

Putting the fear back into fear appeals: The extended parallel process model

Kim Witte

To cite this article: Kim Witte (1992) Putting the fear back into fear appeals: The extended parallel process model, Communication Monographs, 59:4, 329-349, DOI: [10.1080/03637759209376276](https://doi.org/10.1080/03637759209376276)

To link to this article: <http://dx.doi.org/10.1080/03637759209376276>



Published online: 02 Jun 2009.



Submit your article to this journal [↗](#)



Article views: 1505



View related articles [↗](#)



Citing articles: 981 View citing articles [↗](#)

PUTTING THE FEAR BACK INTO FEAR APPEALS: THE EXTENDED PARALLEL PROCESS MODEL

KIM WITTE

The fear appeal literature is diverse and inconsistent. Existing fear appeal theories explain the positive linear results occurring in many studies, but are unable to explain the boomerang or curvilinear results occurring in other studies. The present work advances a theory integrating previous theoretical perspectives (i.e., Janis, 1967; Leventhal, 1970; Rogers, 1975, 1983) that is based on Leventhal's (1970) danger control/fear control framework. The proposed fear appeal theory, called the Extended Parallel Process Model (EPPM), expands on previous approaches in three ways: (a) by explaining why fear appeals fail; (b) by re-incorporating fear as a central variable; and (c) by specifying the relationship between threat and efficacy in propositional forms. Specific propositions are given to guide future research.

This is your brain
This is your brain on drugs
Any questions?

Persuasive strategies like this well-known drug-prevention commercial are known as "fear appeals." Fear appeals are persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends. For example, the creators of this drug-prevention commercial assume that people will avoid using drugs to keep their brains from "frying." While some studies substantiate the effectiveness of fear appeals (e.g., Beck, 1984; Insko, Arkoff, & Insko, 1965; Stainback & Rogers, 1983), others demonstrate their ineffectiveness (e.g., Janis & Feshbach, 1953; Kohn, Goodstadt, Cook, Sheppard, & Chan, 1982; Krisher, Darley, & Darley, 1973), and still others document mixed results (e.g., Hill & Gardner, 1980; Rogers & Mewborn, 1976). Overall, the empirical findings are disappointingly inconsistent, if not contradictory. There are at least three major reasons for the lack of convergence in fear appeal findings.

First, the interchangeable use of conceptually distinct terms has muddled the fear appeal waters considerably. For example, Sutton (1982) equated *threat* and *fear* in his meta-analysis—even though (as will be argued later) fear and threat produce different outcomes. Terms such as fear, threat, and efficacy must be carefully defined and used in a consistent manner across studies if the literature is to be reconciled.

Second, current theoretical explanations overwhelmingly focus on processes associated with message acceptance and neglect processes associated with message rejection. To fully understand individuals' reactions to fear appeals, we

Kim Witte is an assistant professor of speech communication at Texas A&M University, College Station, Texas 77845-4234. The comments of Judee Burgoon and three anonymous reviewers improved this piece substantially. The following individuals are gratefully acknowledged for their comments and insight at some point in this process: Beth Le Poiré, Rick Street, Paul Mongeau, Jim Dillard, Thomas Crawford, Micheal Vickery, Abran Salazar, David Buller, and Susan Gilbertz. An earlier version of this article was presented at the annual meeting of the Speech Communication Association in Atlanta, Georgia, November 1991. Preparation was supported in part by National Institute of Mental Health training grant 5 F31 MH10029-02.

need to understand when and why fear appeals fail, as well as when and why fear appeals work. The proposed theory suggests that fear arousal is the key to understanding message rejection processes. Because the role of fear in fear appeals has been essentially eliminated in current cognitive fear appeal theories (Dillard, 1992), one goal of the present work is to put the fear back into fear appeals.

Third, the interaction between threat and efficacy has not been consistently represented or addressed in fear appeal studies. Rogers and colleagues (e.g., Kleinet & Rogers, 1982; Rogers & Mewborn, 1976) have demonstrated that fear appeals with high levels of threat (e.g., "you are susceptible to the severe disease AIDS") and high levels of efficacy (e.g., "you are able to effectively and easily prevent AIDS by using condoms") produce message acceptance. In contrast, fear appeals with high levels of threat (e.g., "lung cancer is a severe disease that you are susceptible to because you smoke cigarettes") and low levels of efficacy (e.g., "it's unlikely that you'll be able to quit smoking cigarettes, and it's probably too late to prevent lung cancer anyway") result in message rejection. Yet, many researchers have failed to address or analyze the role of efficacy in their studies (e.g., Ben-Sira, 1981; Burnett, 1981; Burnett & Oliver, 1979; Kohn et al., 1982; Ramirez & Lasater, 1976, 1977). It will be argued that threat-by-efficacy interactions are the fundamental determinants of study outcomes. However, *knowing* that efficacy and threat are causal variables in study outcomes does not *explain why* they are causal variables. Thus, their theoretical functions will be explicated and expanded.

A theoretical approach that addresses these differences and explains the inconsistent empirical findings is needed. The theory presented in this paper evolves from earlier perspectives. The present work advances a theory based on Leventhal's (1970) danger control/fear control framework, and explains both successes and failures of fear appeals. Current theoretical approaches explain the danger control processes (Leventhal, 1970), or how people cognitively deal with a given danger or threat by changing their attitudes, intentions, or behaviors to prevent the threat from occurring (i.e., factors leading to message acceptance). But, current approaches virtually ignore the fear control processes (Leventhal, 1970), or how people deal with their fear by denying or defensively avoiding the threat (i.e., factors leading to message rejection). Elements of Rogers' (1975) original Protection Motivation Theory (PMT) are integrated into the proposed theory, because PMT explains the danger control processes that lead to message acceptance. However, neither Leventhal nor Rogers fully define or explain the fear control processes, or the factors leading to message rejection. Thus, the role of fear control processes must be clarified and expanded. Within the next few pages, key variables and processes will be defined and existing theoretical models will be reviewed.

IMPORTANT COMPONENTS OF THE FEAR APPEAL PROCESS

Fear Appeals

Fear appeals (sometimes called threat appeals) can be defined in terms of their content, or by the reaction they engender from the audience (O'Keefe, 1990). For example, fear appeals usually contain "gruesome content" in the

form of vivid language (e.g. "thick purulent, choking secretions welled into the tracheotomy wound," Leventhal, 1965), personalistic language (e.g., "smokers like you . . ."), or gory pictures (e.g., photographs of crash victims). Alternatively, fear appeals have been defined in terms of the amount of fear aroused and/or experienced by the audience (i.e., physiologically or psychologically). Reported or aroused fear is usually evaluated by a manipulation check, with a high fear appeal yielding significantly greater levels of reported or aroused fear than a low fear appeal.

O'Keefe (1990) makes an important distinction between the two definitions of fear appeals (i.e., message content vs. audience reactions) when he notes that messages with gruesome contents might not arouse fear, and fear might be aroused without grisly contents. However, the majority of fear appeal studies conducted have incorporated both definitions in their operationalizations of fear appeals—albeit informally. First, the majority of fear appeal studies include manipulation checks (the audience's response). Second, these same studies also describe the high fear appeal condition as one where the severe consequences of a threat are made applicable to the respondent—usually in the form of vivid and personalistic language with gruesome pictures or films. For example, when fear appeal researchers refer to a strong fear appeal condition, they usually mean that the message depicted a large threat and the receiver perceived a large threat (as assessed by the manipulation checks). Typically, fear appeals offer feasible recommendations that are presented as effective in averting the threat. Thus, the three central constructs in fear appeals are fear, threat, and efficacy.

Fear

Fear is a negatively-valenced emotion, accompanied by a high level of arousal, and is elicited by a threat that is perceived to be significant and personally relevant (Easterling & Leventhal, 1989; Lang, 1984; Ortony & Turner, 1990). Fear may be expressed physiologically (as arousal), through language behavior (verbal self-reports), or through overt acts (facial expressions) (Lang, 1984). In the fear appeal literature, fear has been operationalized as anxiety (i.e., self-rated feelings of anxiousness), physiological arousal (Mewborn & Rogers, 1979; Rogers & Deckner, 1975), responses to mood adjectives (e.g., frightened, anxious, nauseous), and ratings of concern or worry (Janis, 1967; Leventhal, 1970; Rogers, 1975, 1983; Sutton, 1982). Rogers (1983) has demonstrated that self-reported fear, as measured by mood adjectives (the most common measure of self-report fear in fear appeal studies), adequately captures our definition of fear, because of the correspondence between physiological arousal and self-ratings of mood adjectives. Specifically, Mewborn and Rogers (1979) found that a high fear film yielded higher self-ratings of fear, accelerated heart rate, and greater skin conductance, than a low fear film.¹ In fact, Rogers (1983) argues that "the verbal measure may be more sensitive than the physiological measures" because self-rated fear is more global in nature and more adequately reflects an overall emotional state, while physiological arousal fluctuates substantially during the presentation of a fear appeal (p. 164).

Threat

Threat is an external stimulus variable (e.g., an environmental or message cue) that exists whether a person knows it or not. If an individual holds a

cognition that a threat exists, then he or she is *perceiving* a threat. Message characterizations of threat focus on the severity of the threat (e.g., "AIDS leads to death") and on the targeted population's susceptibility to the threat (e.g., "You're at-risk for AIDS because you share needles while using intravenous drugs") (Rogers, 1975, 1983). Correspondingly, *perceived severity* is an individual's beliefs about the seriousness of the threat, while *perceived susceptibility* is an individual's beliefs about his or her chances of experiencing the threat.

Efficacy

Efficacy also exists as an environmental or message cue and may lead to *perceived efficacy*, which refers to cognitions about efficacy. Message depictions of efficacy focus on the effectiveness of the recommended response (i.e., response efficacy) and on the targeted audience's ability to perform the recommended response (i.e., self-efficacy) (Rogers, 1975, 1983). Correspondingly, *perceived response efficacy* refers to an individual's beliefs as to whether a response effectively prevents the threat (e.g., "I believe condoms prevent HIV contraction"), and *perceived self-efficacy* refers to an individual's belief in his or her ability to perform the recommended response (e.g., "I think that I can easily use condoms to prevent HIV contraction") (Rogers, 1975, 1983).

Outcome Variables

The typical outcome in fear appeal research is *message acceptance*, defined as attitude, intention, or behavior change. Other outcomes less commonly assessed but equally important are defensive avoidance and reactance. *Defensive avoidance* is a motivated resistance to the message, such as denial or minimization of the threat. Individuals may defensively avoid a message by being inattentive to the communication (e.g., looking away from the message), or by suppressing any thoughts about the threat over the long term (Hovland, Janis, & Kelly, 1953; Janis & Feshbach, 1953; Janis & Mann, 1977). *Reactance* occurs when perceived freedom is reduced and an individual believes "that the communicator is trying to make him [or her] change" (Brehm, 1966, p. 94) (e.g., "I'll show them that they can't manipulate me, I'm going to smoke even more!").

A BRIEF HISTORY OF FEAR APPEAL THEORETICAL APPROACHES

With these definitions in mind, previous theoretical approaches may now be reviewed. Following Dillard (1992), there are three major categories that correspond to three separate time periods in the evolution of fear appeal theories: (a) the drive models (Hovland et al., 1953; Janis, 1967; McGuire, 1968, 1969), (b) the parallel response model (Leventhal, 1970, 1971), and (c) the expectancy value theories (Rogers, 1975, 1983; Sutton, 1982).²

Drive Models

Two drive models were advanced in the 1950s and 1960s to explain individuals' reactions to fear appeals. The most prominent fear appeal model of this time period was Janis' (1967; Hovland et al., 1953) fear-as-acquired drive model. Janis (1967) proposed an inverted-U shaped relation between fear and message acceptance. He claimed that some fear arousal was needed to elicit a motivational drive state (i.e., create tension), but too much fear would result in

maladaptive outcomes (e.g., defensive avoidance). Using a learning theory approach, Janis (1967) argued that the unpleasant tension caused by fear arousal motivated individuals to get rid of their fear. He said whatever *reduced* their fear—be it adaptive (e.g., behavior changes) or maladaptive (e.g., denial)—would be reinforced and become the preferred response to the threat.

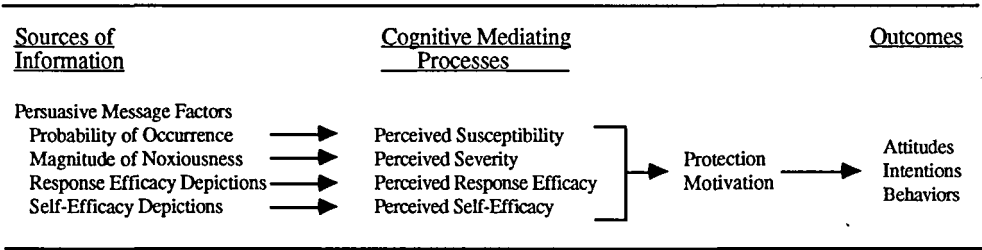
McGuire (1968, 1969) also advanced an inverted-U explanation of fear appeals with his two-factor theory. McGuire (1968, 1969) argued that when fear acted as a *drive*, it motivated people to accept the message's recommendations. When fear acted as a *cue*, he said it elicited habitual responses that interfered with the acceptance or reception of the message. McGuire (1968, 1969) proposed that these two factors (i.e., cues and drives) combined to yield an overall inverted-U relationship between fear arousal and attitude change, where a moderate amount of fear arousal would produce the most attitude change.

Tests of these pioneering fear appeal theories have led to their rejection (see Beck & Frankel, 1981; Rogers, 1983; Sutton, 1982). No evidence has been offered to support McGuire's (1968, 1969) non-monotonic model (see Higbee, 1969). Janis' (1967) model has been similarly rejected. Specifically, the fear-as-acquired drive model's central hypothesis, that acceptance of the message occurred when fear was reduced, was not supported. Studies manipulating false physiological feedback found that increases in fear arousal were accompanied by increases in acceptance, independent of any fear "reduction" (Giesen & Hendrick, 1974; Hendrick, Giesen, & Borden, 1975; Rogers, 1983). In addition, Mewborn and Rogers (1979) found that only arousal, and not arousal reduction, affected intentions. Finally, Rogers and Deckner (1975) found that only cognitive appraisal of the threat and whether the response was seen as effective resulted in message acceptance. The empirical evidence has prompted researchers to reject the drive models as viable fear appeal explanations.

Parallel Response Model

Based on Hovland and Janis' (Hovland, et al., 1953; Janis, 1967) work, Leventhal (1970, 1971) developed the parallel response model (later called the parallel process model; Leventhal, Safer, & Panagis, 1983, p. 4), which began to focus more on cognitive processes, as opposed to emotional processes. Leventhal (1970) argued that protective adaptive behavior stemmed from attempts to control the danger or threat (cognitions), not from attempts to control the fear (emotions). Therefore, if people *thought* about the threatening message and developed strategies to avert the danger or threat (attitude, intention, or behavior changes), they were engaging in danger control processes. In contrast, if people focused on their feelings of fear, and tried to control their fear (e.g., denial), they were experiencing fear control processes.

Leventhal (1970) attempted to reconcile past literature with his model, but offered no evidence for its veracity with a single study. He made general statements about conditions leading to fear or danger control processes, but he failed to specify exactly when one process should dominate over another or what specific factors elicit the different processes. Thus, the main problem with the parallel response model is its lack of precision (Beck & Frankel, 1981; Rogers, 1975). Overall, however, the model offered a useful distinction between cognitive and emotional reactions to fear appeals.



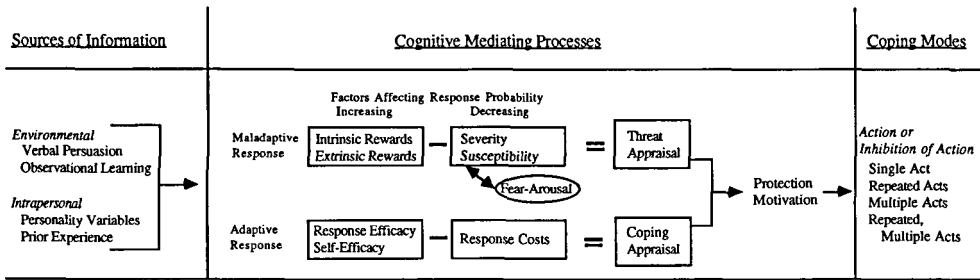
Adapted from Rogers (1975) and Maddux and Rogers (1983).

FIGURE 1
ORIGINAL PROTECTION MOTIVATION THEORY, WITH SELF-EFFICACY ADDED.

Expectancy Value Theories

Further de-emphasizing the role of fear arousal in favor of cognition were Rogers’ (1975, 1983) protection motivation theory (PMT) and Sutton’s (1982) application of subjective expected utility (SEU) theory (Edwards, 1961) to fear appeals. In the latter, Sutton (1982) argued that decisions to accept a fear appeal’s recommendations were a function of three variables: (a) the perceived utility of the threat; (b) the subjective probability that the threat will occur, given no changes in current behaviors; and (c) the subjective probability that the threat will occur if individuals make the recommended changes. To predict a person’s decision to accept a fear appeal’s recommendations, each subjective probability (i.e., “b” and “c” above) is multiplied by the utility. “According to the model, the individual will choose the alternative that has the higher SEU [subjective expected utility] value and hence, in this situation, the one that is associated with the *lower* subjective probability of occurrence of the unpleasant consequence” (Sutton, 1982, p. 326). Tests of this model were generally unresponsive (e.g., Sutton & Eiser, 1984; Sutton & Hallett, 1989). For example, Sutton and Eiser (1984) note “no evidence for the multiplicative combination of utilities and subjective probabilities” (p. 14).

Protection motivation theory. The theoretical framework for most fear appeal research since 1975 is Rogers’ (1975, 1983) PMT. Rogers (1975, 1983) advanced fear appeal research by specifying the message components and cognitive processes related to fear appeals. PMT focuses exclusively on Leventhal’s (1970) danger control process (i.e., thoughts about the danger or threat and how to prevent it); fear control processes are not addressed. In PMT (Figure 1), four message components are proposed to cause corresponding cognitive mediation processes: (a) probability of occurrence depictions in a message lead to perceived susceptibility; (b) magnitude of noxiousness in the appeal produces perceived severity; (c) descriptions of the effectiveness of the recommended response result in perceived response efficacy; and (d) characterizations of an individual’s ability to perform the recommended response produce perceived self-efficacy. The first three components were outlined in Rogers’ (1975) original description of PMT. Bandura’s (1977) work on self-efficacy, and Beck and Frankel’s (1981) delineation of personal versus response efficacy prompted Maddux and Rogers (1983) to add the last component (self-efficacy).³



Adapted from Rogers, R.W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In Cacioppo, J., & Petty, R. (Eds.), *Social Psychophysiology* (pp. 153-176). Copyright by Guilford Press, New York. Reprinted with permission.

FIGURE 2

THE CURRENT FORMULATION OF PROTECTION MOTIVATION THEORY.

These cognitive mediation processes are said to elicit protection motivation, the determinant of danger control actions. Protection motivation "is an intervening variable that has the typical characteristics of a motive: It arouses, sustains, and directs activity" (Rogers, 1975, p. 98) and it is operationalized as intentions (Rogers, 1983). When each of the four PMT variables is at a high level, then maximum protection motivation, and subsequent message acceptance, is proposed to occur. PMT studies have most consistently found two-way interactions between one of the threat variables (i.e., severity or susceptibility) and one of the efficacy variables (i.e., response efficacy or self-efficacy) (e.g., Kleinot & Rogers, 1982; Maddux & Rogers, 1983; Rogers & Mewborn, 1976). However, specific interactions between the four variables have proven difficult to predict (e.g., Rogers, 1985). For example, sometimes susceptibility interacts with response efficacy (Rogers & Mewborn, 1976, smoking experiment), while other times severity interacts with self-efficacy to influence behaviors (Wurtele & Maddux, 1987).

In a reformulation of PMT (Figure 2), Rogers (1983) extended the model into one that differentiates between maladaptive threat appraisal and adaptive coping appraisal processes. In the threat appraisal process, Rogers (1983) says people may continue to engage in maladaptive behaviors (e.g., unsafe sex) if the rewards of performing the maladaptive behavior (e.g., pleasure, social approval) are greater than the perceived severity of the danger (e.g., AIDS is fatal) and their perceived susceptibility to the danger (e.g., increased risk of HIV contraction). Thus, increases in rewards heighten the probability of a maladaptive response while increases in perceived threat (severity/susceptibility) decrease the probability of a maladaptive response (Prentice-Dunn & Rogers, 1986). For the coping appraisal, increases in perceived response/self-efficacy increase the likelihood of adaptive behavior while increases in response costs decrease the likelihood of adaptive behavior. For example, people may choose to perform the adaptive behavior (e.g., use condoms) if perceived response efficacy (e.g., "condoms are effective protectors against AIDS") and perceived self-efficacy (e.g., "I'm able to use condoms to effectively prevent AIDS") are greater than response costs (e.g., time, expense, difficulty). It is important to note that in both original and current PMT, fear is given a backseat role. Specifically, fear is predicted to "only indirectly" affect message acceptance

“through the appraisal of severity” (Rogers, 1983, p. 169). Rogers and colleagues have produced some support for this proposition (e.g., Rippetoe & Rogers, 1987; Rogers & Mewborn, 1976).

Analysis of the current PMT model. There are two key problems with the current PMT model (Figure 2). First, empirical inconsistencies exist between what the revised model predicts (Figure 2), and what is found empirically. For instance, Figure 2 shows that factors *increasing* the likelihood of an adaptive response are greater response/self-efficacy beliefs coupled with fewer response costs, and “factors *decreasing* the probability of the occurrence of the maladaptive response (i.e., punishers) are the severity of the threat and the expectancy of being exposed to the threat” coupled with reduced intrinsic/extrinsic rewards (Rogers, 1983, p. 169, italics added). Thus, according to Figure 2, *increases* in perceptions of susceptibility/severity (with few rewards) should *decrease the likelihood of a maladaptive response, even if efficacy is held constant at a low level* (as long as efficacy is greater than response costs).

However, the empirical literature indicates the opposite of this derived prediction. Namely, if perceived efficacy is low, then increases in perceived threat result in *increases* in maladaptive behaviors (e.g., Kleinot & Rogers, 1982; Rogers & Mewborn, 1976; Witte, 1992). Indeed, Rogers (1983) writes that if perceived efficacy is low, increases in perceived threat will “either have no effect or a boomerang effect” (p. 170). But, the formal model (i.e., Figure 2) suggests exactly the opposite. In short, it is not possible to derive nor explain boomerang predictions from the revised graphic PMT model.

Second, logical flaws exist between the proposed relations of some of the PMT variables. For example, even though Rogers (1983) proposes a multiplicative relationship between threat appraisal and coping appraisal, the PMT does not provide explicit mechanisms to explain how threat appraisal (i.e., rewards minus severity/susceptibility) and coping appraisal (i.e., efficacy minus costs) *work together* to influence protection motivation and subsequent behavior. How does the combination of these separate appraisal processes elicit protection motivation and behaviors? Rogers (1983) does specify what will happen in one situation. Namely, if both threat appraisal and coping appraisal are high, then there should be decreases in maladaptive behaviors, and increases in adaptive behaviors (maximum protection motivation) (Rogers, 1983, p. 171). This scenario is logically consistent in that increases in adaptive behaviors (e.g., increased safer sex practices) coupled with decreases in maladaptive behaviors (e.g., decreased unsafe sex practices) should yield congruent responses—safer sex practices. However, the following scenario, which is derived from the revised PMT model, lacks logical consistency. According to Figure 2, if coping appraisal is high (greater efficacy over costs) there should be increases in adaptive behaviors (e.g., quitting cigarette smoking), and if threat appraisal is low (greater rewards over severity/susceptibility) there should be no changes in maladaptive behaviors (e.g., continuing cigarette smoking). Logically, however, how can one quit smoking cigarettes (increase adaptive behaviors) while at the same time continue smoking cigarettes (no change in maladaptive behaviors)?

In sum, the current PMT model (a) yields derived predictions that are inconsistent with the empirical data, and (b) does not explain why or how an interaction between threat appraisal and coping appraisal occurs, or how the

interaction is related to protection motivation and subsequent behaviors. In contrast, the original PMT (with self-efficacy added), does an excellent job explaining factors leading to message acceptance. In addition, the original PMT model does not suffer from the logical and empirical inconsistencies of the revised model. However, both PMT models fail to explain the specific factors leading to message rejection.

The Lost Role of Fear in Fear Appeals

As one examines the evolutionary development of fear appeal theories, it is striking to note the declining role of fear. Dillard (1992) noted that in the drive models, "fear was at the center of the theoretical stage" (p. 13). However, as the cognitive revolution in psychology took hold, the importance of fear faded so much that by the time PMT and Sutton's SEU model gained popularity: "Fear was virtually excluded from the study of fear appeals. In the most recent investigations based strongly on the cognitive perspective, fear has been treated as a control variable (e.g., Sutton & Eiser, 1984; Wolf, Gregory, & Stephan, 1986), if it is measured at all (e.g., Rogers, 1985; Self & Rogers, 1990)" (Dillard, 1992, p. 13). The following analysis argues that fear should play a central role in theoretical explanations.

DEVELOPMENT OF THE EXTENDED PARALLEL PROCESS MODEL

The inconsistencies in the empirical literature indicate that the fear appeal puzzle has yet to be solved. The overemphasis on cognitions in current theories, coupled with the relative neglect of emotions, are potential reasons for the lack of convergent findings. Few theoretical leaps have been made since Rogers (1975, 1983) published PMT. The theory proposed here, called the Extended Parallel Process Model (EPPM), uses Leventhal's (1970) parallel process model as the overall framework (hence, the *extended* parallel process model) to differentiate between two processes, danger control and fear control. Beck and Frankel (1981) noted that the parallel process model is the most broad of the fear appeal theories and although virtually untestable, offers a nice framework in which to further theorize. Rogers (1975) did just this when he defined and clarified the danger control processes in his original PMT (Figure 1). However, current theories fail to explain why fear appeals are rejected.

The EPPM picks up where the original PMT left off. Specifically, the EPPM adopts the original PMT's explanation of danger control processes that lead to message acceptance (one side of the parallel process model), and defines and expands the fear control processes which lead to message rejection (the other side of the parallel process model). To give readers a basic understanding of the theory as a whole, an overview will be given first, followed by a detailed explication.

Overview of the EPPM

As an overview, consider what happens when a person is presented with a fear appeal depicting the components of threat (i.e., severity and susceptibility), and the components of efficacy (i.e., response efficacy and self-efficacy) (Figure 3). A fear appeal initiates two appraisals in the cognitive encoder (i.e., individual).⁴ First, persons appraise the perceived threat of the hazard. If the appraisal of

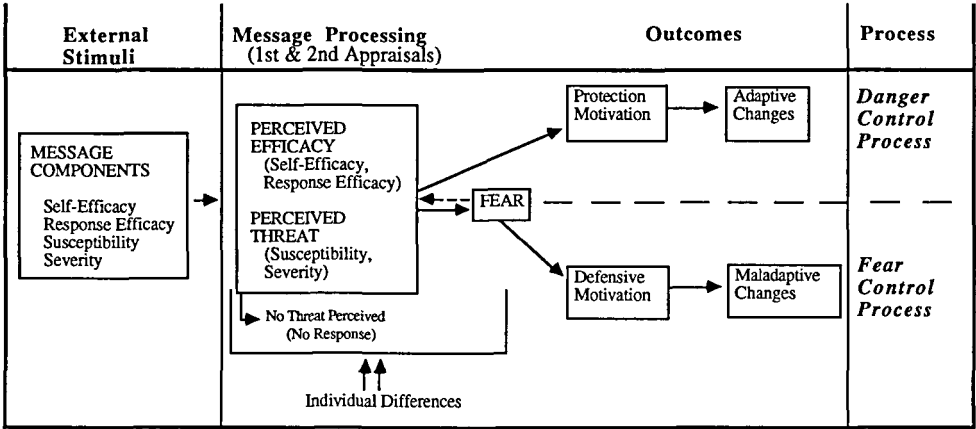


FIGURE 3
THE EXTENDED PARALLEL PROCESS MODEL (EPPM).

threat results in moderate to high perceived threat, then fear is elicited (Easterling & Leventhal, 1989; Lang, 1984) and people are motivated to begin the second appraisal, which is an evaluation of the efficacy of the recommended response. When the threat is perceived as low (i.e., trivial or irrelevant), there is no motivation to process the message further; efficacy is not evaluated and there is no response to the fear appeal.

When both perceived threat and perceived efficacy are high, danger control processes are initiated. When people fear an applicable and significant threat, and when they perceive a response that would feasibly and effectively avert the threat, they are motivated to control the danger (protection motivation) by thinking of strategies to avert the threat (adaptive outcomes). When danger control processes are dominating, *individuals respond to the danger, not to their fear*. Conversely, when perceived threat is high, but perceived efficacy is low, fear control processes are initiated. The fear originally evoked by the personally relevant and significant threat becomes intensified when individuals believe they are unable to effectively deter the threat. Thus, they become motivated to cope with their fear (defensive motivation) by engaging in maladaptive responses (e.g., denial). When fear control processes are dominating, *individuals respond to their fear, not to the danger*.

Fear may contribute to the motivation to process a message if it is cognitively appraised (see feedback loop in Figure 3). That is, thinking about the threatening message may first contribute to the experience of fear, and experiencing fear may then cause a person to upgrade his or her estimates of the threat. Fear causes maladaptive responses, and may indirectly influence adaptive responses, as mediated by perceived threat. In short, *perceived threat determines the degree or intensity of the reaction to the message, while perceived efficacy determines the nature of the reaction* (i.e., which process is initiated—danger control or fear control) (cf. Lazarus, 1991a, 1991b, 1991c; Lazarus & Folkman, 1984).

Individual differences influence the appraisal of threat and efficacy. Each person evaluates the components of a message in relation to his or her prior experiences, culture, and personality characteristics. Thus, the same fear appeal

may produce different perceptions in different people, thereby influencing subsequent outcomes. For example, if one individual perceives high threat and low efficacy from a message, and the other individual perceives high threat and high efficacy from the same message, then the former would be expected to engage in fear control processes, while the latter would be expected to engage in danger control processes.

Detailed Explication of the EPPM

The EPPM proposes that threat initiates and motivates message processing because the greater the threat, the greater the fear aroused, the more attention-getting the message (through depictions of the significance of the severity), and the more involving the message (through depictions of susceptibility). (Many researchers have noted the crucial role of involvement in persuasion, e.g., Johnson & Eagly, 1989; Petty & Cacioppo, 1986.) If perceptions of threat are low, then people are not motivated to continue message processing, because the threat is perceived as either irrelevant or trivial.

Proposition 1. When perceived threat is low, regardless of perceived efficacy level, there will be no further processing of the message.

Thus, there is no response to the fear appeal because the message is not processed any further. Figure 4 illustrates that when perceptions of threat are low, there is little or no message acceptance in both efficacy conditions. Witte (1991) found the least amount of attitude, intention, and behavior change in the low threat condition, regardless of efficacy level.

Once a threat has been determined to exist by a person, efficacy is evaluated. Perceived efficacy is the crucial variable that determines which parallel process will dominate. Thus, perceived efficacy interacts with perceived threat to influence individuals' responses to fear appeals (Job, 1988; Rogers, 1975, 1983). Much accumulated evidence demonstrates the robust interaction between at least one perceived threat dimension (i.e., susceptibility or severity) and one perceived efficacy dimension (i.e., response efficacy or self-efficacy) (e.g., Beck & Lund, 1981; Kleinot & Rogers, 1982; Maddux & Rogers, 1983; Mulilis & Lippa, 1990; Rogers & Mewborn, 1976; Witte, 1991; Wurtele & Maddux, 1987). However, many studies not addressing this construct have yielded conflicting findings (e.g., Kohn et al., 1982; Krisher, Darley, & Darley, 1973). The EPPM proposes that the lack of attention to the efficacy construct is the key reason for the inconsistency. For instance, regardless of whether the efficacy construct is explicitly addressed in a fear appeal study, every fear appeal message has an inherent level of efficacy that may inadvertently influence study outcomes. For example, the efficacy construct was not addressed in the following two studies, which had very different outcomes. Ramirez and Lasater (1976) found positive linear effects in their fear appeal study, where each message had a whole section on response and self-efficacy (e.g., the message "illustrated the correct use of a dental kit containing a toothbrush, disclosing wafers, fluoride dentrifice, and dental floss" [p. 812]). In contrast, boomerang results emerged in Kohn et al.'s (1982) study on drinking and driving, where apparently no *explicit* recommendation was given to avert the threat. Therefore, positive linear findings should be found in studies with strong efficacy depictions, and boomerang findings should be found in studies with weak or missing efficacy depictions. Overall, the

EPPM claims that perceived efficacy determines whether danger control processes or fear control processes are initiated, and perceived threat determines the intensity of these responses.

Danger control processes. Danger control processes are primarily cognitive processes where individuals evaluate their susceptibility to the threat, the severity of the threat, their ability to perform the recommended response (perceived self-efficacy), and the effectiveness of the recommended response (perceived response efficacy). Danger control cognitions are deliberate and complex in nature—changing behavior requires intentional and volitional thought (Bargh, 1989; Lazarus, 1991a, 1991b). Danger control processes appear to work as Rogers (1975) specified in his original PMT (with self-efficacy added). That is, when perceived efficacy (i.e., perceived response efficacy and perceived self-efficacy) and perceived threat (i.e., comprised of perceived severity and perceived susceptibility) are both high, protection motivation is elicited, and individuals make adaptive changes (see Figure 4).

Proposition 2. As perceived threat increases when perceived efficacy is high, so will message acceptance.

People (a) realize they are at risk for a severe danger and become motivated to protect themselves (high threat), (b) they believe they can prevent the danger (high efficacy), and (c) they deliberately and cognitively confront the danger (e.g., “When I’m with my boyfriend next time, I’m going to talk to him about using condoms”). Many investigators have found that fear appeals with high levels of perceived threat (e.g., “I am susceptible to heart attacks because I have elevated cholesterol”) and high levels of perceived efficacy (e.g., “I am able to change my diet, which will effectively decrease my cholesterol”) produce message acceptance (e.g., Kleinot & Rogers, 1982; Maddux & Rogers, 1983; Rogers & Mewborn, 1976; Witte, 1992). The cognitions occurring in the danger control processes stimulate adaptive actions such as attitude, intention, or behavior changes that control the danger.

Proposition 3. Cognitions about threat and efficacy cause attitude, intention, or behavior changes (i.e., adaptive responses).

Fear control processes. Fear control processes are defined as primarily emotional processes where people respond to and cope with their fear, not to the danger. Fear control processes are more automatic and involuntary in nature and may occur outside our conscious awareness (Bargh, 1989; Lazarus, 1991a). Automatic or unconscious information processing is characterized by at least two conditions: (a) individuals are unaware of when or “how such processing occurs,” and (b) individuals are “unable to inhibit or control these processes once they have begun” (Branscombe, 1987, p. 15). If one’s well-being is threatened by a perceived unavoidable threat, then unconscious or automatic defense mechanisms may be activated to protect the individual from further distress (Lazarus, 1991a). For example, some have argued that there is “full semantic identification [of information] prior to conscious perception” (Erdelyi, 1974, p. 18). Furthermore, perceptual defense research has demonstrated that if too much “anxiety is evoked at an early stage, further recognition processes are impeded and the later stages may never emerge” (Gleitman, 1981, p. 481). While some fear may be aroused from the initial appraisal of threat, it is the

heightened and intensified fear resulting from the perception of low efficacy/high threat together that automatically activates defensive motivation and results in maladaptive outcomes (see bottom portion of Figure 4a).

Proposition 4. As perceived threat increases when perceived efficacy is low, people will do the opposite of what is advocated (boomerang).

To control the overwhelming fear stemming from a high perceived threat/low perceived efficacy situation, people either consciously or unconsciously deny the threat or react against the message (e.g., "you can't believe all of those studies anyway, they're just trying to manipulate us"), and do even more of the forbidden behavior to reduce fear or anxiety (e.g., increase cigarette smoking, misuse alcohol). Implicit support for proposition 4 can be found in studies demonstrating that high perceived threat (e.g., "I am susceptible to heart attacks because I have elevated cholesterol") coupled with low perceived efficacy (e.g., "there's no way I can change my diet, and even if I did, my cholesterol reading probably wouldn't change anyway") results in message rejection and boomerang responses (e.g., Kleinot & Rogers, 1982; Rippetoe & Rogers, 1987; Rogers & Mewborn, 1976; Witte, 1992).

The critical point. As long as perceptions of efficacy are greater than perceptions of threat (e.g., "I know that AIDS is a terrible threat, but I can protect myself by using condoms correctly"), danger control processes will dominate and the message will be accepted. However, at some *critical point*, where persons perceive that they cannot prevent a serious threat from occurring, either because the response is perceived as ineffective or they believe they are incapable of performing the recommendation (e.g., "AIDS is terrible and easy to get; I don't think I can do anything to prevent contraction"), fear control responses will begin to dominate. Thus, (a) the critical point occurs when perceived threat exceeds perceived efficacy (see Figures 4a and 4b), and (b) this critical point is where fear control processes begin to dominate over danger control processes.

Overall, fear control responses (defensive avoidance, perceived manipulation) would be expected to interfere with danger control responses (attitude, intention, behavior change). If people are thinking of ways to change their behaviors, they are not defensively avoiding the threat. Conversely, if persons are defensively avoiding the threat, they are not thinking of ways to protect themselves.

Proposition 5. Maladaptive responses will be inversely related to adaptive responses.

In addition, when perceived efficacy is at a moderate level, the critical point may not occur immediately, but at some moderate level of threat. For example, when perceived efficacy is at a moderate level, people may initially believe that they can prevent the threat. But as the threat increases in magnitude and relevance, individuals may begin to give up any hopes of averting the threat. Thus:

Proposition 6. As perceived threat increases when perceived efficacy is moderate, message acceptance will first increase, and then decrease, resulting in an inverted U-shape function.

Figure 4 depicts possible results patterns. In both Figures 4a and 4b, the critical point (where perceived threat exceeds perceived efficacy) is never

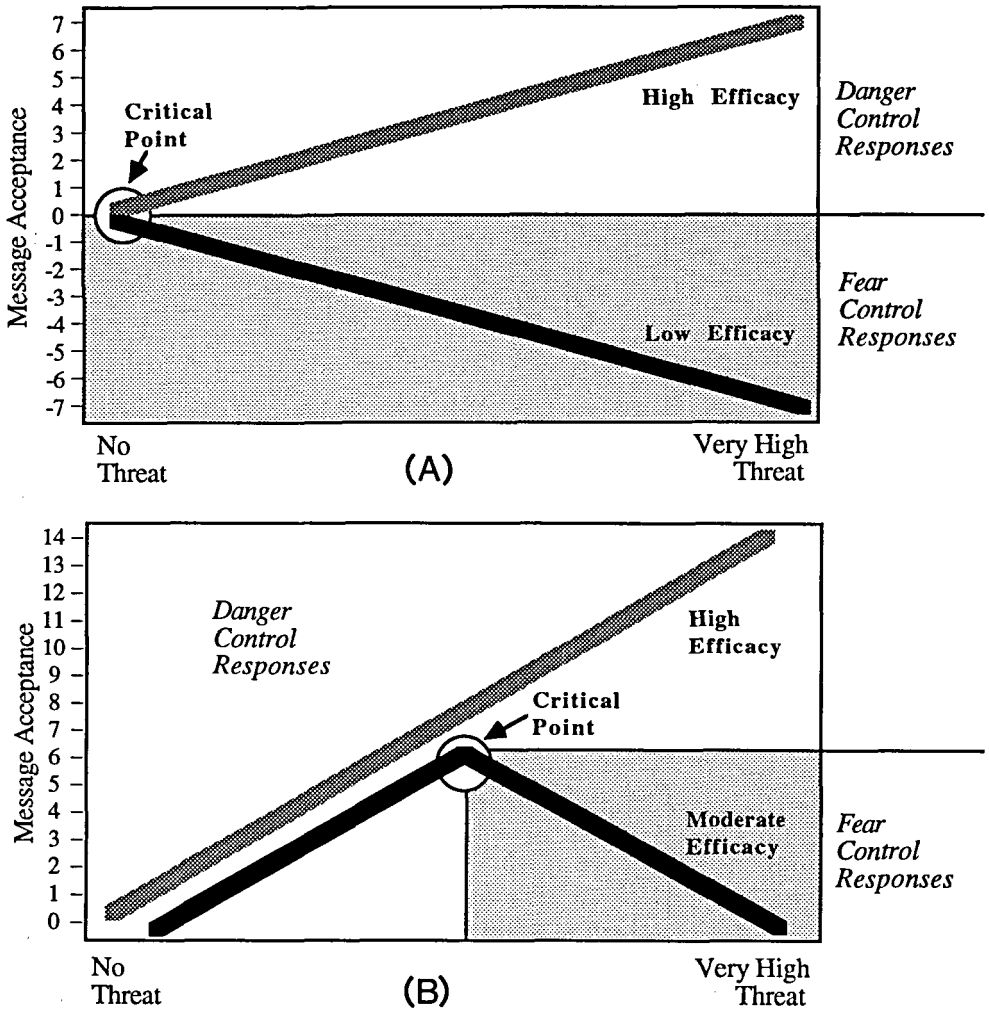


FIGURE 4

HYPOTHETICAL RESULTS PATTERNS OF THE DIFFERENT PARALLEL PROCESSES. (A) PROPOSITION 4'S BOOMERANG PREDICTIONS. (B) PROPOSITION 6'S CURVILINEAR PREDICTIONS.

reached in the high efficacy condition, so message acceptance is positive and linear (proposition 2). However, in the low efficacy condition, the critical point occurs immediately (Figure 4a; proposition 4). In the moderate efficacy condition, the critical point is reached at a moderate level of threat (Figure 4b; proposition 6). Up to the critical point, danger control responses would be expected to prevail. Once the critical point is reached, however, fear control processes would be expected to dominate. The area encompassing fear control responses (the shaded area) is dependent on where the critical point is located. The propositions offer specific guidelines for prediction. In general, the point that perceived threat surpasses perceived efficacy (i.e., the critical point) is likely to be dependent on a variety of factors including the study topic or individual differences.

The role of fear. Discussions about fear have been noticeably absent from recent fear appeal theories. As stated previously, fear is aroused when a significant and relevant threat has been perceived (Easterling & Leventhal, 1989). The EPPM proposes that message threat causes an appraisal of a threat, and the appraisal of a threat causes fear (i.e., message threat → perceived threat → fear). Perceptions of efficacy determine what happens when fear is aroused. If efficacy is believed to be low, fear is increased further. Defensive motivation will be elicited due to the overwhelming fear generated by this high perceived threat/low perceived efficacy condition, and maladaptive responses will ensue (again, it is probable that this occurs automatically, without conscious awareness). Thus, fear is a *direct* cause of maladaptive responses (i.e., message threat → perceived threat → fear → maladaptive outcomes). Empirical support for this proposition is offered in Rippetoe and Rogers (1987), where fear was found to directly increase avoidance coping patterns.

Proposition 7. Fear causes maladaptive responses.

If efficacy is perceived as high, aroused fear will be cognitively assessed and will influence perceptions of threat (i.e., a nonrecursive relationship), thereby *indirectly* influencing adaptive outcomes (i.e., message threat → perceived threat → fear → increased perceived threat → adaptive outcomes). That is, a message leads to the appraisal of a threat, which causes fear. If perceived efficacy is greater than perceived threat, fear will be cognitively appraised as a situational cue, and will lead an individual to upgrade his or her estimate of the threat (i.e., increased perceived threat). Janis and Mann (1977) note that "every physical symptom a person notices in himself [or herself] constitutes a warning signal" (p. 66). For example, a person might process a fear appeal in the following manner (O'Keefe, 1990): (a) "I'm now aware of the consequences of cigarette smoking" (cognitive representation of the threat); (b) "And, this scares me—my heart is racing" (fear arousal; cognitive appraisal of the fear); (c) "Gee, the consequences of cigarette smoking are probably worse than I thought" (further cognitions about the threat); and (d) "I'm going to think of ways to quit smoking" (adaptive response). This proposition is empirically plausible in that Rogers and Mewborn (1976) found that fear affected perceived severity (a cognition about threat), which in turn affected intentions (an adaptive outcome), but fear arousal did not predict intentions directly. Therefore:

Proposition 8. When perceived efficacy is high, fear indirectly influences adaptive outcomes, as mediated by perceived threat.

In addition, the relation between perceived threat and fear is proposed to be nonrecursive (i.e., bidirectional) when efficacy beliefs outweigh threat beliefs (see Figure 3, feedback loop).

Proposition 9. When perceived efficacy is high, there is a reciprocal relationship between perceived threat and fear.

An analysis of empirical findings with these propositions in mind helps to reconcile some of the literature. For example, the studies measuring or inducing *actual* physiological arousal found no direct relation between fear arousal and adaptive outcomes (Mewborn & Rogers, 1979; Rogers & Deckner, 1975).

However, fear induced through *false* feedback techniques did change attitudes (Giesen & Hendrick, 1974; Hendrick, Giesen, & Borden, 1975). Thus, when fear was cognitively appraised (i.e., people were told through false feedback that they were aroused), it contributed to message acceptance.

Boster and Mongeau's (1984; Mongeau, 1991) meta-analysis of fear appeals also offers support for the proposed indirect relationship between fear and adaptive outcomes. Boster and Mongeau (1984) reported that the correlation between fear arousal and attitudes was $r = .21$, and the relation between fear arousal and behavior was $r = .10$. They suggested that one reason for these modest correlations was that the fear manipulations were too weak to properly induce a range of fear arousal. Alternatively, the EPPM suggests that fear and attitudes/behaviors are modestly correlated because an underlying variable, perceived threat, explains the relationship between them. For example, the EPPM (Figure 3) posits the following relationships when perceived efficacy is high: Message threat \rightarrow perceived threat \rightarrow fear \rightarrow increased perceived threat \rightarrow adaptive outcomes. Thus, a simplified EPPM path model, illustrating the indirect relationship between fear and adaptive outcomes, as mediated by perceived threat when perceived efficacy is high, would be depicted as fear (X) \rightarrow perceived threat (Y) \rightarrow adaptive outcomes (Z).

Kenny and colleagues (Baron & Kenny, 1986; Judd & Kenny, 1981) provide three criteria for establishing the existence of a mediational relationship: (a) X and Y must be correlated (fear and perceived threat); (b) X and Z must be correlated (fear and attitudes/behaviors); and (c) if one correlates X and Z, while controlling for Y (removing Y's influence), then the relationship between X and Z should disappear if Y is a mediator. The literature indicates that all three criteria have been met in terms of the indirect influence of fear on adaptive outcomes, as mediated by perceived threat. First, Rippetoe and Rogers (1987) showed that fear and perceived threat are associated. Second, Boster and Mongeau's (1984) meta-analysis demonstrated that fear is related to adaptive outcomes (i.e., attitudes and behaviors). Third, a study by Rogers and Mewborn (1976) showed that the relationship between fear and intentions vanished when controlling for perceived threat. Thus, Boster and Mongeau (1984) may have discovered positive correlations between fear and attitudes/behaviors, because these variables are indirectly related, as mediated by perceived threat when perceived efficacy is high. Overall, fear does not directly cause adaptive changes, but fear can influence adaptive changes when it is mediated by perceived threat in high perceived efficacy conditions.⁵

One final comment about the role of fear and cognitions is in order. It is important to note that one can experience fear in danger control processes, and one can have thoughts in fear control processes—although fear is not necessary for danger control processes and cognitions are not necessary for fear control processes. However, the explicit relationships are specified as:

Proposition 10. Cognitions about efficacy are unrelated to maladaptive responses.

Because perceived threat causes fear,

Proposition 11. Cognitions about threat are indirectly related to maladaptive responses.

Individual differences. Individual differences are likely to influence the appraisals of threat and efficacy, which will then affect the critical point at which

individuals begin to cope with fear, instead of danger. Research has indicated that people who are high anxious, lack coping skills, have low self-esteem, or feel highly vulnerable to the threat are more likely to engage in maladaptive responses (i.e., fear control processes) when faced with a strong fear appeal than those who are not anxious, have high self-esteem, or do not feel vulnerable to the threat (e.g., Boster & Mongeau, 1984; Dabbs & Leventhal, 1966; Hale & Mongeau, 1991; Janis & Feshbach, 1954; Kornzweig, 1967; Leventhal & Trembly, 1968; Leventhal & Watts, 1966; Niles, 1964; Rosen, Terry, & Leventhal, 1982). In addition, people who can be classified as repressors, poor copers, or avoiders, tend to reject strong fear appeals, while those who are sensitizers or good copers tend to accept strong fear appeals (e.g., Dziokonski & Weber, 1977; Goldstein, 1959; Hill & Gardner, 1980; Self & Rogers, 1990). Thus, according to the EPPM, low self-esteem persons may appraise a message recommendation to be unfeasible and ineffective, while high self-esteem persons might appraise the same message recommendation as being effective and easy to do. As perceived threat increases, low self-esteem persons might be more likely to engage in fear control processes because the high perceived threat/low perceived efficacy condition has been met, while high self-esteem persons might be more likely to engage in danger control processes because they perceive both efficacy and threat as high. In summary, dispositional characteristics are posited to affect the appraisal of threat or efficacy and thereby influence the subsequent initiation of danger control or fear control processes.

CONCLUSION

The EPPM expands on previous approaches in three ways: (a) it explains why fear appeals fail; (b) it re-incorporates fear as a central variable; and (c) it specifies the relationship between threat and efficacy in propositional forms. It is believed that the reconceptualized and expanded version of Leventhal's (1970) parallel process model offers a better and more precise explanation of fear appeal message processing than Rogers' PMT or Leventhal's parallel process model by themselves. In short, the EPPM consolidates earlier theoretical views by arguing that fear leads to message rejection (as Janis, 1967, argued) and cognitions (i.e., perceived threat and efficacy) lead to message acceptance (as Leventhal, 1970, and Rogers, 1975, 1983, suggest).

The original PMT's explication of danger control processes is diagrammed in the top portion of the EPPM (Figure 3). That is, message threat results in the cognitive mediators of perceived threat (beliefs about severity and susceptibility) and perceived efficacy (beliefs about response efficacy and self-efficacy), which elicit protection motivation, and adaptive responses, if both threat and efficacy are perceived as high. However, the EPPM departs from PMT after this point. Unlike PMT, the EPPM specifies the variables and processes leading to maladaptive responses, which PMT does not do. Specifically, the EPPM argues that high fear, first caused by high perceived threat, and then intensified by low perceived efficacy, elicits defensive motivation, which induces maladaptive outcomes. The EPPM demonstrates that fear directly causes maladaptive responses, but that fear can be indirectly related to adaptive responses, as long as it is cognitively appraised. In sum, threat determines the degree or intensity of the response, while efficacy determines the nature of the response.

Overall, fear appeals have great potential for stimulating behavioral change—if used correctly. The principles set forth in the present work are offered as guidelines for their effective use. These ideas now await empirical testing.

ENDNOTES

¹It is important to note that Mewborn and Rogers (1979) were more interested in the *pattern* of findings for physiological arousal and self-rated fear (e.g., the high fear condition yields a consistent pattern which is different from the low fear condition), than in the correlation between the two, which was actually quite modest.

²While not a fear appeal theory, per se, one additional theoretical approach to fear appeals is language expectancy theory (Burgoon, 1990; Burgoon & Miller, 1985; Miller, 1963). Burgoon and Miller (1985) outlined research showing that expectations may have been negatively violated and persuasiveness inhibited when strong fear appeals were used by low credibility speakers (Hewgill & Miller, 1965; Miller & Hewgill, 1966). In contrast, they noted that strong fear appeals were successful when given by high credibility speakers, who presumably did not negatively violate expectations because they were allowed greater latitude in their language choices. Few fear appeal researchers have considered the potentially important role of expectancy violations in their research.

³Readers will notice similarities between the PMT and the health belief model (Janz & Becker, 1984; Rosenstock, 1974). Prentice-Dunn and Rogers (1986) discuss the differences between the two.

⁴Knowledge and appraisal are both forms of cognition. Knowledge consists of attributions and "what a person believes about the way the world works in general and in a specific context," while appraisal "is an evaluation of the personal significance of what is happening" (Lazarus, 1991a, p. 354). Cognitive appraisal can, and often does, occur automatically, involuntarily, effortlessly, and outside our awareness (Bargh, 1989; Langer, 1989; Lazarus, 1991a). See Buck (1984) and Zajonc (1980, 1984) for additional views.

⁵An alternative explanation for the relationship between fear, perceived threat, and adaptive outcomes is that fear may be spuriously related to adaptive outcomes, simply because it also is related to perceived threat. Unfortunately, with current statistical methods, "the mediated and spurious relationship are indistinguishable and thus are tested for in the same manner . . . thus, distinguishing these two models from one another must be done on the basis of *substantive or theoretical reasons*" (Levine & Cruz, in press). One study did find a direct path from fear to intentions based on the subjective expected utility (SEU) model, but this was based on a path analysis that did not include the perceived threat construct or the variables of perceived susceptibility or perceived severity (Sutton & Eiser, 1984). Thus, the model may have had a very poor fit (no model fit estimates were given) because it was missing important constructs. The EPPM would suggest that if perceived threat were included in this model, then the relation between fear and intentions would be mediated by perceived threat.

REFERENCES

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Bargh, J.A. (1989). Conditional automaticity: Varieties of automatic influence in social perception and cognition. In J.S. Uleman & J.A. Bargh (Eds.), *Unintended thought* (pp. 3–51). New York: Guilford Press.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 6, 1173–1182.
- Beck, K.H. (1984). The effects of risk probability, outcome severity, efficacy of protection and access to protection on decision making: A further test of Protection Motivation Theory. *Social Behavior and Personality*, 12, 121–125.
- Beck, K.H., & Frankel, A. (1981). A conceptualization of threat communications and protective health behavior. *Social Psychology Quarterly*, 44, 204–217.
- Beck, K.H., & Lund, A.K. (1981). The effects of health threat seriousness and personal efficacy upon intentions and behavior. *Journal of Applied Social Psychology*, 11, 401–405.
- Ben-Sira, Z. (1981). Latent fear-arousing potential of fear-moderating and fear-neutral health promoting information. *Social Science and Medicine*, 15e, 105–112.
- Boster, F.J., & Mongeau, P. (1984). Fear-arousing persuasive messages. In R.N. Bostrom & B.H. Westley (Eds.), *Communication yearbook 8* (pp. 330–375). Newbury Park, CA: Sage.
- Branscombe, N.R. (1987). Conscious and unconscious processing of cognitive and affective information. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 3–24). Toronto: CJ Hogrefe.
- Brehm, J.W. (1966). *A theory of reactance*. New York: Academic Press.
- Buck, R. (1984). *The communication of emotion*. New York: Guilford Press.

- Burgoon, M. (1990). Language and social influence. In H. Giles & W.P. Robinson (Eds.), *Handbook of language and social psychology* (pp. 51–72). New York: John Wiley & Sons.
- Burgoon, M., & Miller, G.R. (1985). An expectancy interpretation of language and persuasion. In H. Giles & R. St. Clair (Eds.), *Recent advances in language, communication, and social psychology* (pp. 199–229). London: Erlbaum.
- Burnett, J.J. (1981). Internal-external locus of control as a moderator of fear appeals. *Journal of Applied Psychology*, 66, 390–393.
- Burnett, J.J., & Oliver, R.L. (1979). Fear appeal effects in the field: A segmentation approach. *Journal of Marketing Research*, 16, 181–190.
- Dabbs, J.M., & Leventhal, H. (1966). Effects of varying the recommendations in a fear-arousing communication. *Journal of Personality and Social Psychology*, 4, 525–531.
- Dillard, J.P. (1992). *Rethinking the study of fear appeals*. Manuscript under review.
- Dziokonski, W., & Weber, S.J. (1977). Repression-sensitization, perceived vulnerability, and the fear appeal communication. *The Journal of Social Psychology*, 102, 105–112.
- Easterling, D.V., & Leventhal, H. (1989). Contribution of concrete cognition to emotion: Neutral symptoms as elicitors of worry about cancer. *Journal of Applied Psychology*, 74, 787–796.
- Edwards, W. (1961). Behavioral decision theory. *Annual Review of Psychology*, 12, 473–498.
- Erdelyi, M.H. (1974). A new look at the new look: Perceptual defense and vigilance. *Psychological Review*, 81, 1–25.
- Giesen, M., & Hendrick, C. (1974). Effects of false positive and negative arousal feedback on persuasion. *Journal of Personality and Social Psychology*, 4, 449–457.
- Gleitman, H. (1981). *Psychology*. NY: W.W. Norton.
- Goldstein, M.J. (1959). The relationship between coping and avoiding behavior and response to fear-arousing propaganda. *Journal of Abnormal and Social Psychology*, 58, 247–252.
- Hale, J., & Mongeau, P. (1991, May). *Testing a causal model of the persuasive impact of fear appeals*. Paper presented at the annual meeting of the International Communication Association, Chicago.
- Hendrick, C., Giesen, M., & Borden, R. (1975). False physiological feedback and persuasion: Effect of fear arousal vs. fear reduction on attitude change. *Journal of Personality*, 43, 196–214.
- Hewgill, M.A., & Miller, G.R. (1965). Source credibility and response to fear-arousing communications. *Speech Monographs*, 32, 95–101.
- Higbee, K.L. (1969). Fifteen years of fear arousal: Research on threat appeals 1953–1968. *Psychological Bulletin*, 72, 426–444.
- Hill, D., & Gardner, G. (1980). Repression-sensitization and yielding to threatening health communications. *Australian Journal of Psychology*, 32, 183–193.
- Hovland, C., Janis, I., & Kelly, H. (1953). *Communication and persuasion*. New Haven, CT: Yale University Press.
- Insko, C.A., Arkoff, A., & Insko, V.M. (1965). Effects of high and low fear-arousing communications upon opinions toward smoking. *Journal of Experimental Social Psychology*, 1, 256–266.
- Janis, I.L. (1967). Effects of fear arousal on attitude change: Recent developments in theory and experimental research. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 3, pp. 166–225). New York: Academic Press.
- Janis, I.L., & Feshbach, S. (1953). Effects of fear-arousing communications. *The Journal of Abnormal and Social Psychology*, 48, 78–92.
- Janis, I.L., & Feshbach, S. (1954). Personality differences associated with responsiveness to fear-arousing communications. *Journal of Personality*, 23, 154–166.
- Janis, I.L., & Mann, L. (1977). *Decision-making: A psychological analysis of conflict, choice, and commitment*. New York: Free Press.
- Janz, N.K., & Becker, M.H. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11, 1–47.
- Job, R.F.S. (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health*, 78, 163–167.
- Johnson, B., & Eagly, A. (1989). Effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin*, 106, 290–314.
- Judd, C.M., & Kenny, D.A. (1981). Process analysis: Estimating mediation in evaluation research. *Evaluation Research*, 5, 602–619.
- Kleinot, M.C., & Rogers, R.W. (1982). Identifying effective components of alcohol misuse prevention programs. *Journal of Studies on Alcohol*, 43, 802–811.
- Kohn, P.M., Goodstadt, M.S., Cook, G.M., Sheppard, M., & Chan, G. (1982). Ineffectiveness of threat appeals about drinking and driving. *Accident Analysis and Prevention*, 14, 457–464.
- Kornzweig, N.D. (1967). *Behavior change as a function of fear arousal and personality*. Unpublished doctoral dissertation, Yale University.
- Krisher, H.P., III, Darley, S.A., & Darley, J.M. (1973). Fear-provoking recommendations, intentions to take preventive actions, and actual preventive actions. *Journal of Personality and Social Psychology*, 26, 301–308.

- Lang, P.J. (1984). Cognition in emotion: Concept and action. In C.E. Izard, J. Kagan, & R.B. Zajonc (Eds.), *Emotions, cognition, and behavior* (pp. 192–226). Cambridge: Cambridge University Press.
- Langer, E.J. (1989). *Mindfulness*. Reading, MA: Addison-Wesley.
- Lazarus, R.S. (1991a). Cognition and motivation in emotion. *American Psychologist*, 46, 352–367.
- Lazarus, R.S. (1991b). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46, 819–834.
- Lazarus, R.S. (1991c). *Emotion and adaptation*. NY: Oxford University Press.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer-Verlag.
- Leventhal, H. (1965). "Tetanus" messages. American Documentation Institute, #9011.
- Leventhal, H. (1970). Findings and theory in the study of fear communications. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 5, pp. 119–186). New York: Academic Press.
- Leventhal, H. (1971). Fear appeals and persuasion: The differentiation of a motivational construct. *American Journal of Public Health*, 61, 1208–1224.
- Leventhal, H., Safer, M.A., & Panagis, D.M. (1983). The impact of communications on the self-regulation of health beliefs, decisions, and behavior. *Health Education Quarterly*, 10, 3–29.
- Leventhal, H., & Trembly, G. (1968). Negative emotions and persuasion. *Journal of Personality*, 36, 154–168.
- Leventhal, H., & Watts, J. (1966). Sources of resistance to fear-arousing communications on smoking and lung cancer. *Journal of Personality*, 34, 155–175.
- Levine, T., & Cruz, M. (in press). Detecting and assessing statistical interactions with multiple regression. *Communication Research Reports*.
- Maddux, J.E., & Rogers, R.W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19, 469–479.
- McGuire, W.J. (1968). Personality and susceptibility to social influence. In E. Borgatta & W. Lambert (Eds.), *Handbook of personality theory and research* (pp. 1130–1187). Chicago: Rand McNally.
- McGuire, W.J. (1969). The nature of attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (Vol. 3, pp. 136–314). Reading, MA: Addison-Wesley.
- Mewborn, C.R., & Rogers, R.W. (1979). Effects of threatening and reassuring components of fear appeals on physiological and verbal measures of emotion and attitudes. *Journal of Experimental Social Psychology*, 15, 242–253.
- Miller, G.R. (1963). Studies on the use of fear appeals: A summary and analysis. *Central States Speech Journal*, 14, 117–125.
- Miller, G.R., & Hewgill, M.A. (1966). Some recent research on fear-arousing message appeals. *Speech Monographs*, 33, 377–391.
- Mongeau, P. (1991, February). *Fear-arousing persuasive messages: A meta-analysis revisited*. Paper presented at the annual meeting of the Western States Communication Association, Phoenix, AZ.
- Mullis, J.-P., & Lippa, R. (1990). Behavioral change in earthquake preparedness due to negative threat appeals: A test of protection motivation theory. *Journal of Applied Social Psychology*, 20, 619–638.
- Niles, P. (1964). *The relationship of susceptibility and anxiety to acceptance of fear-arousing communications*. Unpublished doctoral dissertation, Yale University.
- O'Keefe, D.J. (1990). *Persuasion: Theory and research*. Newbury Park, CA: Sage.
- Ortony, A., & Turner, T.J. (1990). What's basic about basic emotions? *Psychological Review*, 97, 315–331.
- Petty, R., & Cacioppo, J.T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Prentice-Dunn, S., & Rogers, R.W. (1986). Protection motivation theory and preventive health: Beyond the health belief model. *Health Education Research*, 1, 153–161.
- Ramirez, A., & Lasater, T.L. (1976). Attitudinal and behavioral reactions to fear-arousing communications. *Psychological Reports*, 38, 811–818.
- Ramirez, A., & Lasater, T.L. (1977). Ethnicity of communicator, self-esteem, and reactions to fear-arousing communications. *The Journal of Social Psychology*, 102, 79–91.
- Rippetoe, P.A., & Rogers, R.W. (1987). Effects of components of protection-motivation theory on adaptive and maladaptive coping with a health threat. *Journal of Personality and Social Psychology*, 52, 596–604.
- Rogers, R.W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91, 93–114.
- Rogers, R.W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J. Cacioppo & R. Petty (Eds.), *Social psychophysiology* (pp. 153–176). New York: Guilford.
- Rogers, R.W. (1985). Attitude change and information integration in fear appeals. *Psychological Reports*, 56, 179–182.
- Rogers, R.W., & Deckner, C.W. (1975). Effects of fear appeals and physiological arousal upon emotion, attitudes, and cigarette smoking. *Journal of Personality and Social Psychology*, 32, 222–230.
- Rogers, R.W., & Mewborn, C.R. (1976). Fear appeals and attitude change: Effects of a threat's noxiousness, probability of occurrence, and the efficacy of the coping responses. *Journal of Personality and Social Psychology*, 34, 54–61.

- Rosen, T.J., Terry, N.S., & Leventhal, H. (1982). The role of esteem and coping in response to a threat communication. *Journal of Research in Personality*, 16, 90–107.
- Rosenstock, I.M. (1974). The health belief model and preventive health behavior. *Health Education Monographs*, 2, 354–386.
- Self, C.A., & Rogers, R.W. (1990). Coping with threats to health: Effects of persuasive appeals on depressed, normal, and antisocial personalities. *Journal of Behavioral Medicine*, 13, 343–357.
- Stainback, & Rogers, R.W. (1983). Identifying effective components of alcohol abuse prevention programs: Effects of fear appeals, message style, and source expertise. *International Journal of the Addictions*, 18, 393–405.
- Sutton, S.R. (1982). Fear-arousing communications: A critical examination of theory and research. In J.R. Eiser (Ed.), *Social psychology and behavioral medicine* (pp. 303–337). London: Wiley.
- Sutton, S.R., & Eiser, J.R. (1984). The effects of fear-arousing communications on cigarette smoking: An expectancy-value approach. *Journal of Behavioral Medicine*, 7, 13–33.
- Sutton, S.R., & Hallett, R. (1989). Understanding seat-belt intentions and behavior: A decision-making approach. *Journal of Applied Social Psychology*, 19, 1310–1325.
- Witte, K. (1991). *Preventing AIDS through persuasive communications: Fear appeals and preventive-action efficacy*. Unpublished doctoral dissertation, University of California, Irvine.
- Witte, K. (1992). The role of threat and efficacy in AIDS prevention. *International Quarterly of Community Health Education*, 12, 225–249.
- Wolf, S., Gregory, W.L., & Stephan, W.G. (1986). Protection motivation theory: Prediction of intentions to engage in anti-nuclear war behaviors. *Journal of Applied Social Psychology*, 16, 310–321.
- Wurtele, S.K., & Maddux, J.E. (1987). Relative contributions of protection motivation theory components in predicting exercise intentions and behavior. *Health Psychology*, 6, 453–466.
- Zajonc, R.B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35, 151–175.
- Zajonc, R.B. (1984). On the primacy of affect. *American Psychologist*, 39, 117–123.