Fear Appeals and Persuasion: A Review and Update of the Extended Parallel Process Model

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Abstract

The Extended Parallel Process Model (EPPM; Communication Monographs, 59, 1992, 329) is a predominant message design theory in the social science fear appeal literature that provides a framework for effective communication of health-related information. This paper provides a review and update of the theory and the use of fear appeals in persuasion. First, a brief overview of the EPPM is provided. Then, Littlejohn and Foss (Theories of Human Communication, 2005, Belmont, CA: Thomson Wadsworth) criteria for evaluation of theory are used as a guide for reviewing research guided by the EPPM in terms of the consistency of data with theoretical predictions, how it has been adjusted and extended through research findings, and a discussion of future research to expand social scientific knowledge about fear appeals and persuasion. It is concluded that the EPPM has advanced our understanding of how fear appeals operate and continues to generate questions for research in risk messaging.

The study of fear appeals as a persuasive tactic to encourage audiences to engage in healthy behaviors has been ongoing for over 55 years (see Boster & Mongeau, 1984; Witte & Allen, 2000; for reviews). Several theories proposed in the early development of fear appeal research explained positive linear effects on attitudes resulting from the use of scare tactics, but they were unable to justify results from other tests that produced inconsistent findings (Witte, 1992a). In order to help explain these results, Witte (1992a) put forth the Extended Parallel Process Model (EPPM), an amalgamation and extension of the previous research and theories on fear appeals. The EPPM explained the possible responses people may have to a fear appeal message and placed them into three broad categories: non-responses, danger control responses, and fear control responses. The theory made predictions about which of these three response types individuals will demonstrate depending upon the interaction between their perceptions of the threat and their perceptions of efficacy to avert the threat.

Nearly 20 years after it was proposed, the EPPM remains one of the predominant theories in the fear appeal literature. The purpose of this paper is to provide an update on the status of research that has used EPPM as a theoretical framework for examination of fear appeals and persuasion. Littlejohn and Foss (2005) components for evaluation of theory are used as a guide for reviewing the research on the EPPM in terms of the consistency of data with theoretical predictions, how it has been adjusted and extended through research findings, and a discussion of future research to expand social scientific knowledge about fear appeals and persuasion.
EPPM Overview

The EPPM is a message design theory that provides a framework for effective communication of health and risk-related information. Drawing upon 40 years of fear appeal research that predated it, the EPPM provided an explanatory mechanism to resolve seemingly inconsistent findings in past fear appeal studies and distinguished multiple reasons as to why a fear appeal might fail. This was an invaluable contribution for health campaigns and interventions at a practical level because different reasons for fear appeal failures call for different adjustments to messages to increase their probability of success. At its most basic level, the framework offers predictions about people’s attitudinal, intentional, and behavioral responses to fear appeal messages based on their assessments of two central constructs: threat and efficacy (see Figure 1 for the full model).

Threat

In the EPPM, threat is defined as “A danger or harm that exists in the environment whether we know it or not” (Witte, Cameron, McKeon, & Berkowitz, 1996; p. 320). According to the theory, it is not the actual threat posed, but rather people’s perception of the threat, that motivates them to action. Drawing from the literature on the health belief model (Becker, 1974), perceived threat is comprised of two elements: perceived severity (“Beliefs about the significance or magnitude of the threat”), and perceived susceptibility (“Beliefs about one’s risk of experiencing the threat”) (Witte et al., 1996; p. 320). Specifically, Witte (1992a) provided the following message examples:

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’) (p. 332).

Witte (1992a) proposed message components were exogenous variables to the EPPM that had a direct impact on perceived threat. The EPPM maintains that because perceived threat motivates people to action, and messages directly affect threat perceptions, fear appeal messages will incite action to the degree that they successfully convince message recipients that they are susceptible to severe consequences associated with the threat. Perceived efficacy plays a critical role in determining whether a subsequent response is adaptive or maladaptive.

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

Witte et al. (1996), drawing from earlier literature in health behavior change, defined efficacy as an element pertaining to “…the effectiveness, feasibility, and ease with which a recommended response impedes or averts a threat.” (p. 320). It is perceived efficacy that has an impact on people’s actions, and these perceptions may be directly affected by the exogenous variable of message components. Perceived self-efficacy refers to “beliefs about one’s ability to perform the recommended response to avert the threat” (Witte et al., 1996; p. 320). Perceived response efficacy is “beliefs about the effectiveness of the recommended response in deterring the threat” (Witte et al., 1996; p. 320). In particular, Witte (1992a) provided example items used to measure perceived response efficacy (“I believe condoms prevent HIV contraction”) and perceived self-efficacy (“I think I can easily use condoms to prevent HIV contraction”) (p. 332). These items are traditionally measured on Likert-type scales. The EPPM postulates that motivation to take action in response to a fear appeal message depends solely on the degree to which the message increases their perceptions of a threat, the type of action individuals take depends upon the degree of perceived efficacy to avert the threat. If a threat is perceived, the fear appeal message will be successful in motivating people to engage in the recommended protective behaviors if it successfully increases people’s confidence that they are capable of engaging in the recommended behavior, and the this behavior is an effective means of avoiding the threat.

The EPPM maintains that upon exposure to a fear appeal, individuals may respond to the threat addressed in one of three different ways: (i) non-responses, (ii) danger control responses, and (iii) fear control responses. Message recipients’ threat and efficacy assessments determine which of the three responses they will have. First, upon exposure to the message, individuals engage in a threat assessment to determine whether or not they perceive that the threat is severe enough, and their own susceptibility to the threat is high enough to incite them to engage in additional information seeking or processing about the threat.

If people do not perceive the threat to be high, they will not experience fear [i.e., “…an internal emotional reaction comprising psychological and physiological dimensions that may be aroused when a serious and personally relevant threat is perceived.” (Witte et al., 1996; p. 320)], and will not be motivated to make additional appraisals. At this point, the assessment comes to an end, and people will not respond to the message. If, on the other hand, people do perceive a high threat, they will experience fear, and will be motivated to reduce that fear by engaging in either danger control processes or fear control processes, as determined by the second appraisal – the efficacy appraisal.

If, through the efficacy appraisal, people perceive that they have enough efficacy to avert the threat, they will reduce their fear by engaging in danger control responses, i.e., “belief, attitude, intention, or behavior changes in accordance with a message’s recommendations” (Witte et al., 1996; p. 320). Alternatively, if people’s efficacy appraisals lead to the self-perception that they do not have the efficacy to avert the threat, they will reduce their fear by engaging in fear control responses, i.e., “Coping responses that diminish fear, such as defensive avoidance, denial, and reactance (including issue/message derogation and perceived manipulative intent)” (Witte et al., 1996; p. 320). Thus, as explained by Witte (1997),

…perceived threat determines the extent of a response [to a hazard] (i.e., how strong the danger or fear control responses are), while perceived efficacy determines the nature of the response (i.e., whether danger or fear control responses are elicited) (p. 139).
Evaluation and Review of Literature

Social scientific theories may be more or less useful within a field depending on several elements. In their seminal text, *Theories of Human Communication*, now in its ninth edition, Littlejohn and Foss (2005) provide a list of components to consider when evaluating the quality of a theory of human communication. The list includes: parsimony, appropriateness, validity, theoretical scope, openness, and heuristic value. The following sections will evaluate the EPPM in terms of these six components in order to clarify the state of the theory and the literature on fear appeals in general at the present.

Parsimony

Parsimony refers to the degree to which the theory explains a phenomenon of interest in the simplest possible terms. A parsimonious model is preferred to a more complex model with the same explanatory power. The EPPM predicts and explains all possible responses to a fear appeal message using just two main constructs: threat and efficacy. At its most basic, the model can be summed up as follows. First, under the condition that perceived threat is not high enough to produce fear, individuals will take no action in response to a fear appeal message. Second, if perceived threat is high enough to produce fear, when perceived efficacy is higher than perceived threat, individuals will engage in the response recommended by the fear appeal message; when perceived efficacy is lower than perceived threat, individuals will not engage in the response recommended by the fear appeal message, but instead will either avoid thoughts of the hazard altogether, or they will engage in behaviors that put them even more at risk of the hazard.

Thus, the initial conceptualization of the theory was fairly simple and subsequent work has attempted to enhance this parsimony. Witte, Meyer, and Martell (2001) created essentially a ‘how to’ manual for the theory that lays out the theory in simple and practical terms and provides guidance on application of the theoretical constructs for message design. Probably the best demonstration of the parsimony of the EPPM is the fact that 20 years after its inception, the basic structure of the model has changed little due in part to its strong roots in prior research. Refinements of the model (such as adding perceived barriers as a variable predicting message response (Carpioppolo, 2008), and accounting for cultural variability (e.g., Witte & Morrison, 1995a), have not generated significant research. The initial model has continued to be central to risk communication scholarship (see Witte & Allen, 2000).

Appropriateness

The ‘appropriateness’ of a theory deals with whether the underlying theoretical assumptions it makes are suitable for the research question it seeks to address, and whether it expands knowledge surrounding the phenomenon of interest. As noted previously, the EPPM is derived from decades of fear appeal and persuasion research that preceded it. The theory has roots in Leventhal’s (1970) danger control/fear control framework, Rogers’ (1975) original protection motivation theory (PMT), drive models of 1950s and 1960s (Janis, 1967; McGuire, 1968, 1969); Leventhal’s (1970, 1971) parallel process model, Sutton’s (1982) application of subjective expected utility; and the Health Belief Model (HBM), developed by researchers at the U.S. Public Health Service in the 1950s (Hochbaum, 1956). The EPPM combines of all of the previous theories in a way that utilizes the strengths of previous fear appeal theories and accounts for their
shortcomings. Additionally, it expanded the literature on fear appeals in a number of meaningful ways.

First, in the original document that introduced the EPPM, Witte (1992a) provided clear conceptual definitions of three central constructs in the fear appeal literature: fear, threat, and efficacy. These terms were confounded in previous literature, making it difficult to gain a comprehensive understanding of the way in which fear appeal messages affect behavior. For example, Sutton’s (1982) meta-analysis of fear appeals treated threat and fear as interchangeable terms for a single construct. Threat and fear are terms used to represent two different constructs in the EPPM, namely a tangible occurrence that is unrelated to perception and an abstract emotion, respectively. True threats do not always inspire fear and people sometimes experience fear in the absence of a true threat.

Second, rather than evaluating fear appeals only in terms of their intended outcomes, the EPPM also contributes to our understanding of when and how fear appeal messages fail. As explained by Witte, Berkowitz, Cameron, and McKeon (1998b), “Most health behavior change models simply focus on the degree of attitude or behavior change achieved—they do not examine other outcomes produced by the campaign” (p. 573). The distinction between fear appeal attempts that fail due to low perceived threat versus fear appeal attempts that fail due to low perceived efficacy is unique to the EPPM. Previous literature that predicted a threat-by-efficacy interaction was predictive of study outcomes, but it was not explanatory as to why such outcomes should occur. The EPPM provides a clear rationale for behaviors that occur as a result of fear appeals. Specifically, Witte et al. (1996) stated,

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) (p.337).

This greatly increased the predictive and explanatory power of fear appeal theories. For example, the PMT suggested that as perceptions of susceptibility and severity increase, likelihood of a maladaptive response to a fear appeal should decrease. Empirical literature, however, indicated the opposite. Studies showed that under low perceived efficacy conditions, an increased perception of threat actually led to increases in maladaptive behaviors (e.g., Kleinot & Rogers, 1982; Rogers & Mewborn, 1976). Taken together, it may be concluded that the EPPM adequately contributes to the research question it seeks to address (about explaining and predicting effects in response to fear appeal messages), and greatly expands the knowledge that can be garnered from the fear appeal literature that came before it.

Validity

According to Littlejohn and Foss (2005), validity deals with the extent to which a theory predicts and explains realistic processes and the whether there is empirical evidence consistent with the predictions of the model. In addition to providing clear conceptual definitions of all variables involved in the EPPM, and detailing the processes by which people come to produce non-responses, adaptive responses, or maladaptive responses, Witte et al. (1996) have specified statistical guidelines for formative and evaluative assessment of fear appeal persuasion attempts.

A key component of the EPPM is the ‘critical point’, at which perceptions of threat begin to outweigh perceptions of efficacy, and people begin to shift from danger control to fear control processes (Witte et al., 1996; p. 321). Witte’s (1992a) article introducing
the model contains a diagram of this point. Witte (1994) devised a simple mathematical formula for determining the ‘discriminating value’, defined as the value that determines whether an individual is in fear control or danger control (Witte et al., 1996; p. 321). The formula for determining a discriminating value is as follows:

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\text{Discriminating Value} = (Z \text{ for Perceived Efficacy}) - (Z \text{ for Perceived Threat})
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A discriminating value of zero would indicate that the individual is at the critical point. In order to determine whether an individual is in fear control or danger control, a researcher should assess perceived efficacy and threat experienced with regard to the hazard. Subtracting the standardized perceived threat score from the standardized perceived efficacy score will provide the researcher with the individual’s discriminating value.

According to Witte et al. (1996),

This discriminating value formula was devised so researchers or practitioners could diagnose whether clients or audiences were engaged in fear control or danger control and adjust their health risk statements accordingly (p. 321).

If the score obtained is positive, then the individual(s) who completed the questionnaires are likely engaging in danger control processes. The authors specified that when individuals are in danger control, high threat, high efficacy messages will be the most successful to reinforce behavior used to avert the threat. Conversely, a negative discriminating value means that the individual is engaging in fear control. Under such conditions, Witte et al. (1996) recommended high efficacy messages with no mention of threat. This approach will increase the probability that individuals engaging in fear control processes will begin to perceive greater efficacy than threat, and will begin working to reduce their danger, rather than their fear, of the threat.

In addition to providing a formula to determine mathematically how to construct fear appeal messages appropriately, Witte and colleagues later used the EPPM for guidance in developing and validating the Risk Behavior Diagnosis scale (RBD, Witte et al., 1996), a multi-dimensional scale designed for use by practitioners and health care providers to predict risk behaviors. The RBD was designed to provide the scores for perceived threat and efficacy needed for calculating discriminating values with regard to a hazard. Using these tools together, practitioners should be able to measure an individual or group’s perceived threat and efficacy surrounding a hazard, calculate a discriminating value, and use this value to determine the components that should be included in an effective fear appeal message. Confirmatory factor analysis procedures produced strong evidence for validity of the RBD, and the threat by efficacy interaction proposed in the EPPM.

The tools created for determining the discriminating value of a population of interest regarding a particular hazard and the specific guidelines for message design based on this formative assessment allow for fairly straightforward tests of the model for falsifiability. Still, however, the theory’s validity has been questioned. Cameron (2009) noted that meta-analyses of fear appeals do not offer solid evidence in favor of any single model of fear appeals and persuasion. In terms of the EPPM, the threat by efficacy interaction has often failed to reach significance (e.g., Floyd, Prentice-Dunn, & Rogers, 2000; Roskos-Ewoldson, Yu, & Rhodes, 2004; Witte & Allen, 2000). Witte and Allen (2000) coded studies in their meta-analysis to assess the fit of three different fear appeal models. They found that an additive effects-coded model fit the data better than the EPPM. The fact that the data consistently show increases in strength of the fear appeal yield increases in
attention, behavioral intentions, or behaviors (even without taking efficacy into account), suggest that fear appeals are a very useful strategy, even if used only intuitively. Despite a failure to reach significance in Witte and Allen’s (2000) analysis of variance interaction test, effects-coded interaction analyses indicated that the data were consistent with the predictions of the EPPM. The authors suggested that the low number of studies included in the analysis may not have provided enough power for the interaction to emerge as significant in the ANOVA. Importantly, Witte and Allen’s (2000) meta-analysis found that low efficacy produced fear control responses, indicating that these must be addressed in fear appeal studies, which they often are not. Also, four separate meta-analyses using different statistical summary strategies (Boster & Mongeau, 1984; Mongeau, 1998; Sutton, 1982; Witte & Allen, 2000) all concluded that fear appeal messages used in conjunction with high efficacy messages are more effective at bringing about positive changes in attitudes, intentions, and behaviors than fear appeal messages alone. This principle holds across a wealth of different health behaviors for which it has been tested, as discussed in the following section.

Theoretical scope

Theoretical scope refers to the comprehensiveness of a theory (i.e., How broad a range of human behavior does the theory explain?). The theoretical scope of the EPPM is limited to explaining and predicting reactions to fear appeals only. It is important to note that fear appeals are one of a variety of different effective persuasive messaging techniques, and are not always the most appropriate technique for motivating health behaviors. For example, Muthusamy, Levine, and Weber (2009) assessed the impact of fear appeals in a high fear situation. A sample population from Namibia with high pre-existing fear about HIV/AIDS demonstrated no change in perceptions of fears, attitudes, intentions, and behaviors upon exposure to a fear appeal messages that were created in accordance with EPPM guidelines. The authors concluded that it is ill-advised and ineffective to use fear appeals in an attempt to persuade audience members with high levels of pre-existing fear. Likewise, common practice is to use fear-based messages without building efficacy perceptions as recommended by the EPPM. Gore and Bracken (2005) found messages that include threat in the absence of an efficacy component may scare audiences to fall deeper into fear control processes.

The maladaptive responses described above are predicted by the EPPM under the condition that perceived threat outweighs perceived efficacy. It should be acknowledged that under some conditions, an actual threat cannot be reduced through actions that can be taken by an individual. In these cases, some maladaptive responses may be considered quite useful in reducing fear enough to allow an individual to function on a daily basis despite the uncontrollable threat. Witte (1994) found a negative correlation between defensive avoidance and message minimization and fear, suggesting that these can be effective strategies in reducing fear. Under the condition that there is, in fact, an action that an individual can take to reduce the threat, however, Witte (1997) recommended the following: “…the messages developed should focus on the efficacy of the recommended response in order to counteract the already-high levels of perceived threat” (p. 140). In some cases, messages alone cannot increase perceived efficacy enough to overcome individuals’ perceived threat. In such instances, Witte, Cameron, Lapinski, and Nzyuko (1998c) suggested, “If it appears that low efficacy perceptions cannot be adequately addressed in a public health campaign, then practitioners should avoid the use of fear appeals in the campaign” (p. 583).
In situations that fear appeals are deemed appropriate, however, the EPPM has been supported across a variety of different contexts. The theory has been used most extensively in the context of HIV/AIDS prevention (e.g., Murray-Johnson, Witte, Liu, & Hubbel, 2001; Witte, 1992a, 1994; Witte & Morrison, 1995b). However, the model has garnered general support across a wide range of different prevention health behaviors (e.g., skin cancer, Stephenson & Witte, 1998; teen pregnancy, Witte, 1997; genital warts, Witte et al., 1998b; hearing impairment, Smith et al., 2008; meningitis, Gore & Bracken, 2005) and awareness behaviors (e.g., radon awareness, Witte et al., 1998a; tractor safety, Witte et al., 1993). The theory has also been tested on several different populations (e.g., juvenile delinquents, Witte & Morrison, 1995b; college students, Witte, 1992a,b, 1994; Witte et al., 1998b; and African American women, Witte et al., 1996). Not all studies of the EPPM have been experimental; some research has used it as the guiding framework for design or evaluations of intervention material.

Over the years, research based in this theory has applied the theory beyond its original scope. First, McMahan, Witte, and Meyer (1998) tested the effectiveness of messages about electromagnetic fields. The researchers concluded that the EPPM could be extended to be effective in structuring fear appeals about unknown risks. Next, multiple studies have tested the effectiveness of using the EPPM as a guide for individuals to motivate others to perform a given health behavior (e.g., an asthma intervention for school workers, Goei et al., 2010; an intervention to motivate men to encourage women they care about to take protective action against rape, Morrison, 2005). Finally, regarding message transmission, Wong and Cappella (2009) demonstrated that the EPPM has utility for visual as well as verbal messages, rather than just text-based messages (which served as the medium for stimulus materials for the vast majority of EPPM studies). This study had implications for using the EPPM in designing public service announcements (PSA’s), which are generally delivered on television as opposed to print or audio sources.

One of the greatest limitations for practical application of communication theories is that there is never a guarantee that messages will be interpreted by a population of interest the way they were designed to be understood. With regard to the EPPM, messages that are designed to increase threat or efficacy may or may not always be effective in doing so. Murray-Johnson et al. (2001) highlighted that people who scored high on individualism perceived greater threat when exposed to messages about severity and susceptibility of a hazard to the self, and collectivistic people perceived greater threat when exposed to messages about severity and susceptibility of a hazard to a larger group to which they belong. These findings demonstrate the importance of considering cultural orientation (i.e., individualist versus collectivist) in order to achieve the maximum effectiveness of a fear appeal (although it should be noted that results from this study also showed that cultural orientation cannot be assumed based on ethnicity either).

Witte and Morrison (1995b) identified sensation-seeking as an additional characteristic that impacts the effectiveness of messages designed to promote a perceived threat within a population of interest. However, this trait contributed strongly and significantly opposite of the researchers’ predictions: high sensation-seekers were less affected by fear appeal messages than low sensation-seekers. Thus, despite the tools provided for pre-assessment, and the clear guidelines for message construction based on this formative research, messages are not always interpreted by members of the population of interest in the way message designers intended. Given the potential counter-productive consequences of exposing an individual to an inappropriate fear appeal message, this literature highlights the importance of pilot testing messages with at least a small sample drawn from the population of interest before making that message widespread within a community.
on the previous discussion, it is concluded that the EPPM’s theoretical scope is broad in that it successfully explains, predicts, and motivates attitudes, intentions, and behaviors across a number of different topics in a variety of different audiences.

**Openness**

The criteria of openness questions whether the theory is open to other possibilities beyond what it proposes. Two indicators of openness are falsifiability and compatibility with other theories in the field. Falsifiability, i.e., the ability to recognize when data is NOT consistent with the model’s predictions, is of utmost importance for the utility of social scientific theory (Popper, 1959). The specificity with which EPPM predictions for outcomes based on the threat by efficacy interaction, as well as the diagnostic tools and formulas put forth to assess threat, efficacy, and all proposed outcomes associated with fear control and danger control responses greatly increase the falsifiability of the theory, which, in turn, increases the theory’s openness.

Another consideration for the criterion of openness is the degree to which a theory is compatible with other theories in the field. Cho and Salmon (2006) conducted research guided by Prochaska and DiClemente’s (1983) stages of change model to demonstrate that individuals in different stages are likely to react to fear appeals differently. Results of this study suggested that the stages of change moderate the EPPM such that individuals in the early stages of change are likely to react to high threat fear appeals using fear control processes whereas those in later stages are likely to engage in danger control processes when confronted with a high threat fear appeal. Similarly, Hullett and Witte (2001) integrated the EPPM with the predication of uncertainty and anxiety management theory to predict intercultural adjustment.

The EPPM makes specific enough predictions to meet the requirement of falsifiability. Since its advent in 1992, some moderating factors have been identified (e.g., cultural orientation, sensation-seeking, stages of change), and particular situations in which the use of fear appeals are inappropriate because they are unable to raise efficacy perceptions to surpass high levels of perceived threat have been uncovered (e.g., HIV/AIDS prevention in Namibia), but as a whole, the EPPM continually performs well in guiding message design when fear appeals are appropriate. Based on this, it is concluded that the theory is highly predictive and explanatory, while remaining open enough for adjustments and limitations.

**Heuristic value**

Heuristic value refers to the degree to which a theory inspires future research. In addition to the previously discussed abundance of literature on testing the EPPM in the context of different health behaviors across various populations of interest, the theory also serves as the basis for formative and evaluative research for health campaigns and interventions. Witte et al. (1998c) conducted focus groups with commercial sex workers, truck drivers, and their assistants on the Trans-Africa highway to provide formative research for creating effective safe sex materials targeting these at-risk populations. The researchers asked focus group participants to evaluate pre-existing campaign materials to gain insight into proper messaging techniques to be used in a future campaign or intervention. Transcripts coded for constructs of the EPPM offered valuable insight for creating more effective safe sex materials for this high risk population of interest.

In a similar study using focus groups in combination with content analyses of pre-existing campaign materials, both Kline and Mattson (2000, with regard to breast self-exami-
nation) and Witte et al. (1998a, regarding radon awareness) concluded that existing fear appeal materials lacked an efficacy component to incite danger control processes. Lapinski (2006) also noted a lacking self-efficacy component on pro-eating disorder websites based on a content analysis, but also addressed questions as to whether presenting a range of possible responses to a threat, each with a differing level of commitment to the prevention of weight gain (e.g., from reducing food intake by eating from smaller plates to cutting out meals altogether), may in itself increase perceptions of efficacy.

Beyond the realm of fear appeal persuasion, the EPPM has also served as the basis for a relatively new framework, Rimal’s (2001) risk perception attitude framework (RPA). The basic tenet of the RPA is that the relationship between risk perceptions and health outcomes is moderated by perceived efficacy. Unlike the EPPM, the RPA characterizes risk perception as “…a property not of the message, but rather of the individual” (Rimal & Real, 2003; p. 372). Thus, the RPA does not include message components as exogenous elements of the model in the way the EPPM does. Also, “[the RPA] personalizes risk perception by basing it on individuals’ own history and prior behaviors” (Rimal & Real, 2003; p. 372). Witte (1997) specified of the EPPM: “If no information regarding the efficacy of the recommended response is given, individuals will rely on past experiences and prior beliefs to determine perceived efficacy” (p. 139). Therefore, the models diverge in that the EPPM places more importance on threat and efficacy information provided in a message than the RPA does, but in the absence of an efficacy component in a message, the models predict the same recall mechanism.

The RPA has performed well in some tests (e.g. Rimal, Böse, Brown, Mkandawire, and Folda (2009) found that the model was able to explain 40% of intentions to use condoms among a sample of 860 people from eight districts in Malawi in southern Africa). However, data were not consistent with predictions of the framework in other tests such as Rimal (2001), in which a study assessing people’s thinking about cardiovascular disease indicated that people with low perceived risk had lower knowledge and discussion about health issues, than people with perceived higher risk, but there was no difference found between the two low risk perception groups regardless of efficacy. Because the model is fairly new, it has been tested substantially less than the EPPM has been tested. Furthermore, several of the predictions from both theories are the same. Future research should test competing hypotheses based on where the theories differ to determine if the RPA is an improvement upon the EPPM or not.

Another theory that has been put forth with some basis in the EPPM is the stage model of the processing of fear-arousing communications (Das, de Wit, & Stroebe, 2003). This theory adds concepts from dual-process models (e.g., Chaiken, 1980) to traditional fear appeal theories including the EPPM to explain how cognitive processing affects persuasion in fear appeals. The stage model posits that the severity of a risk determines whether a person processes a message systematically (i.e., through careful consideration and analysis of arguments posited) or heuristically (i.e., through use of simple decision rules and cognitive shortcuts). When individuals process threat information heuristically, they form attitudes in line with the fear appeal message without scrutinizing the arguments presented; when individuals process information systematically, they scrutinize the arguments presented in the fear appeal message. Depending on efficacy, individuals may be motivated to believe the argument put forth (defense motivation) or to scrutinize the argument strength (accuracy motivation). Vulnerability (i.e., susceptibility), while still considered to be a component of threat as it is in the EPPM, is expected to operate independently of severity. Vulnerability is thought to have no impact on attitudes (individuals form attitudes consistent with messages when the threat is severe), but it is
thought to have an impact on behavioral intentions and behaviors (if the individual perceives he or she is vulnerable to the threat, he or she will behave in a manner that is consistent with message recommendations).

De Hoog, Stroebe, and Wit (2007) conducted a meta-analysis to examine whether these assumptions held up empirically. Results were consistent with the stage model’s assumptions with regard to the impact of severity and argument quality on attitudes. Instead of the predicted severity by vulnerability interaction predicted to impact behavioral intentions and behaviors, main effects for vulnerability, severity, and response efficacy emerged for behavioral intentions, and main effects for vulnerability and severity emerged for behaviors. This is not consistent with the EPPM’s predicted threat by efficacy interaction influencing behavior, however, the study was under-powered for detecting significant interactions. Also, the meta-analysis investigated the impact of response efficacy only and excluded self-efficacy. Given these limitations, it would be unwise to conclude that this study significantly undermines the predictions of the EPPM. It is clear, however, that the added variables of depth of processing, attitudes, behavioral intentions, and other moderators predicted by the stage model could offer valuable insight to the EPPM and other literature on fear appeals.

Several gaps still exist within the EPPM literature itself that should also be addressed in future research. First, the initial search for possible moderating factors to the persuasion process within the EPPM should continue in order to improve the explanatory and predictive power of the model, and to better inform messages for campaigns and interventions. For example, Goldenberg and Arndt’s (2008) terror management health model for behavioral health promotion identifies the consciousness of death as a factor that determines one’s motivational goals, which, in turn, influences one’s health decisions. Thus, consciousness of one’s death may serve as a moderating factor to the link between threat and efficacy assessments and health behaviors. Also, more research should be done in an effort to uncover which specific type of fear control outcome (avoidance, reactance, or derogation) a person is likely to demonstrate in situations of high perceived threat and low perceived efficacy. Finally, further development and more widely spread use of the RBD in threat and efficacy assessments in combination with post message assessments could offer greater insight into more generally known discriminant values among different populations of interest and regarding different health behaviors. In sum, fear appeals are a widely accepted method of persuasion. Based on this review using Littlejohn and Foss (2005) components for theory evaluation, it may be concluded that the EPPM has successfully advanced knowledge in the area, and continues to generate questions for future research in the area.

Short Biographies

Erin K. Maloney received her PhD in Communication from Michigan State University in August, 2010. As a graduate assistant, she conducted a wide-range of research involving communication about health and environmental issues, and media that has been presented at academic conferences such as the annual meetings of the National Communication Association, and the International Communication Association, and has been published in peer-reviewed journals including Communication Quarterly, Journal of Homosexuality, and Journal of Media Psychology. She also co-authored Communicating Emergency Preparedness: Strategies for Creating a Disaster Resilient Public, the first book dedicated to communicating pre-disaster awareness. Maloney is currently employed as a postdoctoral research fellow at Memorial Sloan-Kettering Cancer Center. Forthcoming research will deal with online
health information seeking and its impact on doctor–patient relationships, and other projects involving the intersection of mass media and public health topics.

Maria K. Lapinski is joint-appointed as an Associate Professor in the Department of Communication and the Michigan Agricultural Experiment Station at Michigan State University (MSU). She is currently serving as the Associate Dean for Research for the College of Communication Arts and Sciences. Dr. Lapinski received her doctorate in 2000 from MSU and her Master’s of Arts from University of Hawaii, Manoa. Her research examines the impact of messages and social-psychological factors on health and environmental risk behaviors with a focus on culturally based differences and similarities. To this end, Dr. Lapinski has conducted collaborative research projects with her students and colleagues in a number of countries in Asia, the Pacific Rim, Central America, and Africa. She is currently working with Johns Hopkins Center for Communication Programs to evaluate a Packard-funded maternal and adolescent health initiative in northern Nigeria and on maternal health issues in the Yucatan, MX. Her work has been presented at national and international communication and public health conferences, published in public health and communication journals and is currently funded by the National Science Foundation and the United States Department of Agriculture. Her favorite courses to teach are International Health Communication, Risk Communication, and Health Communication for Diverse Populations.

Kim Witte (PhD, social ecology, University of California Irvine) is an adjunct Professor in the Department of Communication at Michigan State University. Dr. Witte is an international health communication expert with over 75 publications in such journals as Social Science and Medicine, International Quarterly of Communication Health Education, Communication Yearbook, Health Education & Behavior, Communication Monographs, and Journal of Community Health. She has conducted research with approximately 40 different populations worldwide on more than 35 different health-related topics, with a special focus on culturally appropriate risk messages. Dr. Witte has been recognized with the Outstanding Health Communication Scholar Award, the Distinguished Article Award by the National Communication Association (Applied Communication), the Distinguished Book Award by the National Communication Association (Applied Communication), as advisor to Thesis of the Year and Dissertation of the Year by the National and International Communication Associations, as Outstanding Faculty Member by the undergraduate communication association of Michigan State University, with the Teacher-Scholar Award from Michigan State University, and with nearly a dozen Top Three Papers from national and international conferences. Forthcoming publications include the following:


Endnote

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References


