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ABSTRACT

The relative effectiveness of praise and group competition as motivating incentives affecting task persistence in young children was investigated. As predicted, competition was relatively more effective with 2nd graders than with kindergarten children, with boys than with girls, and with boring tasks than with more ego-involving tasks. However, competition was not significantly more effective than praise except on boring tasks. Competition may not be a very effective incentive for younger school children in view of its possible negative side effects. Praise appears to be simpler and equally effective. (Author)

PRAISE AND GROUP COMPETITION AS MOTIVATING INCENTIVES FOR CHILDREN[1]

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Praise and competition are two incentives frequently used by teachers in attempting to motivate school children. Despite their common use, however, they are rarely discussed in the same context or studied in the same research. This is apparently due to historical reasons. Praise is usually associated with knowledge of results, criticism, and material rewards, largely because behavior theorists working on problems of reinforcement have associated these terms. Similarly, competition is usually studied in conjunction with cooperation because developmental stage theorists, notably Harry Stack Sullivan (1953), have discussed them together in describing the developmental tasks of middle childhood.

There are two important reasons why the relative effectiveness of praise and competition as motivating incentives for children should be studied directly. First, such information is of interest to developmental theorists concerned with stage phenomena or sex role differentiation. Drawing on developmental theories, it can be predicted that children of different sexes and ages will respond differently to these two incentives. The second reason is practical: these incentives are already widely used in the schools. Information about how they affect different children and how they apply to different situations is needed if they are to be used effectively.

For purposes of analysis, this research concentrates on the motivating function of incentives, not on their function of providing feedback or knowledge of results. Motivation research is concerned with the factors that affect the frequency, intensity, and duration of responses. Motivation usually

is not considered to affect the form or quality of response (rate of learning and terminal level reached), which is usually seen to be a function of the subject's learning ability, the teaching-learning conditions to which he is exposed, and the nature of the feedback or knowledge of results with which he is provided. Of course motivation affects the form or quality of learning indirectly, since it affects the time taken and effort expended by the subject in the learning situation.

The effects of praise on the form or quality of response have been studied frequently, usually in conjunction with knowledge of results (or lack of it) and criticism. The results of these studies have been diffuse and conflicting, apparently because of differences in the ages and types of children included, the number and types of incentives used, the types of tasks, and the criterion measures used.

In contrast, there is wide agreement that praise is useful and advisable as a motivating incentive. Except for the suggestion that lavish praise may inhibit the progress of severe underachievers (Kennedy & Willicutt, 1964), researchers find praise to be harmless at worst and extremely effective at best. Disagreements occur in regard to its relative effectiveness, not its absolute value. For example, praise is sometimes more effective with lower-class children in situations in which simple knowledge of results is more effective with middle-class children (Zigler & Kanzer, 1962). Also, praise has been found to be more effective with middle-class than lower-class children when compared with material rewards (reviewed in Spence, 1970), and more effective with younger than older children when compared with simple knowledge of results (Beller, 1955; Gewirtz, 1954; Heathers, 1955). Other than O. K. Moore (Moore & Anderson, 1968), however, virtually no one has suggested that teachers should not use praise as a means of motivating students.

The literature on competition shows much less agreement about its use as an incentive. Most writers agree that competition will make children work longer or harder. They disagree, however, about whether or not competition should be used in the schools. Many point out that school already is inherently competitive because of the teaching methods and grading systems used. Also, it has been shown that competition can arouse debilitating anxiety (Shaw, 1958) and can lead to hostile group climates (Sherif & Sherif, 1953).

Ausubel and Robinson (1969) provide a representative example of how educational psychologists tend to view the subject. They see competition as useful for getting children to work up to their capacities and for making monotonous tasks seem less monotonous, but they also note that it can cause undue anxiety, feelings of inadequacy, and loss of status in the group. They try to strike a balance by cautioning teachers to hold competition between individual children to a minimum, while allowing for competition among subgroups in the class and encouraging individuals to compete with themselves, as in the mastery-learning approach (Bloom, 1968).

Thus, the practice of fostering competition between groups is recommended to teachers, while the practice of fostering competition between individuals is not. Competition between groups was used in the present research, since it offers the presumed advantages of competition (enhanced motivation, increased enjoyment of boring tasks) while minimizing its potential dangers (anxiety, feelings of inadequacy).

Of the response factors affected by motivation (frequency, intensity, and duration), response duration was selected as the most appropriate for generalizing to the school situation. Response rate (frequency) is usually not important in school tasks, and response intensity is difficult to measure (in practice, its measurement often reduces to time on task). Thus, response

duration was selected as the dependent variable to be manipulated through the incentives of praise and competition. Operationally, response duration was defined as the amount of time that a child would continue to work on a task voluntarily before indicating that he wished to stop. Kindergarten and second grade children were selected for study so that certain developmental aspects of responsiveness to the two incentives could be investigated.

Hypotheses

Hypotheses were formulated by extrapolating from the child development literature, since only one study was located which directly compared praise and competition. Wolf (1938) used individual (not group) competition, and found it generally superior to praise for eliciting persistence in kindergarten children, especially on boring, repetitive tasks. However, the low number of subjects in this study, and several questionable aspects of its design, suggest caution in drawing conclusions from it.

As the child gets older and participates more and becomes more adept in group interactions, his primary focus shifts from his parents and other adults to his peers. Psychoanalytic theory explains that during the preschool years the child is at the stage of identification with his parents; ie., he strives to be similar to his parents and other significant adults. Thus, he is very responsive to praise from them. As the child's social contacts become wider and include his peers, he begins to note his own performance relative to the performances of others (Erikson, 1968; Freud, 1935). This leads to the development of relationships involved in competing with others (Heathers, 1955; Sherif & Sherif, 1956).

Wright (1967), collecting specimen behavior records from individual children, observed the following behaviors corresponding to those predicted above.

With an increase in age, there was a decrease in the frequency of adults as associates and an increase in child associates, a definite power gain in interactions with other children, and a change in the relative dependence upon adults, marked by a decline in the appeal of grownups.

Specifically related to praise and competition incentives, studies have found that the effectiveness of verbal approval tends to decrease with age (Allen, 1966; Beller, 1955; Heathers, 1955; Lewis, Wall, & Aronfreed, 1963; Zigler, 1963), and that the responsivity to competition tends to increase with age (Greenberg, 1932; McClintock & Nuttin, 1969; McKee & Leader, 1955).

Consequently, one could expect elementary school children to be relatively more responsive to competition than kindergarten children, who should be relatively more affected by praise. Kindergarten children are still largely at the "identification" stage, in which they are still highly dependent upon adult approval and oriented towards adult norms. By second grade, the children have moved away from this adult orientation and become oriented toward their peers. Presumably they are also more able to understand and become ego involved in group contests, more able to identify with peer groups, and more interested in group competition.

Sex role differentiation must also be taken into account. One of the more clearly established facts in the sex difference literature is that boys are more competitive than girls (Glueck & Glueck, 1950; Kagan & Moss, 1962; Maccoby, 1966; McKee & Leader, 1955), and girls are more responsive to praise than boys (Hill & Moely, 1966). Also, research on mastery and achievement striving suggests that boys tend to strive for mastery for its own sake, while the achievement motivation of girls tends to be tied up with needs for affiliation. That is, girls tend to achieve as a means of gaining approval from significant others (Crandall, et al, 1962). These considerations lead

to the prediction that boys will be more motivated by group competition and girls more motivated by praise from an adult.

In the case of kindergarten and second grade children, change with age needs to be taken into account. Not only are children moving out of the stage of identification with parents and into a stage of preoccupation with peer groups and mastery learning; at the same time they are gradually differentiating along sex role lines. The implications of these developmental changes with regard to response to praise and group competition seem clear for boys. According to psychoanalytic theory, boys are moving toward identification with peers and thus should be more interested in competition. Social learning theories point out that competitive behavior is intimately linked with the traditional prototype for the American male, and thus boys will be reinforced for exhibiting such behaviors, while they will probably be punished for dependency behaviors (Kagan & Moss, 1962; Sears, et al, 1953). From either stage theory or sex-role learning theory, it can be predicted that second-grade boys will be more responsive to competition and less to praise when compared to kindergarten boys. Both lines of development would lead second-grade boys to be more responsive to competition and less responsive to praise from an adult than kindergarten boys.

The situation is much less clear with girls, however, as it usually is when psychoanalytically-based theories are involved. Considerations based on developmental stage phenomena alone would suggest the same prediction as for boys, because as the girls move out of the identification period they should become less responsive to adult praise.

Considerations of sex-role learning, however, lead to a different prediction for girls. If winning and keeping adult approval is really an important part of the feminine sex role, such behaviors will be reinforced

while aggressive, competitive behaviors will be punished (Kagan & Moss, 1960; Sears, et al, 1953, 1965). Thus, second-grade girls should be just as responsive or even more responsive to praise than kindergarten girls.

Consideration of sex differentiation in competitiveness would lead to two different sets of predictions for girls, depending upon how developmental differences in competitiveness are interpreted. From one point of view, the sex difference in competitiveness may be due simply to the fact that boys become much more competitive as they grow older, while girls only become slightly more competitive. In this case, age changes in relative responsiveness to the two incentives would be the same in both sexes, but the change would be much stronger for boys. However, perhaps as boys become more competitive with age, girls become less competitive. If this is true, the developmental stage hypothesis holds only for boys, and the developmental prediction for girls would be opposite to that for boys.

Despite these differences in specifics, an age x sex x incentive interaction can be predicted from each position. The two sexes should be similar in their response to these two incentives at kindergarten age, although boys should be relatively more susceptible to competition than praise. By second grade, however, boys should be much more susceptible to competition and less to praise, relative to girls. Two studies were designed to explore these hypotheses. The first used boring, repetitive tasks, while the second used a more interesting, ego involving task.

STUDY I

Subjects

Subjects were 24 boys and 24 girls in kindergarten, and 24 boys and 24 girls in second grade. All were from white, middle- and upper middle-class families, and were within the normal range of IQ.

Experimenters

One white female senior psychology major and one white male graduate student in educational psychology served as experimenters. Each worked with an equal number of subjects within each cell of the experimental design. Thus, while sex of experimenter was not investigated (since there was only one of each sex), it was controlled through a balanced design.

Tasks

Two tasks were used in Study I. They were designed to be as boring and pointless as possible, so that task persistance would not be sustained by the interest value of the task itself. Since young children may enjoy a task an adult would find boring, two tasks were used and the data were analyzed for task effects which might interact with the other variables being studied.

The first task was a cancellation task. The child was given an 8 1/2-inch by 11-inch page containing 80 evenly distributed circles. He was told to mark through each circle with a single line, proceeding in order across and down the page. As each page was completed it was removed from sight, and the child began a new one.

The second task required the child to fill a 50-hole pegboard, again proceeding across and down in order. When the child finished, he was to remove all the pegs and start over.

Thus, neither task involved any tangible sign of accomplishment. The time required to finish one page or to fill one pegboard was approximately equivalent for most children.

Incentive Conditions

In each incentive condition, the experimenter delivered a verbal incentive every 30 seconds, using lists in which the 4 incentive phrases were

arranged in a standardized order (previously established through randomizing). The four praise statements were: "You're doing real fine!" "You're really good at this!" "That's the way--you're doing fine!" "You certainly are doing well!" The four competition statements were: "Try to help your class win!" "Don't forget--you're trying to beat the other class!" "Try to do better than the other class!" "Let's try to beat the other class!"

Procedure

Subjects were tested at their schools during school hours. Experimenters removed them from their classrooms and took them to unused rooms for individual testing. Each child was tested twice on the same task, once under the praise condition and once under the competition condition. Two to three weeks elapsed between sessions.

After demonstrating the task, experimenters introduced the incentive conditions. In the praise condition, the child was asked to work, "As well as you can and as long as you want to. Try to do your best." In the group competition condition, the child was told that his class was competing against another class in the same grade. The child was told that the longer he continued to work, ". . .the better your class will do. When everyone has had a chance to do this, we will see which class did better."

Experimenters made sure that subjects worked in the prescribed fashion and did not skip circles or holes. If the child asked how long he should stay he was told, "You may stop whenever you want to and you may stay as long as you wish." The session was terminated when the child either stated directly that he was finished or simply stopped working and then said he was finished in response to a probe.

RESULTS

The data were examined with a repeated measures analysis of variance, with incentives (2) and trials (2) as within-subjects variables and subject sex (2), subject age (2), task (2), and examiner (2) as between-subjects variables. Order of incentives (2), a between-subjects variable, was partially confounded with the within-subjects trials effect. Time (minutes) on task was the dependent variable.

Prior to the repeated measures analysis, the possibility of task effects was investigated, using two 5-way analyses of variance (subject sex x subject age x experimenter x order of incentives x task), with persistance in the praise condition and persistence in the competition condition as dependent variables. In each analysis, the main effect for task was not significant, and task interacted only with subject sex ($F = 3.50$, $df = 1,64$, $p = .06$ for praise scores; $F = 4.11$, $df = 1,64$, $p = .04$ for competition scores). Boys persisted longer with the pegboards (24.8 minutes vs. 17.0 minutes under praise, 37.3 minutes vs. 27.2 minutes under competition), and girls persisted longer with cancellation (21.7 minutes vs. 19.1 minutes under praise, 28.0 minutes vs. 23.5 minutes under competition).

Because task differences were not central to the study, and because task interacted only with subject sex (which was perfectly balanced across all other variables), the task variable was omitted in the subsequent analysis.

Data for the five main effects and for those interactions which reached statistical significance are presented in Table 1 (these effects refer to the persistence scores for the two trials combined). As expected, the older children persisted longer than the younger ones, and competition produced longer persistence than praise. Also, children working with the male experimenter persisted longer, as did children who first worked under the competition

condition and then under the praise condition. The sex difference was not significant.

The significant sex x incentive interaction reflects the fact that boys were relatively more influenced by competition than girls. Boys averaged 20.91 under praise and 32.25 under competition, while the parallel figures for girls were 20.41 and 25.76.

The order x incentives interaction occurred because children who first worked under competition persisted considerably longer under competition than under praise (33.54 vs. 22.06). Children who first worked under praise also tended to persist longer under competition, but the difference was less extreme (24.47 vs. 19.26).

This trend is further elaborated in the experimenter x order x incentive interaction, which showed that the interaction was traceable to one of the experimenters (the female). Relative to the other conditions, this experimenter produced notably longer persistence under the competition condition with children who were receiving the competition condition first. This interaction was not expected, and no interpretations are offered for it.

The age x sex x incentive interaction, which was the one most relevant to the purpose of the study, is summarized in Table 2. This interaction almost reached statistical significance ($F = 3.56$; $df = 1,80$; $p = .06$). In general, the data of Table 2 are most interpretable from the standpoint of the sex role differentation. Competition is always more effective than praise, as expected. Also, boys are relatively more influenced by competition than girls. However, there is no evidence to support predictions based on developmental stage theory. The relative advantage of competition over praise remains constant among the boys with age, while it declines among the girls. Relative to praise, second-grade boys are no more influenced by competition than kindergarten boys, and second-grade girls are relatively less influenced.

Study II

Study I employed boring, repetitive tasks. In Study II, the experiment was repeated, this time using a more meaningful, interesting, and ego involving task. It was hypothesized that in Study II praise would be relatively more effective in comparison to competition than it was in Study I. Because the tasks in Study I involved continuous repetition of the same routine behavior, and because they did not lead to any observable goal or end point, it seemed less likely that the praise given by the experimenters in Study I could be taken in a very personal way or perceived as very satisfying by the children. In a more ego involving and goal oriented task, however, in which notable progress or achievement occurred as the child continued working, praise from the experimenter might be perceived as more genuine and as a result be more effective as an incentive. Competition, in contrast, was expected to have a relatively constant meaning, and therefore a relatively constant effect, across the two studies.

Subjects

The same numbers and types of children were used as in Study I. However, Study II was conducted in the summer, and children could not be tested at school. Instead, the children were recruited from day camps which catered to middle- and upper middle-class families. The younger group had recently completed kindergarten, while the older group had recently completed the second grade.

Experimenters

Experimenters were one male and one female white senior psychology majors. Neither had participated in Study I.

Task

A single block stacking task was used with all subjects. The child was presented with a box of three-inch cylindrical blocks and asked to stack them on top of one another. He was to stack blocks in a single tower, trying to make it as high as possible. After a collapse, the child could start again, and could continue for as long as he wanted to until he indicated that he wished to stop.

Incentive Conditions

Incentive conditions were exactly the same as in Study I, except that the subjects were urged to compete against "the other group" instead of "the other class."

Procedure

Subjects were tested shortly after lunch, during a rest period when no structured day camp activities were scheduled. Experimenters took them to an unused room for testing. In all other respects, procedures were identical to those used in Study I.

RESULTS

Main effects and significant interactions from a repeated measures analysis of variance in persistence scores in Study II are presented in Table 3.

In contrast to Study I, none of the main effects in Study II reached statistical significance. The significant experimenter x incentive interaction occurred because one experimenter (the female) was more effective with praise

than competition (25.61 vs. 18.61), while the other experimenter showed little difference (20.17 vs. 20.04).

The order x incentive interaction occurred because praise was more effective when it occurred first (27.98 vs. 17.80). Competition was also more effective when it occurred first (20.82 vs. 18.83), but the difference was much smaller. This interaction is one aspect of two major differences between the scores in Study II as opposed to Study I. First, persistence scores were generally lower in Study II than in Study I. Second, a trials effect appeared in Study II: scores were notably smaller on the second trial as compared to the first trial. This same trend was seen in subjects who had competition first and praise second in Study I, but not for subjects in the other condition.

The two remaining significant interactions included an age x experimenter x order effect and a four-way effect including these three variables plus sex. These interactions were not expected and do not bear on the purposes of the study, so no interpretations are offered. Sex appears in the four-way interaction because the male experimenter produced longer persistence in girls than in boys, while the female experimenter showed no clear sex difference. This relationship is complicated by age and order effects, however. The two-way interaction between experimenter and sex of child did not reach statistical significance ($F = 1.56$; $df = 1, 78$; $p = .21$).

Data for the age x sex x incentive interaction in Study II are presented in Table 4. The group means are as predicted, but the interaction does not reach statistical significance ($F = 2.18$; $df = 1, 78$; $p = .14$). Comparing across the two studies it is clear that the expectation that praise would be more effective relative to competition in Study II was confirmed. Also, the same age x sex trend noted in the data of Table 2 is apparent in Table 4.

With age, boys become relatively more influenced by competition than praise, compared to girls.

DISCUSSION

Although the results of Study I are much more clear cut than those of Study II, both experiments yield the same theoretical implications. They provide support for predictions based on the sex typing literature, but they do not support hypotheses derived from developmental stage theory. Between kindergarten and second grade ages, boys do become more susceptible to competition as an incentive, but they appear to remain strongly susceptible to adult praise. In contrast, girls remain stable or perhaps even increase in their responsiveness to adult praise, while apparently becoming less susceptible to competition.

Before proceeding to educational implications, certain methodological problems and unexpected findings will be discussed. First, it was evident that the results of Study II were generally weaker and less clear cut than Study I. Although there are many possible reasons for this, the generally shorter persistence times suggest that the children were less interested or motivated in Study II, despite the more meaningful and ego involving task. One possibility is that this result is simply another example of the contrast effect noted recently by Elkind, et.al. (1970). That is, perhaps the children were glad to be out of their classrooms and willing to persist longer in Study I because they would have to return to their classrooms when they stopped, while the day camp children may have been eager to rejoin their peers, even though the experiment was conducted during unstructured rest periods.

The task used in Study II may also have discouraged persistence. This was a pure skill task which afforded the children continuous and immediate feedback about their progress, independent of the experimenter's comments. It may be that once the children built up to their peak performance and then failed in their next few attempts to top it, they concluded that they could do no better and gave up further attempts. The trend toward shorter persistence times on the second trial in Study II is consistent with this interpretation.

It is also possible that the competition condition may have been perceived differently in the two studies. In Study II, the children got clear-cut feedback about their absolute progress, but could not know about their performance relative to other children. Under these circumstances, the experimenter statements made in the competition condition might have been interpreted as criticism by some children. To the extent that this occurred, it would have impaired performance and discouraged persistence.

The pervasiveness of experimenter effects once again points up the need to control this variable in research involving adult-child interaction. The cross-sex effect noted in Study II is consistent with previous findings (Stevenson, 1961), although it cannot be unambiguously attributed to the experimenter's sex rather than to other, uncontrolled experimenter variables.

The effects of order of incentives were tangential to the purposes of the study and difficult to interpret. However, this variable has to be taken into account in planning research involving repeated measures on the same subject. A methodological refinement that could be used in other studies of this type would be to employ equivalent but different tasks in each incentive condition. This way the children would not be repeating the same task they had done earlier, and each condition could be presented as a separate experiment or exercise unconnected with the others.

Regarding educational implications, the results of these studies suggest that the typical advice given to teachers is sound as far as it goes: competition is most useful as a way to add interest value to dull, routine tasks. However, since the kinds of tasks for which it is most effective are not (or shouldn't be) important parts of the school curriculum, and since school is probably already overly competitive, there remains the question of whether (artificial) group competition should ever be used at all. These results, along with recent work by Clifford (1970, 1971), suggest that competition may be generally overrated as a motivating incentive for children. Perhaps instead of relying on competition and other artificial extrinsic incentives, teachers would do better to eliminate routine tasks or present them in ways that make them more meaningful to children and allow them to set goals and monitor their individual progress.

Footnotes

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References

Allen, S. The effects of verbal reinforcement on children's performance as a function of the type of task. Journal of Experimental Child Psychology, 1966, 3, 57-73.

Ausubel, D., and Robinson, F. School learning: an introduction to educational psychology. New York: Holt, Rinehart, & Winston, 1969.

Beller, E. Dependency and individuality in young children. Journal of Genetic Psychology, 1955, 87, 25-34.

Bloom, B. Learning for mastery. Evaluation Comment, 1968, 1, no. 2.

Clifford, M. The effects of competition on classroom performance, retention, and interest. Paper presented at the annual meeting of the American Educational Research Association, 1971.

Clifford, M., Cleary, T., & Walster, G. Effects of emphasizing competition in classroom testing procedures. Paper presented at the annual meeting of the American Educational Research Association, 1970.

Crandall, V., Katkovsky, W., & Preston, A. Motivational and ability determinants of young children's intellectual behaviors. Child Development, 1962, 33, 643-661.

Elkind, D., Deblinger, J., & Adler, D. Motivation and creativity: the context effect. American Educational Research Journal, 1970, 7, 351-357.

Erikson, E. Identity: youth and crisis. New York: W. W. Norton & Co., 1968, pp. 107-128.

Freud, S. A general introduction to psychoanalysis. Translated by J. Riviene. New York: Liveright, 1935.

Gewirtz, J. Determinants of attention seeking in growing children. Monographs of the Society for Research in Child Development, 1954, 19, (whole no. 59).

Glueck, S., and Glueck, E. Unraveling juvenile delinquency. New York: Commonwealth Fund, 1950.

Greenberg, P. Competition in children: an experimental study. American Journal of Psychology, 1932, 44, 221-248.

Heathers, G. Emotional dependence and independence in nursery school play. Journal of Genetic Psychology, 1955, 87, 37-57.

Hill, K., and Moely, B. The affects of social reinforcement and non-reinforcement from female adults on performance of boys and girls at two age levels as a function of game vs. test instruments. Paper presented at the annual meeting of the American Psychological Association, New York, 1966.

Kagan, J., and Moss, H. The stability of passive and dependent behavior from childhood through adulthood. Child Development, 1960, 31, 577-591.

Kagan, J., and Moss, H. Birth to maturity. New York: John Wiley & Sons, 1962.

Kennedy, W., and Willicutt, H. Praise and blame as incentives. Psychological Bulletin, 1964, 62, 323-332.

Lewis, M., Wall, A., & Aronfreed, J. Developmental change in relative values of social and nonsocial reinforcement. Journal of Experimental Psychology, 1963, 66, 133-137.

Maccoby, E. The development of sex differences. Stanford: Stanford University Press, 1966.

McClintock, C., and Nuttin, J. Development of competitive behavior in children across two cultures. Journal of Experimental Social Psychology, 1969, 5, 203-218.

McKee, J., and Leader, F. The relationship of socioeconomic status to the competitive behavior of preschool children. Child Development, 1955, 26, 135-142.

Moore, O., and Anderson, A. Some principles for the design of clarifying educational environments. In Goslin, D. (ed.). Handbook of socialization theory and research. Chicago: Rand McNally, 1968.

Shaw, M. Some motivational factors in cooperation and competition. Journal of Personality, 1958, 26, 155-169.

Sears, R., Rau, L., & Alpert, R. Identification and child rearing. Stanford: Stanford University Press, 1965.

Sears, R., Whiting, J., Howles, V., & Sears, P. Some child-rearing antecedents of aggression and dependency in young children. Genetic Psychology Monographs, 1953, 47, 135-243.

Sherif, M., and Sherif, C. Groups in harmony and tension. New York: Harper, 1953.

Sherif, M., and Sherif, C. An outline of social psychology. New York: Harper & Brothers, 1956, p. 597.

Spence, J. The distracting effects of material reinforcers on the discrimination learning of lower- and middle-class children. Child Development, 1970, 41, 103-112.

Stevenson, H. Social reinforcement with children as a function of CA, sex of E, and sex of S. Journal of Abnormal and Social Psychology, 1961, 63, 147-154.

Sullivan, H. The interpersonal theory of psychiatry. New York: Norton, 1953.

Wolf, T. Persisting behavior of kindergarten children.

Wright, H. Recording and analyzing child behavior. New York: Harper & Row, 1967.

Zigler, E. Social reinforcement, environmental conditions, and the child. American Journal of Orthopsychiatry, 1963, 33, 614-623.

Table 1. Main effects and significant interactions, Study 1*

Main Effects	Group Means (minutes of persistence)		F	p
Age	Younger	20.25	9.61	.0030
	Older	29.42		
Sex	Boys	26.58	1.40	.2390
	Girls	23.09		
Experimenter	Male	27.85	4.17	.0419
	Female	21.81		
Order of Incentive	Praise First	21.87	4.03	.0454
	Competition First	27.80		
Incentive	Praise	20.66	39.32	<.0001
	Competition	29.00		
Significant Interactions (p <.05)				
Sex x incentives			5.06	.0256
Order x incentives			5.53	.0199
Experimenter x order x incentives			13.65	.0007

*df = 1, 80

Table 2. Age X sex X incentive interaction, Study 1*

	BOYS		GIRLS	
	Praise	Competition	Praise	Competition
Younger	17.59	25.55	15.43	22.43
Older	24.23	38.95	25.39	29.10

* $F = 3.56$; $df = 1, 80$; $p = .0594$

Table 3. Main effects and significant interactions, Study II*

Main Effects	Group Means (minutes of persistence)		F	p
Age	Younger	19.02	2.17	.1406
	Older	23.69		
Sex	Boys	18.43	3.43	.0644
	Girls	24.28		
Experimenter	Male	20.60	0.23	.6408
	Female	22.11		
Order of Incentive	Praise First	23.40	1.68	.1964
	Competition First	19.31		
Incentive	Praise	22.89	2.98	.0846
	Competition	19.82		
Significant Interactions ($p < .05$)				
Experimenter x Incentive			4.91	.0278
Order x Incentive			11.75	.0013
Age x experimenter x order			5.21	.0236
Age x sex x experimenter x order			7.51	.0076

* df = 1, 78

Table 4. Age X sex X incentive interaction, Study II*

	BOYS		GIRLS	
	Praise	Competition	Praise	Competition
Younger	15.86	12.19	26.55	21.50
Older	20.75	24.91	28.40	20.70

* $F = 2.18$; $df = 1, 78$; $p = .1402$