

AN EXPERIMENTAL COMPARISON OF THE EFFECT OF PRAISE AND
REPROOF UPON GROUP PERFORMANCE IN BASKETBALL

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CHAPTER I

STATEMENT OF PROBLEM AND HISTORICAL SUMMARY

The purpose of this investigation is to determine the effect, if any, of praise or reproof on group performance in basketball.

The nature of this problem is not regarded as entirely original, but seemingly the application of the technique of praise and reproof to a problem in the field of athletics is new.

Many controversial opinions have existed in the athletic coaching profession, as to the effect of statements of praise or reproof on the behavior of a group.

One of the earliest experiments to investigate directly the effect of praise or reproof upon the ability of pupils to learn was made by Gilchrist¹ in 1916. The subjects for his study were fifty students of a class in educational psychology. The Curtis English Test 4B was given to the entire class as a group. The class was then divided at random into two groups, A and B, and these groups were placed in separate rooms, the same test being again given to the two groups.

Prior to the giving of the test the second time, Group A was reproofed as follows: "A hasty examination of the papers in the test just given shows that the members of this group did not do so well in

¹ Edward P. Gilchrist, "The Extent to Which Praise and Reproof Affect a Pupil's Work." School and Society, 4: 872-874, 1916.

the test as the average twelve-year-old child would do. I ask you to take the test again."

Group B, meanwhile, was praised as follows: "A hasty examination of the papers in the tests just given shows that the members of this group did exceptionally well. I ask you to take the test again."

The results reveal that the praised group improved their scores 79 per cent in the second test, as compared with the reproved group, who did not improve their scores.

Gilchrist's study is noteworthy because of its pioneer attempt to investigate praise and reproof as motivation, but it does not meet the present standards of scientific investigation in that no attempt was made to equate the two groups. The data reveal that on the first test, Group B was superior to Group A by 23 per cent. Results obtained from a study like Gilchrist's have only a suggestive value.

Chapman and Feder,² in 1917, conducted a similar study. The subjects for their investigation were 36 boys and girls from Grade 5A in the Cleveland Observation School. The tests used in the investigation were: (1) the simple addition test used by Thorndike, (2) the cancellation test described by Woodworth and Wells, and (3) a digit symbol test where figures are substituted for numerals.

On the basis of the mean score made in the addition test, the subjects were divided into two equal groups, A and B. The three tests

² J. Crosby Chapman and R. B. Feder, "The Effect of External Incentives on Improvement." Journal of Educational Psychology, 8: 469-495, 1917.

were then given daily to each group for 9 successive days, omitting Saturday and Sunday. Ten minutes were devoted to addition, 1 minute to cancellation, and 5 minutes to substitution. Group B received no external incentives apart from the fact that they were informed of the number of errors made in addition. Group A had the foregoing incentive and in addition the following: (1) Each individual's results of the previous day were published. (2) On sheets presented for the day's work, the point reached on the last occasion by the subject was marked in heavy blue pencil. (3) The general improvement of the class was presented in the form of group results. (4) Credits were given in the form of stars, (a) to those who, as regards results produced on the previous day, were in the upper 50 per cent; and (b) to those who, in regard to the amount of gross improvement, were in the upper 50 per cent of the class.

The results obtained were as follows: In the addition test, the improvement of the motivated group was 50 per cent greater than that of the non-motivated group; in the substitution test, the motivated group's improvement was 22 per cent greater; and in the cancellation test, no difference was recorded.

In this study by Chapman and Feder, an advance in technique was made by introducing a control group. The method used in the equating of the groups is questionable in that the score of one test was used instead of the scores in the three tests. No account was taken of the effect of practice. One does not know what effect to ascribe to the information received by Group B.

Gates and Rissland³ investigated the effect of encouragement and discouragement upon performance. The subjects used were 74 college students who were given individually, after a preliminary exercise, two trials of a motor coordination test and two trials of a color-naming test. The selection was made purely on the basis of the order in which the subjects chanced to come to the experimenter. They were divided by chance order into three groups, and were given individually two trials of the tests named above. All the tests and comments were made individually and privately. In the first group every subject was praised highly. In the second group every subject was reproved severely, and in the third group no comments were made. The results of this study seem to show a very slight difference in average improvement. In the motor coordination test, the group that was encouraged increased its average score 9 per cent; the group that was discouraged increased its average score 6 per cent; and the control group increased its average score 5 per cent. In the color-naming test, the group that was encouraged increased its average score .008 per cent; the group that was discouraged increased its average score .012 per cent; and the control group score decreased .02 per cent.

The results of this study cannot be compared with those of the other studies, because the incentives were administered to individuals

³ G. S. Gates and L. Q. Rissland, "The Effect of Encouragement and of Discouragement upon Performance." Journal of Educational Psychology, 14: 21-26, 1923.

instead of to groups. Also, as Gates and Rissland themselves realize, the data and the statistical treatment of the data are not adequate to warrant definite conclusions.

Brenner,⁴ in his investigation of the effect of immediate and delayed praise and blame upon learning and recall, refers to Hurlock's investigation, which reveals a further step in technique by introducing four performances for comparison instead of one. At the same time, it introduced a new complication in the make-up of the incentive. The incentives used were administered to the respective groups in the presence of the other experimental groups (not the control group). Therefore, these types of incentives cannot be compared with other experiments.

Brenner carried the technique further by introducing six groups. The subjects used were 192 children of the third-grade age-level. The equating was done on the basis of chronological age expressed in months, I. Q., spelling ability, and initial score. They were then divided into six equivalent groups, Immediate Praise, Immediate Blame, Immediate Control, Delayed Praise, Delayed Blame, and Delayed Control. The material used in testing was eighty words from the Ayres Measuring Scale for Ability in Spelling. The words were above the third-grade level of difficulty in spelling, but could be read by the children. These words were printed on eight 14" x 20" cards, each containing ten different words. The Otis Group Intelligence Scale, Primary Form A,

⁴ Benjamin Brenner, "Effect of Immediate and Delayed Praise and Blame upon Learning and Recall," Contribution to Education, No. 620, Teachers College, Columbia University, 1934.

was used to determine the I. Q.'s of the subjects. The first performance on the experimental material was used as an initial test to equate the groups. Eighty consecutive tests were given to the immediate groups and six to the delayed groups. A new card of words was exposed at every new trial. These cards when used were placed for four minutes in front of the group to be tested. The group was informed by the examiner that after four minutes the card would be taken away and they would have two minutes to write as many words as they could remember. The papers were then collected and scored by the examiner and a trained scorer.

In the case of the Delayed Praise, the Delayed Blame, and both Control groups, the examiner left without making any comment. In the case of the Immediate Praise group, the examiner inspected the papers for about two minutes, after which he praised the work. In the Immediate Blame group, the examiner, having inspected their work, reproved them. For the Delayed Praise and Delayed Blame groups, the comments came after an interval of one day, always after the test was given. In order to avoid monotony, various expressions of praise as well as of blame were used. The type of statements used for the Immediate Praise Group was as follows: "This is very well done. The class did very well today." For the Delayed Praise Group: "Yesterday the class did very well. The class did very well yesterday." For the Immediate Blame Group: "This work is poorly done. The class did very poor work today." For the Delayed Blame Group: "Yesterday the class did very poorly. The class did very poorly yesterday."

In the administering of the various statements, a word or two of explanation was used whenever there was any doubt as to whether the children understood,

The results were as follows: All the groups, with the exception of the Delayed Praise group, showed an improvement on their second and third trials, with a slight decrease in the fourth trial. The mean scores made in the fourth trial were equal to or still above their initial mean scores. In the fifth and remaining trial, the mean scores of all the groups were below their initial mean scores. In the Delayed Praise group, an improvement was made on the second trial, with a decrease in performance on the third trial, and a slight increase in performance again on the fourth trial. The performance of this group on the third and fourth trials was equal to slightly more than their initial performance. But on the fifth and remaining trial, the results were the same as in the other groups.

The order of the differences in the mean scores of all the groups in the second, third, and fourth tests is shown in Table I.

TABLE I

S. D. AND DIFFERENCE IN THE MEAN SCORE OF EACH
SUCCEEDING TRIAL OVER THE INITIAL MEAN SCORE
FOR THE SIX GROUPS

GROUP	2d Trial		3d Trial		4th Trial	
	Diff. in S. D. Score	S. D.	Diff. in S. D. Score	S. D.	Diff. in S. D. Score	S. D.
Delayed Control	1.17	1.69	1.33	1.73	.40	1.66
Immediate Blame	.94	1.25	1.03	1.57	.41	2.01
Delayed Blame	.57	1.73	1.07	1.71	.39	1.41
Immediate Control	.52	1.68	1.08	1.89	.14	2.02
Immediate Praise	.52	1.48	.74	1.70	.00	1.93
Delayed Praise	.23	1.69	.00	1.73	.17	1.67

Table I reads as follows: Delayed Control mean score on the second trial was 1.17 greater than the mean score made by this group on the initial trial, with a S. D. of 1.69. In the third trial, the mean score was 1.33 greater, with a S. D. of 1.73. In the fourth trial, the mean score was .40 greater, with a S. D. of 1.66.

From the statistical results as shown in Table I, the order of effectiveness of the various incentives upon the performance of the different groups is as follows: Delayed Control group, Immediate Blame group, Delayed Blame group, Immediate Control group, Immediate Praise group, and Delayed Praise group.

From the standpoint of experimental technique, Brenner's experiment seems to be the best thus far made in the field. His experiment is noteworthy in that six groups were used for comparison. Greater emphasis was placed on equating the groups. Greater precaution was taken in the controlling of the study, the tests being made in actual

school environments. It would be interesting to note whether the same results would be obtained if adults were used instead of children.

A survey of the various studies submitted, taking into consideration the wide variation in ages of the subjects used, the different conditions under which the experiments were carried out, and the differences in kind and intensity of incentives used, shows that one should expect a large disagreement in the results obtained. It is typical, however, of all the foregoing studies that the introduction of a new variable in a learning situation, whether it is in the form of a "positive" or a "negative" incentive, will produce for a certain time an increase in the performance.

With this fact in mind, the writer has made an investigation of his own in which the same type of incentives are used on various groups in basketball, in order to determine the effect, if any, which these incentives have on group performance.

CHAPTER II

METHOD AND PROCEDURE

The subjects used in this study were 36 male students, regularly enrolled in a physical training class in the Department of Physical Education at the Kansas State Teachers College of Emporia.

The objective data were obtained by the actual participation of the subjects in the game of basketball, played according to the 1935 basketball rules.¹

These thirty-six students were divided into four groups, with nine students in each group. Although only five students in each group were used at a time, as proscribed by the basketball rules, the other four in each group were used as alternates or substitutes.

The two groups of the four represented the experimental groups, and the other two represented the control groups.

Special attention was given to the equating of the groups. The thirty-six students were given a series of basketball aptitude tests. The tests were devised by H. D. Edgren, Department of Physical Education, Chicago Y. M. C. A. College, and V. T. Trusler, basketball coach, Kansas State Teachers College, Emporia, Kansas. A complete description of the eight tests is given in the appendix of this study.

These tests were used by the writer in a previous study² which

¹ Oswald Tower, Official Basket Ball Guide, 1935.

² Unpublished Research Problem.

revealed that the correlation between the test scores and the actual playing scores was $.77 \pm .05$. This indicates the validity of the tests used for the purpose of equating subjects for this study.

The eight tests were given individually to each of the thirty-six subjects. No attempt was made to curb any distraction by other members of the group present while the tests were being given. Mental distractions were as follows: talking (not to the individual being tested), observing the efforts of the individual tested, milling around in the presence of the individual tested, carrying out desired fundamentals such as passing the ball from one to another (not the individual being tested), and shooting at the goal not in use. In other words, every means of distraction that would present itself under game conditions and would be regarded as ethical was permitted so as to create an environmental condition similar to game conditions.

The scores of each individual in each test are indicated in Table II.

Table II reads as follows: Subject number 1 scored 9 points on Test 1, 32 points on Test 2, etc. The total score of each subject was obtained by adding the points made on all the tests.

After the scores on the various tests had been compiled, it remained only for each subject to be placed in his respective group on the basis of these scores. The method of dividing the subjects into four approximately equal groups is indicated in Table III.

TABLE II
INDIVIDUAL SCORES ON EQUATING TESTS

Subject Number	Test Number								Total
	1	2	3	4	5	6	7	8	
1	9	32	0	0	2	2	1	5	51
2	8	30	0	1	3	4	1	11	58
3	9	35	0	5	9	4	1	8	71
4	8	25	2	3	5	4	0	10	57
5	9	36	1	3	7	4	1	8	69
6	6	24	0	4	8	1	0	7	50
7	10	36	0	3	6	1	1	9	66
8	9	28	0	2	7	2	2	8	58
9	9	25	0	0	3	3	1	9	50
10	5	26	0	0	2	2	0	8	45
11	8	33	0	5	4	4	1	11	66
12	8	33	1	4	6	4	1	10	67
13	9	32	0	2	9	4	1	9	66
14	9	32	2	4	7	3	0	10	67
15	18	35	2	4	14	3	1	18	65
16	10	35	0	3	11	3	2	10	74
17	10	29	2	3	8	4	1	14	71
18	10	28	0	3	7	1	1	10	60
19	10	34	1	4	6	3	3	11	72
20	9	26	1	2	5	1	1	10	55
21	7	33	1	1	3	3	1	6	55
22	10	30	1	2	1	2	2	8	56
23	7	27	0	0	1	3	0	8	46
24	8	29	0	3	4	4	2	7	57
25	11	29	0	4	6	4	0	10	64
26	8	29	1	4	5	1	2	12	62
27	9	25	0	1	3	5	1	11	55
28	11	31	1	3	5	5	2	7	65
29	9	34	1	3	8	2	1	8	66
30	7	28	0	1	0	3	1	11	51
31	7	26	1	4	5	4	2	12	61
32	9	34	0	4	5	6	1	11	70
33	9	29	0	0	2	1	0	8	49
34	8	30	0	0	2	2	2	10	54
35	8	27	0	0	1	1	1	6	44
36	5	26	0	0	2	1	0	8	44

TABLE III
GROUPING OF INDIVIDUALS BY TEST SCORES

Group Number	Individual Scores								
1	74	67	66	62	61	55	55	49	46
2	72	67	66	64	60	56	55	50	45
3	71	69	66	65	58	57	54	50	44
4	71	70	66	65	58	57	51	51	44

Table III reads as follows: Group number 1 consists of individuals whose test scores were 74, 67, 66, etc. Group number 2 consists of individuals whose test scores were 72, 67, 66, etc. Their respective placings in the various groups were obtained by placing the individual who obtained the highest score in Group 1, the second highest score in Group 2, the third highest score in Group 3, the fourth highest score in Group 4, the fifth highest score in Group 4, the sixth highest score in Group 3, the seventh highest score in Group 2, etc.

The groups having been equated as above, a single round-robin schedule³ was played in order to test the validity of the test scores in formulating the groups. In actual play each group consisted of five individuals, as prescribed by the official basketball rules. They possessed the highest test scores. Whenever a substitute was used in one of the competing groups, a like substitute was used in the other group. These substitutes consisted of individuals whose scores were

³ The term "single round-robin" as used here means that each group competes against each other group twice.

next in rank to those of the five subjects in the competing groups.

The official basketball rules were observed in all games with the exception that the duration of each game was 20 minutes instead of 40 minutes. Each half consisted of 10 minutes of play, with a 5-minute intermission between halves. The scoring method used was as specified by the rules. A goal scored during play counted 2 points, and a goal scored from the free throw line, as the result of a foul committed by an opponent, counted 1 point. Finally, the same officials (referee, scorer, and timekeeper) were used throughout the whole experiment. The writer of this study had no connection in any way with the games after actual play commenced.

The results of the twelve games played in the single round-robin schedule are indicated in Table IV.

TABLE IV

SCORES OF EACH GAME PLAYED FOR PURPOSE OF EQUATING GROUPS

Group Number	1	2	3	4
1		4	12	10
2	3		13	12
3	10	10		12
4	8	13	12	
	10	9	14	

Scores Refer to First Game

Scores Refer to Second Game

Table IV is interpreted as follows: All scores indicated above the diagonal line are scores resulting from the first half of the single round-robin schedule; and all scores below the diagonal line are scores resulting from the last half of the schedule. All scores below each diagonal line in each individual square of the table are the scores made by the group indicated by number to the left of the table; and all scores above each diagonal line in each individual square are the scores of the group indicated by number at the top of the table. Thus the table reads as follows: In the first game played between Group 1 and Group 2 the score was 5 points for Group 1 and 4 points for Group 2. In the second game between Group 1 and Group 2 the score was 3 points for Group 1 and 7 points for Group 2.

The results of the games as indicated by the scores in Table IV show the equality of the groups. Each group succeeded in winning one of the two games from each other team with one exception. This was when Group 3 met Group 2 in the second game. The score was a tie, each group having made 10 points.

The groups were thus properly equated and tested in actual competition, for experimental purposes. As previously stated, Groups 1 and 2 were to represent the experimental groups and Groups 3 and 4 the control groups.

The writer took charge of the experimental groups, and another individual, not a representative of the class, was given charge of the control groups. This individual's duty was to have a control group on the playing court ready to play when needed. This was the only connection

that he had with the two control groups. He was placed in charge of the control groups to assist the writer in controlling the experiment, thereby not permitting any awareness, on the part of the subjects, that an experiment was being conducted.

A single round-robin schedule was made. The time allotted for completion of this schedule was four weeks. Each group played three games a week.

Group 1 was selected as the "Praise group," and Group 2 as the "Censor group."

Twelve statements were used by the writer on the experimental groups, six statements of praise and six statements of reproof. Statements of praise numbers 1, 2, and 3 were used the first time that Group 1 played Group 2 and Control group 3; and statements of praise numbers 4, 5, and 6 were used first when Group 1 played Control group 4. Statements of praise numbers 1, 2, and 3 were used the second time that Group 1 played Control group 4; and statements of praise numbers 4, 5, and 6 were used the second time Group 1 played Group 2 and Control group 3. The same method of administering the statements of reproof was used when the Censored group played the Control groups and the Praised group. These statements were used only on the groups concerned, in a separate room away from the playing court. The control groups were never brought into this room; they always remained on the playing court.

The statements as previously indicated were administered to each

group just prior to entering the game. Each time the praise group was brought into the room for statements of praise, the introductory phrase was used in a pleasant tone of voice: "Men, I am pleased..." When the censured group was brought into the room for statements of reproof, the introductory phrase was used in a very critical tone of voice: "Men, I do not like..."

The statements used were as follows:

1. (praise) You have shown a very good attitude toward one another, and this will always make for better team play and results.
1. (censor) You have shown a very poor attitude toward one another, and this will always make for poor team play and results.
2. (praise) I have noticed that the desire for fulfilment of the required activity for credit alone has not revealed itself, but instead you play basketball because you enjoy the game.
2. (censor) I have noticed that the desire for fulfilment of the required activity for credit alone has revealed itself, and you play basketball because you have to, and not because you enjoy it.
3. (praise) Your play in the past has been very good; you handle the ball well, your passing is good, and your shots are well directed.
3. (censor) Your play in the past has been very ragged; you handle the ball poorly, passing is ragged, and your shooting gives one the impression that all you intend to do is to dispose of the ball. You don't care where it goes, just so it's gone.
4. (praise) You are all working and moving around the court as a team. Every man is desirous to uphold his part as a member of the team.
4. (censor) You are all loafing and standing around on the court, destroying all possibilities of team organization, and trying to be the self-appointed game hero.

5. (praise) You have revealed to me that you are thinking basketball and trying to meet every new situation that presents itself logically.
5. (censor) You have revealed to me that you are not thinking basketball and every new situation that presents itself, you seem to meet awkwardly and with poor results.
6. (praise) Your play has been clean and free from any form of muckerism, and you have always been very thoughtful in encouraging a team mate who has been a victim of a bad play.
6. (censor) Your play has been rough and muckerism has revealed itself, and you have been entirely too critical toward a team mate who has been a victim of a bad play.

The foregoing statements were memorized by the writer and given to the respective groups as previously indicated.

During actual play the score made by each team was recorded.

When the first experimental single round-robin schedule was completed, the experimental groups were reversed: Group 1 became the censored group and Group 2 became the praised group. A single round-robin schedule was again played, with a four weeks' interval between the first and the second schedule. The same experimental procedure applied to this schedule as was used on the first experimental schedule.

CHAPTER III

RESULTS OF THE INVESTIGATION

The results shown in Table V are the scores obtained when Praise Group 1 played Control Groups 3 and 4¹ in the first round-robin schedule, and Praise Group 2 played Control Groups 3 and 4 in the second round-robin schedule. The games as listed in Table V are in the order in which they were played.

TABLE V

STATISTICAL COMPARISON OF RESULTS OF GAMES
BETWEEN PRAISED GROUPS AND CONTROL GROUPS

GAMES	Scores of First Round-Robin Schedule				Scores of Second Round-Robin Schedule			
	Praise Group	Score	Cont. Group	Score	Praise Group	Score	Cont. Group	Score
	1st	1	15	4	10	2	14	3
2nd	1	9	3	11	2	9	4	14
3rd	1	7	4	19	2	6	3	11
4th	1	4	3	16	2	0	4	12

Table V reads as follows: In the first game of the first round-robin schedule, Praise group 1 scored 15 points and Control group 4 scored 10 points. In the first game of the second round-robin schedule, Praise group 2 scored 14 points and Control group 3 scored 11 points.

A graphical presentation of the results in Table V is shown in

¹ The numbers of the two experimental groups are 1 and 2, and those of the two control groups are 3 and 4.

Figure 1. The solid black line represents Group 1, and the broken black line Groups 3 and 4 in the first round-robin schedule. The solid red line represents Group 2, and the broken red line Groups 3 and 4 in the second round-robin schedule.

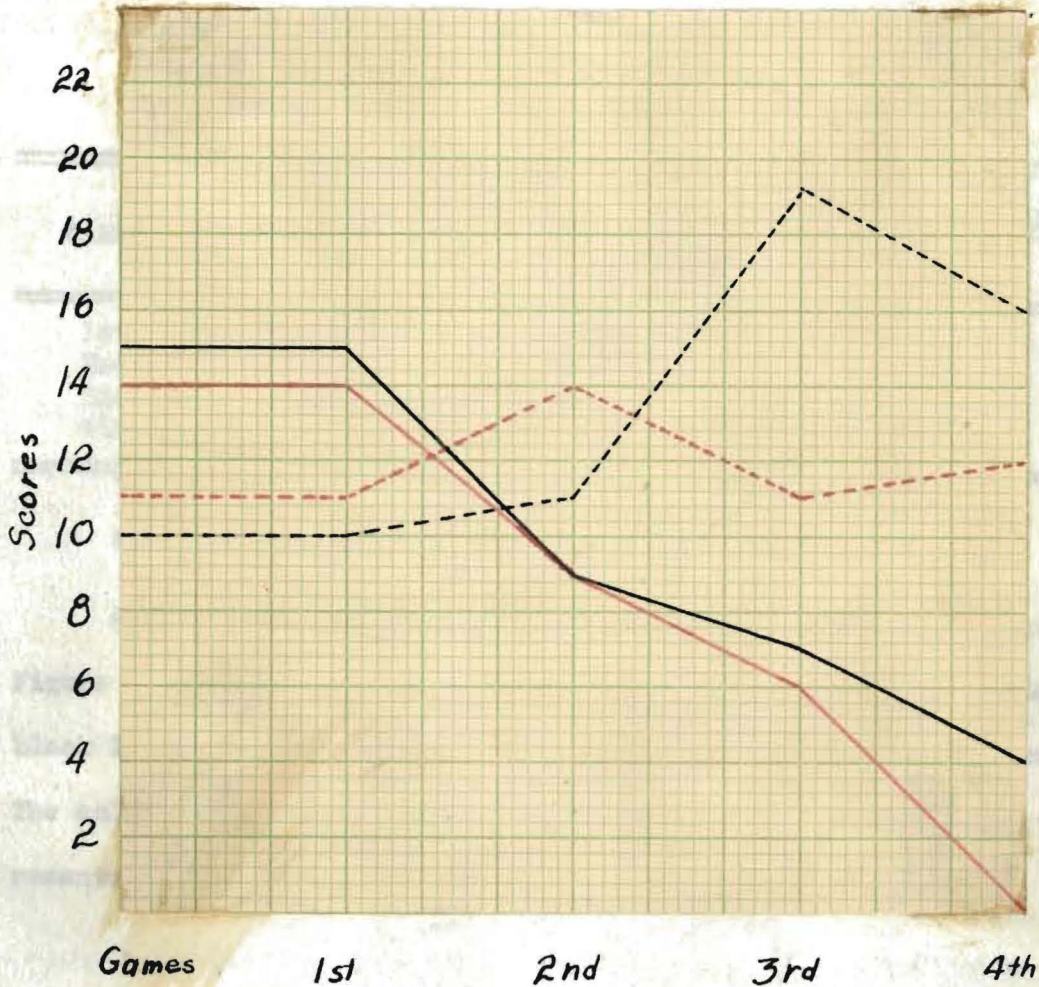


Figure 1. Result of Games Between Praised Groups and Control Groups

The results shown in Table VI are the scores obtained when Censor group 1 played Control groups 3 and 4 in the first round-robin schedule, and Censor group 2 played Control groups 3 and 4 in the second round-

robin schedule. The games as listed in Table VI are in the order in which they were played.

TABLE VI

STATISTICAL COMPARISON OF RESULTS OF GAMES
BETWEEN CENSORED GROUPS AND CONTROL GROUPS

GAMES	Scores of First Round-Robin Schedule				Scores of Second Round-Robin Schedule			
	Censor Group	Score	Cont. Group	Score	Censor Group	Score	Cont. Group	Score
1st	2	11	3	8	1	9	4	8
2nd	2	6	4	13	1	9	3	12
3rd	2	9	3	14	1	6	4	14
4th	2	8	4	15	1	2	3	11

Table VI reads in the same way as Table V.

A graphical presentation of the results in Table VI is shown in Figure 2. The solid black line represents Group 2, and the broken black line represents Groups 3 and 4 in the first round-robin schedule. The solid red line represents Group 1, and the broken red line represents Groups 3 and 4 in the second round-robin schedule.



Figure 2. Result of Games Between Censored Groups and Control Groups.

The data in Table V and the graphical presentation of these data in Figure 1 reveal a small margin of difference in the results obtained in the first games in which the praise groups played the control groups. But the results indicate that each of the two praise groups won its first game. This margin of difference in the scores of the first games may not indicate a large enough difference in favor of the praise groups to make it possible to state that the performances of these groups were affected favorably by statements of praise as an incentive.

To give a clearer interpretation of the results of the first games, as shown in Table V and Figure 1, it is necessary to refer back to Chapter II (Methods and Procedure), which describes the methods used in the administering of the incentives. This reference will yield a better interpretation of the results involving Group 2 in the first game. These methods and procedures were as follows: Group 2 was censored prior to each game which it played in the first round-robin schedule, and this same group was praised prior to each game which it played in the second round-robin schedule.

With this fact in mind, the data in Table VI and Figure 2 show that Censor group 2, in the first round-robin schedule, won its first game from Control group 3. Censor group 2 scored 11 points and Control group 3 scored 8 points. Table VI and Figure 2 further show that Censor group 2 lost its second game and the two remaining games to the control groups. In the last game in this schedule, Censor group 2 scored 8 points and Control group 4 scored 15 points. Therefore, the findings in Table V and Figure 1 indicate a reversal of performance in the second round-robin schedule, in that Praise group 2 won its first game by 3 points when as Censor group 2 in the first round-robin schedule they lost their last game by 7 points. Table V and Figure 1 also show that both Praise group 1 and Praise group 2 won their first games. Therefore, it is clearly evident that praise was a factor in the favorable performance of the two groups in the first games of their respective schedules.

This finding is corroborated by the finding of Brenner, in that an increase in performance of the group was recorded the first time statements of praise were used as an incentive.

Table V and Figure 1 further indicate that when statements of praise were again used, prior to the second game, on Praise group 2 in the second round-robin schedule, they lost to Control group 4 by 5 points. Therefore, the performance of Praise group 2 in the second round-robin schedule was the same as the performance of Praise group 1 in the first round-robin schedule, in that Praise group 1 lost to Control group 3 by 2 points. These results seemingly show that continuous statements of praise were unfavorable to the performance of the two experimental groups. The foregoing statement is further corroborated by the fact that in the third and fourth games, in both the first and second round-robin schedules, a very marked and increasing difference in the scores was also recorded in favor of the control groups. Thus the study shows that continuous statements of praise are detrimental to group performance.

The data as shown in Table VI and Figure 2 reveal a smaller margin of difference in the results obtained, in the first games in which the censor groups played the control groups, than was shown in Table V and Figure 1 by the praise groups. But the study shows that the results found for the two censor groups are similar to those found for the two praise groups.

The performance of Censor group 1 was improved, when statements

of reproof were used the first time. In the last game of the first round-robin schedule, when statements of praise were used as an incentive, Praise group 1, as indicated in Table V and Figure 1, lost to Control group 3 by 12 points. And as shown in Table VI and Figure 2, in the second round-robin schedule, when reproof was introduced as an incentive, Censor group 1 won the first game from Control group 4 by 1 point. Censor group 2 also won its first game. Thus it is clearly shown that reproof was a factor in the favorable performance of the two groups in the first game of their respective schedules.

Table VI and Figure 2 also show that in the second game, when statements of reproof were again used on both Group 1 and Group 2, in their respective schedules, they lost their games to the control groups. Thus the study reveals that continuous reproof is unfavorable to group performance, and this is further corroborated by the fact that Censor group 1 and Censor group 2 lost their remaining two games in both the first and the second round-robin schedules, by increasing differences in scores, to both control groups. Therefore, the study reveals that continuous statements of reproof are also detrimental to the performance of a group.

A comparison of the results in Figure 1 and Figure 2 shows that continuous statements of praise or reproof have almost similar effects upon performance. But Figure 1 shows a greater difference in results than is shown in Figure 2 at the completion of the fourth game, indicating that praise is somewhat more detrimental than reproof with a continuous usage.

The foregoing results are further strengthened by comparing the scores of the two games when Praise group 1 played Censor group 2, in the first round-robin schedule, and the scores of the two games when Praise group 2 played Censor group 1 in the second round-robin schedule. The results are presented in Table VII

TABLE VII
STATISTICAL COMPARISON OF RESULTS OF GAMES
BETWEEN PRAISED GROUPS AND CENSORED GROUPS

GAMES	Scores of First Round-Robin Schedule				Scores of Second Round-Robin Schedule			
	Praise Group	Score	Censor Group	Score	Praise Group	Score	Censor Group	Score
1st	1	9	2	11	2	10	1	12
2nd	1	8	2	8	2	2	1	5

Table VII reads as follows: In the first game of the first round-robin schedule when Praise group 1 played Censor group 2, the score was 9 points for Praise group 1 and 11 points for Censor group 2. In the first game of the second round-robin schedule, when Praise group 2 played Censor group 1, the score was 10 points for Praise group 2 and 12 points for Censor group 1.

A graphical presentation of the results of Table VII is shown in Figure 3. The scores for each game played in the first round-robin schedule are represented by a solid black line for Praise group 1 and a broken black line for Censor group 2. The scores of each game played in

the second round-robin schedule are represented by a solid red line for Praise group 2 and a broken red line for Censor group 1.

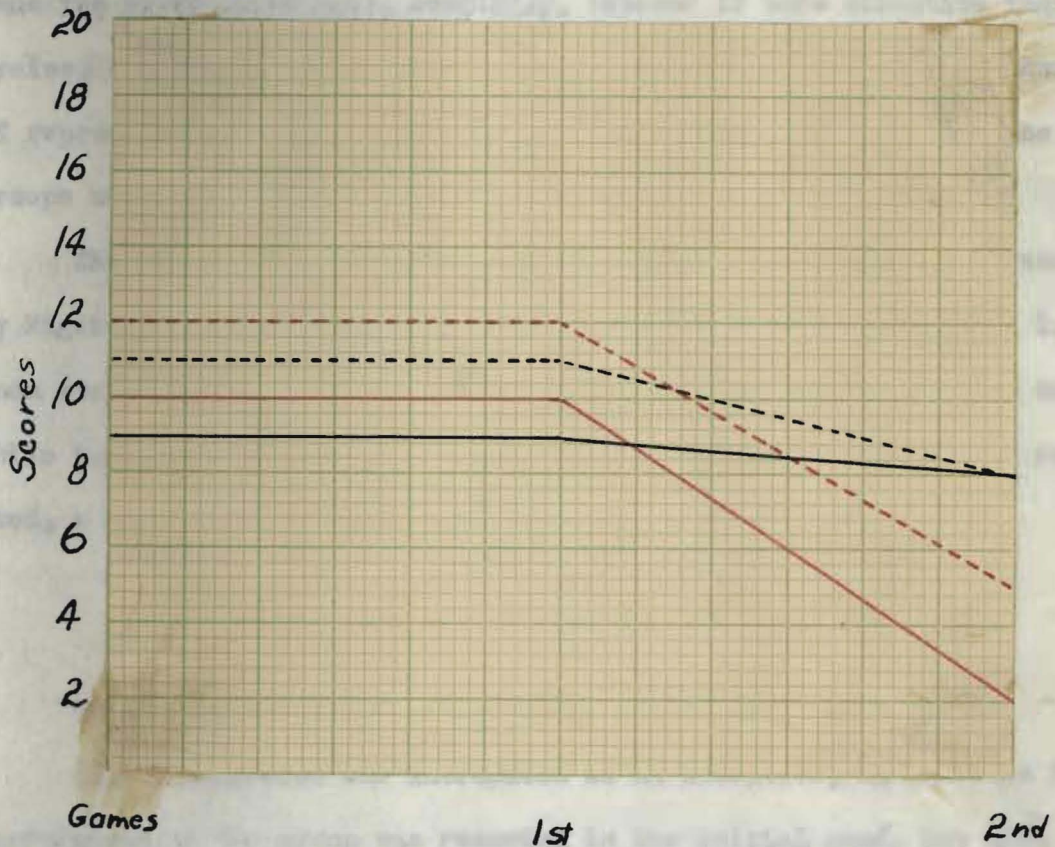


Figure 3. The Effect of Praise or Reproof on Group Performance when the Experimental Groups Compete Against One Another

Table VII and Figure 3 show that when Praise group 1 played Censor group 2 in the first round-robin schedule, Censor group 2 won by 2 points. In the second game the score was tied, both groups making 8 points. In the first game of the second round-robin schedule, when praise was used as an incentive on Group 2 and reproof was used as an

incentive on Group 1, Censor group 1 won from Praise group 2 by 2 points, and in the second game Censor group 1 won from Praise group 2 by 3 points. Thus the study shows that, seemingly, reproof is more effective than praise, since out of four games played, the groups on which statements of reproof were used won 3 games, the fourth game was tied, and the groups which were praised did not win any games.

The findings of Table VII and Figure 3 are further corroborated by Figures 1 and 2, which show that in the fourth games in Figure 1, when statements of praise are used, a large difference in results occurs, while in the fourth games of Figure 2, when statements of reproof are used, a small difference in results occurs.

Conclusions

The findings of this study may be summed up as follows:

- (1) When praise was introduced as an incentive, an increase in performance of the group was recorded in the initial game, but when praise was continuously used on the same group, it became detrimental to group performance.
- (2) When reproof was used as an incentive, the same results were recorded as with praise.
- (3) Continuous statements of reproof are slightly less detrimental than continuous statements of praise.

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APPENDIX

THE TRUSLER-EDGREN BASKETBALL APTITUDE TESTS

I. Speed Test.

The test measures how rapidly a subject can pass a basketball against a wall. Standing behind a line eight feet from the wall, he passes the ball as rapidly as possible against the wall. Time starts when the ball leaves his hands on the first pass, 10 seconds being allowed for the complete test. All passes are made from behind the eight-foot line, and all passes are received behind this line. Any kind of pass may be used. The number of passes completed in ten seconds is the score.

II. Accuracy Pass.

The test is designed to measure the accuracy in the execution of four passes: the chest pass, the two-hand-underhand pass, the shoulder pass, and the hook pass. A target marked in concentric squares is used, the outer square being 48" by 60", the middle square 24" by 40", and the inner square 10" by 12". The subject stands behind a line parallel to the target, and, in the case of the chest and underhand passes, 15 feet away. In the case of the shoulder and hook passes, he stands 30 feet away. Five throws are made with each pass. In scoring, one point is allowed for the outer square, two points for the center square, and three points for the inner square.

III. Pivot and Shot Test.

The test is constructed to measure the accuracy of shooting immediately following a pivot. Five shots are taken from the free-throw line, which is 15 feet from the basket. The subject stands with his back to the basket, and by the use of the back pivot turns and shoots, without advancing, toward the basket. In scoring the pivot and shot test, score one point for each basket made.

IV. Speed-Dribble Test.

Draw a line 15 feet long and mark it A _____ B, as in

Figure 1.

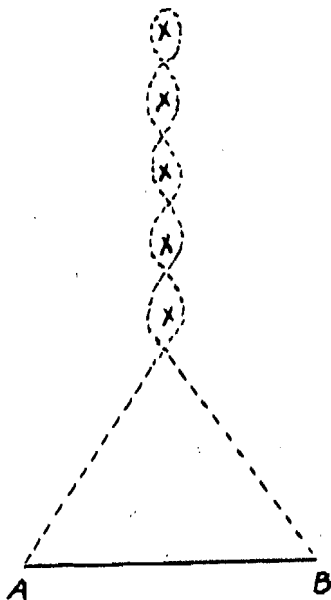


Figure 1. Diagram of Speed-Dribble Test

The subject is to start at A, dribbling the ball in and out between objects, the first of which is set at fifteen feet from A and B as in the diagram. Five objects are used, there being six feet between each object. He finishes at B. Time is taken when the subject leaves A, and stopped when he reaches B. Knocking over an object constitutes a mixtrial, and the exercise must be repeated. One point is scored for each second or fraction of a second below sixteen for the total exercise. For each mixtrial one point is deducted from the total.

V. Dribble and Shot Test.

The subject is given the ball at point A in Figure 2. The action consists of dribbling the ball around the free-throw line and back to the basket, making the basket if possible. The subject then recovers the rebound and repeats the exercise five times. As this is another time contest, he must be urged to execute the movement as rapidly as possible.

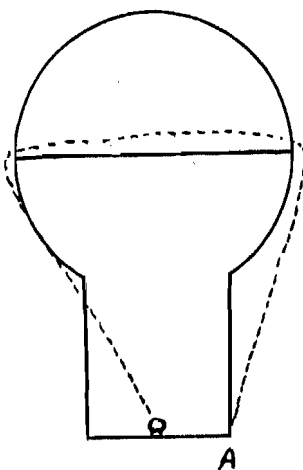


Figure 2. Diagram of Dribble and Shot Test

One point is scored for each second or fraction of a second below thirty-five for the total exercise, and one point for each basket made.

VI. Free-Throw Test.

Ten free-throws are attempted. After each throw the subject must leave the free-throw area. Ten seconds may be allowed as in a game to complete each throw. Score one point for each basket made.

VII. Opposition-Shooting Test.

The subject is paired with another of about the same ability. The men are placed one on either side of the lanes and at the junction of the lanes and the free-throw arc, with their backs to the basket. The subject is given the ball, and both are instructed that the second man will try to block the shot of the subject without fouling. At a given signal, which neither man can anticipate, the exercise is executed. Five trials are allowed for the test. The subject has a great deal less territory to cover in order to get to the basket than does the defensive player. One point is given for each basket made.

VIII. Defensive Shift.

This is a test to judge the ability of the individual to shift the weight of the body back and forth as is necessary in defensive play. The subject must work with both feet well apart, thus giving a good base, and then must shift the weight of his body back and forth across an eight-foot lane. He works inside the lane and needs only to touch each line

with the outside foot on each shift. One shift across the lane is counted as a complete shift. Ten seconds are allowed for the complete exercise. Score one point for each complete shift made. Failure to touch either line constitutes a miss, and the score on the mistrial is deducted from the total score of the exercise.