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EFFECTS OF FEAR AND SPECIFICITY OF RECOMMENDATION UPON ATTITUDES AND BEHAVIOR¹

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The study dealt with the effects of (a) level of fear and (b) specific plans for action vs. general recommendations on attitudes toward tetanus inoculations and actually getting tetanus shots. The arousal of fear resulted in more favorable attitudes toward inoculation and the expression of stronger intentions to get shots. However, actually getting shots occurred significantly more often for Ss receiving a specific plan for action. Although action was unaffected by fear level some level of arousal was necessary for action to occur. A specific plan was not sufficient for action to appear. Although the 2 dependent measures were affected by different independent variables, those people getting shots were also more favorable toward doing so. The results are compared with other studies on fear arousal and actions, and speculations were presented on the role of specific action plans in the translation of attitudes into actions.

Information alone seldom provides sufficient impetus to change attitudes or actions toward a given object (Cohen, 1957; Klapper, 1960; Rosenberg, 1956). The information must not only instruct the audience but must create motivating forces which induce attitude and behavioral change. Janis and Feshbach (1953, 1954) were among the first to explore the effects of information which arouses fear or avoidant motivation on the changing of attitudes. Their results indicated that high fear arousal produced less adherence to recommendations, presumably because high fear produced responses of defensive avoidance. Support for the finding of less persuasion with high- than with low-fear communications has also been presented by Goldstein (1959) and by Janis and Terwilliger (1962). However, in other recent studies evidence has accumulated which suggests the need to re-evaluate the relationship between fear arousal and persuasion.

First, Berkowitz and Cottingham (1960) have demonstrated that, at relatively low levels, increments in fear may produce increased attitude change especially for subjects for whom the communication was less relevant. Leventhal and Niles (1964), and Niles (1964) have also found that fear arousal in-

creases persuasion. They obtained a positive correlation between reported fear and intentions to act (Leventhal & Niles, 1964), and increases in intentions with increasingly powerful communications (Niles, 1964). These effects were found using stimuli considerably more vivid and frightening than those used in any of the earlier investigations. Thus, these experiments suggest that fear functions as a drive which promotes the acceptance of recommended actions, and, regardless of the absolute level of fear arousal used in any study, the communication which arouses more fear will be more persuasive.

There are a number of incidental factors that may account for the different results in these studies: for example, Janis and Feshbach's topic was dental health while lung cancer was the topic for Leventhal and Niles (1964) and Niles (1964); Janis and Feshbach (1953) used high-school students, Leventhal and Niles used people attending the New York City health exposition, and Niles used college students. However, while these factors could be responsible for the different outcomes, one variable which seems of particular importance is the availability of the recommended action. In their study, Janis and Feshbach (1953) suggested that fear arousal could lead to increased persuasion if the action was immediately available. In the Leventhal and Niles study, action was immediately available to all groups of subjects; that is, they could get an

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X ray, and, while stopping smoking may require concerted effort over a long period of time, it can be initiated immediately. In the Niles experiment the arousal of fear increased desire to take action principally for subjects who do *not* see themselves as vulnerable to disease. Subjects who feel vulnerable to disease showed relatively small increases in willingness to take preventive action when made fearful. Their greater resistance to persuasion seemed to be related to their tendency to judge the recommendations to prevent lung cancer as ineffective. In addition, subjects high in vulnerability scored low on a scale of self-esteem that relates to seeing oneself as able to cope with the environment (Dabbs, 1962; Leventhal & Perloe, 1962). The findings suggest that when environmental conditions or the subject's dispositional characteristics make action seem highly possible and effective, fear will promote action and attitude change.

The present study was designed to provide additional data on this question. Fear-arousing and non-fear-arousing communications were used recommending a clear action (taking a tetanus shot) which is for all intents and purposes 100% effective. Thus, in line with our earlier findings (Leventhal & Niles, 1964; Niles, 1964), it was predicted that more attitude change and more action would be produced by the high-fear conditions. Second, an attempt was made to experimentally manipulate the perceived availability of the recommended action by giving some subjects a *specific plan* to guide their action. It was hypothesized that adherence to the recommended act would be greater among subjects possessing a specific plan. Finally, an interaction was expected between fear and specificity: highly motivated subjects, that is, those exposed to the fear-arousing materials, were expected to show the greatest attitude and behavioral compliance when a clear plan for action was given to them.

Another question which was raised with regard to these divergent findings was the kind of emotion evoked by the stimulus. Careful attention has been given to discriminating levels of fear arousal, and to the possibility that fear-arousing communications arouse aggression as well as anxiety (Janis & Feshbach, 1953; Robbins, 1962). Other studies in the

current program (Leventhal, Jacobs, & Trembly, 1963 unpublished²) suggest that fear may be experienced with many other emotions. Therefore, several items were used to assess emotional arousal with the hope that these would provide added information on the nature of the fear associated with persuasion.

METHOD

Design and Subjects

The experimental design incorporated two levels of fear and two levels of information on the availability of the recommended action. Additional control groups were run to clarify questions unanswered by the factorial design. These are described in the Results section. Booklets were used to present the fear-arousing stimuli and to deliver the recommendation for inoculation. A questionnaire was completed after reading the booklet.

All subjects were seniors at Yale University and were selected by taking every other name from the class list. Initial contacts were by mail, and specific appointments for the experimental session were made by phone. No inducements were offered for participating in the study and subjects only knew that they were to evaluate a public health pamphlet. All contacts with the subjects were made by using the name of the John Slade Ely Center and the University Department of Health.

Subjects were run individually and in a building 2.5 blocks away from the University Health Service. Conducting the study in the University Health Building would have made it far too simple for subjects to get shots. When a student entered the experiment, he was given a pamphlet and told: "Would you please read this pamphlet carefully. When you are finished, please bring it back to me and I will give you a questionnaire to fill out about it." After reading the pamphlet and filling out the questionnaire the students departed. There was minimal conversation with the experimenters.

Experimental Manipulations

The booklets were composed of two sections: a "fear section," dealing with the causes of tetanus and including a case history of a tetanus patient; and a "recommendation section," dealing with the importance of shots in preventing the disease. There were two forms of each section: high fear and low fear, specific recommendation and nonspecific recommendation, making four pamphlets.

Fear manipulation. The same facts about the disease were present in both fear levels. Three devices were used to manipulate fear: coupling frightening or nonfrightening facts with basic information on tetanus; emotion-provoking or emotion-nonprovoking adjectives to describe the causes of tetanus, the tetanus case, and the treatment of tetanus; and

² Unpublished study entitled "Negative Emotions and Persuasion."

including different kinds of photographs to illustrate the pamphlet. For example, in the high-fear booklet the incidence was described as being as high as that for polio, and the bacteria were described as "under your finger-nails, in your mouth" etc., and as literally surrounding the reader. The low treatment simply stated these facts in a nondramatic way. The aim of the high-fear booklet was to create a strong feeling of personal vulnerability.

A case history, constructed from reports in medical journals, was presented to make vivid the severity of the disease. In the high-fear condition, the wording was constructed to create a clear image of the patient's symptoms (convulsions; his back arched upwards, his head whipped back, mouth slammed shut, etc.). Photographs were also included which showed a child in a tetanic convulsion and bedridden patients. Three of the photographs were in color. One illustrated a gaping tracheotomy wound, the others depicted patients with urinary catheters, tracheotomy drainage, and nasal tubes. The treatments illustrated are actually used in the therapy of severe cases of tetanus. They proved to be quite startling to the subjects.

In the low-fear condition, colored photographs were omitted as were the pictures of the hospital patients and equipment. Two photographic copies of drawings of the facial expressions found in tetanus were included. The case history was described in unemotional terms and, whereas the patient died in the high-fear booklet, he survived in the low-fear case. Otherwise, the booklets were factually identical and were approximately of equal length (7 mimeographed pages).

Plan for action. After the presentation of the case history, all pamphlets contained identical paragraphs on the importance of controlling tetanus by inoculation. This point was illustrated by statistics which clearly demonstrated that shots are the only powerful and fully adequate protection against the disease. In addition, it was stated that the University was making shots available free of charge to all interested students.

For the high availability treatment additional material was included urging the students to take a shot and providing a detailed set of suggestions as to how he could do this within the context of his daily activities. The points made can be paraphrased as follows: The University Health Service expressed the hope that all students would take the necessary action to protect themselves, the location of the University Health Service was described and the times that shots were available were listed, precisely where to go and what to do to get a shot was indicated, a map was presented of the campus with the University Health Building clearly circled, and a request was made that each student review his weekly schedule to locate a time when he would pass by the University Health so that he could stop in to be inoculated. The specific recommendation, then, is essentially a detailed plan to make the subjects rehearse the various steps needed to take the suggested action. Thus, the low availability groups are told of the effectiveness of shots and that shots

are available. The high availability groups have this information plus additional material helping them to plan and to review the specific steps needed to take shots. It should be made clear, however, that since the subjects were seniors, they *all* knew the location of student health, and it is extremely likely that they had all visited the building at some time in the past. The plan, therefore, would simply make salient that which is *already* known rather than providing new information.

Response Measures

Two types of responses were observed for all subjects participating in this experiment. Immediately after the communication all subjects completed a questionnaire on which they reported their attitudes, feelings, and reactions to the experimental setting. In addition, a record was obtained of all subjects taking a tetanus inoculation.

Questionnaire measures. The questionnaire included items on: prior inoculation against tetanus; intentions to be inoculated; attitude regarding the importance of inoculation; judgments of the likelihood of contracting tetanus and its severity *if* contracted; emotions experienced while reading the communications; and reactions to, and interest in, the communications. The items used will be reported in the Results section.

Behavioral measures. The records of all participants were checked by student health authorities and a count was made of the subjects in each condition who were inoculated. The dates for inoculation were also obtained. Those students who were inoculated at the close of the semester, more than 1 month after the study termination, were not included in the inoculation count. It is common practice for students taking trips abroad to receive inoculations at the end of the semester.

The questionnaire also included a variety of items on many diseases besides tetanus. The items were included principally to suggest to the subject that the investigation was on *health*, rather than an attempt to coerce him into taking an inoculation. Thus, items asked about prior shots for polio, typhoid, and flu, and feelings of susceptibility to and the severity of six other diseases.

RESULTS

Fear Arousal

As can be seen from Table 1, the fear manipulation was highly successful. Subjects report feeling greater fright, tension, nervousness, anxiety, discomfort, anger, and nausea in the high- than in the low-fear treatment.³ All differences were significant at $p < .005$.

³ The self-reports of emotion were obtained by asking "While you were reading the pamphlet did you find that you had any of the following feelings?" A series of adjectives with 21-point scales followed this statement.

TABLE 1
MEAN REPORTED EMOTIONS BY TREATMENT AND PRIOR INOCULATION OF SUBJECT

Emotion ^a	High fear		Low fear		Significance data	
	No prior shot	Shot	No prior shot	Shot	<i>F</i> (high-low)	<i>df</i>
Fear	9.25	8.47	4.51	3.21	43.19*	1/139
Base line (<i>n</i> = 11)	2.61					
Recommendations only (<i>n</i> = 29)	3.00					
Tension	9.28	9.07	4.43	3.58	35.28*	1/139
Base line	1.35					
Recommendations only	2.83					
Nervousness	7.85	7.79	3.93	2.70	36.40*	1/139
Base line	1.53					
Recommendations only	3.10					
Anxiety	9.51	9.06	5.43	3.26	32.30*	1/139
Base line	2.97					
Recommendations only	4.03					
Discomfort	11.43	10.40	4.47	3.36	63.84*	1/139
Base line	3.87					
Recommendations only	3.52					
Anger	4.56	3.40	2.19	1.59	15.54*	1/140
Base line	5.94					
Recommendations only	3.41					
Nausea ^b	7.34	5.22	2.61	2.19	27.81*	1/140
Base line	3.87					
Recommendations only	1.59					
<i>N</i> ^c	30	44	29	44		

Note.—The means are averages of the means for specific-nonspecific for each fear level. This was done for ease in presentation. The analyses were conducted on the complete table using Walker and Lev's (1953) technique for unequal *n*'s. There were no significant interactions.

^a Twenty-one points on scale. Higher numbers on all scales indicate higher reported affect.

^b Nausea was also effected by specificity. This will be reported in a later table.

^c *N*'s are the number of cases for the averaged pair of means. The *N* in the second column was actually higher than 44 for two figures.

* *p* = .005.

Incidental observations indicated that the high-fear booklets were indeed distressing. All subjects were extremely intent and focused on the materials; some appeared pale, others shaken and many made other sounds and gestures indicating distress. These treatment effects were significant whether or not subjects had been inoculated against the disease. (Means are also presented for two control groups. One was not exposed to any communication and simply filled out the "Health Practices Questionnaire." The other received only the specific recommendation material prior to completing the questionnaire.)⁴

⁴ The control subjects completed essentially the same questionnaire as the experimental subjects. However, all references to the communication were omitted for the questionnaire-only control. The relatively high mean for anger in the questionnaire-only groups reflects the irritation felt by some of these subjects upon having to answer questions (on emotion) which did not seem to have a clear referent. On the other hand, a few of the recommendation-

Attitudes. A general question ("How important do you think it is to get a tetanus shot?"—13-point scale) was used to assess the degree of importance which subjects attached to tetanus shots. Another question was used to assess his intentions to avail himself of inoculation ("Do you intend to get a tetanus shot?"—13-point scale). As can be seen in Table 2, regardless of prior inoculation, subjects in the high-fear conditions feel that shots are more important than do subjects in the low-fear conditions ($F = 8.45$, $df = 1/140$, $p < .01$).

For the intention question, there were two important trends. First, subjects who had had a shot within the last 2 years scored lower than those who had not had a shot ($F = 16.8$, $df = 1/136$, $p < .005$). In addition, there was a trend for subjects in the

only subjects felt upset by the suggestion to get shots. The detailed suggestion to act seemed unusual enough to convince a few that a threat must be imminent.

TABLE 2
MEAN IMPORTANCE OF TETANUS SHOTS AND INTENTIONS TO BE INOCULATED

	No prior shots		Prior shots		Control
	High fear	Low fear	High fear	Low fear	
Importance of shots (13-point scale)					
Specific	11.92	10.00	11.61	11.82	
<i>N</i>	13	16	23	22	
Nonspecific	11.29	10.54	11.93	10.32	
<i>N</i>	17	13	22	22	
Recommendations only					8.76
<i>N</i>					29
Base line					8.82
<i>N</i>					11
Intention to get shots (13-point scale)					
Specific	11.23	10.00	8.43	5.90	
<i>N</i>	13	15	23	22	
Nonspecific	11.29	9.69	7.52	7.55	
<i>N</i>	17	13	21	20	
Recommendations only					7.00
<i>N</i>					29
Base line					6.75
<i>N</i>					10
Strong intention (13)	18 ^a	9			
Moderate intention (1-12)	12	20			

^a $\chi^2 = 6.22$, $df = 1$, $p < .02$.

high-fear treatment, regardless of inoculation status, to express stronger intentions to get shots than did subjects in the low-fear condition ($F = 3.55$, $df = 1/136$, $p < .08$). Since the distributions were skewed downwards and the means in the high-fear cells were over 11, using a 13-point scale, it appeared that a ceiling effect was operating to minimize the differences. Therefore, a test of the effect of fear on intentions was performed by treating all scores of 13 as very strong intentions and scores of 12 and below as weak intentions. Using only those subjects who *had not* had a shot within the last 2 years (relevant subjects), a significantly greater number of subjects expressed a strong intention to be inoculated in the high-fear treatment than in the low ($\chi^2 = 6.22$, $df = 1$, $p < .02$).

Action. During the 4-6 week period between the experimental sessions and the end of classes 9 of the 59 eligible subjects went for shots. Of the 9, 4 were in the high fear specific, 4 in the low fear specific, 1 in the low fear nonspecific, and none in the high fear nonspecific. A comparison between the 27.6% of specific takers and the 3.3% of nonspecific takers is significant ($CR = 2.65$, $p < .01$). Subjects in the specific condition

were more likely to get shots.⁵ Thus, attitudes and actions appear to be affected by different factors. While a low fear nonspecific communication has little influence on either attitudes or actions, fear-arousing messages affect attitudes regardless of specificity of plan, and recommendations using specific plans affect actions regardless of the level of fear.⁶

Recommendations-only control. Because the specificity factor did not interact with arousal as predicted, it was unclear whether the arousal of fear was a necessary condition for action. The main effect suggests that specific information may be a sufficient condition for

⁵ Seven additional eligible subjects took shots following the close of classes. These were distributed as follows: four specific (two high and two low) and three nonspecific (two high and one low). Adding in these cases gives 41% specific, 13% nonspecific taking shots ($CR = 2.44$, $p < .02$). Among the ineligible subjects two in the high fear nonspecific condition took shots. It appears that most of these subjects were receiving shots as part of a series in preparation for travel.

⁶ One could argue that the specificity effect was obtained because subjects in the nonspecific condition *missed* the statement that shots could be obtained at University Health. However, when subjects were asked where they would get shots, 70% of those in the nonspecific treatment and 72% of those in the specific mentioned University Health.

the occurrence of action. To test this possibility a control group was run of subjects exposed only to specific information. This group was run the following year and a time difference is involved which was absent in the other comparisons.

The procedures for contacting and dealing with subjects were identical to those used in the four experimental groups. Of the 30 eligible subjects in the group not one availed himself of the opportunity to obtain an inoculation. Thus, specific information alone does not seem to be sufficient to influence actions or attitudes (see Table 2).

Action base line. The date of tetanus inoculation for a sample of 60 students was also obtained to record the base rate of inoculation seeking during the experimental period. None of the students (eligibles or ineligibles) were inoculated during that period. Therefore, while the rate of shot taking was not high in the specific experimental treatments (27.6%), it is obviously greater than the base rate.⁷

Mediating Factors

Variables associated with attitude change. In addition to the fear measures, several other measures of reported feelings varied in the same manner as did attitudes toward tetanus inoculations. Subjects in the high-fear condition felt that tetanus was more serious than did subjects in the low-fear treatments ("How serious do you think it would be if you contracted tetanus?" $F = 22.94$, $df = 1/139$, $p < .005$). Subjects in the high-fear conditions also reported more concern about getting tetanus ("When you think about the possibility of getting tetanus, how concerned or worried do you feel about it?" Table 3, $F = 3.92$, $df = 1/140$, $p < .05$), more worry about the way they had treated cuts ("While you were reading the pamphlet, did you feel worried about the way you have treated abrasions, cuts, or bruises?" $F = 3.75$, $df = 1/136$, $p < .10$), and reported more irrita-

tion directed at the photographs than did subjects in the low-fear condition ("Did the illustrations irritate you or make you angry?" $F = 6.95$, $df = 1/136$, $p < .01$). High-fear subjects were also more certain than low-fear subjects that the pictures used enhanced the pamphlet ("Did the illustrations in the pamphlet enhance the message of the pamphlet?" $F = 11.62$, $df = 1/134$, $p < .001$). These effects were significant regardless of the subjects prior vaccination history. As with the prior measures of emotional arousal, being vaccinated is no protection against the distressing emotions which appear to be elicited by the pamphlet per se. It is also interesting to note that the arousal of aggression (anger and irritation) occurs in the same conditions as opinion change. Therefore, either the annoyance and irritation prompted by the communication and the illustrations does not minimize their effectiveness or was not of sufficient strength to arouse resistance to persuasion.

Variables associated with action. In examining data relating to action, we shall compare the means only for those subjects eligible for vaccination. Subjects receiving specific recommendations tended to report stronger feelings of susceptibility to tetanus. Though the difference is at the .10 level ("The chances are _____ in 100 that I will contract tetanus" Table 4, $F = 3.14$, $df = 1/136$, $p < .10$), the scores are highly skewed and do not approach significance using an appropriate test.

Subjects receiving the specific recommendation reported feeling *less* nauseated than those getting the general recommendation ($F = 6.14$, $df = 1/140$, $p < .01$). Thus, while nausea was increased by the high-fear booklets, it was depressed by the specific recommendation and for the low fear specific was below the control mean. In addition, the specific subjects reported more interest in the communication ("Did you find the pamphlet interesting?" $F = 4.26$, $df = 1/137$, $p < .105$). It seems, therefore, that the correlates of action are a greater interest in the outer environment and a lessening of what may be potentially inhibiting visceral reactions, though fear itself is high.

⁷ Only one of the subjects included in the experimental groups had had a shot just prior to participating. He had received it as treatment for an injury. Thus, there is little reason to believe that students spontaneously take shots during the year to protect themselves against tetanus.

TABLE 3
MEAN OTHER DIFFERENCES BETWEEN HIGH AND LOW FEAR
CORRELATED WITH ATTITUDE CHANGE

	High fear		Low fear		F (high-low)	df
	No prior shot	Prior shot	No prior shot	Prior shot		
1. Seriousness of tetanus ^a	10.88 ^b	10.68	8.16	8.02	22.94***	1/139
N	30	44	29	44		
Control (N=11)	7.02					
Recommendations only (N=30)	8.90					
2. Concern over contracting tetanus	10.48	10.59	9.13	7.67	3.92*	1/140
N	30	45	29	44		
Control (N=11)	5.58					
Recommendations only	7.53					
3. Worry over cuts and bruises	7.20	7.39	6.43	4.72	3.75	1/136
N	30	45	28	41		
Control (N=11)	1.26					
Recommendations only	4.17					
4. Anger at illustrations	3.71	3.94	2.37	2.62	6.95**	1/136
N	30	45	28	41		
Recommendations only	4.17					
5. Pictures enhance pamphlet	7.06	7.13	5.69	5.55	11.62***	1/134
N	29	43	28	42		
Control (N=11)	1.26					

^a Item 1 used a 13-point scale, Items 2 and 3 used 21-point scales, and Items 4 and 5 used 9-point scales.

^b Means reported are the average of the means for specific and nonspecific cells.

* $p = .05$.

** $p = .01$.

*** $p = .005$.

Takers versus nontakers. The analyses to this point appear to indicate that fear arousal is sufficient to influence attitudes while both arousal stimuli and specific recommendations are needed for action. Since an increase in the level of fear does not increase the rate of action taking, it may appear that actions and attitudes are no longer related to one another. To obtain further evidence on this question a post hoc comparison was made of takers and nontakers on the questionnaire measures. In making the comparisons, a

constant equal to the difference between the high- and low-fear means was added to all scores in the low-fear condition. This eliminated the main effects of arousal and allowed a comparison of shot takers and nontakers ignoring the effect of the fear treatment. The only values that approached significance were for anxiety, fright, importance of shots, and feelings that the illustrations enhanced the pamphlet. Thus, shot takers, who are mainly in the specific recommendation condition, not only differ from

TABLE 4
MEAN DIFFERENCES BETWEEN SPECIFIC AND NONSPECIFIC TREATMENTS
(NO PRIOR SHOT SUBJECTS ONLY)

	Specific		Nonspecific		Control	
	High fear	Low fear	High fear	Low fear	Questionnaire only	Recommendations only
Susceptibility (100-point scale)	7.089	13.569 ^a	4.736	4.615	5.58	11.61 ^a
N	13	16	17	13	11	28
Nausea (21-point scale)	5.61	1.75	9.06	3.46	3.87	1.59
N	13	16	17	13		
Interested in pamphlet (9-point scale)	8.15	7.73	7.17	7.3	—	
N	13	15	17	13		

^a A few subjects had extremely high scores for these questions which caused an unduly inflated mean.

TABLE 5
MEAN COMPARISON OF SHOT TAKERS
WITH NONTAKERS

	Takers	Nontakers	<i>t</i>
Emotion			
Anxiety	11.90	9.07	1.55
<i>N</i>	9	50	
Fright	11.39	8.88	1.47
<i>N</i>	9	50	
Attitude			
Importance	11.96	10.49	1.89*
<i>N</i>	9	50	
Illustrations enhance	8.89	6.36	1.59
<i>N</i>	9	48	
Susceptibility ^a	19.16	10.32	1.28
<i>N</i>	8	21	

^a Specific treatment subjects only.
* *p* = .05, one-tailed.

nontakers in the *general* recommendation condition in the ways discussed before, but they *also* show higher scores on the above measures. Attitude and arousal are related, therefore, to action.

DISCUSSION

The data lend mixed support to the hypotheses. As in the earlier experiments (Leventhal & Niles, 1964; Niles, 1964) fear-arousing communications increased attitudinal acceptance of the recommendations, in this case, favoring tetanus inoculations. Supporting evidence for the facilitating effect of fear on attitude change can also be found in Weiss, Rawson, and Pasamanick (1963) where high scores on dispositional anxiety facilitated opinion change. However, these results are contradictory to the data reported in two studies of acceptance of recommendations for dental hygiene (Goldstein, 1959; Janis & Feshbach, 1953) where increases in fear level appeared to be associated with resistance to the recommendations.⁸ As suggested earlier (Leventhal & Niles, 1964; Niles, 1964), the discrepancy between the experiments may relate to differences in the per-

⁸ The Janis and Terwilliger (1962) experiment also tends to support the thesis that high fear increases resistance to persuasion. However, the experiment was not specifically designed to test this hypothesis and the results on this particular issue were borderline; the trend for high fear (6-2/11) versus low fear (11-0/16) on acceptance of a nonsmoking recommendation being only suggestive ($CR = 1.35$, $p < .18$, two-tailed).

ceived effectiveness of the recommended actions. Thus, tetanus inoculations are far more effective as a preventive measure for tetanus than toothbrushing is for dental disease. No matter how one cares for his teeth, he is still likely to have some caries. On the other hand, the incidence of tetanus is practically zero for protected people, and for lung cancer, the incidence is extremely low for nonsmokers. Therefore, when fear is aroused it may be critical to present an extremely effective (or effective-appearing) recommendation to minimize the possibility that subjects will leave the communication setting still in need of reassurance and thus open to counter-persuasion.

It has also been suggested (Weiss et al., 1963) that fear will have opposite effects upon attitude change depending upon the subjects initial position. When subjects hold competing opinions, the increased drive level could be predicted to strengthen the incorrect responses more than the correct ones (e.g., Farber & Spence, 1953). In the present experiment, it is clear from the control-group data that subjects are initially favorable toward shots. It is possible, however, that subjects in the dental hygiene study (Janis & Feshbach, 1953, 1954) were negative toward some of the recommended practices and that fear strengthened the "incorrect" responses. However, this argument loses some strength as smokers in the lung cancer studies also showed more acceptance of recommendations with high levels of fear (Leventhal & Niles, 1964; Niles, 1964). Still, the actions recommended in the current setting are preventive, simple to take, and relatively painless.

Of greater interest, however, is that specific plans for action influence behavior while level of fear does not. But specific information alone is insufficient as action is influenced only when specific information is combined with one of the fear-arousing communications. The group exposed only to specific information is generally quite similar to an unexposed control for reported emotions and very similar to the unexposed control's attitudes concerning the importance of shots. Therefore, while emotional arousal is necessary for attitudinal and behavioral change, it seems to be suf-

ficient for the former and only necessary for the latter. Does this mean that behavior and attitudes are entirely independent of one another? In our first study on lung cancer (Leventhal & Niles, 1964) a very high correspondence was found between intentions to get X rays and actually having one taken. In addition, X-ray takers reported more fear than nontakers. In the present study, the comparisons of takers and nontakers revealed a similar effect, that is, the takers regarded shots as more important (though intentions were *not* stronger) than the nontakers, and the takers had higher scores on some of the fear indices. Neither of these experiments shows significant differences between fear treatments for the action measures. If one re-examines the setting for the lung cancer study, it soon becomes apparent that subjects in all conditions were given a highly specific plan for taking X rays; that is, while delivering the recommendation for X rays, "the experimenter pointed directly at the X-ray unit which was down the corridor from the 'theatre.' The unit was clearly visible to all Ss . . . [Leventhal & Niles, 1964, p. 462]." Therefore, the effects on action are extremely similar in both studies and both studies produced a relationship between attitude and actions, though the relationship is weaker in the present experiment.

Although there is a positive relationship between attitudes and behavior, the present data show that the independent variables have different effects upon attitudes and actions. Specific information for taking action does not in itself produce favorable attitudes but does establish a link between attitude and action. What is the nature of this link that permits the attitude to be translated into action? In certain situations, for example, those where the action is immediately possible, specificity may entail the elimination of barriers to action (Leventhal & Niles, 1964). However, in situations such as the present, where the actions were carried out several days subsequent to the communication, other aspects of the manipulations, for example, rehearsing the action, making a decision to act, as well as simple information on how to make the response, could be responsible for the link. An examination of questionnaire effects

associated with the specificity manipulation tentatively suggests that specificity altered the subject's emotional state. Thus, subjects receiving the specific plan for action were somewhat more interested in the materials and reported significantly less nausea which can be interpreted to mean that the specific information eliminated various inward-turning inhibitory features of the fear state. Several authors have distinguished between inhibitory or depressive fear states and excitatory fear states (Bull, 1962; Kollar, 1961; Shands, 1955) and have associated striving and protective activity with the latter. However, while it is clear that these affective states can be distinguished in communication studies (Leventhal et al., 1963 unpublished²) the study of their relationship to persuasion and action has just begun. The present data do suggest, however, that providing a clear possibility or plan for action can reduce the inhibitory properties of certain fear states.

Regardless of the exact process by which specific information links the evaluative and action components, it is still puzzling why more action did not occur in that condition where the attitude change was greatest. There is a very simple hypothesis that can be suggested to account for this. If the effects of fear dissipate rapidly with time, then it may be that the failure to find more action in the high-fear treatments reflects the fact that attitudes were measured *at* the time of exposure while action took place *after* the fear-induced attitude effects had been dissipated (Leventhal & Niles, 1965). If this is the case, no relationship between attitude change and behavior could possibly be expected.

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