

Attribution Versus Persuasion as a Means for Modifying Behavior

Richard L. Miller, Philip Brickman, and Diana Bolen
Northwestern University

The present research compared the relative effectiveness of an attribution strategy with a persuasion strategy in changing behavior. Study 1 attempted to teach fifth graders not to litter and to clean up after others. An attribution group was repeatedly told that they were neat and tidy people, a persuasion group was repeatedly told that they should be neat and tidy, and a control group received no treatment. Attribution proved considerably more effective in modifying behavior. Study 2 tried to discover whether similar effects would hold for a more central aspect of school performance, math achievement and self-esteem, and whether an attribution of ability would be as effective as an attribution of motivation. Repeatedly attributing to second graders either the ability or the motivation to do well in math proved more effective than comparable persuasion or no-treatment control groups, although a group receiving straight reinforcement for math problem-solving behavior also did well. It is suggested that persuasion often suffers because it involves a negative attribution (a person should be what he is not), while attribution generally gains because it disguises persuasive intent.

Despite the volume of research on attitude change and persuasion, there is surprisingly little evidence that persuasion can be effective, particularly if a criterion of persistence of change over time is applied (Festinger, 1964;

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Requests for reprints should be sent to Richard L. Miller, Department of Psychology, Georgetown University, Washington, D. C. 20007.

Greenwald, 1965b; Rokeach, 1968; Zimbardo & Ebbesen, 1969; Cook, Note 1). The failure of persuasive efforts to produce lasting change may be taken as evidence that subjects have not integrated the new information into their own belief systems (Kelman, 1958) or taken it as the basis for making an attribution about themselves (Kelley, 1967). We might expect that a persuasive communication specifically designed to manipulate the attributions a person made about himself would be more effective in producing and maintaining change. This research was designed to test the relative importance of attribution manipulations to persuasive attempts by comparing a normal persuasion treatment with an attribution treatment.

The persuasion conditions of the present research were designed to be maximally effective through their use of a variety of techniques which have been found to be helpful, at least on occasion, in past research. Past research has shown that an optimal persuasive manipulation should involve a high-credibility source (Hovland & Weiss, 1951) delivering a repeated message (Staats & Staats, 1958) with an explicitly stated conclusion (Hovland & Mandell, 1952) which is supported by arguments pointing out the benefits of change

(Greenwald, 1965a) and overlearned by the audience (Cook & Wadsworth, 1972). Face-to-face communication by the source (Jecker, Maccoby, Breitrose, & Rose, 1964), reinstatement of the source at the time of attitude assessment (Kelman & Hovland, 1953), and active role playing or participation by the audience in the message (Janis & King, 1954) are also helpful.

The attribution techniques were also designed to be maximally effective through their use of all three factors specified by Kelley (1967) as conducive to making a stable attribution: consistency of the evidence over time, consistency of the evidence over modalities, and consistency or consensus across sources.

STUDY 1: LITTERING BEHAVIOR

Study 1 attempted to modify children's littering behavior. Behavior was monitored before and after treatment and again after a 2-week period of nontreatment. It was hypothesized that both the attribution and the persuasion conditions would result in initial posttreatment behavioral change but that the attribution condition would show greater persistence as a result of altering the basic self-concept of the subjects in a direction inconsistent with littering.

Method

Participants

The research took place in three fifth-grade classrooms in an inner-city Chicago public school. Two fifth-grade classrooms were randomly assigned to the experimental conditions, while a third was designated a control group. Three female experimenters, all undergraduate psychology majors at Northwestern University, were randomly assigned to a different classroom for each test.

Experimental Manipulations

There were a total of 8 days of attribution and persuasion treatments dealing with littering, with discussion intended to average about 45 minutes per day.

Attribution condition. On Day 1, the teacher commended the class for being ecology minded and not throwing candy wrappers on the auditorium floor during that day's school assembly. Also on Day 1, the teacher passed on a comment ostensibly made by the janitor that their class was one of the cleanest in the building. On Day 2, after a visiting class had left the classroom, the teacher commented that paper had been left on the floor but pointed out that "our class is clean and would not do that." The

students at this point disagreed pointedly and remarked that they would and did indeed litter. On Day 3, one student picked up some paper discarded on the floor by another and after disposing it in the wastebasket was commended by the teacher for her ecology consciousness. On Day 4, Row 1 was pointed out as being the exceptionally neat row in the room by the teacher. Also on Day 4, the principal visited the class and commented briefly on how orderly it appeared. After the principal left the room, the students castigated the teacher for her desk being the only messy one in the room. On Day 5, a large poster of a Peanuts character saying "We are Andersen's Litter-Conscious Class" was pinned to the class bulletin board. Also on Day 5, the teacher gave a lesson on ecology and talked about what we "the class" are doing to help. On Day 6, the principal sent the following letter to the class: "As I talked to your teacher, I could not help but notice how very clean and orderly your room appeared. A young lady near the teacher's desk was seen picking up around her desk. It is quite evident that each of you are very careful in your section." On Day 7, the teacher talked about why "our class" was so much neater. In the interchange the students made a number of positive self-attributions concerning littering. On Day 8, the janitors washed the floor and ostensibly left a note on the blackboard saying that it was easy to clean.

Persuasion condition. On Day 1 during a field trip, the children were told about ecology, the dangers of pollution, and the contribution of littering to pollution. They were then asked to role play being a trash collector and to pick up litter as they came across it. On Day 2, inside the school lunchroom the teacher talked about garbage left by students and gave reasons why it should be thrown away: it looked terrible, drew flies, and was a danger to health. On Day 3, the teacher gave a lecture on ecology, pollution, and litter and discussed with the class how the situation could be improved. Also on Day 3, the teacher passed on a comment ostensibly from the school janitor that they needed help from the students in keeping the floors clean, implying here as elsewhere that nonlittering would lead to approval and commendation by various adult authorities. On Day 4, the teacher told the students that everyone should be neat, mentioning aesthetics among other reasons for neatness. Also on Day 4, the principal visited the class and commented briefly about the need for clean and tidy classrooms. On Day 5, the teacher told the students that they should not throw candy wrappers on the floor or the playground but should dispose of them in trash cans. Also on Day 5, a large poster of a Peanuts character saying "Don't be a litterbug" with "Be neat" and "Don't litter" bordering it was pinned to the class bulletin board. On Day 6, the principal sent the following letter to the class: "As I talked to your teacher, I could not help but notice that your room was in need of some cleaning. It is very important that we be neat and orderly in the upkeep of our school and classrooms. I hope each of you in your section will be very careful about litter."

On Day 7, the teacher appointed several children in each row to watch and see if people were neat outside the building as well as in the classroom. On Day 8, a note was left on the board ostensibly from the janitors to remind the children to pick up papers off the floor.

Measurement of Littering

Pretest. To discover any existing differences among the three classrooms with respect to their tendency to litter, a specially marked reading assignment which had previously been turned in to the teachers was returned to the students 5 minutes before the end of the school day. The students were then instructed to throw the assignment away after the bell rang for dismissal. After school the experimenters counted the number of assignments thrown in the wastebasket versus left on the floor or on the shelf under the students' seats. Less than 20% of the students in each class disposed of their assignments in the wastebaskets. The precise percentages were 20% for the control group ($n = 31$), 16% for the persuasion group ($n = 26$), and 15% for the attribution group ($n = 27$).

Posttest. A two-part behavioral test was designed to tap the two aspects of the ecology-littering problem, nonlittering and cleaning up the litter of others.

On the morning of the tenth day, 10 minutes before the first recess, each teacher introduced the experimenter for her classroom as a marketing representative of a local candy manufacturing firm and left the experimenter in charge of the room. The experimenter explained that she was testing the tastiness of a new brand of candy and passed out one piece of candy to each student. The candy was wrapped in colored cellophane with a different color used for each classroom. Following the taste test, the class was dismissed for recess. During recess the experimenters counted the number of candy wrappers in the wastebaskets, on the floor, and in the desk seats. The experimenters then relittered the classroom entrance area with seven specially marked candy wrappers. After recess the experimenters checked the hallway and playground for discarded candy wrappers. During the lunch break, which came 1 hour after recess, the experimenters reentered the classroom and determined the disposition of the specially marked candy wrappers.

The second posttest followed the first by a period of 2 weeks. During this time no mention of ecology or littering was permitted in any of the classrooms. The second test was very similar to the first except that this time, the experimenters did not interact with the students. Ten minutes before the afternoon recess the teacher passed out toy puzzles as Christmas presents from the Parent Teachers Association. The students were asked to try to work the puzzles before recess. Each puzzle was wrapped in a color-coded container with a different color assigned to each class. During recess the experimenters entered the classroom and determined the disposition of the containers left there. They then relittered the entrance way. After recess the experimenters searched

the hallway and playground for other containers. After school the experimenters reentered the classroom and determined the disposition of the relittered containers.

Results and Discussion

Littering Behavior

Figure 1 charts the percentage of items in each group which were discarded in the wastebasket on each test. A chi-square test was used to compare frequency of littering in the three groups on the immediate and delayed posttests. Although the measures directly reflect items of litter rather than individual subjects, it was observed by the experimenters that subjects independently discarded their own candy wrappers in the wastebaskets. The three groups were significantly different at both the immediate posttest, $\chi^2(2) = 18.14$, $p < .001$, and at the delayed posttest, $\chi^2(2) = 20.99$, $p < .001$. The attribution group was significantly superior to the persuasion group on both the immediate posttest, $\chi^2(1) = 7.19$, $p < .01$, and the delayed posttest, $\chi^2(1) = 16.15$, $p < .01$. Although the persuasion group appeared to show an immediate increase in litter-conscious behavior, it was not significantly different from the control group even on the immediate posttest, $\chi^2(1) = 2.57$, *ns*.

Cleanup Behavior

All seven items were picked up by members of the attribution group on both the immediate and the delayed posttest. Persuasion group members picked up four items on the immediate posttest and two on the delayed posttest, while control group members picked up two items on the immediate posttest and three on the delayed test. Since the total number of wrappers left was only seven and more than one wrapper may sometimes have been picked up by a single individual, a chi-square test is not fully appropriate. Nonetheless, such a test would be significant at the .05 level at each posttest, which supports the appearance of differences favoring the attribution group.

After this study the attribution teacher was advised that the nonlittering behavior could perhaps be maintained if the students were occasionally reminded of the attribution "You are neat." Three months later the teacher reported that her class was still sig-

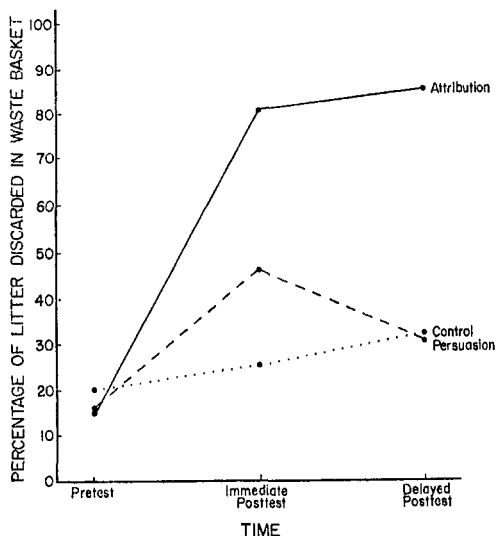


FIGURE 1. Nonlittering behavior of the attribution, persuasion, and control groups over time (Study 1).

nificantly neater than it had been prior to treatment.

The results for both the littering test and the cleanup test support the hypothesis that attribution is a more effective technique than persuasion for inducing stable behavioral change. We would like to show, however, that this effect holds for other kinds of behavior. Furthermore, it would be desirable to overcome a weakness in Study 1 that arose from the fact that treatments were nested within classrooms. It is possible, if relatively unlikely, that the differences emerging over time were due to teacher differences rather than treatment differences. Study 2 avoids this by including all treatment and control conditions in each classroom.

STUDY 2: MATH ACHIEVEMENT

The results of Study 1 are certainly encouraging for an attributional approach to modifying behavior. However, while ecology consciousness and nonlittering are of some social importance, they are not the primary focus of the schools, which is, at least theoretically, to teach skills. Will attribution and persuasion techniques show the same pattern of effectiveness in generating a skilled behavior, like math achievement, as they have in generating a socially desirable but unskilled

behavior, like disposing of trash in wastebaskets? Furthermore, littering behavior would certainly be only a weakly valenced aspect of self, while most of the skills taught in schools would be highly valenced and of considerable import for a student's self-concept. Will attribution be as effective for a highly valenced aspect of self as it was for the more peripheral aspect? The first purpose of Study 2 was to answer just these questions. It might also be noted that attributions in Study 2, in addition to being more central to self-concept, are specifically directed to particular individuals rather than addressed to a group as a whole.

The second purpose of Study 2 was to test the relative effectiveness of attributions of motivation versus attributions of ability in changing behavior. Both perceptions of ability and motivation are essential to the belief that a person will attain a given goal (Heider, 1958). Study 1, however, would seem to have involved primarily the attribution of motivation, since the children presumably began with a common belief that they had the ability to be neat. In the case of a skilled behavior like arithmetic, however, it would seem more likely that motivation and belief in one's motivation to do well is more common than ability and belief in one's ability to do well (Katz, 1964), so that attributions of ability would be of greater value than attributions of motivation. Nonetheless, enhancing people's perceptions of their motivation for a task may also benefit their performance. Study 2 attempts to separate ability and motivation as the bases of attribution and the targets of persuasive appeal.

So far we have only considered cognitive strategies for modifying attitudes and behavior. Staats (1965) has shown that even young children will engage in complex learning tasks if they are simply given appropriate reinforcement. According to Bandura (1969), a successful reinforcement strategy for behavior modification requires a valued reinforcer which is contingent upon the desired behavior and a reliable procedure for eliciting the desired behavior. In the present study both verbal praise and extrinsic rewards were used as reinforcers for efforts at mathematical achievement, and a number of

overlapping procedures were used to elicit these efforts.

To compare the relative efficacy of the attribution and reinforcement techniques with standard attitude change approaches, a persuasive manipulation was devised similar to the one used in Study 1. The only changes were that audience participation and role playing were deleted, since neither were appropriate to the treatment conditions, while public labeling was added. It appears from the study of deviance (Becker, 1963) that public labeling of a person can lead that person to redefine himself along the lines of the label. While it was felt in Study 1 that children had to be convinced of the benefits of nonlittering in the persuasion condition, the advantages of math achievement as a means for obtaining rewards in school seemed too obvious to need pointing out.

The present study attempted to modify children's math-related self-esteem and their math scores on skill tests. The six conditions were attribution ability, attribution motivation, persuasion ability, persuasion motivation, reinforcement control, and a no-message control. It was hypothesized that all three basic techniques (attribution, persuasion, and reinforcement) should have an initial positive effect on the self-esteem and math behavior of the subjects but that attribution should have the most enduring effect over time.

Method

Participants

The research took place in four second-grade classrooms of the same inner-city Chicago public school involved in Study 1. Second-grade students were picked, since it was felt on the basis of Rosenthal and Jacobson (1968) that their school-related self-concepts would be more malleable than at a later age. In all, 96 students took part in the study. All five experimental conditions and one control condition were present in each of the four classrooms. From each class list of approximately 30 students, 24 were randomly assigned to the six possible conditions. Thus 4 students in each classroom appeared in each condition.

Overview of Procedure

All subjects first received a mathematics pretest and a self-esteem pretest. Subsequent treatments consisted of 8 days of attribution, persuasion, or reinforcement. Immediately following the treatment, math and self-esteem posttests were administered.

Delayed posttests were given after a 2-week period of no treatment. The control group received the pretests and the immediate and delayed posttests but no treatment. Student absences for both treatments and tests were made up on the day the student returned to school.

Experimental Manipulations

Five treatment techniques were used with all groups: verbal comments, written comments, letters from the teacher, letters from the principal, and medals. The above order is followed in discussing these techniques for each experimental condition. It should also be noted that in the attribution and persuasion conditions, students were initially called to the principal's office in groups of eight, where they received a treatment-related message. The principal discontinued these treatments after the third day of the experiment, however, on the grounds that they were too time-consuming for her and that she found the false attribution treatments too difficult to deliver.

All treatment techniques were prepackaged. Before the experiment began, teachers' treatment packages were prepared which listed the treatment techniques and their recipients for each day. The order in which each subject received the treatments was randomized for classroom "A" and repeated in each of the other classrooms.

Attribution ability. The general focus of this treatment was attributing to the students skill and knowledge in mathematics. Three different verbal comments were made by the teacher to each student on different days: "You are doing very well in arithmetic," "You are a very good arithmetic student," and "You seem to know your arithmetic assignments well." Three different written notes were tied to assignments on different days and handed back to the students: "You're doing very well," "excellent work," and "very good work." The letters from the teachers and principal underscored the students' excellent work in math and were sent home on days when a verbal or written note was not scheduled. The letter from the teacher included the phrases, "very good student," "does all his assignments well," and "excellent arithmetic ability." The letter from the principal used the phrases "excellent ability," "knows his assignments," and "very good student." The medals awarded to the attribution ability students featured the words "good student—math."

Attribution motivation. The general focus of this treatment was attributing hard work and consistent trying to the student. Three appropriate verbal comments were made by the teacher to each child privately, and three written notes were appended to a test or assignment. The verbal comments were the following: "You really work hard in arithmetic," "You're working harder in arithmetic," and "You're trying more in arithmetic." The written comments were as follows: "You're working harder, good!" "You're trying more, keep at it!" and "Keep trying harder!" The letters from the teacher and principal

underscored the child's application in math. The teacher's letter used the phrases "working hard," "trying," and "applying himself." The principal's letter used the phrases "working harder," "applying himself," and "trying harder." The medals awarded to the attribution motivation students featured the words "hard worker—math."

Persuasion ability. The general focus of this treatment was to persuade the student that he should be good in arithmetic and doing well in that subject. Three verbal comments and three written comments summarizing that message were made in the same manner as that for the attribution messages. The three verbal comments were "You should be good at arithmetic," "You should be a good arithmetic student," and "You should be doing well in arithmetic." The three written comments were "should be better," "should be good at arithmetic," and "should be getting better grades." The letters from the teacher and principal used ostensible "aptitude test scores" to inform parents that their child should be making good grades in math. The teacher's letter included the injunctions "should be doing well," "should be getting high grades," and "should be becoming a good arithmetic student." The principal's letter used the phrases "should get good grades," "should do very well," and "should be a good arithmetic student." The medals awarded to these students contained the words "do better—math."

Persuasion motivation. The general focus of this treatment was to persuade the student that he should be working harder and spending more time on math. The three verbal and the three written comments asked the child to try more at math and were made in the same way as they were in the other treatment conditions. The three verbal comments were "You should spend more time on arithmetic," "You should work harder at arithmetic," and "You should try more on arithmetic." The three written notes were "Try harder," "Work more on arithmetic," and "Work harder." The letters from the teachers and the principal informed parents that their child should spend more time on math and to pass that idea along to him. The teacher's letter included the injunctions "should be trying harder," "should spend more time on arithmetic," and "should be applying himself." The principal's letter used the phrases "spend more time" and "try harder." The medals awarded the persuasion motivation students contained the words "work harder—math."

Reinforcement. The reinforcement condition also followed the same format as the attribution and persuasion conditions except that it added two additional methods and deleted the principal's comments. Three verbal comments indicating pride in the student's good work were made by the teacher. They were as follows: "I'm proud of your work," "I'm pleased with your progress in arithmetic," and "very good." Three written comments of simple praise were appended to the student's math work. They were, "excellent," "very good," and "I'm very happy with your work." The letters from the teachers and principal indicated pride and satisfaction in

the child's work to the parent. The teacher's letter used the phrases "proud of his work," "good grades," and "happy with his work." The principal's letter used the phrases "excellent progress," "doing very well," and "proud of him." The medals awarded those students contained the words "math award." On Days 2, 5, and 7, students were praised verbally if they chose to work on an extra math problem rather than a reading exercise. On two other days the students received silver stars by solving a problem from a math assignment.

Control. The control condition received no treatment whatsoever but took part in all tests of mathematical ability and self-esteem.

Measurements

Self-Esteem

The self-esteem pretest was an adaptation of the questionnaire originally developed by Rogers and Dymond (1954) that includes items which measure self-esteem with regard to peers and parents, school interests, and personal interests. Four new items were added which dealt specifically with math-related self-esteem. All items were declarative sentences generally of the "I am _____" form, from which the children were asked to say whether it was "like me" or "unlike me." The self-esteem pretest and posttest were both administered individually to each student by one of a dozen eighth-grade assistants, who asked each question privately to the second graders and personally recorded the subject's answer. The self-esteem posttest was given in the morning on the day after treatment ended.

Mathematics

The pretest and all subsequent math tests were 20-item tests consisting of 25% review questions, 50% current material, and 25% new material. The math pretest was administered by the teachers as a regular arithmetic quiz. The immediate posttest was administered in the afternoon on the day after treatment ceased. The final posttest was administered after a two-week period in which no treatment took place.

Results

Self-Esteem

The mean math self-esteem scores for all six conditions on the pretest and the posttest are presented in Figure 2. Analysis of variance of the pretest scores indicated that there were no significant differences among the five treatment groups and the control group in math self-esteem before treatment began, $F(5, 90) = .79, ns$.

The major analysis of the math self-esteem scores was a repeated measures analysis of variance using the six experimental conditions and the two times of measurement as factors.

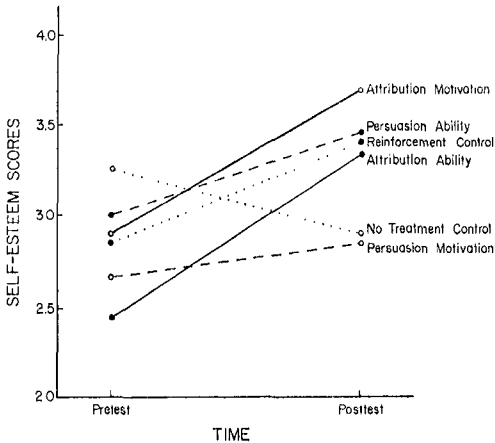


FIGURE 2. Self-esteem scores for the attribution, persuasion, and control groups over time (Study 2).

Results indicated both a main effect of time, $F(1, 90) = 10.84$, $p < .01$, and a significant Time \times Treatment interaction, $F(5, 90) = 2.41$, $p < .05$. As can be seen from Figure 2, all treatment groups show an increase in self-esteem, while the control group shows a decrease, which is probably due to the lack of any treatment for control students in the face of a number of public treatments visible to them in their classroom.

A subsidiary analysis of variance was performed using only the attribution and the persuasion groups, with mode of treatment (attribution vs. persuasion), basis of treatment (ability manipulation vs. motivation manipulation), and time as the three independent variables. Results again indicated a main effect of time, $F(1, 60) = 19.02$, $p < .001$, and a significant Time \times Mode of Treatment interaction, $F(1, 60) = 4.76$, $p < .05$. The math self-esteem of the attribution groups increased more sharply from pretest (2.66) to posttest (3.50) than did the math self-esteem of the persuasion groups (2.84 at pretest, 3.13 at posttest). Only the attribution ability and attribution motivation groups were significantly different from the no-treatment control group in their change from pretest to posttest, $F(1, 30) = 7.58$, $p < .01$ for attribution ability, $F(1, 30) = 7.66$, $p < .01$ for attribution motivation. This difference approached but fell short of significance for the persuasion ability group, $F(1, 30) = 3.12$, $p < .11$.

Similar analyses showed no significant effects on general school-related and non-school-related self-esteem.

Mathematics

The mean total math scores for all six conditions on the pretest, the immediate posttest, and the delayed posttest are presented in Figure 3. Analysis of variance of the pretest scores indicated that there were no significant differences among the five treatment groups and the control group in their total math scores before treatment began, $F(5, 90) = .54$, *ns*.

The major analysis of the math test scores was a repeated measures analysis of variance using the six experimental conditions and the three times of measurement as factors. The results show both a main effect of time, $F(2, 180) = 36.69$, $p < .001$, and a significant Time \times Treatment interaction, $F(10, 180) = 5.57$, $p < .001$. From Figure 3 it can be seen that both attribution conditions show marked increases on the immediate posttest followed by a slight tendency to enlarge that increase after the 2-week delay. Both persuasion conditions appear to show an increase on the immediate posttest but fail to maintain that increase over the 2-week delay. The reinforcement condition shows a pattern similar to

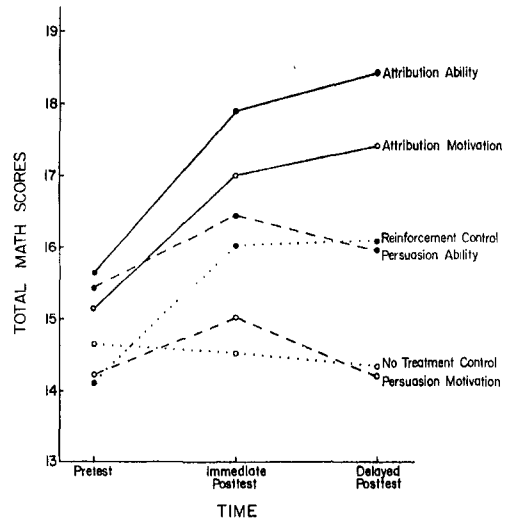


FIGURE 3. Total math scores of the attribution, persuasion, and control groups over time (Study 2).

that of the attribution conditions but with a lesser degree of improvement.

To assess the extent to which attribution and persuasion differed in their initial effectiveness versus the extent to which they differed in their ability to maintain their effectiveness over time, separate analyses were made of changes from the pretest to the immediate posttest and from the immediate posttest to the delayed posttest. Mode of treatment (attribution vs. persuasion) and basis of treatment (ability vs. motivation) were used as factors along with time of test. For change from pretest to the immediate posttest, a significant Mode \times Time interaction, $F(1, 60) = 11.97$, $p < .001$, indicated that attribution was significantly more effective than persuasion in inducing change. Only the attribution ability and attribution motivation groups were significantly different from the no-treatment control group in their change from pretest to immediate posttest, $F(1, 30) = 14.75$, $p < .01$ for attribution ability; $F(1, 30) = 11.42$, $p < .01$ for attribution motivation. This difference approached but fell short of significance for the persuasion ability group, $F(1, 30) = 2.92$, $p < .10$.

For change from the immediate posttest to the delayed posttest, another significant Mode \times Time interaction, $F(1, 60) = 13.67$, $p < .001$, indicated that the attribution treatments were also superior to the persuasion treatments in maintaining what change they produced. The attribution treatments show an increase of .50 from the immediate to the delayed posttest, while the persuasion treatments show a decrease of .63.

Finally, to make a preliminary test as to whether attribution and persuasion were similar in their effects on high- and low-ability students, subjects in each condition were divided at the cell median according to their math pretest performance. An analysis of variance on posttest math scores was conducted using pretest ability (high vs. low), treatment (attribution vs. persuasion, ignoring basis of treatment), and posttest time (immediate vs. delayed) as factors. Initially, more able students continued to outperform initially less able students, $F(1, 60) = 46.01$, $p < .001$, on the posttests. Attribution was more effective than persuasion for both groups,

$F(1, 60) = 19.39$, $p < .001$, but the attribution-persuasion difference was significantly larger for the low-ability students than for the high-ability students, interaction $F(1, 60) = 5.66$, $p < .05$. Average posttest scores for the high-ability students were 18.8 for attribution and 17.8 for persuasion, while for low-ability students they were 16.5 for attribution and 13.0 for persuasion.

Discussion

In both studies the attribution treatments caused a significant change which persisted over time. These treatments were strong enough to overcome counterarguing by subjects in Study 1 and a history of at best modest success among many subjects in Study 2. Both attributions based upon subjects' ability to do something and those based upon subjects' motivation to do it appeared effective. The effects of persuasion were, in general, insignificant and dissipated over time.

The fact that the superiority of attribution treatments over persuasion treatments was demonstrated in two different field experiments using different behaviors (nonlittering and math problem solving), two different subject populations (fifth graders and second graders), and two different designs (a between-classroom design and a within-classroom design) gives us some confidence that these effects are real and generalizable. Neither study is without weakness. The nesting of treatments within classrooms in Study 1 leaves teacher or group differences as a possible, if unlikely, alternative explanation for the treatment effects that emerged over time. The public nature of the treatments in each classroom in Study 2 means that treatment effects may have been aided by implicit comparisons students were making between their own condition and other treatments, a process which must lie behind the unexpected drop in math self-esteem shown by the no-treatment control group. (This last result must also be counted among the ethical costs of a within-classroom design.) The weaknesses of the two studies, however, are quite different, while their effects are quite similar, which suggests that the results are not due to idiosyncrasies of design.

The present research provides a general framework into which previous work concerning the effects of teacher expectancies on pupil performance (Beez, 1968; Rosenthal & Jacobson, 1968; Seaver, 1973) can be fit. The means by which teacher expectancies are communicated is at best a dependent variable in previous studies (Meichenbaum, Bowers, & Ross, 1969) and often mysteriously unobserved. The present study made the communication of expectancies, in the form of attributions, its central manipulation. The fact that this programmed communication of expectancies worked as it did provides some support for the essential validity of the often elusive teacher expectancy effect.

Effects of Attribution

That attributions based upon ability and attributions based upon motivation did not differ in their effectiveness implies that direct linkage of skill-specific attributions to the self-system is more important than the basis on which this linkage is made. The message "You are a particular kind of person" is more important than the specification of "why." It should be noted, however, that the present research contrasted only two kinds of internal attributions, ability and motivation. Attributions made to a person on the basis of external factors ("You are neat because I am watching you") would presumably be less effective in producing lasting change.

Attribution can, of course, involve elements of persuasion. As we have seen, the statement "You are a neat person" may be a most effective means of persuading someone to be neat. Nonetheless, such attributional statements need not involve persuasive intent but may instead be simple statements of fact. Indeed, their guise as truth statements may be thought of as their most effective advantage. Not only does this enable them to work directly on a person's self-concept, as noted, but it may also enable them to slip by the defenses a person ordinarily employs against persuasive attempts that are recognized as such. Attribution as persuasion may be further effective because it is less easily recognized as persuasion, and hence less likely to arouse resistance, counterarguing, or reactance.

In Study 1 the attribution treatment did

elicit counterarguing by the students, which suggests a possible reactance (Brehm, 1972) or boomerang effect (McGuire, 1969), but there was no evidence of such an effect by the end of the experiment. It is possible that reactance, like other attitude-change forces, dissipates over time as the issue is worked through and the treatment is maintained. It is also possible that the elementary school students who were subjects in the present studies are less likely to perceive the manipulative intent of an attribution treatment and less likely to show reactance than a comparable adult group.

Attribution and Persuasion

In accounting for the relative ineffectiveness of persuasion, we may note first of all that persuasive communications urging a person to do something do not necessarily tap the internal self-concept of their target. Worse yet, to the extent that they do implicate self-concept, they may involve the negative attribution that the person is not the kind of individual who engages in the recommended behavior. An appeal to be neat or an appeal to work hard can involve the implicit attribution that the person is not currently the sort of individual who is neat or works hard. If convincing people that they are neat or hard working is the key to making them neat or hard working, a naive persuasive attempt can cancel out its own message. At best it attributes to its target the potential for becoming the sort of person recommended, but this is clearly much weaker than the attribution that the person already embodies the desired behavior.

In this study, moreover, the persuasive messages implied something negative about the subjects, while the attribution treatments implied something positive. Although blame as well as praise has been shown to be effective in eliciting improved performance (see Kennedy & Willcutt, 1964, for a review of the mixed results in this area), one of the best designed studies (Hurlock, 1925) found that the improvement elicited by blame dissipated over time, while that elicited by praise persisted. It may be speculated that persuasion and punishment both remain effective in motivating behavior only so long as the actors

feel that they can accomplish what is being called for. As they accept the implicit negative attributions of a persuasive message, the effectiveness of the message diminishes. This may explain why persuasion was relatively more effective for high-ability students than for low-ability students. The high-ability students may have been better able to respond to the appeal to do better without becoming discouraged by the implicit attribution (which they could to some extent discount) that they were not currently demonstrating appropriate accomplishment.

The implicit attributions of the persuasion treatments in this study were negative because the behaviors they were calling for (which the subjects were presumably not emitting) were positive. Likewise, the attribution treatments were positive because the behaviors they attributed to the subjects were positive. For practical and ethical reasons, all of the treatments in the present study were aimed at producing positive or socially desirable behaviors. It is our idea that the implicit or explicit labeling itself, and not merely the rewardingness or punishingness of the labels, made the present attribution treatments effective and the persuasion treatments ineffective. This can only be known for sure, however, by a study that aims at producing undesirable behavior, in which case attributions of the behavior would have negative implications, while persuasion to the behavior would have implicit positive implications for the present self-concept. If people were responding to the attributions in the present experiment only because they were rewarding, we would expect that attributions of an undesirable behavior would have reverse effects and, indeed, that persuasion under these circumstances might even be more effective. The sociological literature on deviance (e.g., Schur, 1971), however, suggests that negative attributions (e.g., labeling as delinquent) can indeed produce or support the attributed behavior, as does a recent experimental study of labeling "charitable" or "uncharitable" behaviors (Kraut, 1973). We may suspect, then, that the positive implications of the attributions in the present study were not the sole key to their effectiveness and that if a suitable experiment could be designed in which

the target behavior were socially undesirable, attribution would continue to be more effective than persuasion in generating that behavior.

Attribution and Reinforcement

A straightforward reward contingency program seems to modify behavior because it makes that behavior worthwhile to the subject. However, the separation between reinforcement and attribution seems somewhat confounded. Symbolic reinforcement, as used in the present study, has some attributional aspects. Simple praise is often interpreted as a "You are X" statement. Furthermore, attribution can contain elements of reinforcement especially when socially desirable behaviors are the focus of the attributional process. Thus to some extent a reinforcement procedure that produces enduring change may require elements of attribution, while a successful attribution treatment may involve elements of reinforcement.

The remaining feature distinguishing attribution from reinforcement would seem to be the noncontingent nature of the attribution. In this regard it is interesting to note that Kazdin (1973) has recently found that under circumstances where the desired behavior was emitted at a fairly high base rate and subjects believed that reinforcement was contingent, noncontingent reinforcements were as effective as contingent ones in modifying behavior. Attribution treatments, however, may have the very important further advantage over simple reinforcement of serving to elicit behavior (like modeling; see Bandura, 1969) as well as to maintain it.

Practical and Ethical Implications

The present study supports the idea that an effort to improve the child's academic self-concept will help improve academic performance, if only because the improved self-image will make actual success less inconsistent, less unexpected, and less likely to be discounted or rejected (Brickman, 1972). A distinguishing feature of the present attribution treatments is that they focused on raising self-esteem in a specific area of skill rather than raising global or general self-esteem. The failure of more general "cultural enrichment"

or general "self-concept enhancement" programs may be due in part to the fact that these global manipulations have only vague and diffuse implications for particular areas of academic performance (but cf. deCharms, 1972).

Nonetheless, there are a number of reasons to be cautious about considering these results as the basis for a solution to any social problem. It is unlikely that long-standing individual differences in accomplishment will be overcome by short-term manipulations of motivation, incentive, or self-regard. A gain of three problems solved after a week of treatment is not very substantial in terms of life chances, and there is no reason to assume that 10 weeks of treatment will necessarily result in a gain of 30 problems. Second, the attribution treatments in Study 2 were difficult to administer and, unlike the treatments in Study 1, did not produce any immediate and visible indications of success to sustain teacher enthusiasm. While the teachers involved in Study 1 were quite positive toward the study, those involved in Study 2 had decidedly mixed feelings about the value of the time and energy involved. More seriously, the false attributions came increasingly to be felt by at least one teacher and by the principal as an intolerable risk to their credibility. As indicated, the principal terminated her office meetings with the students after the third day of treatment mainly on these grounds. While future research could tailor attributions not to be too discrepant from individual pretest baselines, the practical and ethical difficulties involved in maintaining such attributions will not thereby be eliminated. All of these matters warn against an uncritical application of the present results to matters of educational importance.

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