

Effective and Ineffective Use of Fear in Health Promotion Campaigns

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Abstract: Health promotion campaigns are typically designed to elicit fear, yet the use of fear is often ineffective in achieving the desired behavior change. Campaigns which attempt to use fear as part of a punishment procedure are unlikely to succeed. Consistent with established principles of learning, fear is most likely to be effective if the campaign allows for the desired behavior to be reinforced by a reduction in the level of fear. This entails five requirements: 1) fear onset should occur before the desired behavior is offered; 2) the event upon which the fear is based should appear

to be likely; 3) a specific desired behavior should be offered as part of the campaign; 4) the level of fear elicited should only be such that the desired behavior offered is sufficient to substantially reduce the fear; 5) fear offset should occur as a reinforcer for the desired behavior, confirming its effectiveness. Under some circumstances it may be difficult to ensure that these requirements are met. In general, a positive reinforcement approach may prove to be more effective than the use of fear. (*Am J Public Health* 1988; 78:163-167.)

Introduction

Even today, a large number of health promotion campaigns are based on a simple strategy: get behind people with a big stick (lots of threat and fear) in the hope that this will drive them in the desired direction. Unfortunately, in the case of health promotion, this strategy has met with little success. Again unfortunately, this approach is often mistakenly believed to be based on well-established principles of learning. While the principles of learning have great practical potential, many areas of application have been hindered by misunderstanding and misuse (witness the use of punishment in schools and prisons, or application to clinical psychology).¹ Mass media health promotion is in danger of becoming another example of this misapplication.

The focus of this paper is the application of relevant principles of learning to the use of fear in health promotion campaigns, the relevant evidence and methodology, the consequences of not following these principles, and likely reasons for the principles not to be followed.

The Fear-Persuasion Relationship

The use of fear in mass media communication has been somewhat of an enigma. Prior to the classic Janis and Feshbach study of 1953² a belief that it was self-evident seems to have existed, i.e., that fear works and that, regardless of other factors, more fear works more effectively. Indeed, this view is not uncommon today. However, the work of Janis and Feshbach made the view that moderate fear would be a more effective persuader than high fear, part of the text book literature.³⁻⁶ Others have suggested that the bulk of the evidence indicates a positive relation between fear and persuasion and that the Janis and Feshbach result in dental hygiene is the exception rather than the rule.⁷⁻⁹ However, the vast majority of studies supporting either point of view have used self-report as the basis of evaluation. For example, of the 21 studies cited by Leventhal⁸ as showing a positive relationship between fear and persuasion, 16 identified the positive relationship in self-report data only. Furthermore, some of the studies cited by Leventhal as showing support for the positive fear-persuasion relationship did not find this relationship in the most relevant measure (behavior) even though the measure was available.^{10,11} While Sutton⁷ sepa-

rated "intention" and "behavior", the results reported under behavior included self-report of behavior. The only study cited by Avery, i.e., Leventhal and Singer,¹² in support of her claim that Janis and Feshbach's result was exceptional, relies on self-report.

Self-report based variables are susceptible to experimenter effects and demand characteristics¹³ to such a degree that demand characteristics formed the basis of one important theory of attitude change.¹⁴ Further, it is well recognized that the assumed correspondence between self-reported attitude change and behavior change is not supported by the data.^{8,15-17} Given the ultimate goal of behavior change in health promotion campaigns, attitude change is only relevant insofar as it predicts relevant behavior change or helps in the analysis of behavior change for future campaigns. Thus, for practical purposes, "actual" not "reported" behavior change is the variable of critical interest.

The self-report basis of many studies has contributed to the lack of resolution of the fear-persuasion relationship. The relation or lack of relation of fear to persuasion⁷ has been hampered by three factors: major methodological weaknesses; the difficulty of testing some of the competing theories; and the failure to collect sufficient data on fear during the studies. The impact of each of these factors is briefly outlined below.

Methodological Weaknesses

In addition to the problems of self-report, the operation of the Hawthorne effect contributed to changes in behavior following a persuasive communication.¹⁸ Self-selection of subjects resulting in an unrepresentative population affected the results of the study by Leventhal and Watts reporting the effect of fear produced by movies shown to smokers at a state fair on the behavior of taking a chest x-ray:¹⁰ some subjects had self-selected themselves out of the study population by already having had an x-ray taken. In a study of the sexual behavior of men at risk of AIDS (acquired immunodeficiency syndrome), the most at-risk respondents (more partners) were the most likely to drop out before the follow-up.¹⁹ Non-standard follow-up intervals and criteria for evaluating anti-smoking campaigns reduce the value and comparability of the relevant studies.²⁰ From a practical as well as theoretical point of view, generalization from the laboratory to the field may be reduced by the forced exposure to the message in the laboratory versus the possibility of avoiding the message in the field.²¹ The manipulation of fear has been confounded with such factors as message length.^{2,10,22} Furthermore, it is all but impossible to ensure that the credibility

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of the message remains the same across different levels of fear since any reported decrease in the credibility of a high-fear message may reflect genuine loss of credibility or defensive responding on the part of the subjects, to protect themselves from the fear. While the latter interpretation is typically the one chosen, the former possibility has not been eliminated. Finally, the subjective measurement of fear varies from study to study.²³ All of these problems are potentially avoidable in field studies of persuasive communication.

Testing Competing Theories

The proposed curvilinear relationship between fear and persuasion proposed by Janis^{2,24} in the context of the fear-drive model is difficult to test, because it predicts a complex series of interactions with no specific statement of the range of variation in fear, or recommendation effectiveness, etc., required to show the interaction. Sutton⁷ pointed out the further difficulty that the roles of "amount" of fear reduction and "completeness" of fear reduction are not sufficiently delineated. Nonetheless, the strong experimental support for the inverted U-shaped relationship between motivation and performance in other areas,²⁵ suggests that this position may be fruitfully pursued in the area of persuasion. Leventhal's alternative parallel response model separates danger control and fear control, proposing parallel processes for each which often lead to different behaviors.⁸ However, the difficulty of varying danger and fear independently makes this model difficult to test empirically. Alternative cognitive decision-making models have been proposed by Rogers²⁶ and Sutton.⁷ Sutton's model is based on concepts of the subjective values of the alternative outcomes, subjective probabilities of recommended actions leading to those outcomes, and confidence in ability to carry out the recommended actions. The model is unusual in its claim that there is no causal connection between fear and persuasion. While the model yields certain predictions, the measurement of the underlying concepts appears to be left to subjective judgments of the subjects. Furthermore, as Sutton pointed out,⁷ many details are as yet unspecified: the model does not specify the determinants of the subjective probabilities or subjective values. Nonetheless, the model provides a useful overall schema, and with some additional specifications would be amenable to empirical investigation.

The protection motivation theory proposed by Rogers²⁶ is more explicit than other theories in its specification of the factors affecting persuasion. Attitude change is affected by the level of protection motivation, which is in turn a function of the probability of occurrence of the depicted event, the severity of occurrence of the depicted event, and the efficacy of the recommended action. However, the theory ultimately fails as an explanatory tool due to the circularity of the basic concept—protection motivation. The specification of any motivational concept in terms of its aim (to protect) rather than its source ultimately leads to teleological explanation²⁷—action X was performed because of the motivation-to-perform-X. This problem was recognized by Holt in his now classic criticism of McDougall's theory of instincts.²⁸

Data Collection

Collection of insufficient data on fear during the studies is directly related to the problems of testing the various theories. As Sutton⁷ pointed out, the ideal study would involve continuous monitoring of fear throughout the study.

Thus, the level of fear created by different aspects of the message and the level of fear reduction occasioned by the recommended action and its suggested effectiveness would each be known. Testing the prediction of an inverted U-shaped relationship between fear and persuasion also requires more than two levels of fear. For this reason several studies have employed three levels of fear and often failed to observe an inverted U-shaped relationship. These results are often taken as evidence against the inverted U-shaped relation. However, it is possible that the range of fear covered in the studies did not include the point of inversion: that is, all three levels of fear occurred on the rising side of the peak of the curve. Thus, the inverted U-shaped relation was not supported. This argument has three implications:

- from a theoretical perspective the evidence against the inverted U-shaped relationship is not compelling;
- from a research perspective, the researcher must ensure that a wide (ideally maximum) range of fear is covered in order to test the inverted U-shaped relation; and
- from a practical point of view, if the levels of fear employed in field studies and in health campaigns do not reach the point of inversion, this theory is of limited practical importance in the field of fear and persuasion.

The Punishment Paradigm

While Leventhal and Janis dispute the nature of the relationship between fear and persuasion, both appear to assume that fear operates as a drive.^{11,12,29,30} Consistent with learning principles, the use of fear as a source of drive would dictate that the fear occur first so that a drive state exists to activate responding.³¹ Others have suggested that the use of fear in a punishment paradigm will be effective in removing or reducing the unwanted (unhealthy) behavior. That is, it is suggested that having an aversive consequence follow a response will directly weaken the response. The use of punishment is seen as stemming directly from accepted learning principles. For example, Doob wrote that the principles could be "simply expressed: reward reinforces, whereas punishment extinguishes responses."³² More recently, Petty and Cacioppo characterized the instrumental conditioning of attitudes as being achieved "by directly rewarding or punishing a person for expressing certain attitudes."¹⁷

This faith in punishment is not a generally accepted principle of learning. Punishment does not have a reliable direct weakening effect on preceding responses.³³ The effects of punishment depend on a large number of factors.³⁴ A major disadvantage of punishment as a procedure is that it does not provide direction to a healthier behavior, whereas reinforcement produces strengthening of specific behaviors. Punishment is like saying, "No, don't do that", without suggesting what could be done in its place.

Insko and Cialdini have provided some evidence that punishment is ineffective in producing attitude change.¹⁴ These researchers found that verbal positive reinforcement alone ("good") was effective in producing self-reported attitude change; verbal punishment alone (use of a disapproving "huh") was ineffective; and the combined use of positive reinforcement and punishment was no more effective than the use of positive reinforcement alone.

Despite the lack of evidence for a direct reliable weakening effect of punishment, this has often been assumed to be the sound basis for persuasive communications. Thus many health campaigns are based on the procedure of punishment—fast driving is followed by crashes; smoking is followed by cancer, etc.

However, there is evidence that under certain circumstances punishment does appear to suppress behavior.³⁵ This suppression may be seen, at least in part, as being due to the indirect reinforcing effect of the offset of the punishing stimulus. The case of a rat punished with a brief electric shock for a previously learned bar press response illustrates the point. In this case, the bar press may be reduced by virtue of other responses which have been reinforced. For example, the onset of the shock may cause a freezing response. This response may be reinforced by the offset of the shock. After a number of these trials, the rat may be more likely to freeze than to bar press, leading to an observed suppression of bar pressing. Thus the punishment produced its effect via a reinforcement mechanism. Indeed, even if a direct suppressing effect of punishment is evident, it would seem that any program of behavior change which also used the reinforcing aspects of the punishing stimulus offset to reinforce an appropriate response would be superior. For example (leaving aside other considerations—side effects, moral issues), a punishment procedure of even a smack may be effective in reducing very active running and jumping in a child since the responses elicited by the punishing stimulus (crying, etc.) are not consistent with the punished response. On the other hand, many of us seem to recognize that smacking a child for crying is unlikely to reduce the crying: the response produced by the punishing stimulus is consistent with the response the parent was attempting to reduce. Similarly, high fear or anxiety provoking messages may be particularly ineffective in stopping behaviors which are themselves anxiety reducing since the message may elicit the unwanted behavior, e.g., reaching for a cigarette or a drink.

Despite the evidence, the tendency to view most health promotions as the removal of unhealthy behavior seems to lead many workers to see punishment as the appropriate approach. Health promotion may be better viewed as the increasing of healthy alternative behaviors, however. Rather than promoting messages like “don’t smoke” or “don’t drink and drive”, we need to promote messages like “do this specific behavior” where the behavior offered is a set of skills for refusing cigarettes or alcohol, or for getting a ride with someone else instead of driving.

The Effective Use of Fear: Reinforcement

Regardless of the underlying theoretical account provided, the most powerful learning principle available for use in health promotion campaigns is not the use of punishment, but the use of a response followed by reinforcement (or vicarious learning from the observation of such a sequence). If fear must be used, it should be used in a manner which allows fear offset reinforcement to follow an appropriate response. It is not sufficient for this to be implicit. An example is provided by the campaign aimed at increasing seat belt wearing by depicting a skeleton at the wheel of a car, with the caption “Don’t you feel naked driving without your seat belt?”⁹ In this case, it may be suggested that an obvious response has been offered—wear your seat belt—yet the campaign was not successful. There are three likely reasons for this failure:

- The presentation is not in an appropriate response-fear offset setting. Rather, while a response is implicitly available, the communication still presents a pairing of the incorrect response and the punishing event (death): the punishment paradigm.

- Even if the appropriate response-fear offset pairing had been attempted, the response may not be seen as sufficient to actually reduce the fear, i.e., for a possible

consequence as large as death a very effective response is needed to alleviate the fear.

- The event on which the fear is based (death) seems a very unlikely event.

However, wearing a seat belt does appear to be a response which is seen as being sufficient to alleviate the fear of a fine, as reported by Herbert, for the results of compulsory seat-belt-wearing legislation³⁶ and Netterfield and Graham for the results of a successful campaign based on the fine itself,³⁷ with objective behavioral evaluation.³⁸

More effective use of fear in a road safety campaign was demonstrated by the campaign signaling the introduction of random breath-testing in New South Wales, which brought about substantial changes in reported attitudes and behavior and a large reduction in road trauma.³⁹ The campaign offered the specific alternative behavior of being under the legal limit for breath-testing (.05) and the level of fear was not excessive, i.e., it was based on fear of arrest, not fear of death or injury. Further, arrest may be seen as a more likely event than a crash given the great confidence of the drivers.⁴⁰ Various forms of the campaign were quite specific in terms of other alternative behaviors—taking a taxi, staying overnight, getting a lift with a friend, etc.

In the laboratory setting, Rogers and his associates have obtained evidence supporting the interpretation of these campaigns: the response needs to be seen as effective in removing the source of danger (and fear). Reassurance was varied by informing the subjects that the fear-arousing event was easily escaped or avoided if encountered versus informing subjects that there was no effective way to avoid the problem. Attitude change was facilitated in the high reassurance condition.⁴¹⁻⁴³ This contradicts the results of earlier research.^{44,45}

Employing programs soundly based on learning principles, effective persuasion has been achieved during the 1980s in the area of smoking. The persuasive messages evaluated have been soundly based on three learning principles:

- The level of fear employed must be relatively low, so that inappropriate responses (such as denial) are not required to deal with the fear. This has been achieved by concentration on immediate physiological effects of smoking such as blood pressure and lung capacity.

- This concentration on the short-term effects also allows for a more immediate result from the cessation of smoking, i.e., the results of increased lung capacity rather than the very long-term reinforcer of possible relief from earlier death. It is a well-established principle of learning that a reinforcer of shorter delay is more effective than one of long delay,⁴⁶ and even with long delays of reinforcement less time for “associative interference” enhances learning.⁴⁷

- The principle of behavior shaping is employed as specific responses are offered rather than naive advice to simply not smoke. Typically this has involved teaching specific skills to resist the social pressures to smoke. These principles have been employed in numerous studies reporting positive results.⁴⁸⁻⁵²

Potential Harm of Ineffective Campaigns

The ineffective use of fear in health promotion campaigns may have more serious consequences than the tangible waste of time, effort, and money: such campaigns may produce the opposite of the desired effects, making the target audience more likely to continue with the unhealthy behavior. The argument that ineffective fear campaigns may immunize their audience against the message is not new.^{9,40,53,54}

As health promoters/educators we may believe that a campaign is producing a useful piece of classical conditioning: that is, pairing some situation (the conditioned stimulus) such as sitting behind the wheel of a fast moving car or riding in a car without a seat belt with some fear producing situation (an unconditioned stimulus) such as injury (or even death). However, this really relies on second order classical conditioning. The situation is an example of second order conditioning because the words of warning regarding injury/death only have a fear (unconditioned response) eliciting quality by virtue of their association with the event itself—injury/death. The real effect of the campaign thus may be to reduce the association between the words and images of injury/death and injury/death itself. Second order classical conditioning may produce only weak conditioning unless original conditioning trials are interspersed.⁵⁵ Thus, ultimately the supposed health promotion campaign may amount to presenting the conditioned stimulus (stimuli of fast driving, etc.) without any effective unconditioned stimulus. This is, in reality, the precise procedure for extinction of any existing fear response, and/or conditioned stimulus pre-exposure which *reduces* the effectiveness of subsequent conditioning trials.^{56,57} The operation of these principles may be seen in a more subjective way, as follows. The target audience may observe that despite continued smoking/fast driving/not wearing a seat belt, lung cancer, injury, or death has not occurred. This may lead to quasi-logical support for the denial type of response which alleviates any existing fear. For example, "I have been smoking/speeding/not wearing a seat belt for years and it hasn't harmed me (yet or to my knowledge). Therefore, the health promotion campaign is wrong or I am special and immune in some way (e.g., a very good driver⁴⁰)."

The above argument is not only applicable to ineffective campaigns but also to relevant news coverage.

From a practical point of view, successful induction of fear may also be harmful when no clear improvement follows the recommended action. For example, in examining the effect of a preschool screening and intervention program, Cadman and his colleagues observed a potentially harmful labeling effect.⁵⁸

Difficulty in predicting when a campaign will be successful and when it will have the opposite effect is highlighted by the finding of reduced smoking in boys after a school-based anti-smoking campaign which had the opposite effect on girls.⁵⁹ The researchers suggested that the later onset of smoking by girls contributed to the failure of the intervention. While the results were based on self-report, these results highlight the difficulty in successfully implementing such a program. In contrast, the success of programming based on positive reinforcement of skills involved in resisting pressure to smoke supports a preference for programs not based on fear.⁴⁸⁻⁵²

If fear is to be employed as the basis of a health promotion campaign, then research must be undertaken before the intervention is implemented. This preliminary research should ensure that, in the relevant target audience:

- The level of fear aroused is not so high as to make it unlikely that the prescribed action alleviates the fear;
- The prescribed action does, in fact, largely eliminate the fear aroused; and
- Other inappropriate reactions (denial, perceived personal invulnerability) are not occurring and being reinforced by fear reduction.

Why is fear still employed inappropriately?

Given the evidence that fear appeals (especially those involving a punishment paradigm) are not the most effective way to promote healthy behavior, it is perhaps surprising that such fear appeals are still employed. There are at least two likely reasons for this continued use.

- 1) The final say in mass media campaigns is often given to bureaucrats who do not have a working knowledge of the principles of behavior change. As Mendelsohn suggested, "Much of what we see in so-called mass education in public health today is more often designed to please the whims of some well-meaning board members than it is to accomplish meaningful effects."⁶⁰ Further, it is easy to see how well-meaning people could arrive at the wrong conclusion by examining their own reactions. For example, Janis and Feshbach found that the high fear communication was *seen* as more effective yet it produced less attitude change,² and Evans and his co-workers found that subjects *reported* more success of high fear messages but were in fact more influenced by a positive reinforcement approach.⁶¹
- 2) Health promotion campaigns may be based on the relatively direct approach often adopted successfully in commercial advertising.⁶² However, many commercial campaigns which may seem straightforward are thoroughly researched before being implemented. Further, with some exceptions, there is good reason not to expect a strong parallel between health promotion and commercial advertising. In the commercial sphere, most advertising is an attempt to direct the buyer to a particular brand in the backdrop of existing motivation. Typically, the commercial advertiser does not need to convince people that they need to eat or drink or use motor fuel, etc. Rather the need already exists, but has to be given direction. In most health promotions, the aim is to induce the motivation to begin with—i.e., convince the target audience that they do need to do something about danger on the road or the possibility of a heart attack or cancer (create an appropriate amount of fear as a source of motivation or create incentive motivation based on reinforcement).³¹ In addition, it is necessary to direct the behavior toward seat belts, exercise, fiber in the diet, etc. Thus the situations differ: in the commercial case an existing motivation is being channeled; in the health promotion case the motivation must be induced and channeled.

Conclusions and Recommendations

More careful evaluation of mass-media campaigns and more rigorous field studies which do not rely on self-report data are required to resolve many issues of the effectiveness of various forms of persuasion, and major theoretical issues.

Although learning principles provide a set of technologies for changing behavior, they are often oversimplified and misapplied.

The use of fear is only likely to work under particular circumstances involving the identification of specific behaviors which successfully reduce the fear aroused. The practical application of this principle requires assessment of the level of fear aroused, and the level of fear reduction achieved by the prescribed action, before the campaign is implemented.

Ineffective health promotion campaigns based on fear are likely to reduce the effectiveness of subsequent relevant health promoting action.

Given the difficulties and potential harm involved in a fear-based campaign, the tendency to view health promotion

as the removal of unhealthy behavior should be resisted in favor of viewing health promotion as the promotion (shaping and reinforcement) of healthy alternative behaviors.

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