure. Taken as a whole, sensation seeking does not appear to drive people's choice of messages. This may be due to the weak reliability of the scale items as well as the evidence that the four factors which constitute sensation seeking (e.g., Thrill and Adventure Seeking; Experience Seeking; Disinhibition; and Boredom Susceptibility)

represent different aspects of personality and do not necessarily represent the same underlying personality trait. In addition, sensation seeking does not appear to be related to engaging in health protective action for activities lacking high sensation value. Taken together, these results suggest that it is possible certain sensation seeking factors to be better predictors of selective exposure to high threat messages yet be unrelated to the propensity to engage in risky activities. Again, the propensity to engage in health protective action may rest on the type of activity being advocated.

Results also suggest that the people most likely to selectively expose themselves to high threat messages are those who perceive themselves susceptible to the health risk. For this group, it is expected that high threat, high efficacy messages will be effective. People who feel susceptible and seek out information which affirms this belief are likely to encounter information about how they can change their behavior to protect themselves. Active information seeking behavior may also indicate readiness and motivation to adopt recommended courses of action. Yet, these results also raise the possibility that this group will be more likely to engage in danger control responses (i.e., attitude, intention, and behavior change) regardless of the level of efficacy contained within the message.

This investigation suggests that selective exposure to a high threat message may play a pivotal role in determining the likelihood of acceptance of the message's recommendations. Although sensation seeking does not appear to provide a strong explanation of selective exposure, perceived susceptibility does. The factors influencing susceptibility perceptions may hold the key to understanding when and why individuals are

likely to expose themselves to high threat messages and to engage in danger control processes.

Implications for Health Communicators

Health communicators who want to spur health protective action may want to utilize high threat fear appeals with high efficacy components. It is these messages which have consistently been found to be most effective (Rogers, 1983; Witte & Allen, 1996). This investigation provides two reasons why high threat fear appeals with high efficacy messages would be most effective. First, this study suggests that most people prefer to expose themselves to low threat messages. However, these messages are likely to be less effective in promoting attitude, intention, and behavior change in than would a high threat message. Yet, when individuals who desire a low threat message receive a high threat message, they have more positive attitudes, intentions and behaviors. Thus, use of a high threat fear appeal should prove more effective for these individuals. Second, this study also suggests that those individuals who desired to expose themselves to a high threat message perceived themselves to be more susceptible to the health threat. Believing that they are at risk for a health threat and that they are able to easily and effectively avert the threat may motivate these individuals to engage in health protective action.

A caveat to this approach revolves around the augmenting of perceived susceptibility for individuals who may not necessarily be at greater risk to a health threat. The ramifications of increasing people's perceived susceptibility to a threat for which they are not truly at risk must be taken into account. First, this may cause an individual to engage in a health protective action which is unnecessary. Second, it raises questions

about the ethics of using a high threat message regardless of the circumstances. Third, if this approach is taken, the message must include messages which increase perceived response efficacy and perceived self-efficacy to create conditions under which people will be most likely to perform actions which would not prove detrimental to their health.

Although use of a high threat fear appeal is effective, it leaves the potential to increase the desire of high sensation seekers to engage in the risky activity. Indeed, previous research has shown that high sensation seekers are more likely to engage in the discouraged activity (e.g., Clayton, Cattarello, & Walden, 1991; Harrington & Donohew, 1996; Witte & Morrison, 1995). As Witte and Morrison (1995) suggest, when using high threat fear appeal messages the campaign needs to include a substitute behavior which will provide the stimulation desired by high sensation seekers but will not lead to the negative consequences. If a substitute behavior is not provided, the high sensation seeker is unlikely to perform the recommended response and the high threat fear appeal may provide an impetus to engage in the risky behavior.

Finally, health communicators must give consideration to the nature of the health threat and the recommended responses. When advocating the creation, rather than the cessation of habits, additional avenues to encourage maintenance must be provided. Under most circumstances, the creation of a habit (like flossing one's teeth) may involve more effort than would the cessation of an activity because it requires the establishment of patterns which may be viewed as not entirely within the realm of one's control. Although one may have a positive attitude, behavioral performance may not occur because one does not believe that the performance of that behavior will be easy (Ajzen & Madden, 1986;

McCaul, Sandgren, O'Neill, & Hinsz, 1993). Not only would one message be insufficient to bring about attitude, intention, and behavior change, but strategies to encourage behavior change as well as maintenance of the habit and long term performance would be necessary for continued performance of the recommended response (McCaul, Glasgow & O'Neill, 1992). Simply advising people what to do, without providing the knowledge of how to perform the behavior as well as the means to support the creation of the habit may leave motivated individuals otherwise unable to perform the desired actions. Health communication campaigns which are limited solely to media messages may be insufficient to spur health protective action. Utilization of peers and interpersonal communication may prove fruitful in developing the advocated behaviors.

Summary

Fear appeals have been the subject of much investigation over the past forty years. Results of these studies indicate that fear appeals are potent messages, especially when they utilize both high threat and high efficacy components. This investigation provides further evidence for the effectiveness of high threat/high efficacy messages regardless of an individual difference variable (i.e., sensation seeking) and regardless of a person's desire to view a high threat message. In sum, campaigners must make audience members feel at risk to a serious health threat and make them feel that they can easily and effectively avert it.

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