Human Reactions to Psychological Stress

Robert Helmreich, Principal Investigator
Department of Psychology
The University of Texas at Austin

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Opinion Change as a Function of Stress and Communicator Credibility

Harold Sigall and Robert Helmreich

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Abstract

An experiment, investigating the effects of audience stress and communicator credibility on opinion change was conducted. High and low stress and high-relevant, high-irrelevant, and low communicator credibility comprised a 2 X 3 factorial design. The nature of the stress was unrelated to the topic of the communication. Sixty subjects were randomly assigned to one of the six experimental conditions.

It was predicted that differences in communicator credibility would lead to differences in opinion change under low stress and that under high stress, opinion change would not be affected significantly by differences in communicator credibility. The results supported these predictions.

Opinion Change as a Function of Stress and Communicator Credibility

Harold Sigall and Robert Helmreich[1]
The University of Texas at Austin

The effect of perceived threat or stress on opinion change has received considerable attention from students of the persuasion process. Janis and Feshbach (1953) found that a fear arousing communication was increasingly persuasive up to a moderate level of fear, but that persuasiveness decreased when high levels of fear were aroused. On the other hand, Leventhal and his associates (e.g., Leventhal and Niles, 1964; Dabbs and Leventhal, 1966; Leventhal and Singer, 1966) have generally found that persuasion attempts become more effective as fear level increases. Although the evidence, on the whole, seems better to support the latter position, the controversy remains unresolved. For example, the nature of the dependent measure seems to affect the results, with observed changes in attitude not always being reflected in accompanying behavior (see Dabbs and Leventhal, 1966).

One source of the confusion, as Dabbs and Leventhal (1966) have suggested, may lie in the nature of the recommendations made in the communication. The consequences of following proposed recommendations can be a crucial determinant of whether attitude or behavior change is effected. If, for example, stress is manipulated by pointing out dangers of smoking with respect to lung cancer, and recommendations include getting a chest X-ray, high fear subjects may employ defensive avoidance of the communication and may ignore its recommendations (dependent variable-related) because they fear learning that they have lung cancer.

In most of the experiments dealing with stress and opinion change, the fear manipulation affects more than the fear level of the subjects; the communication differs across stress conditions. The result is that subjects in different stress conditions are exposed to different communications as well as being subjected to various stress levels. It is difficult to conclude that differential attitude change between stress conditions is, in fact, due to differing stress levels, and not differential communications.

One step toward eliminating this confounding can be taken by separating the situation in which stress is manipulated from the one in which the communication is presented. This, however, is not sufficient, because while it achieves the aim of maintaining constant information transmission via the communication, differential information about the issue is given to subjects in different stress conditions, as long as the stress is relevant to the communication. If, for example, stress is varied by noting the horrors of a particular disease, changing the specific dreadful effects or altering the emphasis on certain points, does not alter the fact that subjects in different stress conditions possess different amounts or kinds of information.

The relationship between persuasion and stress when the two are related is an extremely interesting one. But it includes peculiarities that distinguish it from a more general area of inquiry - the relationship between stress and persuasion, regardless of the connection between stress and communication. To investigate the relationship between stress, per se, and opinion change requires that the nature of the stress be irrelevant to the issue under consideration in the persuasive communication.

Irrelevant stress, in its own right, may very well affect opinion change. High stress seems to increase the need for social comparison (Schachter, 1959). Therefore, increasing stress may produce increasing attitude change. But this relationship can change as other factors vary. For example, communicator credibility may interact with audience stress level. It may be that people under high stress are so in need of supports to grasp, that they ignore the implications of the source of the communication. On the other hand, people under little or no stress may be better able to sift and weigh the information they receive, which could lead to greater salience of communicator credibility, under such conditions. If for example, a group of people are under high stress due to learning about an impending disaster in a radio news bulletin, does this make them more likely to buy a particular dog food which is advertised immediately following that bulletin? Moreover, in such a situation, would a veterinarian be more effective at persuasion than John Doe from Main Street? If not, would opinion change be affected as a function of such differences in credibility when high stress was absent?

One of the more consistent findings in the attitude change literature is that effective persuasion is a positive function of communicator credibility (see Hovland, Janis, and Kelley, 1953). Credibility may be defined in a number of different, but similar ways. Differences in prestige, status, expertise, etc. each make for differences in credibility.

Expertise may be defined in terms of the knowledgability a communicator possesses about the topic he is discussing. Status differences are

more subtle: but if one conceives of status in terms of social position, it is not difficult to conceptualize a situation in which, due to the issue involved, communicators of relatively equal status have grossly unequal expertise. In one sense, a high-status communicator whose expertise is pertinent to the communication may be viewed as having high relevant credibility, while a communicator of similar status, but whose expertise is unrelated to the issue under question may be said to have high irrelevant credibility.

How important is the relevance of the communicator's credibility as a determinant of effective persuasion? In an experiment that bears on this question, Aronson and Golden (1962) demonstrated that subjects who were prejudiced against Negroes were less likely to change their opinions for a Negro communicator than for a white communicator, even though the objective credibility of both was the same. The interpretation given to this finding is that irrelevant aspects (skin color) of the communicator's credibility affect opinion change. The nature of that irrelevance is quite unlike the irrelevance factor we want to consider. Our concern is with the relevance of the communicator's expertise to the topic while in Aronson and Golden (1962) the relevance variable was independent of the persuasive communication. Our hypothesis is that, other things being equal, resultant opinion change will be greater when a persuasive communication is delivered by a highly credible communicator whose credibility is issue-relevant than when his credibility is irrelevant. In addition, we expect that a high-credible-irrelevant communicator will be more effective at persuasion than a low-credible communicator.

The relationships predicted above hold for situations in which credibility (and relevance) are the only factors that vary. How is opinion change affected when, in addition to communicator credibility, audience stress level is manipulated? As noted above, high stress seems to be conducive to increasing needs for social comparison (Schachter, 1959). An increase in dependence on the social environment has strong implications for how stress can affect opinion change.

An hypothesis that immediately suggests itself is that high-stress subjects should be more easily persuaded, under all circumstances, than low-stress subjects. Close examination, however, indicates that although this is doubtless a possibility, viable alternatives exist.

We believe that stress, at the same time, increases dependency and decreases (narrows) the field of attention. Thus, we predict that credibility and stress will interact; i.e., under low stress agreement with the position presented in a communication will be greatest when the communicator is high-credible-relevant, next when he is high-credible-irrelevant, and least when he is low-credible; under high stress we predict that the credibility effect will be greatly reduced, if at all present, and that the communication will produce approximately equal agreement, regardless of the credibility condition.

METHOD

As the concern of the study was with the effects of irrelevant stress on opinion change, the nature of the stress manipulation had to be unrelated to the nature of the communication. In addition, we considered it prudent to separate the situation in which stress was manipulated from that in which the communication was presented. Thus, subjects were led to believe that they were participating in two experiments rather

than one. In the first "experiment" stress was varied; in the second, credibility was manipulated, and the communication presented. There were two levels of stress and three levels of credibility, resulting in a 2 X 3 factorial design.

Subjects: Subjects were sixty[2] male undergraduates in introductory psychology classes at the University of Texas. Each subject was randomly assigned to one of six experimental conditions and tested individually.

Procedure: Each subject reported for an experiment entitled "Perception and Physiology", and was ushered into an experimental room. Then the experimenter (E_1) explained the "purpose" of the experiment. He said that he was interested in studying perception, and how it was related to some physiological measures. At this point, instructions branched according to the stress condition.

Low Stress Subjects: Pointing out various pieces of electrical apparatus present in the room, the experimenter told the subject that he would be monitoring certain of the subject's physiological activities, such as galvanic skin response and blood pressure.

High Stress Subjects: Subjects in the high stress condition underwent a similar procedure, with the following addition: Blood sampling equipment (syringes, cotton, glass containers, and alcohol) was in full view of the subject. E_1 also said: "One of the physiological tests involves blood analysis. So, when you come back, I'm going to have to take a blood sample from you--it's not very painful, though."

In both Stress Conditions E_1 was dressed in a full length laboratory coat, and wore a full beard - features which may have added impact to the high stress manipulation.

After the stress induction, E_1 handed the subject a form, titled "General Perception". The form consisted of five different questions, each of which asked the subject about his present perceptions. This five-question set appeared twice on the same page. The first set was headed by "Part I: First Impressions". The second set of identical items by "Part II: Post-Physiological Testing". E_1 instructed the subject to fill out "Part I", explaining that he was interested in their first impressions, and wanted to know if their perceptions were at all altered after physiological testing. He told the subjects that they would fill out "Part II" after the physiological testing had taken place.

The two-part perception questionnaire was designed to increase the impact of the stress manipulation. We wanted subjects to expect to return to E_1, after listening to the communication. By allowing subjects to think that they had half of the questionnaire to complete, we hoped to increase the likelihood that they would expect to return.

When the subject had completed "Part I", E_1 told him that it would take a few minutes to ready the equipment for physiological testing. He then explained, "Someone from the Speech department is doing some work and needs subjects for a few moments. I've told him that since the subjects in my experiment have to wait for me to get ready anyway, they would participate in his research." The experimenter then sent the subject to the "Speech department researcher" (E_2), in a nearby room, telling him to return as soon as he was finished.

Credibility and the Communication: After greeting the subjects, E_2 told them that he was from the Speech department, and that he was going to play a videotape of a speech given at an earlier date. The experimenter

explained that, "Some time ago there was an open citizens' meeting in Oakland, California, at which people from all walks of life were invited to come and express their views on the drug and drug-legislation issue." E_2 told the subjects that the speech department at Stanford University had videotaped some of the speeches given at that meeting and was sending copies of those tapes to universities in various parts of the country, "because they are interested in how people from different parts of the country react to identical speeches." E_2 then explained that although Texas' speech department was anxious to help Stanford with their project, Texas was "really more interested in a more basic question: How good is this videotape machine as a device for presenting information and communications?" E_2 elaborated by telling the subject that the videotape machine was a device that the Speech department had recently bought, that its effectiveness in presenting information was not yet known, and that the Speech department was interested in learning about how people reacted to information presented on videotape, as opposed to other methods of administering standardized material. Subjects were instructed to listen carefully and were told that they would be expected to answer questions at the conclusion of the speech.

The speech, heard by all subjects, was a persuasive communication favoring the legalization of "non-habit forming drugs, like marijuana or LSD" for people over the age of twenty-one. It contained strong, rational arguments favoring such legalization, noting the problems associated with the prohibition of drugs.

All subjects were exposed to identical stimulus material; i.e., the speech and speaker remained constant in all conditions. Communicator

credibility was manipulated by varying the manner in which the speaker was introduced. In the High-Credible-Relevant condition the speaker was introduced as a Professor of Biology and Physiology at Stanford University, who had conducted a great deal of research on the effects of hallucinogenic drugs on human and animal behavior. The High-Credible-Irrelevant communicator was described as a Professor of Astronomy at Stanford. The Low-Credible communicator was presented as a postal clerk in Palo Alto, California. In each case the speaker was described as being "very much interested in the current drug question."

At the conclusion of the speech, the subject was instructed to fill out a questionnaire. One of the items asked subjects to indicate their agreement, on a nine-point scale extending from "strongly disagree" to "strongly agree", with the following statement: "Use of non-habit forming drugs, like Marijuana or LSD, should not be illegal for people who are over 21." This item was the dependent measure. To check on the Credibility manipulation, subjects simply were asked: "What was the speaker's profession?" The remaining items on the questionnaire asked subjects to recall various aspects of the content of the communication.

After the questionnaire was completed, the subject was debriefed. The experimenter explained the need for the deception, and informed the subject of the nature of the hypothesis under investigation.

RESULTS AND DISCUSSION

Observation of subjects under high and low stress indicated that stress was effectively manipulated. Subjects under high stress appeared tense, verbally expressed apprehension over having to return to E_1, and seemed to be generally anxious.

Figure 1 presents the mean agreement on the part of subjects with the position advocated in the persuasive communication. These results support our hypothesis: Under high stress the agreement manifested by the subjects was, by and large, unaffected by the credibility level of the communicator, the means being 5.3 when the communicator was high-credible relevant, 5.1 when he was high-credible irrelevant, and 5.8 when he was low-credible. Under low stress, communicator credibility greatly affected the extent of the resultant agreement: mean agreement obtained by the High-Relevant communicator was 6.9, that by the High-Irrelevant communicator 4.1, with a mean of 3.2 resulting when the communicator had Low Credibility.

Insert Fig. 1 about here

Analysis of variance was used to assess the significance of the differences in mean agreement. Table 1 presents the results of the analysis. Although more persuasion was effected under high than under low stress, the stress main effect did not reach an acceptable level of statistical significance. The main effect for credibility demonstrated differences of borderline significance among communicator conditions ($p < .10$), despite the fact that these differences were attenuated by the similar means in the high stress conditions. Our prediction, that stress level and credibility would interact is borne out by the data ($p < .025$).

Insert Table 1 about here

In one sense, the present report describes two experiments, or more

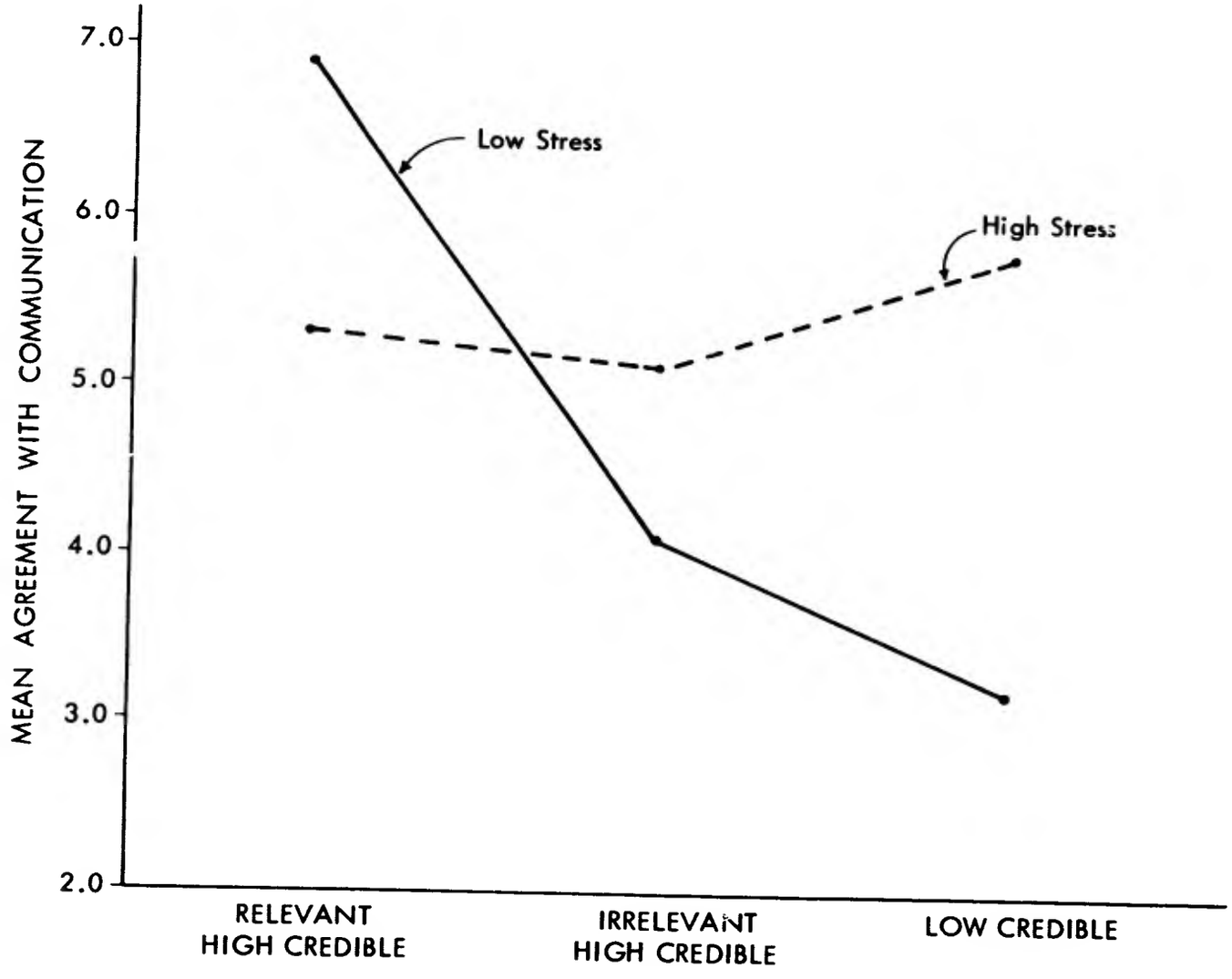
MEAN AGREEMENT WITH COMMUNICATION
7.0
6.0
5.0
4.0
3.0
2.0
Low Stress
High Stress
RELEVANT HIGH CREDIBLE
IRRELEVANT HIGH CREDIBLE
LOW CREDIBLE

Table 1

Analysis of Variance of Agreement with the Communicator

Source	df	Mean Square	F
A (Stress)	1	6.33	1.15
B (Credibility)	2	16.07	2.91*
A X B	2	22.64	4.10**
Error	54	5.52	
Total	59		

* $p < .10$
** $p < .025$

precisely, an experiment within an experiment. The low stress conditions, in and of themselves, provide a study of communicator credibility. Let us look at this "subexperiment" before discussing the primary problem. A separate analysis of variance was used to examine credibility effects under low stress. This provided a more conservative test (larger error term and fewer degrees of freedom) than would have resulted from the use of the error term yielded by the analysis shown in Table 1. Even so, the credibility main effect was statistically significant at beyond the .01 level ($F = 6.23$; $df = 2,27$). The comparison of high-credible-relevant condition versus the high-credible-irrelevant and low-credible conditions, yielded an $F = 11.78$ ($df = 1,27$) demonstrating the differences between these means to be highly significant ($p < .005$). Although in the predicted direction, the difference between the high-irrelevant and low-credible conditions (under low stress), failed to reach statistical significance ($F<1$). Thus, the relevance of the communicator's credibility to the topic of the persuasive communication seems to be an important factor in determining opinion change. We must point out that this finding seems less interesting if one views credibility as an arithmetical sum of, in addition to other factors, status and expertise. One can then argue that since our high-credible relevant communicator possessed both status and expertise he simply is more credible than our high-credible-irrelevant communicator, and that relevance, *per se*, is not a crucial variable. However, this problem boils down to one of definition; i.e., how credibility is defined. At the very least, the present findings suggest that status may be a feature of communicator credibility that is not terribly important for effective

persuasion. Whether one defines issue pertinent expertise as an aspect of credibility or irrelevant to credibility, a communicator who possesses such expertise is likely to be far more effective at persuasion than a communicator who lacks it, even when status is held constant.

The most important finding of the present experiment is that while differences in communicator credibility have a marked effect on opinion change when the audience is under little or no stress, such differences carry little impact with regard to opinion change when the audience is under high stress. This replicates an earlier study by Helmreich, Kuiken and Collins (in press). We interpret this result in terms of social comparison concepts. A person under high stress seems to be so in need of social pillars that others, regardless of credibility, can affect his opinions. When stress, and therefore need for social comparison, diminishes, the level of the communicator's credibility becomes an important feature of the persuasion situation. The audience has less of a need to agree, and may make its decision more "rationally"; e.g., agreeing with a high-credible-relevant communicator is fairly rational--much more so, at any rate, than agreeing with a low-credible communicator.

Looking at differences in opinion change for the same communicator, under both high and low stress reveals that stress was most salient when the communicator was low credible. The low credible communicator was significantly more effective ($\underline{F} = 6.12$; $\underline{df} = 1,54$; $\underline{p}<.025$) when the subjects were under high stress. The high-credible-relevant communicator seemed to lose effectiveness when audience stress was high. This difference between means (5.3 in the high-relevant-high stress condition

versus 6.9 in the high-relevant-low stress condition) did not reach an acceptable level of statistical significance ($F = 2.32$; $df = 1,54$).

Nevertheless, this finding seems to replicate the results of Janis and Feshbach (1953), if we assume that the communicator used in that study had high-relevant credibility. On the other hand the fact that the stress, in the present experiment, was irrelevant to the communication appears to rule out an explanation in terms of defensive avoidance --the concept invoked by Janis and Feshbach to explain their results.

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Footnotes

1. This research was supported by Contract N00014-67-A-0126-0001 with the Office of Naval Research, Group Psychology Branch, Robert Helmreich, principal investigator. We wish to thank James Zinn who served as the first experimenter.

2. Sixty-four subjects were actually run. Four subjects' data were excluded from the analysis, because they were unable to recall the occupation of the communicator, thereby indicating that the credibility variable had not been effectively manipulated for these subjects. Inclusion of the data obtained from these subjects does not alter the results of the analysis in any meaningful way; i.e., neither significance levels nor the relationship of any mean to any other mean was affected.

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13. Abstract - An experiment, investigating the effects of audience stress and communicator credibility on opinion change was conducted. High and low stress and high-relevant, high-irrelevant, and low communicator credibility comprised a 2 X 3 factorial design. The nature of the stress was unrelated to the topic of the communication. Sixty subjects were randomly assigned to one of the six experimental conditions.

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