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AUTHOR Morris, Larry W.; And Others
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SPONS AGENCY Middle Tennessee State Univ., Murfreesboro.; National Inst. of Mental Health (DHEW), Bethesda, Md.
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ABSTRACT

This study examined the nature of the anxiety reduction resulting from the administration of a film designed to reduce anxiety about snakes. One-hundred-sixty high school seniors viewed either a modeling film or a control film. As expected, the modeling group, compared to control subjects, experienced significantly greater decrements on self-report measures of anxiety and avoidance of snakes and demonstrated significantly fewer false assumptions about snakes after viewing the film than before. Also as expected, following the distinction between Worry and Emotionality as separable components of anxiety, Worry scores decreased significantly more for the modeling than for the control group, whereas no differential changes in Emotionality were found. (Author)

The purpose of this study was to explore, in subjects with normal anxiety about snakes, the nature of the anxiety reduction resulting from viewing a film (symbolic modeling) designed for treating snake phobias. The following hypotheses were advanced: (a) global measures of anxiety and avoidance of snakes would be reduced as a function of viewing the modeling film; (b) Worry scores would be more effectively reduced than Emotionality scores; and (c) decrease in Worry scores would be positively related to decreases in subscription to faulty beliefs about snakes.

Method

Subjects. One-hundred-sixty seniors enrolled in sociology-psychology classes at Glencliff High School in Nashville, Tennessee, served as subjects. There was no attempt to preselect subjects on the basis of an anxiety criterion. Experimental treatments were administered to intact classes ranging in size from 10 to 25 students. Data from the "modeling" subjects was gathered during the spring semester, with "control" data being collected from a similar grouping of subjects in the following fall semester.

Films. The 12-minute color modeling film, developed by Spiegler et al. (1969), was shown to be effective in decreasing anxiety and increasing approach behavior toward snakes with only one or two presentations. The film depicts

function of stressful cues in the testing situation, whereas the arousal of Worry is a function of lowered performance expectancy.

Specific anxieties (phobias) likely involve both of these components, and the relative salience of the Worry and Emotionality components probably varies from one individual to another. Thus, one person's anxiety may be largely "irrational" or emotional in nature, with little cognitive control of the anxiety reaction, while another's anxiety may be more rational or cognitive in nature in the sense that it varies as a function of the perceived danger involved in the situation.

It is interesting to speculate about the differences between normal and phobic anxiety as related to the Worry-Emotionality distinction. Phobias may more often be characterized by Emotionality than Worry, since phobic individuals often recognize the irrational nature of their extreme anxiety, but are unable to exercise cognitive control over it. On the other hand, the moderate anxiety of normal individuals may be due largely to a lack of experience with and/or faulty beliefs about the feared object. For a person who does not know the difference between poisonous and nonpoisonous snakes, to be worried in the presence of the latter is a realistic fear. Likewise, if one believes that the flicking of the tongue indicates a desire on the part of the snake to

bite, it is realistic for him to be worried in the presence of a snake which is continually flicking its tongue. If this line of reasoning is valid, treatment for normal anxiety should seek to change cognitive elements in the direction of greater sophistication and accuracy, thus decreasing Worry and/or making it more realistic and adaptive in nature. In contrast, treatment for more extreme anxiety would primarily involve deconditioning the subject's emotional response to the feared object.

The modeling approach to anxiety reduction seems to lend itself more readily to changing cognitive elements than other techniques (e.g., systematic desensitization, implosive therapy), while at the same time vicariously extinguishing emotional responses. Thus, the effectiveness of the modeling treatment is due at least in part to the demonstration of viable alternative responses previously not included in the observer's repertoire and the subsequent changes in observer's expectations regarding the consequences of these alternatives. It is interesting to note in this regard that the modeling treatment is most effective when accompanied by training in deep muscle relaxation (Bandura, Blanchard, & Ritter, 1969; Spiegler, Liebert, McMains, & Fernandez, 1969). This combination effects change in both the cognitive and emotional components of the anxiety reaction simultaneously.

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Films. The 12-minute color modeling film, developed by Spiegler et al. (1969), was shown to be effective in decreasing anxiety and increasing approach behavior toward snakes with only one or two presentations. The film depicts

a female college student (initially anxious model) interacting with a female herpetologist (nonaxious model) who is helping her to learn how to handle snakes. The initially anxious model progresses from stroking a small snake with gloves on while the snake remains in the cage, to holding a large king snake barehanded. At each progressive step, the nonanxious model demonstrates the proper procedure for handling the snake, followed by a successful performance of the task by the initially anxious model. As the film progresses, the initially anxious model is depicted as becoming more skillful in the handling of the snakes and as deriving more enjoyment and self-confidence with each new experience. The film is accompanied by a tape-recorded narration (male voice) which explains each step in succession and provides bits of information about snakes when appropriate (e.g., "flicking the tongue helps the snake perceive his environment and does not indicate that the snake is about to bite"). One-half of the modeling subjects viewed this film with an additional scene included, which portrays the initially anxious model holding the large king snake up to her face and allowing it to wrap itself around her neck at will.

In addition to the modeling groups, two control groups were utilized. To control for exposure to snakes, one group viewed a film in which both a small and a large snake are shown crawling around in cages and on a table top with no model present and no accompanying narrative. To control for viewing a film the other group viewed a film portraying various scenes of natural beauty and a family enjoying outdoor activities on vacations; the content was unrelated to snakes. Each of the four films was in color and ran for approximately the same length of time. Since preliminary analyses revealed no significant differences between the effects of the two modeling films, nor between the effects of the two control films, these groups were combined to form one modeling group and one control group.

Procedure. Immediately upon entering the classroom students were given an initial set of questionnaires with instructions that emphasized that all questions were to be answered under the assumption that the snakes involved were nonpoisonous and harmless. The film was then shown, with interruptions after each of the four scenes for completion of a short questionnaire. After the completion of the film the teacher took 10-15 minutes to make assignments and announcements. Immediately before the students were to leave the room they again were asked to complete a set of questionnaires. Students were asked to refrain from discussing the experiment with their friends until the following day.

Dependent variables. Three questionnaires were employed to evaluate subjects' reactions to the four films. The first questionnaire, used by Spiegler et al. (1969) to screen potential subjects, presented 10 activities related to snakes and subjects were asked (a) to state (on a 5-point scale from "no negative feelings" to "extremely unpleasant") how they would feel while performing each activity (Anxiety) and (b) to state whether or not they would be willing to engage in each activity (Avoidance). Spiegler et al. (1969) found that responses to this questionnaire were positively related to anxiety and avoidance behavior exhibited in the presence of snakes when subjects were asked to actually perform these activities.

A second questionnaire consisted of 16 statements of opinion or belief about snakes with which subjects were asked to agree or disagree, on a 5-point scale. Ten of these statements had negative implications for the handling of snakes, and six were positive statements. A high score on this questionnaire indicates strong agreement with popularly-held, but incorrect beliefs about snakes and their undesirable nature (Misconception).

The third questionnaire was designed to measure Worry and Emotionality. The 10 items of this questionnaire were similar to those described by Liebert and Morris (1967), except modified where necessary to make them applicable to the

handling of snakes. These likewise were rated on a 5-point scale.

Each of the questionnaires was administered immediately before and 10-15 minutes after each film. The Worry-Emotionality questionnaire was also completed after each of four scenes in the films. Thus, five dependent variables--Anxiety, Avoidance, Misconception, Worry, and Emotionality--were employed. Additionally, subjects were asked before viewing the film to indicate how much previous experience they had had with snakes by checking items which were applicable to their previous experience. These responses were scored from 1-10 in the direction of increasing experience.

Results and Discussion

Mean scores for the five dependent variables included in subjects' responses to the three questionnaires for the modeling and control groups are presented in Tables 1 and 2. These were submitted to separate analyses of variance, the summaries of which are presented in Table 3. Each of these analyses involved two levels of factor A (Modeling vs. Control Films) and two levels of factor B (Pre- vs. Post-film tests). The preliminary test of the first and second hypotheses involves the interaction effects in these analyses, which were significant for all dependent measures except Emotionality, as expected. Thus, it is apparent that subjects reacted differentially over time to the Modeling and Control films.

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Insert Tables 1, 2, and 3 about here

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Newman-Keuls comparisons among each set of means showed that postfilm means were significantly lower than prefilm means in the Modeling group for all five dependent measures. For Avoidance and Misconception scores there was no difference between pre- and postfilm means in the Control group; these differences were significant, however, for Anxiety and Worry scores, but the significant interaction effects indicate that these scores decreased significantly more in the Modeling group than in the Control group. These findings clearly support the hypotheses advanced. It is noteworthy (see Table 2) that Worry scores decreased steadily throughout the modeling film, with each of the various scenes contributing to the significant cumulative effect. In contrast to these findings, Emotionality scores decreased significantly in both groups, and the interaction effect was not significant. Thus, decrements in Emotionality were a function of repeated testing or the passage of time and were unrelated to the administration of the modeling film.

There is one possible complicating factor revealed by these analyses. There were significant pretreatment differences between the Modeling and Control groups on all dependent measures except Misconception, with the Control group mean being higher in each case. Thus, it is possible that the

higher initial anxiety of the control subjects made them more resistant to change. To explore this possibility, pretreatment scores were correlated with change scores from pre- to posttreatment for all groups. These correlations were negative for all variables, indicating that the higher the initial score, the greater the decrease. Thus, all else being equal, the Control group would have been expected to show greater pre-post differences than the Modeling group. In fact, a "floor" effect may have operated to attenuate the anxiety reductions for the Modeling group. These results provide support for the first hypothesis indicating that the therapeutic modeling film was useful in reducing general anxiety about snakes. The fact that the results obtained with subjects whose initial levels of anxiety was moderate in intensity, rather than being phobic, suggests that the application of modeling principles is relevant not only to clinical practice, but to a broader range of situations where minor personality change is a desired goal (e.g., educational settings).

The major purpose of this study was to explore in more detail the nature of the anxiety reduction due to the modeling treatment in the light of the Worry-Emotionality distinction. Results were consistent with the prediction that the film would be more effective in reducing Worry

than Emotionality. This prediction was based on the informative nature of the film and its accompanying narrative, on its presentation of alternative responses which had no negative consequences, and on the assumed predominance of the cognitive component in the anxiety reactions of these normal subjects. These results lend support to the Worry-Emotionality distinction and to the speculations discussed above concerning the differential treatment approaches needed to reduce each component of anxiety.

It was further predicted that decrements in Worry scores would be related to decrements in Misconception socres (i.e. to an increase in accurate knowledge about snakes) provided by the modeling film and narrative. The most striking differential effect of the modeling and control films was on Misconception scores, with both groups scoring equally on the variable before treatment, and only the Modeling group changing markedly on the postfilm assessment. Thus, whatever other effects resulted from this treatment, it was an educational experience for the subjects. And, as predicted, there was a positive relationship between Worry change scores from pre- to posttreatment and Misconception change scores, with no corresponding relationship between Emotionality and Misconception (see Table 4). It is interesting to note that Worry change

scores were also more strongly related to the other indices of anxiety reduction than was Emotionality.

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Insert Table 4 about here

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The relationship of these variables to the amount of prior experience with snakes (Table 4) was consistent with the other findings of this study. The positive correlations involving this variable indicate that the more prior experience reported, the less the decrease in the indices of anxiety. Subjects who had had less experience with snakes showed the greatest reduction in anxiety as a result of the therapeutic modeling film. This is in keeping with the idea that the normal anxiety about snakes exhibited by the subjects in this study was likely due to ignorance about or lack of experience with snakes. For these subjects, the modeling treatment was an educational experience which led to a reduction in anxiety.

In summary, the modeling treatment has been demonstrated to be effective in reducing self-reported anxiety about snakes in subjects whose initial anxiety was only of moderate intensity. A major contributing factor to the success of the modeling treatment was its educational component, providing accurate information about snakes in an attempt to dispel

popularly-held, negative, incorrect assumptions about snakes, and providing an example of an untrained snake handler who enjoyed the experience and incurred no harmful consequences from it. Thus, the treatment was more effective in reducing the cognitive component of anxiety (Worry), which is based on one's expectation of potentially harmful consequences, than in reducing Emotionality, the physiological-affective component of anxiety. The implication is that symbolic modeling approaches can be expected to be most effective in therapy situations where a change in cognition is desired. Where noncognitive, autonomic anxiety reactions constitute the major problem, other forms of counter-conditioning may be more effective. A combination of these therapeutic approaches would allow the therapist to work toward both of these goals simultaneously.

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Footnotes

1. The data for this study were collected while the authors were at Vanderbilt University. This study was supported in part by United States Public Health Service Predoctoral Fellowship MH-34053, from the National Institute of Mental Health, and in part by a Faculty Research Grant from Middle Tennessee State University, both to the senior author. The authors wish to thank Miss Sharon Anthony for the use of her students, classroom time, and facilities for this study.

2. Requests for reprints should be sent to Larry W. Morris, Department of Psychology, Middle Tennessee State University, Murfreesboro, Tennessee 37130.

TABLE 1

Mean Pre- and Posttreatment Scores

	Modeling Group		Control Group	
Variable	Pre	Post	Pre	Post
Anxiety	22.18	18.24	25.81	24.46
Avoidance	1.80	1.25	2.43	2.43
Misconception	47.74	30.59	47.50	47.10

TABLE 2

Mean Worry and Emotionality Scores

Groups	Assessments					
	Pre film	Post Scene 1	Post Scene 2	Post Scene 3	Post Scene 4	Post film
Modeling Group: Worry	10.36	9.67	9.53	8.92	8.87	8.40
Emotionality	7.35	6.78	6.54	6.49	6.24	5.74
Control Group: Worry	12.16	11.65	11.47	11.43	11.52	11.46
Emotionality	9.83	9.19	9.02	8.69	8.85	8.33

TABLE 3

Analyses of Variance of Five Dependent Variables

Variables		Anxiety		Avoidance		Misconception		Worry		Emotionality	
Source	df	MS	F	MS	F	MS	F	MS	F	MS	F
A (films)	1	1945.88	9.10**	34.80	3.56*	5297.51	57.76**	472.98	22.05**	512.56	12.71**
SS/groups	158	213.74		11.85		91.72		21.45		22.52	
B (repeated measures)	1	559.15	56.91**	6.05	11.07**	6100.05	396.99**	741.78	34.77**	165.70	33.67**
A x B	1	129.80	13.03**	6.05	11.00**	5611.25	361.53**	[illegible]	9.19**	0.25	0.05
B x SS/groups	158	9.83		.55		15.52		3.09		4.92	

* $p < .05$

** $p < .01$

TABLE 4

Pearson Product-Moment Correlations Among Change Scores for Five Dependent Variables and Experience, Modeling Group Only

Variables	Anxiety	Avoidance	Misconception	Emotionality	Worry
Avoidance	.45*				
Misconception	.47*	.23**			
Emotionality	.22**	.23**	.10		
Worry	.48*	.25**	.22**	.49*	
Experience	.25**	.24**	.05	.38*	.28**

* $p < .01$

** $p < .05$