

Scaring the Already Scared: Some Problems With HIV/AIDS Fear Appeals in Namibia

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Fear appeals are often used in public health campaigns in Africa to prevent further spread of HIV/AIDS. Based on the extended parallel processing model framework (K. Witte, 1991), this research assessed the impact of such messages in a high-fear situation. A 2 (high threat, low threat) × 2 (high efficacy, no efficacy) experiment with a no-message offset control and efficacy-only conditions tested several predictions. Participants demonstrated high preexisting fear about HIV/AIDS. As a likely consequence, statistical equivalence tests indicated that messages' threat levels had little impact on perceptions of fear or on outcome measures such as attitudes, intentions, or behaviors. It is concluded that the use of fear appeals to persuade audience with high levels of preexisting fear is ill-advised and ineffective.

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Scaring people into changing their behaviors is a well-known, widely practiced, and frequently researched persuasive strategy. Fear appeals, as they are known, are especially prevalent in health communication campaigns and advertisements where they are used to convince audiences to adopt protective and healthy behaviors. In the context of HIV/AIDS in particular, content analysis shows that 26% of all AIDS public service announcements use fear appeals (Freimuth, Hammond, Edgar, & Monahan, 1990). Research finds that fear appeals can be effective in achieving persuasive goals, but their effectiveness depends on message (Witte & Allen, 2000) and audience features (Boster & Mongeau, 1984).

The extended parallel processing model (Witte, 1991, 1992b) is an influential model of fear appeals in health contexts. The model holds that the effectiveness of a fear appeal rests on the amount of perceived threat in relation to perceived efficacy. A fear appeal will result in the acceptance of message recommendations and positive changes in attitudes, behavior, and intentions if and only if efficacy exceeds threat, otherwise maladaptive responses and rejection of message recommendations are predicted.

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However, in a context in which peoples' levels of fear are high to begin with, there is a notable lack of theoretical and empirical clarity in the fear appeal literature concerning what type of message is most effective. Is it useful to reinforce the existing high perceptions of fear, present messages with low levels of threat, or doing away with threat content completely so as to minimize the probability of defensive reaction? Although some authors advocate a moderate threat/high-efficacy strategy to promote message acceptance in a high preexisting fear context (e.g., Cameron, Witte, Lapinski, and Nzyuko, 1999), others advocate a no-threat, high self-efficacy strategy (e.g., Witte, Girma, & Girgre, 2002). These recommendations rest of the premise that it is possible to affect fear in a preexisting high-fear context. This assumption has not been empirically tested.

This article seeks to investigate the role of fear-inducing message content in a high-fear context, specifically that of the HIV/AIDS pandemic in Namibia. AIDS has become the single most serious threat to life, education, social, and economic progress in the country (www.cdc.org) and is the primary cause of death and hospitalization (USAID, 2002). More than one in five individuals (22.5%) in the adult population (14–49 years) are infected with the virus (Ministry for Health and Social Services, 2002). It is therefore likely that Namibians are experiencing high levels of fear toward HIV/AIDS.

The premise guiding this research is that, if an audience's levels of fear are high to begin with, the perceived threat is likely to equal or exceed efficacy, and fear messages are theoretically specified to be ineffective or counterproductive. Consequently, using fear appeals on those who are already scared may be ineffective and therefore ill-advised. To this end, the extended parallel processing model (EPPM) is detailed, the HIV/AIDS pandemic in Namibia is briefly described, and predictions regarding the role of fear in a high-fear context are advanced and tested with an experiment and statistical equivalence tests involving inferential confidence intervals (CIs).

The extended parallel processing model

The EPPM was developed by Witte (1991, 1992b) as a model to assist scholars and practitioners in the development of effective risk communication messages and offer insight into how to channel an individual's fear into motivation for effective action.

According to the EPPM, when a threat in the environment is recognized, the extent of the threat is assessed in a primary appraisal process (Witte, 1994). This cognitive appraisal involves assessment along two dimensions, perceived severity and perceived susceptibility. Perceived severity refers to an individual's perceptions about the magnitude of a threat. Perceived susceptibility refers to individual's belief about his or her chances of experiencing the threat. Perceived severity and perceived susceptibility combine to determine the extent to which a threat is perceived.

If an individual concludes that the magnitude of the threat is low, then further processing of the message is stalled and no response is elicited (Witte, 1991, 1992b). As individuals' perception of severity and their perceived susceptibility toward the threat increases, they experience fear, with increasingly greater threats leading systematically to higher levels of fear. Fear is the force that drives individuals to action and is defined as an internal emotional reaction comprising of psychological and physiological dimensions that are aroused when a serious and personally relevant threat is perceived (Easterling & Leventhal, 1989; Lang, 1984; Ortony & Turner, 1990). That is, fear is an emotion that is aroused contingent on whether something is perceived as highly threatening. The impact of perceptions of threat generated by messages on various persuasive outcomes is mediated by fear. The heightened perceptions of fear also motivate individuals to engage in a secondary appraisal process in which they evaluate efficacy (Witte, 1992b).

Efficacy is defined as the effectiveness, feasibility, and ease with which a recommended response impedes or averts a threat (Witte, 1994). Specifically, perceived efficacy refers to thoughts about the effectiveness and ease of two underlying dimensions, response efficacy and self-efficacy. Self-efficacy refers to the individual's beliefs about their ability to perform the recommended response (Witte, 1994). Response efficacy is the assessment of the ability of the response to avert the threat (Witte, 1994).

According to the model, when individuals' perceptions or beliefs about their ability to perform the recommended response and their faith in the ability of the response to avert the threat are below the levels of perceived threat (susceptibility and severity of threat), individuals engage in a process called fear control (Witte, 1994). Fear control is an involuntary and automatic emotional coping process that occurs when people are faced with a significant and relevant threat, but believe that they are unable to perform a recommended response and/or that the response is ineffective (Witte, 1992a, 1992b). When individuals engage in fear control, they psychologically reduce fear rather than the danger causing the fear. Defensive avoidance (Hovland, Janis & Kelly, 1953; Janis & Mann, 1977), denial, and reactance (Brehm, 1966) including issue/message derogation and perceived manipulative intent are classic manifestations of fear control responses (Witte, 1994). Consequently, messages invoking fear control are counterproductive.

In contrast, when individuals perceive that their self-efficacy and response efficacy is higher relative to their perceptions of fear, then danger control processes are triggered. Danger control is a cognitive process eliciting protection motivation that occurs when a person believes he or she is able to effectively avert a significant and relevant threat through self-protective changes (Witte, 1994). When in danger control, people are motivated to reduce the threat. Danger control responses are belief, attitude, intention, and behavior changes in accordance with message's recommendations. Thus, messages leading to danger control are, by definition, effective.

In sum, when levels of efficacy exceed levels of threat, adaptive responses are elicited. Maladaptive responses result when perceptions of threat exceed levels of efficacy. According to EPPM, the higher the threat, the more likely that message recommendations will be accepted, so long as threat levels do not exceed levels of efficacy.

The EPPM has been tested in nearly 50 studies across a wide variety of topics including skin cancer (Stephenson & Witte, 1998), HIV/AIDS prevention (Murray-Johnson, Witte, Liu, & Hubbel, 2001; Witte, 1992a, 1994; Witte, Cameron, Lapinski, & Nzyuko, 1998; Witte & Morrison, 1995), teen pregnancy (Witte, 1997), genital warts (Witte, Berkowitz, Cameron, & McKeon, 1998; Witte, Cameron, McKeon, & Berkowitz, 1996), breast cancer (Kline, 1995), radon awareness (Witte et al., 1998), and tractor safety (Witte et al., 1993). In addition, EPPM has focused on many different populations, including juvenile delinquents (Witte & Morrison, 1995), college students (Witte, 1992a, 1992b; Witte, 1994; Witte et al., 1998), African Americans (Witte et al., 1996), and Kenyan prostitutes (Witte et al., 1998). The model's author claims good empirical support for the EPPM (Witte & Allen, 2000; Witte, Meyer & Martell, 2001). More generally, meta-analyses find that fear appeals are effective in producing attitude and behavior change ($r = .15 - .21$) in studies where the mean induction strength ranges from $r = .30$ to $.36$ (Boster & Mongeau, 1984; Witte & Allen, 2000).

HIV/AIDS in Namibia

The HIV/AIDS epidemic is the most serious challenge facing Namibia today (www.cdc.org). More than one in five individuals (22.5%) between the ages of 14 and 49 years are infected with the virus in Namibia, with infection rates ranging from 44% in Katima Mulilo to 9% in Opuwo (Ministry for Health and Social Services, 2002). AIDS is the primary cause of death and hospitalization in Namibia (USAID, 2002). Thus, AIDS has become the single most serious threat to life, education, social, and economic progress in Namibia today (www.cdc.org).

Given this state of affairs, most Namibians have likely heard about AIDS and know about its causes and consequences. The population has high levels of literacy (83.3%, UNDP, 2002), and local (nonprofits, church-based initiatives), national (Ministry of Health and Social Services, 2002), and international programs (e.g., President's Emergency plan initiative to combat HIV/AIDS) aimed at spreading awareness about the HIV/AIDS illness are in place (USAID, 2002). Research shows that Namibians have considerable knowledge about the causes and fatal consequences of the illnesses (Murray-Johnson, Keulder, & Witte, 2004a, 2004b). In the words of Grotzinger, Mainga and Pietersen (2000), "Every Namibian is surely aware of AIDS, the risk and patterns of transmission, and the effects of HIV and AIDS on individuals in the community" (p. 83).

Given the rate of prevalence (over one in five individuals among the adult population), and the fact that HIV infection is generalized and spread across Namibia

(Ministry of Health and Social Services, 2002; USAID, 2002), AIDS is not just an illness that affects “others.” For many if not most Namibians, this illness hits close to home. People have had close personal experiences with this illness (Murray-Johnson, et al., 2004a). They have either known a family member who has died of this illness or they have had to take care of orphans themselves. Many have been child victims of parents who have died of AIDS.

A propositional framework

It is a common knowledge among Namibians that the cause of the infection in Namibia is unprotected sexual intercourse (Haoses, 2000). Given normative pressures of having unprotected sex and multiple sexual partners in the African culture (see Grobler, 2000; Katjire, Langa, Siwa, Mbucho & Tjongarero, 2000), it is likely that many people in Namibia also perceive themselves to be susceptible to the illness (Murray-Johnson et al., 2004b). Thus, many Namibians are likely aware of the possibility that they could be having sex with an infected person and research has found this to be the case (Murray-Johnson et al., 2004b). In short, because the prevalence rate is high, the illness is generalized throughout the adult population in Namibia, and is proximal to the lives of so many Namibians, it is likely that Namibians perceive that they themselves may be susceptible to the illness. The likely consequence of these heightened perceptions of threat is high fear. It is therefore likely that, in Namibia, most of the population experiences preexisting high levels of fear toward HIV/AIDS.

H1: Most people in a sample from Namibia have high levels of fear with regard to HIV/AIDS.

If hypothesis 1 is consistent with the data, then threat inductions in fear-arousing messages are unlikely to substantially increase fear because of a literal or practical ceiling effect. In other words, if most message recipients already think of HIV/AIDS as being highly severe and that they are susceptible, being exposed to a high-fear message will not result in a further heightening of fear levels. Even the most graphic message content is likely to pale in comparison with the impact of previous, firsthand experience with the actual consequences of the disease.

When preexisting levels of fear are already high, there is little room left to make participants more frightened. Even if a person is not maximally terrified already, it is unlikely that message content will make them any more scared. At best, a high-threat message only confirms their worst fears, and that corresponds to the reality they live in. People are already as scared of HIV/AIDS as they are going to be, and messages designed to increase fear are unlikely to have a meaningful impact on fear.

H2: Threat inductions in messages are unlikely to substantially increase fear when preexisting levels of fear are high.

If people with high preexisting fear levels are exposed to a low-threat message, it is possible that the low-threat message may be read as contrary to their experience and knowledge of HIV/AIDS. As a consequence, participants might perceive a low-threat

message as less credible, and consequently will be less likely to be persuaded by the contents of the message. Therefore, participants might dismiss or discount the message. This line of reasoning predicts that low-threat messages are unlikely to lower fear among participants.

Alternatively, however, there is at least potential room for fear reduction, and it is possible that a low-threat message might reduce perceptions of fear. According to Boster and Mongeau's (1984) meta-analysis of fear appeal literature, low-threat messages are likely to be more persuasive than a high-threat message for individuals who are more anxious. According to EPPM, this is because people who are highly fearful and anxious tend to engage in fear control in the face of a highly threatening appeal message, and do not engage in cognitive processes necessary for danger control. Therefore conditional on hypothesis 1 being true, it is plausible that a low-threat message might reduce fear and be processed more rationally. In the absence of evidence that demonstrate the role of a low-threat induction under conditions of preexisting high levels of fear, two rival predictions are advanced.

H3a: Low-threat messages will have little impact on perceptions of fear when levels of preexisting fear is high.

H3b: Low-threat messages will substantially reduce the preexisting perceptions of fear.

If hypotheses 1, 2, and 3a are true, then the threat content of the message and the perceived threat will have little impact on the adaptive outcomes. According to EPPM, the primary appraisal of a threat is a prerequisite to further processing of the message. Because high fear preexists, this condition cannot have been induced by a message, and therefore cognitive appraisal of the threat severity and susceptibility occurs independent of the message. Because perceived threat is not affected, no additional fear is generated, further processing of the message is stalled, and no response is elicited as a result of the threat content. Therefore, message threat content is irrelevant.

Furthermore, according to the EPPM, fear mediates the relationship between threat (message content) and the dependent measures. Because fear (the mediator) is invariant and will not be affected by the message content, EPPM predicts that there can be no impact of the message on the dependent outcomes (attitudes, intentions, and behavior change). Therefore, if H1, H2, and H3a are true, then

H4: Threat levels of a message have little impact on attitudes, intentions, and behavior under conditions of high preexisting fear.

The EPPM specifies that once individuals appraise levels of threat, they engage in secondary appraisal processes. At this stage, the outcomes of perceived threat depend on how individuals evaluate their own ability to adopt the recommended response as well as the ability of the recommended response to avert the threat. These perceptions of ability are labeled as self and response efficacy, respectively. With regard to the role of efficacy in a high-fear condition, at least two possibilities exist.

First, EPPM specifies that for a message to produce positive attitudinal and behavioral effects, efficacy must exceed threat. It is possible, however, that preexisting

threat levels are so high that no amount of efficacy content can overcome the high levels of threat. If this is the case, then EPPM logic predicts that individuals will engage in fear reduction regardless of message content. Thus, if hypotheses 1, 2, 3a, and 4 are true, then it is possible that perceived efficacy might not meet or exceed perceived threat because perceived threat is already extremely high. Consequently, participants might be engaging in fear control regardless of efficacy conditions (high efficacy or no efficacy).

H5a: Under conditions of high preexisting fear, the efficacy content of the message will have little impact on attitude, intentions, and behaviors.

Alternatively, it is plausible that participants exposed to a sufficiently high-efficacy message (regardless of fear content) will have their self-efficacy and response efficacy enhanced by the message, whereas participants who do not read the self-efficacy message feel less affirmed. If levels of efficacy can be raised to the critical point where they meet or exceed preexisting threat levels, then high-efficacy measures may provoke danger control processes, and high-efficacy messages may be effective regardless of high- or low-fear content. A no-efficacy message, however, will be ineffective because of fear-control process.

H5b: Under conditions of high preexisting fear, the efficacy content of the message will have a positive impact on attitude, intentions, and behaviors.

If, however, hypotheses 1 and 3b are true, then only the participants exposed to the low-fear/high-efficacy conditions will exhibit a positive influence on the dependent outcomes. If message inductions lower levels of threat to an extent that perceived threat is lower than levels of perceived efficacy, then according to EPPM logic dependent outcomes will be influenced positively. Therefore, if H1 and H3b are correct, then:

H5c: Under conditions of high preexisting fear, the efficacy content of the message will have a positive impact on attitude, intentions, and behaviors when used in combination with a low-fear message.

Finally, given the possibility that efficacy and threat might or might not combine to have an impact on the outcomes in the context of high preexisting fear, it is interesting and informative to assess how efficacy affects dependent outcomes in the absence of a fear induction. Given a preexisting high-fear situation, participants might not be in a position to cognitively process the high-efficacy component of the message when they are presented with fear content that precedes the efficacy component of message. Therefore, it is important to investigate the impact of an efficacy-only message on participants' attitude, intentions, and behaviors in the absence of a fear induction.

RQ1: Under conditions of high preexisting fear, what is the impact of a high efficacy-only message on attitude, intentions, and behaviors relative to the control condition?

Method

Participants

A total of 434 undergraduate male and female students enrolled in various departments at the University of Namibia (UNAM) formally participated in this study. UNAM is a public university, the only university in Namibia, and it attracts students from all ethnic, economic, and geographical cross-sections of the country. Of the 434 students, 60 students took part in a prestudy, and 374 students participated in the main experiment. Students in the main experiment were randomly assigned to one of the six experimental conditions allowing for approximately 60 respondents per cell and statistical power of .86 for between cell comparisons and .98 for main effects given a medium effect (i.e., $d = .5$, $r = .24$).

In the main experiment, 69% of the respondents ($n = 254$) were women. Ages ranged from 18 to 45 years ($M = 22.7$). A majority ($n = 312$, 85.5%) were Namibians and represented all regions of the country. The remaining participants were from other African countries including Angola, Botswana, Nigeria, South Africa, Uganda, and Zimbabwe.

Most of the respondents in this study were single ($n = 330$, 91.2%). When asked about their behaviors with regard to HIV/AIDS, almost all respondents ($n = 364$, 98.4%) denied using needles to use drugs, and they also denied having sexual relationships with people who use needles and drugs ($n = 333$, 90.5%). Just over half of the sample ($n = 187$, 54.7%) reported not having sex over the last 3 months. The remaining students (45.3%) stated that they engaged in sexual relationships with 1 to as many as 11 different partners over the course of the last 3 months. Slightly over one-third of the respondents ($n = 142$, 38.6%) indicated that they had been tested for HIV/AIDS.

The individuals in the sample were well aware of the HIV/AIDS pandemic. Most ($n = 288$, 79.3%) had a family member or a friend who had died of AIDS. More than two-thirds of the respondents ($n = 238$, 66.3%) mentioned that they knew a family member or a friend currently living with HIV/AIDS. Almost all the respondents ($n = 355$, 97.3%) had come across HIV/AIDS advertisements on TV, radio, and posters.

Experimental design

Threat and efficacy were systematically varied in a 2 (high threat, low threat) \times 2 (high efficacy, no efficacy) independent groups factorial design, with an offset no-message control group and an offset high self-efficacy-only condition. Participants were randomly assigned to one of these six experimental conditions. The cell sizes ranged from 59 to 66. The control group served as a baseline comparison of preexisting levels of fear, and attitudes, intentions, and behaviors toward AIDS and condom use. The efficacy-only condition assessed the impact of self-efficacy on the dependent measures independent of a threat-fear induction. The dependent variables in the study were attitude toward using condoms, intentions to use condoms, and self-reported safe sex behaviors.

Message design

The messages and questionnaire items were adapted from Witte (1994) for use in Namibia. The high-threat and low-threat messages consisted of a core message informing respondents about what HIV/AIDS was, and a case study of a fictitious AIDS patient. Threat was varied in these two sections. In the low-threat message, severity and susceptibility was minimized by showing innocuous photographs of clinical laboratory tests, and by focusing on the impact of AIDS on noncollege-aged risk group and by using neutral language. In contrast, in the high-threat message, severity was emphasized by showing graphic photographs of late-stage AIDS victims and by using extremely vivid language. Furthermore, HIV infection among college students was highlighted in the message, and their personal risk of contracting the AIDS virus was emphasized in personalized language to maximize perceived susceptibility to AIDS. Each message was equated for order of arguments and number of pictures. Similar inductions have successfully induced threat in previous research (Witte, 1992, 1994).

A message about the effectiveness of condoms was added to the messages in the efficacy condition. Response efficacy was maximized by emphasizing that condoms substantially reduced the risk of HIV transmission if used correctly. Self-efficacy was increased by discussing the benefits and ease of using condoms as well as providing refutations of typical excuses partners gave for not wanting to use condoms. Low-efficacy messages were not used out of ethical considerations.

Prestudies

Several prestudies were conducted to insure measurement and induction validity and cultural applicability. Initial prestudies involved a series of informal focus groups and consultations with UNAM faculty and students regarding message and item wording and cultural applicability. A subsequent formal prestudy is described below.

The main prestudy assessed whether the instructions, messages, and items were understood by the sample, and whether the inductions were perceived as intended. Pretesting the message inductions with UNAM students, however, posed a conceptual problem. Conducting induction check with a student sample in the UNAM would result in testing the hypotheses of the study. That is, this study predicts that there will be no effects of threat in message content because of high preexisting levels. If pretest results are consistent with this, then this could be just because of a weak induction, because the predictions are accurate, or both. However, pretesting instruments on a sample drawn from a different low-fear population would be less substantively informative, and risk treatment by subject artifacts. Obviously, a valid pretest ought to involve a sample from the same population as the primary study.

To overcome these problems, a prestudy was conducted on a sample of Namibian University students with the following modifications. Participants were asked to read high and low threat-inducing messages and fill out a survey about their thoughts and perceptions on how other people like them (i.e., people other than themselves) reading this message were likely to react to the message in terms of threat and efficacy.

They were told that the materials that they were to review were at the early stages of development, and that their reactions to the messages were needed to refine them. When participants evaluated the messages based on other people's reactions rather than their own, it was likely that they might rate the messages more objectively.

To ascertain whether the message inductions (threat and efficacy) were in fact effective, the messages were pretested on 30 students in the UNAM in a repeated measures design so that participants served as their own control. Each participant read all three messages, that is, high-fear messages, low-fear messages, and high-efficacy messages (related to condom use), and then gave feedback on how other people (students other than themselves) would react on fear, threat, and efficacy based on the messages they read. The high- and low-threat messages and the high-efficacy message were counterbalanced so as to avoid order effects. Furthermore, a no-message control group ($N = 30$) was also included in the prestudy to assess efficacy items only in the absence of any message.

The response formats for all the scales used in the prestudy and the main experiment were Likert-type and ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Fear was assessed with four items (e.g., "Reading this message will make people frightened"). The reliability of the fear scale that elicited participants' responses after they read the high-threat message was $\alpha = .73$. The reliability of the fear scale after respondents read the low-threat message was $\alpha = .89$. Perceived severity was assessed with four items such as "Reading this message will make people think that HIV/AIDS is extremely harmful." Perceived susceptibility was measured with five items (e.g., reading this message will make people think that they are likely to get HIV/AIDS). Perceived threat was computed by averaging the severity and susceptibility scores ($\alpha = .71$ for high-fear message and $\alpha = .85$ for the low-fear message).

Response efficacy was measured with four items such as "This message is likely to make people feel that condoms are effective in preventing HIV/AIDS." Students also responded to a five-item self-efficacy scale (e.g., "This message will make people think that using condoms is easy"). Condom and self-efficacy items were averaged to create an overall efficacy index with a reliability of $\alpha = .80$.

Participants strongly agreed ($M = 4.21$) that reading a highly threatening message would make people frightened about HIV/AIDS. In contrast, students thought that reading the low-threat message would only somewhat cause people to fear about this illness ($M = 3.09$). A paired sample t test revealed that participants thought that others like them would be significantly more frightened after reading the high-threat message than the low-threat message, $t(28) = 5.20$, $p < .01$, $r = .70$. In addition, respondents felt that the high-threat message ($M = 4.17$) would read as significantly more threatening to people than the low-threat message ($M = 3.37$), $t(28) = 4.22$, $p < .01$, $r = .62$.

Scores obtained after students read the efficacy message were compared with those in the no-message condition. When condom efficacy and self-efficacy scores were combined, tests revealed that those who read the message ($M = 3.97$) scored

significantly higher on perceived efficacy than those who did not ($M = 3.60$), $t(57) = 2.06, p = .04, r = .26$.

The prestudy also included a qualitative component that asked respondents what they felt like when they read the message. Their open-ended reactions to the threat and efficacy message corroborated the quantitative findings, providing additional evidence that the messages inductions functioned as intended. An interesting observation was that several respondents volunteered the opinion that the high-fear message would be more persuasive effective than the low-fear message.

In addition, the prestudy elicited responses on whether the messages were easy to understand, and whether there were any words or sentences that were difficult to comprehend. Students did not report difficulty in message comprehension, language, or structure of sentences, suggesting that the refinements stemming from previous informal prestudies were effective.

The main experiment

UNAM students ($N = 374$) who did not take part in the prestudy were solicited to participate in a study evaluating AIDS educational materials. A faculty member in the Department of Communication at UNAM collected data from the students with the help of a research assistant. Students were solicited during class hours. Anonymity of responses was emphasized. Participants were directed to read the messages carefully and to underline important passages to ensure close attention. Next, they were asked to complete a posttest questionnaire assessing their own reactions to the message and their perceptions on the various dependent outcomes. The phase 1 questionnaire measured participants' reactions to the message on fear, severity, susceptibility, response efficacy, self-efficacy, attitude and intentions related to condom use, and fear-control outcomes such as defensive avoidance, message derogation, and perceived manipulation. This questionnaire also elicited demographic information from the respondents.

Two weeks after the completion of phase 1 of the study, the research assistants approached the students once again to fill out a poststudy questionnaire. The poststudy questionnaire elicited responses on participants' behavior related to condom use since they participated in the first phase of the study. This survey was matched with the phase 1 survey. After the questionnaires were completed, participants were debriefed about the purpose of the study and given information about the AIDS cell on campus. Of the 374 participants who participated in the first phase, 218 (58.2%) completed the second phase. No evidence of differential mortality by experimental condition was observed, $\chi^2(5, N = 374) = 2.25, p = .81$.

Scales measuring the constructs of interest included items identical to those tested in the prestudy except that the stem of the items used in the prestudy were modified to reflect self-assessment of the message rather than other peoples' opinions. That is, instead of the stem "reading this message will make people feel . . ." the items in the main study simply read "I feel." All items used to measure constructs of interest

in this study were again screened for unidimensionality with confirmatory factor analysis and reliability.

One item was deleted from the fear scale because it failed to yield flat and positive correlations with other items. The remaining items were reliable, $\alpha = .91$. One severity scale item was deleted as it failed to contribute to scale reliability and the remaining items had a reliability of $\alpha = .81$. All five susceptibility items were retained, $\alpha = .85$. The threat index that was obtained by averaging the severity and susceptibility scores had a reliability of $\alpha = .79$. Although severity and susceptibility did not appear second-order unidimensional, they were also scored as an index of threat so as to be consistent with EPPM.

Response efficacy was measured with four items, $\alpha = .86$. Five items were used to assess self-efficacy scale, $\alpha = .87$. When combined, the condom and self-efficacy items yielded a second-order unidimensional efficacy index with a reliability of $\alpha = .88$.

Intentions toward condom use were assessed by using a five-item scale, $\alpha = .92$. The attitude toward condom scales was also reliable, $\alpha = .91$. Behavior was assessed in the second phase of the study. Responses were elicited on the behavior scale that summed yes–no responses to five items (e.g., After I participated in this study, I/my partner bought condoms). Reliability of this scale was $\alpha = .91$.

The fear-control outcomes measured in this study included defensive avoidance, message derogation, and perceived manipulation. Defensive avoidance assessed whether the messages that respondents read, made them feel like they wanted to “switch off” and stop thinking about HIV/AIDS. This scale comprised of four items and had a reliability of $\alpha = .87$. Fear control was also assessed by investigating whether respondents tended to derogate the message content after reading it. A three-item scale that assessed message derogation with specific reference to AIDS was constructed and yielded a reliability of $\alpha = .77$. This study also assessed whether respondents derogated the message with specific reference to condoms. A three-item scale yielding a reliability of $\alpha = .81$. Lastly, the perceived manipulation scale assessed whether respondents felt that the message was trying to exploit them and deceive them in any way. This scale consisted of three items and had a reliability of $\alpha = .80$. Means, standard deviations, and reliabilities of all the scales used in this study are presented in Table 1.

Equivalence tests

Several of the current research predictions specify little difference between experimental conditions and thus require statistical tests for the equivalence of population means. Applying standard null hypothesis significance testing (NHST) and interpreting nonsignificant empirical results as evidence of no difference between population means is not justified because the absence of a statistically significant difference does not constitute evidence of statistical equivalence. In standard NHST, the null is rejected or not. The null is never accepted.

Table 1 Means, Standard Deviation, and Reliabilities of Measured Variables

Variable	Mean	Standard Deviation	Alpha
Severity	4.23	0.86	.81
Susceptibility	3.20	0.96	.85
Perceived threat	3.60	0.73	.79
Fear	4.04	1.06	.91
Response efficacy	3.46	1.00	.86
Self-efficacy	3.79	0.86	.87
Perceived efficacy	3.64	0.80	.88
Attitudes	4.44	0.76	.91
Intentions	4.11	1.17	.92
Behaviors	0.39	0.42	.91
Defensive avoidance	2.31	1.03	.87
Message derogation—AIDS	2.05	0.94	.77
Message derogation—condoms	2.53	1.07	.81
Perceived manipulation	1.73	0.77	.80

In contrast to classical NHST, equivalence tests are applied here. To simplify the understanding of equivalence testing, the concept of inferential CIs (Goldstein & Healy, 1995; Tryon, 2001) is applied. Inferential CIs adjust standard descriptive CIs such that nonoverlapping inferential CIs are algebraically identical to NHST. The inferential CI for a mean is defined as (cf. Tryon, 2001):

$$p \left(\bar{Y} \pm E \cdot t_{\frac{\alpha}{2}} \cdot \frac{\hat{\sigma}}{\sqrt{n}} \right) = 1 - \alpha$$

where, p stands for the probability that the population mean falls into the interval; \bar{Y} for the sample mean; $t (\alpha/2)$ for the critical t value with $n - 1$ degrees of freedom and a maximum type I error of α ; $\hat{\sigma}$ for the estimated standard deviation of the variable in the population; n for the sample size. E is a correction factor with which the standard descriptive CI is adjusted so that two nonoverlapping intervals correspond to a significant result ($p < \alpha$) in a test for a mean difference, and is defined as:

$$E = \frac{\sqrt{\sigma_{\bar{Y}_1}^2 + \sigma_{\bar{Y}_2}^2}}{\sigma_{\bar{Y}_1} + \sigma_{\bar{Y}_2}}$$

where $\sigma_{\bar{Y}_1}$ and $\sigma_{\bar{Y}_2}$ are the standard errors of the means in groups 1 and 2. A statistically significant difference ($\alpha = 5\%$) between the two group means exists if the two inferential CIs do not overlap.

Statistically significant equivalence ($\alpha = 5\%$) requires both that the inferential CIs overlap and that the range (R_{CI}) of the two inferential CIs lies completely within a mean difference θ_{Md} that is considered inconsequential on the basis of substantive theoretical considerations ($R_{CI} < \theta_{Md}$). R_{CI} is defined as the difference between the upper CI limit of the greater mean and the lower CI limit of the lesser mean. In other words, convincing evidence for statistical equivalence is obtained when the maximum probable mean difference estimate provided by the inferential CIs is less than the amount that defines equivalence or θ_{Md} .

If the two inferential CIs do not overlap, then the two means are significantly different, and this is interpreted the same as standard t test that is significant at $p < .05$. Alternatively, if the two inferential CIs overlap but R_{CI} is greater than θ_{Md} , then the statistical conclusion is undetermined, and there is sufficient evidence neither for a mean difference nor for the equivalence of the means. Thus, three outcomes are possible: equivalence, difference, or indeterminacy. The procedure of using inferential CIs as equivalence test corresponds to statistical equivalence testing as described in Levine, Weber, Park, & Hullett (2008). Both procedures lead to identical conclusions.

Results

Hypothesis 1 held that in Namibia, the people have high preexisting levels of fear with regard to HIV/AIDS. Data from the control group were examined to test this hypothesis. Independent of any message induction, on average the respondents in the control group indicated that they were very scared of the HIV/AIDS illness ($N = 63$, $M = 4.31$, $SD = 0.91$). A large majority of the respondents either strongly agreed ($n = 30$, 47.6%) or agreed ($n = 19$, 30.2%) with the item that they were “terrified” by HIV/AIDS. Only seven respondents (11.3%) disagreed or strongly disagreed with the statement. On the averaged responses to the fear items, 79.4% scored 4.0 or higher (on the 5-point scale), and the modal response was 5.0 ($n = 24$, 38.1%, see Figure 1). Furthermore, the mean obtained in the control group was contrasted against the neutral midpoint of the scale. A one-sample t test revealed that the control group mean on fear was significantly and substantially greater than the scale midpoint, $t(62) = 11.42$, $p < .0001$.

Hypothesis 2 stated that threat inductions in messages are unlikely to increase fear when preexisting levels of fear are high. The equivalence test procedure as described above was used to test this hypothesis. The inferential CIs ($\alpha = .05$) and their range R_{CI} are:

$$\begin{aligned} \text{Low threat : } & 3.9556 \pm 0.7078 \cdot 1.960 \cdot 0.09021 = 3.96 \pm 0.12 \\ \text{High threat : } & 4.1240 \pm 0.7078 \cdot 1.960 \cdot 0.09888 = 4.12 \pm 0.15 \\ R_{CI} = & (4.12 + 0.15) - (3.96 - 0.12) = 0.43 \end{aligned}$$

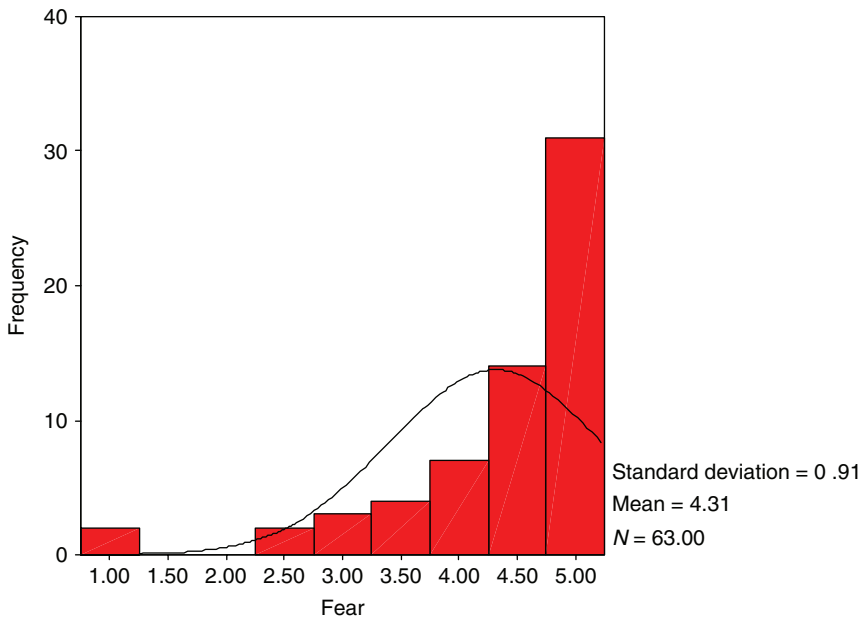


Figure 1 Fear in control group respondents.

If a mean difference in fear of $\theta_{Md} = 0.43$ and smaller are considered inconsequential on the basis of theoretical considerations, then the found mean difference of 0.16 provides good evidence for statistical equivalence ($p < 0.05$). A mean difference of $\theta_{Md} = 0.43$ corresponds to a standardized mean difference of $\delta = 0.43/\sigma = 0.43/1.06 = 0.41$ (σ is the standard deviation of fear, see Table 1), which, according to Cohen (1988), lies between a small and medium effect. The meta-analyses of Boster and Mongeau (1984) as well as of Witte and Allen (2000) suggest an average substantial effect of $r \approx 0.3$, which exceeds a standardized mean difference of $\delta \approx 0.5$ (medium effect). Hence, we consider the mean difference of 0.16 as good evidence for equivalence with $p < .05$. Thus, the data are consistent with hypothesis 2. Regardless of the threat induction, respondents reported high levels of fear toward HIV/AIDS.

Two rival hypotheses were proposed to examine the role of low-threat messages on fear levels. Hypothesis 3a stated that low-threat messages will have little impact on perceptions of fear when levels of preexisting fear are high, whereas hypothesis 3b stated that low-threat messages will reduce the preexisting perceptions of fear. Inferential CIs (contrasting the experimental groups with low-threat induction and the no-message control group) were used to investigate these rival hypotheses. The inferential CIs ($\alpha = .05$) and their range R_{CI} are:

$$\text{Low threat : } 3.9556 \pm 0.7122 \cdot 1.960 \cdot 0.09021 = 3.96 \pm 0.13$$

$$\text{Control : } 4.3135 \pm 0.7122 \cdot 1.960 \cdot 0.11496 = 4.31 \pm 0.16$$

$$R_{CI} = (4.31 + 0.16) - (3.96 - 0.13) = 0.64$$

The two inferential CIs do not overlap ($3.96 + 0.13 < 4.31 - 0.16$). Furthermore, a mean difference of 0.64 corresponds to a standardized mean difference of $\delta = 0.60$ ($\sigma = 1.06$ is the standard deviation of fear; see Table 1), which indicates an effect greater than a medium effect and greater than an average effect found in meta-analyses. Hence, the data unequivocally support hypothesis 3b over 3a. Low-threat messages significantly reduce preexisting perceptions of fear, $t(185) = 2.37, p < .05, \eta^2 = 0.03$ in a traditional t test for independent samples.

In addition, we contrasted the high-threat message with the control message:

$$\begin{aligned} \text{High threat : } & 4.1240 \pm 0.7091 \cdot 1.960 \cdot 0.09888 = 4.12 \pm 0.14 \\ \text{Control : } & 4.3135 \pm 0.7091 \cdot 1.960 \cdot 0.11496 = 4.31 \pm 0.16 \\ R_{CI} = & (4.31 + 0.16) - (4.12 - 0.14) = 0.49. \end{aligned}$$

A mean difference of $\theta_{Md} = 0.49$ corresponds to a standardized mean difference of $\delta = 0.46$, which still can be considered a small and medium effect. Similar to our argumentation above, we therefore consider the mean difference of 0.19 as good evidence for equivalence with $p < .05$. High-threat messages do not increase fear levels when compared with the control message.

Hypothesis 4 posited that threat levels of a message would have little impact on attitudes, intentions, and behavior. The inferential CIs ($\alpha = .05$) are as follows:

Attitude toward condom use:

$$\begin{aligned} \text{Low threat : } & 4.4393 \pm 0.7083 \cdot 1.960 \cdot 0.07515 = 4.44 \pm 0.10 \\ \text{High threat : } & 4.4193 \pm 0.7083 \cdot 1.960 \cdot 0.06677 = 4.42 \pm 0.09 \\ R_{CI} = & (4.44 + 0.10) - (4.42 - 0.09) = 0.21 \end{aligned}$$

Intention to use condoms:

$$\begin{aligned} \text{Low threat : } & 4.0947 \pm 0.7080 \cdot 1.960 \cdot 0.10137 = 4.10 \pm 0.14 \\ \text{High threat : } & 4.0699 \pm 0.7080 \cdot 1.960 \cdot 0.11121 = 4.07 \pm 0.15 \\ R_{CI} = & (4.10 + 0.14) - (4.07 - 0.15) = 0.32 \end{aligned}$$

Behavior:

$$\begin{aligned} \text{Low threat : } & 0.3371 \pm 0.7071 \cdot 1.960 \cdot 0.04859 = 0.34 \pm 0.07 \\ \text{High threat : } & 0.3760 \pm 0.7071 \cdot 1.960 \cdot 0.04891 = 0.38 \pm 0.07 \\ R_{CI} = & (0.38 + 0.07) - (0.34 - 0.07) = 0.18 \end{aligned}$$

All three inferential CIs overlap. The standardized mean differences that correspond to the CIs' ranges are $\delta = 0.28$ for attitude ($\sigma = 0.76$), $\delta = 0.27$ for intentions ($\sigma = 1.17$), and $\delta = 0.43$ for behavior ($\sigma = 0.41$). Because we consider effects close to a small effect as inconsequential, we interpret the found mean differences of 0.02 (attitudes) and 0.03 (intentions) as good evidence ($p < .05$) for hypothesis 4. Threat levels of a message have little impact on intentions and

attitudes under conditions of high preexisting fear. The standardized mean difference for behavior, however, is with $\delta = 0.43$ close to a medium effect and as such too large to be considered inconsequential. The meta-analyses cited above found an average effect of $r \approx 0.1$ for behavior that corresponds to a standardized mean difference of $\delta \approx 0.16$. Thus, the range of the inferential CIs exceeds the mean difference that is considered “little effect” ($R_{CI} > \theta_{Md}$). At the same time, the inferential CIs for behavior overlap. Hence, these data provide evidence neither for significant equivalence nor for a significant difference, and the statistical conclusion is undetermined. One reason for this result is the smaller group sample sizes for behavior ($n_{low\ threat} = 70$, $n_{high\ threat} = 75$).

Three rival hypotheses were advanced for hypothesis 5: Hypothesis 5a predicted that under conditions of high preexisting fear, the efficacy content of the message will have little impact on attitude, intentions, and behaviors. In contrast, hypothesis 5b proposed that under the same conditions, the efficacy content of the message will have a positive impact on attitude, intentions, and behaviors. The corresponding inferential CIs ($\alpha = .05$) and their ranges are as follows:

Attitude toward condom use:

$$\text{No efficacy : } 4.4412 \pm 0.7155 \cdot 1.960 \cdot 0.06831 = 4.44 \pm 0.10$$

$$\text{High efficacy : } 4.4173 \pm 0.7155 \cdot 1.960 \cdot 0.07341 = 4.42 \pm 0.10$$

$$R_{CI} = (4.44 + 0.10) - (4.42 - 0.10) = 0.22$$

Intention to use condoms:

$$\text{No efficacy : } 4.0063 \pm 0.7078 \cdot 1.960 \cdot 0.11091 = 4.01 \pm 0.15$$

$$\text{High efficacy : } 4.1571 \pm 0.7078 \cdot 1.960 \cdot 0.10179 = 4.16 \pm 0.14$$

$$R_{CI} = (4.16 + 0.14) - (4.01 - 0.15) = 0.44$$

Behavior:

$$\text{No efficacy : } 0.2889 \pm 0.7072 \cdot 1.960 \cdot 0.04729 = 0.29 \pm 0.07$$

$$\text{High efficacy : } 0.4247 \pm 0.7072 \cdot 1.960 \cdot 0.04903 = 0.42 \pm 0.07$$

$$R_{CI} = (0.42 + 0.07) - (0.29 - 0.07) = 0.27$$

For attitudes toward condom use, the findings provide good evidence for hypothesis 5a, that is, the efficacy content of the message has little or no impact on attitudes under conditions of high preexisting fear. For intentions, a mean difference of 0.44 or a standardized mean difference of $\delta = 0.38$ ($\sigma = 1.17$) must be presumed inconsequential to yield a significant result for the equivalence test ($p < .05$). This conclusion is justified based on the available meta-analyses. For behavior, however, the mean difference that we have to consider inconsequential is 0.27, which corresponds to a standardized mean difference of $\delta = 0.65$ ($\sigma = 0.41$). This effect size is beyond what we and available meta-analyses would consider inconsequential. In addition, the inferential CIs' overlap is only about 0.01, which

indicates a p value of slightly above .05 for the mean difference. Hence, for attitudes and intentions, the data support hypothesis 5a. For behavior, however, the data are technically equivocal, but tend to support hypothesis 5b—efficacy content indeed has a small positive impact on behaviors, $t(143) = 1.99$, $p < .05$ ($p = .049$), $\eta^2 = .027$.

Hypothesis 5c stated that under conditions of high preexisting fear, the efficacy content of the message will have a positive impact on attitude, intentions, and behaviors when used in combination with a low-fear message. To test this hypothesis, the inferential CIs ($\alpha = .05$) that contrast the no-efficacy message with the high-efficacy/low-threat message are examined:

Attitude toward condom use:

$$\text{No efficacy/low threat : } 4.4275 \pm 0.7075 \cdot 1.960 \cdot 0.10330 = 4.43 \pm 0.14$$

$$\text{High efficacy/low threat : } 4.4520 \pm 0.7075 \cdot 1.960 \cdot 0.11035 = 4.45 \pm 0.15$$

$$R_{CI} = (4.45 + 0.15) - (4.43 - 0.14) = 0.31$$

Intention to use condoms:

$$\text{No efficacy/low threat : } 3.9613 \pm 0.7081 \cdot 1.960 \cdot 0.14951 = 3.96 \pm 0.21$$

$$\text{High efficacy/low threat : } 4.2398 \pm 0.7081 \cdot 1.960 \cdot 0.13415 = 4.24 \pm 0.19$$

$$R_{CI} = (4.24 + 0.19) - (3.96 - 0.21) = 0.68$$

Behavior:

$$\text{No efficacy/low threat : } 0.3111 \pm 0.7072 \cdot 1.960 \cdot 0.06829 = 0.31 \pm 0.09$$

$$\text{High efficacy/low threat : } 0.3647 \pm 0.7072 \cdot 1.960 \cdot 0.06987 = 0.36 \pm 0.10$$

$$R_{CI} = (0.36 + 0.10) - (0.31 - 0.09) = 0.24$$

All three inferential CIs overlap, but the three absolute mean differences correspond to the standardized mean differences of $\delta = 0.41$ ($\sigma = 0.76$) for attitudes, $\delta = 0.58$ ($\sigma = 1.17$) for intentions, and $\delta = 0.59$ ($\sigma = 0.41$) for behavior. Given these findings, only the findings for attitudes provide evidence for equivalence ($p < .05$). For intentions and behavior, the CI ranges are too large for equivalence while the CIs overlap. This indicates neither evidence for equivalence nor a difference—the statistical conclusion is undetermined with the amount of information provided by our sample.

A research question asked under conditions of high preexisting fear, what is the impact of a high efficacy-only message on attitude, intentions, and behaviors relative to control condition? The corresponding inferential CIs ($\alpha = .05$) are:

Attitude toward condom use:

$$\text{High efficacy only : } 4.3793 \pm 0.7132 \cdot 1.960 \cdot 0.10230 = 4.38 \pm 0.14$$

$$\text{Control : } 4.5370 \pm 0.7132 \cdot 1.960 \cdot 0.07852 = 4.54 \pm 0.11$$

$$R_{CI} = (4.54 + 0.11) - (4.38 - 0.14) = 0.41$$

Intention to use condoms:

$$\begin{aligned} \text{High efficacy only : } & 4.0763 \pm 0.7081 \cdot 1.960 \cdot 0.15617 = 4.08 \pm 0.22 \\ \text{Control : } & 4.2606 \pm 0.7081 \cdot 1.960 \cdot 0.14066 = 4.26 \pm 0.20 \\ R_{CI} = & (4.26 + 0.20) - (4.08 - 0.22) = 0.60 \end{aligned}$$

Behavior:

$$\begin{aligned} \text{High efficacy only : } & 0.4621 \pm 0.7113 \cdot 1.960 \cdot 0.08131 = 0.46 \pm 0.11 \\ \text{Control : } & 0.4000 \pm 0.7113 \cdot 1.960 \cdot 0.06530 = 0.40 \pm 0.09 \\ R_{CI} = & (0.46 + 0.11) - (0.40 - 0.09) = 0.26 \end{aligned}$$

All three inferential CIs overlap. The CIs' ranges translate into the following standardized mean differences: $\delta = 0.54$ ($\sigma = 0.76$) for attitudes, $\delta = 0.51$ ($\sigma = 1.17$) for intentions, and $\delta = 0.63$ ($\sigma = 0.41$) for behavior. In line with the available meta-analyses, we consider medium effects greater than $\delta = 0.5$ as substantial. Hence, these results do not allow for a definite statistical conclusion. Neither a mean equivalence nor a mean difference is statistically significant with $\alpha = .05$. The impact of a high efficacy-only message on attitudes, intentions, and behavior remains undetermined with the data at hand. Cell means and standard deviations are presented in Table 2.

Supplemental analyses

The association between self-reported fear, threat, and efficacy and the various outcomes across the message inductions was examined. Correlation analysis revealed that fear was not substantially correlated with attitudes, intentions, or behavior ($r_s > .10$). Perceived threat was correlated attitudes, $r(367) = .11, p < .05$, and behaviors, $r(216) = .14, p < .05$, but not intentions, $r(363) = .06, p = .28$. These correlations, however, were uniformly small. Perceived efficacy, however, was substantially and positively correlated with all three outcomes; intentions $r(363) = .33, p < .01$, attitudes, $r(367) = .48, p < .01$, and behavior, $r(216) = .20, p < .01$. Moderated regression analyses indicated that when threat, efficacy, and the threat by efficacy interaction were considered together, only efficacy was significantly associated with the three outcomes and all interactions were nonsignificant and small. The full correlations matrix is provided in Table 3.

Table 2 Group Means on Outcomes Measures

Variable	Condition 1: High Fear, High Efficacy, <i>M (SD)</i>	Condition 2: High Fear, Low Efficacy, <i>M (SD)</i>	Condition 3: Low Fear, High Efficacy, <i>M (SD)</i>	Condition 4: Low Fear, No Efficacy, <i>M (SD)</i>	Condition 5: Efficacy Only, <i>M (SD)</i>	Condition 6: No-Message Control, <i>M (SD)</i>
Intentions	4.08 (1.22)	4.05 (1.27)	4.24 (1.01)	3.96 (1.18)	4.07 (1.20)	4.26 (1.12)
Attitudes	4.39 (0.80)	4.46 (0.69)	4.45 (0.85)	4.43 (0.82)	4.38 (0.78)	4.54 (0.62)
Behaviors	0.54 (0.58)	0.28 (0.41)	0.36 (0.41)	0.32 (0.41)	0.43 (0.44)	0.40 (0.39)

Table 3 Correlation Matrix of Fear, Threat, Efficacy, and Outcomes

	Fear	Perceived Threat	Perceived Efficacy	Attitudes	Intentions	Behaviors
Perceived threat	.37*					
Efficacy	.03	.06				
Attitudes	.07	.11*	.48*			
Intentions	.00	.06	.33*	.48*		
Behaviors	.09	-.14*	.20*	.20*	.22*	

*Correlation is significant at $p < .05$.

In addition to testing the hypotheses in this study, an examination into the predictions of EPPM with regard to the role of threat and efficacy in predicting fear-control outcomes, particularly in the context of preexisting fear, is worthwhile. As evident in Table 1, scores on the various fear-control outcomes were generally low, with mean values near or below the scale midpoints. Analysis of fear-control outcomes by experimental condition yielded no significant differences, either in the omnibus comparisons or among any of the six experimental groups on any of the fear-control outcomes. Thus, there was no evidence of wide spread fear control, nor was there evidence that message threat content or the threat by efficacy interaction affected danger control.

Discussion

Fear appeals have long been used in numerous and diverse contexts to motivate people to adopt protective behaviors. Yet, the effectiveness of fear-based messages in contexts in which fear toward a target object preexists has not been empirically investigated. The outcomes associated with using fear appeals on the already scared needs empirical assessment because theory suggests such an approach may be ineffective, or worse yet, counterproductive. Nevertheless, fear-based campaigns are used in these contexts.

For theoretical guidance, the extended parallel processing model was chosen because testable predictions could be derived from the model and because it reflects a current, communication-based approach to fear appeals. This model has been used in a variety of contexts and populations, it is presumed to be general, and consistent support for its predictions is claimed in the literature. Although the hypotheses were derived from EPPM, the theoretical implications of the findings probably extend beyond EPPM and apply to other theoretical perspectives on fear appeals. The central prediction that fear appeals are unlikely to persuade the already scared could have been derived from other theories such as protection motivation (Rogers, 1975, 1983). Any perspective where message effective rests on increases in message generated fear would generate predictions similar to the current hypotheses.

The HIV/AIDS illness in Namibia was chosen as a context to study the impact of fear-based messages using the EPPM framework because of the severity of the

onslaught of the disease in this country and the dramatic extent to which the pandemic has affected the lives of Namibians. Thus, HIV/AIDS in Namibia provided an ideal context to test the impact of threat messages under preexisting high fear. Although this study involved a specific set of participants (i.e., college students in Namibia), the logic of the argument should extend to any topic-population with high levels of preexisting fear.

Toward this end, the EPPM was outlined, and its logic was applied to the use of fear appeals in the HIV/AIDS pandemic in Namibia. A set of hypotheses were deduced from theory and tested in an experiment modeled after past EPPM research, but adapted to the Namibian situation. Because trivial effects were predicted, data analyses involved equivalence tests with inferential CIs rather than standard NHST.

Threat and fear

Hypothesis 1 posited that in Namibia, most people are likely to have high preexisting levels of fear. The data were clearly consistent with this hypothesis. The vast majority of the respondents in the no-message control condition indicated that they were “terrified” by HIV/AIDS. The degree and extent of HIV/AIDS in Namibia, and its deadly consequences to the lives of people have made most Namibians very familiar with this illness. Many Namibians, including a substantial proportion of the current participants, have had close personal experiences with this illness, and this disease has killed their loved ones. Virtually all Namibians have knowledge about the causes and fatal consequences of this illness (Murray-Johnson *et al.*, 2004a), and it is not at all surprising that HIV/AIDS scares them.

Given this high preexisting fear toward HIV/AIDS, it was questioned whether peoples’ perceptions of fear can be increased or decreased. Hypothesis 2 stated that threat inductions in messages would not substantially increase perceptions of fear. The data were consistent with this hypothesis. The groups that read the high-threat messages did not report substantially higher levels of fear than the groups that read the low-threat message or that received no message. Presumably, because the participants had personally witnessed the harsh realities of HIV/AIDS firsthand, what were otherwise very scary messages did little to increase existing fear levels.

If fear levels cannot be meaningfully increased by message inductions, the question remains as to whether fear can be lowered. If fear levels can be lowered to a point where efficacy was greater than fear, then people can be motivated to adopt healthy and protective behaviors. The results revealed that participants who read the low-fear messages were significantly less fearful of HIV/AIDS than those who had not read any message at all. Thus, the threat content of a message did not increase fear levels, but low-threat messages did somewhat reduce fear.

Because threat content did not increase fear, message threat levels were expected to have little impact on attitudes, intentions, and behaviors related to condom use. Based on EPPM, it was reasoned that if fear is relatively invariant, there will be little or no relationship between the threat content of the message and the persuasive outcomes. Results were generally consistent with this hypothesis, and threat content made

little difference. Statistical evidence for equivalence was obtained for attitudes and behavioral intentions. The results for behavior, however, were statistically inclusive.

These findings are interesting because they contradict an intuitive and widely held idea that fear and threat inductions are universally useful in eliciting prohealthy behaviors. "If only they knew how deadly HIV/AIDS is, surely they act rationally and reduce their risk" is the view that is not supported by the empirical evidence obtained in this study. Nevertheless, practitioners and campaign designers are strong believers that this approach will work (Dillard, Plotnick, Godbold, Freimuth, & Edgar 1996; Freimuth *et al.*, 1990). Even the Namibians in the pilot study endorsed frightening others like them and thought that positive action could thereby be elicited. Participants in the prestudy found the fear content scary. They thought the high-fear message would scare people like themselves, and they believed such scare tactics would be effective. Despite seeing and living the consequences of HIV/AIDS, they still believe that threatening people with a message on AIDS can affect their intentions, attitudes, and behaviors positively. Given a context of high preexisting fear, using education entertainment methods might yield much more desirable results.

Efficacy

The role of efficacy in predicting the dependent outcomes was also examined. Three rival hypotheses regarding the impact of efficacy on attitudes, intentions, and behaviors related to condom use were proposed. First, according to EPPM, if the efficacy content in the message exceeded threat levels, then positive impact on dependent outcomes would be expected. Thus, it was possible that a main effect for message efficacy might result. Second, it was also possible that initial threat levels were simply too high to overcome, and, if so, efficacy content would have little impact. Third, if a low-threat message reduced fear enough, a threat by efficacy interaction might be anticipated. Finally, a research question asked whether an efficacy-only message (in the absence of any threat content) might affect the outcomes.

The data reveal that the efficacy content of the message had little impact on attitudes and intentions but had a marginal impact on behaviors. Generally, the efficacy messages were no more effective than the messages lacking efficacy content, and the efficacy-only condition did not differ from the no-message control. Furthermore, even though low-threat messages lowered fear, there was no evidence that efficacy messages were more effective in low-threat conditions.

Interestingly, however, self-reported efficacy was substantially and positively related to protective attitudes, intentions, and behaviors. That is, those participants who reported higher levels of perceived efficacy also tended to have more positive attitudes about condom usage reported that they used condoms in the recent past and intended to use condoms in future. It is unclear, however, whether perceived efficacy was driving attitudes, intentions, and behaviors, or whether perceived efficacy might be a consequence of positive attitudes. If the former is the case, then a more potent efficacy message might conceivably be effective. What that might entail, and if efficacy could be increased while maintaining factual accuracy is less clear.

Implications

The most obvious implications stem from the current findings that using fear appeals in context of high preexisting fear is likely ineffective. The impotence of fear appeals in this context appeared robust and could not be overcome by either minimizing fear content or by emphasizing efficacy. Perhaps, the only encouraging finding for fear appeals is that they did not produce statistically significant boomerang. This, however, is small consolation and the recommendation therefore is to avoid fear content when the target audience is already scared.

That fear appeals do not work in a preexisting fear context, might throw light on when fear appeal messages do operate effectively. Presumably when the extent and magnitude of a threat is so high that it crosses some threshold, fear messages do little to change fear levels or to achieving desirable outcomes. Similarly, if the magnitude of the threat is very low or nonexistent, fear reduction is less likely to have much motivation force. Above and below these threshold points, the contents of fear appeal might be irrelevant, but between the threshold points, it is likely that fear can be effectively induced to elicit desirable outcomes.

For example, in the context of HIV/AIDS, instilling fear of the illness by way of a message may not be an effective approach in other African countries where HIV/AIDS prevalence rate and the consequences it entails have crossed an upper limit. Likewise, in contexts where the prevalence rate and the impact of the illness has still not reached a minimum point, scaring people into believing that HIV/AIDS is an illness that one should beware of might not be effective. Only in contexts where the HIV/AIDS infection has just begun to spread rapidly and has started to create a substantial but not overwhelming impact (e.g., India, China), fear messages might prove timely and effective. Thus, between the high- and low-threshold points of fear, there is room for molding fear so that it yields beneficial results. Future research in this area will be extremely beneficial in guiding scholars and practitioners by specifying exactly where these threshold points lie. Such information can be incorporated in executing a meaningful campaign.

The lack of effectiveness of fear-based messages found in this study also highlights the complexity of the target threat chosen in this study, HIV/AIDS. This disease cannot be viewed outside the social context within which it is harbored. In Namibia, unprotected sexual intercourse is the primary reason for HIV/AIDS transmission. Unprotected sex is intrinsically linked to issues of gender relations, alcohol and drug abuse, poverty, and unemployment (Center for Communication Programs [CCP], 2005). There is a strong belief that the responsibility to stem the surging tides of HIV/AIDS infections lies with the woman alone, and alcoholism is a root cause that leads to unprotected sex and HIV/AIDS (CCP, 2005). Many Namibian women feel that it is meaningless for them to think about using protection when unprotected sex provides them with some money to buy food. Given this wider social context, it is no surprise that an effort focusing on scaring people and promoting condom use alone does not yield desirable outcomes. These social issues are interwoven and warrant

a deeper and multipronged approach. Any campaign that fails to acknowledge the interrelationship between these issues is likely to be less effective.

Many campaigns and AIDS education efforts treat HIV/AIDS as a medical condition and not a social condition. For example, in Namibia, messages on AIDS rarely allude to alcohol abuse, even though alcoholism has been identified as the primary factor that promotes unprotected sex. Similarly, HIV/AIDS campaigns do not discuss gender issues, even though safe sex negotiations are housed within the context of gender relations. What is also needed to enhance effectiveness in addressing attitudinal and behavioral change is an attempt to build local capacity. Local capacity can be mobilized to evolve indigenous methods that address the illness "from within." This approach might result in the creation of communication message content, channel, and medium that might be very different from mainstream approaches, and yet be very effective in achieving desired outcomes.

Finally, the implications of the current research for theory merit mention. In one sense, many of the findings are theory consistent. Using EPPM logic, it was correctly anticipated that message fear content would have little impact on adaptive outcomes. The failure of efficacy content to affect outcomes is also consistent with EPPM predictions, although *a priori* predictions were less clear. Nevertheless, these findings, while theory consistent, offer little positive support for EPPM.

Although the message findings are theory consistent, the mediating variables did not operate as specified by EPPM. According to EPPM, perceived threat and perceived efficacy should interact to affect outcomes. Instead, only a main effect for perceived efficacy was found. This result is inconsistent with EPPM logic but is consistent with the results of meta-analysis that also finds main effects rather than a statistical interaction (Witte & Allen, 2000). Furthermore, there was little evidence of fear control overall, or differential fear control by message conditions. These findings, too, were not consistent with EPPM. Thus, EPPM was useful in predicting the ineffectiveness of fear appeals in a high-fear context, but the mediating explanatory variables did not operate as specified.

Limitations

The most obvious limitation of this study rests on the particular idiosyncrasies of the current sample. The participants were literate, educated, and college students from one specific region in Africa. Thus, open questions exist regarding the generality of the findings. On one hand, the logic behind the study should apply to any topic and population where fear appeals are used on the already terrified. On the other hand, a much more nuanced approach is likely needed when considering the conditions under which fear appeals might prove effective. For example, with respect to HIV/AIDS, the immediacy of the threat needs to be considered. In places in Africa, threats such as civil war and starvation may pose much more immediate concerns. In addition, the fear-generating aspects of HIV/AIDS are likely variable. Although many public health campaigns focus on the medical consequences of the disease, the social consequences such as ostracism may be more salient in some cultures. Thus,

although the logic of the fear appeal strategy may be culturally universal, the effective implementation of any strategy needs to consider context and culture and adapt accordingly.

The effect size for the efficacy induction check was less than optimal despite efforts made to enhance efficacy content to the extent allowable by ethics and factual accuracy. Examination of descriptive statistics suggests that a stronger induction might have been obtained by adding a low-efficacy message. This was deemed unethical because attempting to reduce efficacy might have put respondents at increased risk. However, given that perceived efficacy was substantially associated with the outcome measures, sufficient variation in perceived efficacy existed. As with fear, the perceived efficacy seemed to be preestablished and resistant to the influence of outside messages.

Finally, the correlation between attitudes and behaviors ($r = .20$) is substantially lower than expected based on meta-analysis, which typically find values between .40 and .50 (Hale, Householder & Greene, 2002). It is possible that the correlation was attenuated because of the measures' restriction in range. Consistent with this restriction in range, the means on each of the outcome measures were close to the maximum.

Conclusion

The results of this research strongly suggest that there is little substantive yield in scaring the already scared. From a practice point of view, it appears that the consequences associated with fear-based messages are not sufficient to justify the investment of time and money required to design and disseminate such messages. Although these findings would be anticipated in all high preexisting fear situations, this is particularly important in the context of HIV/AIDS intervention. The failure of health campaigns cost lives that might be saved by alternatives that are more effective. Such alternatives will likely need to consider social context in addition to internal psychological states.

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