Behavior change following a persuasive communication[1]

Anthony G. Greenwald, *Educational Testing Service**

It is a common observation that people maintain consistency between their beliefs and their actions. Another way of saying this is that we are generally able to "explain" our actions in terms of our beliefs An indication of the generality of this phenomenon is that we give the negative appellation, "hypocrite," to the person whose behavior is inconsistent with his professed belief Further, when we find a person who does not "practice" what he "preaches," we often suspect that he has misrepresented his belief

Since *beliefs* are observable only in the form of verbal *behavior,* we must clarify our use of these terms In this paper, "belief" will mean "a statement about the desirability of performing some action " "Behavior" will refer to the actual performance of that action Although this usage of belief is perhaps more restricted than its customary usage, nonetheless the class of statements about the desirability of performing actions is important and worthy of separate attention It includes, among others, all those beliefs commonly called "morals" and "ethics "

For the present, it makes no difference whether we consider that people develop beliefs to justify their actions, that they act in accordance with their beliefs, or possibly that belief and behavior have no effect on each other but are, rather, parallel consequences of some third factor (such as the environment) Whichever process causes maintenance of belief-behavior consistency,

1 The studies reported in this paper were supported by funds from several sources United States Office of Education grant # 1373 (administered by Richard Alpert at Harvard University), a Woodrow Wilson Dissertation Year Fellowship held by the author, and Public Health Service grant # 1-TI-MH-8260-02 Experiment I was part of a doctoral dissertation submitted to the Department of Social Relations, Harvard University, in partial fulfillment of the requirements for the Doctor of Philosophy degree The author is indebted to Gordon W Allport for advice in the earlier part of the research reported here and to Albert E Myers and this journal's editorial consultant for many helpful comments on earlier drafts of this manuscript

* Now at Ohio State University

it appears to be a powerful one, as evidenced by one of its rarer manifestations—voluntary martyrdom—the occurrence of belief-behavior consistency even when it involves the sacrifice of one's life

It should follow, then, that when we induce a change in a person's beliefs, such changes as are necessary to renew consistency between belief and behavior will soon occur. A search of the literature by the writer, however, uncovered no empirical support for this proposition It appeared that psychologists had ignored the problem entirely, perhaps considering the proposition as too obviously true to need testing[2] The first of the present experiments was designed to provide some empirical verification for this "obvious" proposition.

The study assumed more significance, however, in light of Festinger's (1964) more thorough search of the literature on this problem Festinger found two relevant empirical studies, each of which had, surprisingly, failed to support the proposition that belief change will lead to consistency-renewing behavior change One of the studies Festinger described (by Maccoby, Maccoby, Adams, & Romney) has not been published In that study, a communication advocating late toilet training produced opinion change in the mothers who were exposed to it, but failed to have any effect on the time at which they actually commenced toilet training their children In the other study (Fleishman, Harris, & Burtt, 1955), a two-week course stressing considerateness in dealing with subordinates produced the expected opinion change in a sample of industrial foremen, but did not lead to any behavioral change in their subsequent dealings with subordinates.

In the present series of four experiments, changes in the rate

2 There is a moderately sizable body of research that can be characterized, at best, as "consistent" with the proposition that "when we induce a change in a person's beliefs, such changes as are necessary to renew consistency between belief and behavior will soon occur" Among the best known of these are the Lewin (1943) and Bennett (1955) studies directed at changing eating habits In these studies, behavior changes were observed, but relevant beliefs were not studied Studies by Thorndike (1935, ch 16) and Duncker (1938) similarly observed only behavior change Another set of studies (e g, Thorndike, 1935, ch 13 and 14, Brehm, 1959, 1960, Smith, 1961) demonstrates changes in beliefs without observing the effects of the changed beliefs on behavior The dearth of studies dealing with the relationship between belief and behavior change is due, then, to the failure of change studies to use simultaneous measures of both belief and behavior

at which junior high school students volunteered to do vocabulary problems and in their belief about the importance of vocabulary learning were observed following a communication advocating the importance of vocabulary learning

Experiment I

Subjects

Two seventh- and two eighth-grade classes (from an elementary school consisting mainly of children from middle-class families) were Ss in Experiment I [3] The four classes were approximately equivalent in terms of intelligence and numbers of males and females One seventh- and one eighth-grade class were assigned randomly to each of the two conditions—Belief Change and Control Data from three Ss in each condition had to be discarded owing to incomplete responses on the measures described below This left a total of 89 Ss—45 in the Belief Change condition and 44 in the Control condition [4]

Procedure

Introduction of the Experiment

When the *E* arrived in each of the classrooms, he introduced himself and immediately emphasized that, although he was going to ask the students to answer some questions, the answers were to be used only for research on "student attitudes" and would not be graded or used in any way as a test This aspect of the introduction was probably quite important, as evidenced by the fact that the students visibly relaxed upon hearing this assurance

Pretest Belief Measure

After this introduction, the *E* distributed copies of a booklet containing all of the experimental materials and asked the Ss to answer a question on the first page of the booklet This question asked for a ranking of eight activities in order of their importance Two of the activities were "learning the meanings of difficult words" (i e , vocabulary learning) and "learning about current world events" (The other six were other learning activities) A score indicating belief in the

3 The author is deeply indebted to Miss Helena Glenn, Assistant Principal of Weeks Junior High School in Newton, Massachusetts, for her generous help during some preliminary research and to Dr Robert Newbury, Principal of the Baker School in Brookline, Mass , for his kind cooperation in making arrangements for Experiment I

4 In the four experiments to be described in this paper, male and female Ss were used together in their assigned school classes The data were checked at all stages for sex differences Since none occurred, no breakdowns of data by sex will be presented However, care was taken in all of the experiments to balance different treatments in terms of numbers of males and females

importance of vocabulary learning relative to current events learning was obtained from this question by subtracting the ranking of vocabulary learning from that of current events learning This will be referred to as the "pretest belief" score

Pretest Behavior Measure

Following the pretest belief question, the Ss turned to a questionnaire labeled "Learning Preferences Questionnaire," consisting of 30 multiple-choice vocabulary questions (asking for the proper definition of a word) and 30 true-or-false current events questions All 60 of the questions were designed to be quite difficult for the S population. Along with this Learning Preferences Questionnaire (LPQ), the Ss were given a separate list of the answers to all of the questions

The *E* described himself as being interested in finding out which of the two types of problems—current events or vocabulary—the Ss really preferred to do The best way to find this out, he went on, was to give the Ss an opportunity to do some actual learning (by doing the difficult problems and having a chance to look up the answers) and to let them choose which *type* of problem they wanted to work on

The Ss were then instructed to decide, for one problem at a time (and for a total of five problems), which type of problem they wanted to do—current events or vocabulary—and were asked to indicate their choices in writing After each choice, the *E* gave one problem number (that of a vocabulary problem) to those Ss who had chosen to do a vocabulary problem, and a different number (that of a current events problem) to those who had chosen to do a current events problem The Ss did each of their assigned problems by reading the question, looking up the answer, and writing it down The five choices could be divided between the two alternatives in any fashion, e g, one vocabulary and four current events, three vocabulary and two current events, etc The number of choices of vocabulary problems served as the pretest measure of behavioral preference for vocabulary learning. It will be referred to as the "pretest behavior" score (It should be noted that this measure is indeed *behavioral*, the Ss, in all cases, *did* the problems of the types they had chosen)

The Belief Change Condition

The *E* went on to tell the Ss in the two classes in the Belief Change condition that he had recently asked several college professors to estimate the relative importance of the eight types of learning listed in the (pretest belief) ranking question These professors, he said, had been unanimous in selecting vocabulary learning as being the most important and had given reasons for their choice These reasons—which were rather sound arguments for considering vocabulary learning to be very important and were not actually drawn from any inter-

views with college professors—were then read to the Ss This communication will be referred to as the pro-vocabulary communication

The Control Condition

For the two classes in the Control condition, no mention was made of any beliefs of college professors or of any reasons for considering any type of learning to be more important than any other The Control condition differed, then, from the Belief Change condition only in the omission of the pro-vocabulary communication.

Ss in both conditions were then asked to do five more problems from the LPQ, for which they were allowed *no* choice All of the problems were to be vocabulary problems This no-choice procedure was used here to reduce individual differences in experience with the LPQ prior to the final ten free (posttest) choices

Posttest Behavior Measure

For these final ten choices on the LPQ, the Ss were again asked to select a type of problem, one at a time, and were assigned problems to do, according to their choices The number of vocabulary problems done served as the posttest measure of behavioral preference for vocabulary learning (referred to subsequently as the "posttest behavior" score)

Posttest Belief Measure

Following the tenth posttest problem, beliefs relevant to the two types of learning were measured by readministering the ranking question used for the pretest belief measure (The reason given to the Ss for repeating this question was that the *E* was interested in finding out whether any change in their estimates had resulted from their "experience with doing the two types of problems in the course of working on the Learning Preferences Questionnaire") The vocabulary ranking was subtracted from the current events ranking in order to assess posttest belief in the importance of vocabulary learning relative to current events learning This will be referred to as the "posttest belief" score

Perception of E's *Wishes*

One final question asked the Ss to judge whether or not the *E* had any preferences about the way the Ss chose their problems on the LPQ It may be remarked here that responses to this question indicated that the Ss perceived no experimenter bias That is, virtually all of the Ss indicated that the *E* seemed not to care about which type of problem the Ss chose to do, so long as the choices represented the Ss' real preferences

The procedure for Experiment I is summarized in Table 8 In addition to serving as a summary of the procedures and results of the four experiments to be reported in this paper, Table 8 will facilitate any inter-experimental comparisons that readers may wish to make. Owing to limitations of space, such comparisons will not be made extensively in the course of presenting the data of the four experiments

Results

The pro-vocabulary communication (given to the Belief Change condition) was effective in producing an increase in belief in the importance of vocabulary learning, relative to the Control condition In both conditions the mean posttest belief score was higher than the mean pretest belief score ($t = 5.33$, $p < .001$, Belief Change condition, $t = 1.45$, n s, Control condition) The increase in the Belief Change condition was, however, significantly greater than that in the Control condition ($t = 3.16$, $p < .005$) [5]

Table 1 presents the mean pretest and posttest behavior scores for the Belief Change and Control conditions By inspection of Table 1 it may be seen that, following the communication, there

Table 1 Mean pretest and posttest behavior scores for Belief Change and Control conditions

Condition	n	Pretest	Posttest	Change[a]	t
Belief Change	45	1.60	4.96	+0.88	4.57***
Control	44	1.89	2.52	−0.63	4.61***

[a]Change is calculated by subtracting the pretest behavior score from half the posttest behavior score, since the posttest was based on twice as many items (ten) as was the pretest (five). Incidentally, it may be noted that there was no time trend on the behavior posttest That is, means for the first five posttest choices were not significantly different from those for the second five choices in either of the conditions, nor was there a difference in trend between conditions.

***$p < .001$, by t test for significance of mean difference

was a significant increase in the rate of selection of vocabulary problems in the Belief Change condition. In the Control condition there was a significant decrease—most likely a product of satiation on vocabulary problems during the block of five no-choice vocabulary problems The difference between the changes in the two conditions is highly significant ($t = 7.34$, $p < .001$).

In sum, the pro-vocabulary communication produced increases

5 All tests of significance reported in this paper are two-tailed

in both belief in the importance of vocabulary learning and rate of voluntary selection of vocabulary problems. Further, it should be pointed out that, within the Belief Change condition, the difference between pretest and posttest belief scores correlated positively with the difference between pretest and posttest behavior scores ($r = .31$, $p < .05$) [6] From these results, it seems reasonable to conclude that a persuasive communication can initiate both belief and behavior changes, these changes being such as to maintain belief-behavior consistency

The most pressing problem raised by the finding of Experiment I is the need to integrate it with the earlier mentioned failures (see Festinger, 1964) to obtain behavior change following persuasive communications. In trying to resolve this problem created by apparently conflicting results, it is most natural to try first to attack the legitimacy of the newcomer. For instance, it was possible—despite the fact that Ss in the Belief Change condition of Experiment I generally gave negative responses when asked if they perceived any preference on the part of the *E* concerning their choice behavior—that both the belief change and behavior change that occurred in that condition were produced by "demand characteristics" of the experiment (Orne, 1962) rather than by persuasion. That is, the Ss may have felt that they were "supposed to" indicate changes in belief and behavior and may not have been, in fact, persuaded by the communication It was also possible that the changes observed in Experiment I were weak

6 It may be remarked here also that pretest belief and behavior correlated .36 and posttest belief and behavior correlated .49 in the Belief Change condition In the four experiments reported in this paper, it was generally true that pretest belief correlated with pretest behavior (average $r = .30$ for eight samples, average $n = 41.0$), also, posttest belief correlated with posttest behavior (average $r = .37$ for 11 samples, average $n = 42.4$), and change in belief correlated with change in behavior within the conditions receiving the pro-vocabulary communication (average $r = .35$ for three samples, average $n = 41.7$)

While there is no doubt that these relationships are statistically significant, it is of some concern that the correlations are not higher, i e , that the consistency between belief and behavior was not greater The fact that vocabulary learning was an issue for which the Ss' beliefs and behavior were not well-formed may account for this Also of importance in regard to the magnitude of correlation between belief and behavior measures is the order of testing used In the four experiments in the present series, the behavior posttest always preceded the belief posttest This was done in light of the fact that the focus of the present studies was behavior change and it was felt that the reverse testing order (for posttests) might have produced a spurious tendency for Ss to make their behavioral choices consistent with their belief statements

and ephemeral ones, and were only noticed due to sensitivity of the measuring procedures.

In light of these possibilities that the finding of Experiment I was not "genuine" or substantial, it was desirable to expend some effort in replicating the finding, using additional control groups as a means of checking the validity of such potential criticisms. One way of checking on the possible role of demand characteristics was to put the Ss in a situation in which the demand characteristics would tend to produce changes opposite to those produced by the communication This was done in Experiment II.

Experiment II

Subjects

Three seventh-grade classes in a junior high school from a socioeconomically and racially mixed neighborhood participated in Experiment II [7] The classes were selected so as to be well matched in terms of intelligence and numbers of males and females

Procedure

The general procedure (which is outlined in Table 8) was much the same as in Experiment I This consisted, in order, of belief pretest, behavior pretest, introduction of experimental conditions, behavior posttest, and belief posttest Four changes may be noted (1) A set of questions on world history was substituted for the current events questions in the Learning Preferences Questionnaire (LPQ) and the phrase "recent world history" was substituted for "current world events" on the pretest and posttest belief measurement questions This change eliminated the necessity for continually having to update the LPQ items (2) The behavior pretest and posttest were changed to seven-choice length (3) Two steps—the five no-choice vocabulary problems following the experimental manipulations and the question on perception of experimenter bias—were omitted (4) Different experimental conditions were used

In one condition (Demand vs Communication—DvC), the *E* followed the belief and behavior pretests by saying

> Before I came to Educational Testing Service, I had studied history and was concerned because I found that relatively few

7 The author is grateful to Principal William D Walker and Guidance Counselor Mrs Olivia R Kneeshaw of Trenton (New Jersey) Junior High School Three for their kind help in making arrangements for Experiment II Dr Sarah C Christie, Assistant Superintendent of Schools in Trenton, generously supervised the arrangements with the schools participating in Experiments II, III, and IV

people had an active interest in learning about history—even about recent history that is so important to our everyday lives. I decided then to study the development of interest in the topic of history, with the hope of finding methods of increasing people's interest

After this establishment of a "demand characteristic," the *E* went on to say that he had interviewed college professors in the course of his study, thereby introducing the pro-vocabulary communication used in Experiment I Following the communication, he reiterated his personal interest in stimulating more history learning and then administered the behavior and belief posttests

Table 2 Mean belief and behavior changes in Experiment II.

	Conditions			F[a]
	Demand vs Communication	Demand Only	Communication Only	
Belief Change[b]	+44 ($n=32$)[d]	−67 ($n=33$)	+60 ($n=30$)	1.72
Behavior Change[c]	+29 ($n=34$)	−56 ($n=34$)	+94 ($n=32$)	6.25**

[a]F values are for one-way analyses of variance within the rows of Table 2
[b]Posttest belief score minus pretest belief score
[c]Posttest behavior score minus pretest behavior score
[d]n's for belief change are smaller than those for behavior change due to incomplete belief data for some Ss
**$p < .01$

In a second condition (Demand Only—D-Only) the procedure was identical save for the omission of the communication A third condition (Communication Only—C-Only) included the communication but omitted the statements indicating the *E*'s desire to stimulate interest in recent world history

Results

The belief and behavior change results for Experiment II are presented in Table 2 Conditions DvC and C-Only differed procedurally only in whether or not the "demand" was used Therefore, comparison of these two conditions should indicate any effect of the demand This comparison shows no significant effect of the demand on either belief change (mean difference = 0.16), or behavior change (mean difference = 0.65, $t = 1.51$, n s)

The effect of the communication may be observed by comparing the DvC and the D-Only conditions. This comparison

shows a sizable but not significant effect of the communication on belief (mean difference = 1 11) in the expected direction and a significant effect of the communication on behavior, also in the expected direction (mean difference = 0 85, $t = 2\ 04$, $p < .05$).

The results of Experiment II, in summary, partially replicated the main finding of Experiment I (only partially because of the lack of significance of the effect of the communication on belief change). In addition, they showed that the establishment of a demand characteristic in opposition to the communication had little or no effect on belief or behavior

Another, and perhaps more direct, method of testing the extent to which the results of Experiment I may be attributed to demand characteristics is to have the demand manipulation work in the same direction as the communication and to compare the magnitude of their effects Experiment III was designed for this purpose and, in addition, used a second posttest (two weeks after the first posttest) in order to assess the durability of the communication-induced changes

Experiment III

Subjects

Three seventh- and three ninth-grade classes from a junior high school in a socioeconomically and racially mixed neighborhood participated in Experiment III [8] One seventh-grade and one ninth-grade class were assigned to each of the three conditions (to be described below) in such fashion as to equate the conditions as much as possible in terms of intelligence and numbers of males and females

Procedure

The procedure (outlined in Table 8) was similar to that for Experiments I and II, with the addition of a second session to obtain delayed posttest measures The first session consisted, in order, of belief pretest, behavior pretest, introduction of experimental conditions, five (no-choice) vocabulary problems, behavior posttest, and belief posttest

Two weeks following the first session, the *E* returned to readminister the belief measure (the question asking *Ss* to rank eight types of learning) and to do another behavior posttest (using fresh LPQ

8 The author wishes to thank Miss Dalba Brilliantine, Principal of Trenton (New Jersey) Junior High School Two, for her efficient organization of the arrangements for Experiments III and IV

items) The behavior pretest and the two behavior posttests each consisted of five choices on the LPQ

In one condition (Communication), the same communication used in Experiments I and II was administered following the pretests A second condition (Demand) did not receive the communication Instead, the *E* indicated his interest in getting students more interested in vocabulary The wording of this demand manipulation was parallel to that used in Experiment II In the third condition (Control), neither the communication nor the demand was administered Instead, the *E* proceeded directly from the pretests to the five no-choice vocabulary problems

Results

Belief Change

The changes in belief in the importance of vocabulary learning (relative to history learning) for the three conditions are shown in Table 3. It may be seen that on both the immediate

Table 3 Mean belief score changes in Experiment III.

Conditions	n[a]	Pretest Level	Immediate Posttest Minus Pretest	Delayed Posttest Minus Pretest
Communication	51	−1 04	+1 98	+1 59
Demand	47	−1 53	+ 49	− 06
Control	48	−1 00	00	+ 29
F[b]		0 46	8 29***	4 28*
t tests				
Communication vs Demand		—	2 93**	2 76**
Communication vs Control		—	3 91***	2 18*
Demand vs Control		—	0 97	0 58

[a]These *n*'s represent those Ss present at both experimental sessions About four Ss in each condition missed the second session

[b]These values of *F* are for one-way analyses of variance within the columns of Table 3

*$p < 05$
**$p < 01$
***$p < 001$

and the delayed posttests, the Communication condition showed a greater increase in belief in the importance of vocabulary learning than did either the Demand or Control conditions. The Demand condition was not significantly different from the Control condition In other words, the "demand" had no apparent effect on the Ss' beliefs relevant to vocabulary learning, whereas the communication had a substantial effect

Table 4 Mean behavior score changes in Experiment III

Conditions	n[a]	Pretest Level	Immediate Posttest Minus Pretest	Delayed Posttest Minus Pretest
Communication	51	1 90	+ 98	+ .73
Demand	47	2 45	− 02	+ 04
Control	48	1 88	+ 20	+ 39
F[b]		2 97	5 77**	4.73**
t tests				
Communication vs. Demand		—	3 22**	3 10**
Communication vs. Control		—	2 50*	1 49
Demand vs Control		—	0.72	1 48

[a]See note (a), Table 3
[b]These values of *F* are for one-way analyses of variance within the columns of Table 4
*$p < 05$
**$p < 01$

Behavior Change

It may be seen in Table 4 that the Communication condition showed significantly greater changes on the immediate behavior posttest than did either the Demand or Control conditions, which were not different from each other. On the delayed behavior posttest, the Communication condition was still superior to both of the other conditions, but was significantly superior only to the Demand condition.

In light of the results presented in Tables 3 and 4, it may be concluded that the communication-induced changes were durable enough to persist over a two-week delay The balance of evidence favors this conclusion despite the fact that the Communication-Control difference on the delayed behavior posttest was not statistically significant Further, the combined evidence of Experiments II and III indicates that demand characteristics of the experiment were not significant determinants of belief or behavior change.[9]

On the basis of the results of Experiments I, II, and III, it seems safe to conclude with certainty that it is possible to induce genuine and moderately durable changes in both belief and rele-

9 It may be noted that it would also have been possible to test demand characteristics by having one condition receive both a pro-vocabulary demand and the pro-vocabulary communication Although the results from such a condition would have been interesting in an empirical sense, this particular condition was not vital to accomplishing the strategic goal of demonstrating the "genuineness" of the Experiment I results and was not run due to limitations on the number of available Ss

vant behavior by means of a communication directed at changing the belief in question The changes that occur are such as to maintain consistency between belief and behavior Let us recall now the findings summarized by Festinger (1964) indicating that there are some situations in which belief change occurs without behavior change The juxtaposition of those results with the present ones indicates the direction to be taken by further research—determination of the situational or personality factors responsible for the success or failure of a communication in producing behavior change when belief change occurs.

We may consider that certain aspects of the situation or the personality act to *immunize* the person against behavior change (or possibly against both belief and behavior change) [10] In a first attempt to investigate possible "immunizers," Experiment IV was designed, assessing the role of certain types of experience prior to the communication in producing resistance to the behavioral effects of the communication It was reasoned that a S who had no practice on the experimental task might not have the same susceptibility to the communication advocating the importance of vocabulary learning as would a S who had just been practicing doing vocabulary problems, further, that Ss with the same amount of experience (practice in doing vocabulary problems) might have different susceptibilities depending on whether the practice was voluntary or forced.

Experiment IV

Subjects

One seventh-, one ninth-, and four eighth-grade classes from the same school in which Experiment III was done were subjects in Experiment IV (Experiments III and IV were actually run concurrently.) Assignment of classes to the three experimental conditions to be described below was done so as to equate the three conditions as much as possible in terms of intelligence, sex distribution, and age distribution The school situation in which the experiment was conducted did not, unfortunately, allow selection of six comparable classes from one grade The final assignment of classes to conditions that

10 It is not possible to apply previous research on the problem of resistance to change (e g, Hovland, Janis, & Kelley, 1953, Brehm & Cohen, 1962, McGuire, 1962) directly to the present problem, again (cf footnote 2) because of the lack of attention in previous research to problems of the interrelationship of belief and behavior

seemed best to equate the three conditions distributed the classes (by grade) as follows. No Experience condition (8, 8), Forced Experience condition (7, 8), Voluntary Experience condition (8, 9)

Procedure

In order to test hypotheses about differences in experience with vocabulary learning prior to exposure to the pro-vocabulary communication, it was necessary to eliminate a basic aspect of the procedure of Experiments I, II, and III—the belief and behavior pretests, which necessarily gave all Ss a certain amount of both shared and unshared experience with the vocabulary and/or history problems prior to the communication With the exceptions of the elimination of the pretests and the introduction of experimental manipulations prior to the communication (which was received by Ss in all three conditions), the remainder of Experiment IV was quite similar to Experiment III (see Table 8)

The experiment was run in two sessions, the second being a two-week delayed posttest identical to that in Experiment III Both the immediate and delayed behavior posttests were based on seven choices from the LPQ [11]

Three conditions of experience prior to the communication were used In the No Experience condition, the pro-vocabulary communication was administered immediately after the *E* had completed his introduction (see Procedure section, Experiment I). In the Forced Experience condition, Ss in one class were asked to do five practice vocabulary problems followed by five practice history problems and in the other class were asked to do these problems in the reverse order prior to receiving the communication In the Voluntary Experience condition, the Ss were given a *choice* as to what type of problem they would do for practice prior to the communication They were asked to indicate their preference for history or vocabulary practice problems in writing and then were given five practice problems of the type they had chosen When they had completed these, they were asked to read through five questions and answers of the type they had not chosen in order that they would be familiarized with both types of problems

In summary, Experiment IV was designed to compare the effects of (1) no prior experience, (2) prior experience passively received, and (3) prior experience actively sought, on susceptibility to change

11 The reader may have noticed that the length of behavior tests has varied somewhat from experiment to experiment Such variation was not itself an object of study, but was prompted rather by variations in the characteristics of the school settings (mainly length of testing time available) in which the experiments were run For purposes of facilitating inter-experimental comparisons, Table 8 presents the behavior test means for all four experiments corrected to a five-choice test length

of vocabulary learning behavior and beliefs relevant to it (Experience is used here to refer to the practice acquired while doing problems on the LPQ)

Results

The results of Experiment IV were analyzed by computing one-way analyses of variance for the three conditions on each of the six criteria of performance in the experiment—immediate posttest, delayed posttest, and change between the posttests for both the belief measure and the behavior measure The belief and behavior results will be presented separately In addition, the results for the Voluntary Experience condition will be broken down into its two subgroups—initial preference for history and initial preference for vocabulary—in order to assess differences in performance due to differences in prior preference

Belief Change

Mean belief scores for Experiment IV are presented in Table 5 This table may be summarized briefly by noting that the

Table 5 Mean belief scores in Experiment IV.

Condition	*n*[a]	Immediate Posttest[b]	Delayed Posttest[b]	Change[c]
No Experience	51	+ 31	+ 08	− 24
Forced Experience	47	− 08	− .30	− .21
Voluntary Experience	53	+ 15	− 34	− 49
F[d]		0 24	0 38	0 19

[a]*n*'s include only those Ss present for both experimental sessions Sixteen Ss were absent for the second session.

[b]No behavior or belief *pretest* measures were made (see text)

[c]Change is the delayed posttest score minus the immediate posttest score

[d]These values of *F* are based on one-way analyses of variance within the columns of Table 5

treatments did not produce any differences in immediate or delayed posttest belief scores or in change of belief over the two-week delay.

Behavior Change

Behavior scores for Experiment IV are presented in Table 6. Differences between the conditions occurred not on the immediate posttest, but on the delayed posttest and in the difference between the two posttests. The significance of the *F*'s for the

Table 6 Mean behavior scores in Experiment IV

Condition	n[a]	Immediate Posttest[b]	Delayed Posttest[b]	Change[c]
No Experience	51	3 69	3 25	− 43
Forced Experience	47	3 87	4 28	+ 40
Voluntary Experience	53	4 23	3 79	− 43
F[d]		1 77	3 35*	5 70**
t tests				
No Experience vs. Forced Experience		—	2 58*	2 93**
No Experience vs Voluntary Experience		—	1 40	0 01
Forced Experience vs Voluntary Experience		—	1 24	2 96**

[a] [b] [c]See notes (a), (b), and (c) for Table 5
[d]These values of *F* are based on one-way analyses of variance within the columns of Table 6
*$p < .05$
**$p < .01$

delayed posttest and change scores can be attributed largely to the data of the Forced Experience condition, which is significantly superior to the No Experience condition on the delayed posttest and significantly superior to both of the other conditions in terms of change from immediate to delayed posttest

Rather than try to interpret this "latent effectiveness" of the Forced Experience condition as being due to the communication "growing" on the Ss during the two-week delay, it is perhaps more reasonable to attribute it to a temporary negative effect of the "coercive" forced practice procedure The forced practice may have induced a negative attitude toward the experiment or the *E*, reducing the immediate behavioral responsiveness of the Ss in the Forced Experience condition to the communication. The full effect of the communication may then not have appeared until the delayed posttest session when, presumably, any initial negative attitude would have dissipated This interpretation has obvious similarities to that given by Hovland and Weiss (1951) for their finding of delayed effectiveness of a communication attributed to a negatively described source It should be noted that this interpretation does not account for the superiority of the Forced Experience condition over the No Experience condition on the delayed behavior posttest At the moment, this last-mentioned difference does not seem very amenable to interpretation and is perhaps best left (for the present, anyway) uninterpreted.

Voluntary Experience Condition

The fact that Ss in the Voluntary Experience condition expressed initial preferences for doing practice problems of one or the other type made it possible to do an internal analysis on the basis of these preferences When the data from this condition were thus subdivided (according to initial preference for history or vocabulary) several interesting findings emerged. The data for the two subgroups are presented in Table 7

Table 7 Belief and behavior scores in the Voluntary Experience condition.

Initial Preference	Immediate Posttest		Delayed Posttest		Change	
	Belief	Behavior	Belief	Behavior	Belief	Behavior
History ($n=27$)	+ 26	3 07	− 67	2 70	− 93	− 37
Vocabulary ($n=26$)	+ 04	5 42	00	4 92	− 04	− 50
t tests[a]	0 28	6 10***	0 90	4 92***	1 13	0 34

[a]All t tests are based on comparisons of the two subgroups within the columns of Table 7
***$p < .001$, two-tailed

Two results are immediately apparent in Table 7 (1) there was no significant difference between the two subgroups on either the immediate or delayed *belief* posttests, and (2) there was a large difference between the subgroups on both of the *behavior* posttests. This discrepancy between the belief and behavior findings for the two subgroups was quite unexpected, in light of the fact that posttest belief and behavior were generally positively correlated in the present series of experiments (see footnote 6).

It is of considerable interest to compare the posttest data for the two subgroups in the Voluntary Experience condition with posttest data from the previous experiments (The data for such a comparison are presented in Table 8) On the basis of this comparison, it can be concluded that the communication produced the expected change in both belief and behavior for the vocabulary preference subgroup whereas it produced belief change but *no* behavior change for the history preference subgroup This finding of belief change but no behavior change for the history preference subgroup is noteworthy since it is exactly the same pattern of results as those cited by Festinger (1964)

Table 8 Summary of procedures and data from four experiments

	I		II			III			IV			
Conditions	Belief Change	Control	Demand vs Commun.	Demand Only	Commun Only	Commun	Demand	Control	No Exp	Forced Exp	Voluntary Exp	
											Hist	Voc.
N	45	44	34	34	32	51	47	48	51	47	27	26
Session I Procedure												
Preference											Hist	Voc.
Practice										✓	✓	✓
Belief Pretest	−1 31	−2 45	−1 91	−1 18	−0 83	−1 04	−1 53	−1 00				
Behavior Pretest[a]	1 60	1 89	2 02	1 43	2 34	1 90	2 45	1 88				
Demand			Anti-Vocab	Anti-Vocab			Pro-Vocab					
Pro-Vocabulary Communication	✓		✓		✓	✓			✓			
Forced Vocabulary Practice	✓					✓						
Behavior Posttest[a]	2 48	1 26	2 23	1 03	3 01	2 88	2 43	2 08	2 64	2.76	2 19	3 87
Belief Posttest	+1 02	−1 80	−1 47	−1 85	−0 23	+0 94	−1 04	−1 00	+0 31	−0 08	+0 26	+0 04
Session II Procedure												
Delayed Behavior Posttest[a]						2 63	2 49	2 27	2 32	3 06	1 93	3 51
Delayed Belief Posttest						+0 54	−1 59	−0 71	+0 08	−0 30	−0 67	0 00

Note: Boldface rectangles enclose those aspects of each experiment's procedure in which experimental manipulations were introduced Shaded boxes indicate that the procedure listed on the left was omitted

[a]In Expt I, the behavior pretest was five choices and the posttest was ten; in Expt III, all behavior tests were five choices, in Expts II and IV, all behavior tests were seven choices For comparison purposes, the mean behavior scores entered in this table have been multipied by the constant (e g , 5/7 for the seven-choice tests) necessary to adjust them to five-choice length

[b]Forced vocabulary practice following the communication was used only in Expts I and III It was omitted from Expts II and IV due to considerations involving length of testing Although this manipulation was not considered to be of much importance in designing the experimental procedure, it is possible that the forced practice had some effect on the observed posttest data

when he observed that persuasive communications did not produce expected behavior changes

Discussion

Let us attempt to sum up the findings of the four experiments The first three experiments demonstrated that a communication advocating the importance of an action produced a change both in the belief that the action was desirable and in the probability of choosing to perform the action Further, they demonstrated that the observed changes were due to persuasive aspects of the communication rather than to demand characteristics of the experiment and that the changes were not momentary but, rather, durable enough to be observed after a two-week delay.

The findings of these experiments are necessarily equivocal in regard to determining the process by which a persuasive communication produces both belief and behavior change It would perhaps be most pleasing intuitively to assume that the communication produced changes in belief which, in turn, produced changes in behavior, i e , that the behavior change was *mediated by* the belief change However, the evidence equally well supports the alternative hypotheses that belief change was mediated by behavior change or that belief and behavior change were parallel products of the communication but had no effect on each other

In the fourth experiment, it was found that under certain conditions (history preference subgroup of the Voluntary Experience condition) belief would change without an accompanying change in behavior This finding logically casts considerable doubt upon the possibility that the belief changes observed in the present experiments were mediated by behavior change However, none of the findings of the fourth experiment can rule out the possibility that belief and behavior change are parallel and noninteracting products of the communication It is perhaps safest to summarize the results as showing that *behavior change can be produced by a persuasive communication*, we thereby avoid any more specific statement about the direction of causality in the underlying process.

It remains to reconcile these findings with the earlier-men-

tioned data summarized by Festinger (1964) to the effect that behavior change does not necessarily accompany the change of relevant beliefs.

The history preference subgroup of the Voluntary Experience condition in Experiment IV, in showing the same pattern of results described by Festinger, offers the possibility of such a reconciliation In light of the fact that previous investigators (e.g., Hovland, Harvey, & Sherif, 1957, Brehm & Cohen, 1962, Freedman, 1964) have shown that commitment to an opinion produces resistance to that opinion's being changed, it seems that the first procedural step in the Voluntary Experience condition—in which Ss expressed a preference for either history or vocabulary—may be chiefly responsible for the obtained results. That is, the expression of preference for history (in the history subgroup) may have had some of the characteristics of a commitment, producing resistance against the behavioral effects of the ensuing pro-vocabulary communication It is, of course, a bit of a mystery that this "commitment" did not produce equal resistance to the effects of the communication on the belief measure in the history subgroup. (Parenthetically, it may be noted that there was, in fact, some evidence of such resistance to belief change that showed up in the second session of the experiment, the delayed belief posttest for the history subgroup showed a near significant decline—$t = 1\ 94$, $.10 > p > .05$—from the immediate posttest, indicating that the belief change in the history subgroup was not very durable.)[12]

To what extent, then, is it possible that the data reported by Festinger may also be accounted for in terms of commitment-induced resistance to the behavioral effects of a persuasive communication? In favor of such an interpretation is the fact that the behavior changes demanded in the Maccoby et al. and Fleishman et al. studies were apparently in opposition to already established behavior patterns in their Ss, these established behavior patterns may represent a commitment to a position in opposition

12 Subsequent to the completion of this manuscript, the author has obtained more evidence in support of the conclusion that resistance to the behavioral effects of a persuasive communication (but not to the effects on belief) can be brought about as a result of prior commitment opposing the ensuing communication These findings are reported in Greenwald (in press)

to the communications used in those studies However, the attempt to reconcile the data of these two studies with those of the history subgroup of the Voluntary Experience condition in Experiment IV must be qualified by noting a few differences in experimental procedures (1) the communications in the former studies dealt with topics (toilet training and foremen's behavior toward subordinates) that were undoubtedly of more importance to the Ss than was vocabulary learning to Ss in the present study, and (2) the belief and behavior measures were administered virtually simultaneously in the present study, in contrast to the separated observations used in the former studies Despite these procedural differences, the results of Experiment IV should be considered as promising in regard to the possibility that the data reported by Festinger and the findings of the first three experiments in the present series are not mutually contradictory, but are, rather, observations of the behavioral effects of persuasive communications under two different values of an important independent variable—prior opposing commitment

The empirical reconciliation of previously contradictory findings is only a first step. The chief significance of the present results (particularly those of Experiment IV) is most likely their indication that the linkage between belief and behavior is not a simple one. Theorization as to the nature of this linkage has been minimal Festinger (1964) has suggested that behavior is usually stubbornly resistant to change and that persuasive communications normally are not enough to induce behavior change. The present findings suggest that Festinger's proposal is too extreme Rather, it appears that behavior is more resistant to a persuasive communication than is belief only when there is a prior commitment (or an established behavior pattern) opposing the influence attempt, in the uncommitted S, neither behavior nor belief resists persuasion Neither Festinger's generalization nor the present one (which, it should be noted, is based on more data) makes much of a dent in the problem of theorizing about the processes underlying the relationship between belief and behavior. Further work will have to be directed both at accumulating more data relevant to this important problem and (insofar as the data permit) at theorizing about underlying processes.

SUMMARY

When a persuasive communication causes a change in belief, will behavior relevant to the belief also change? Past studies directly relevant to this problem have failed to obtain such be-behavior change The first three studies in the present series did succeed, however, in obtaining behavior change following a communication. The fourth experiment offers a reconciliation for these contradictory findings by showing that the pattern of belief change with *no* behavior change occurred only in Ss who, before the communication, committed themselves to a position opposing it.

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Manuscript received September 15, 1964