THE EFFECTS OF A CLASSROOM GAME ON SPELLING PERFORMANCE:

A SYSTEMATIC REPLICATION

A THESIS

Presented in Partial Fulfillment of the requirements for the Degree of Master of Arts

by

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ABSTRACT

Six male students from a regular classroom served as the subjects in an experiment designed to determine if a spelling game would increase the spelling performance of these students. The students were divided into two teams and given daily five-word spelling tests. The scores of the team members were then added together to determine the winners of the game. The winners received social or tangible reinforcement dependent upon the experimental condition in effect for the day. Measurement of peer tutoring interactions were taken daily for both teams and added together. Results of the study showed that the spelling performance was increased as a result of the game. There was a higher number of peer tutoring interactions under the Game Plus Tangible Reinforcement condition than both the Game and No Game conditions. The students' response to the game was quite positive. All of the students expressed an interest in having the game implemented in their regular classroom.

This study illustrates that this spelling game can be effective in increasing the spelling performance of students. The implications of this study offer practical information to the classroom teacher who wishes to use this spelling game to increase the spelling performance of his or her students.
CHAPTER ONE
INTRODUCTION

Since the early 1960's, researchers have produced changes in the social and academic behaviors of children and adolescents through the application of individual and group contingencies. Before examining the types of behavior that have been changed through the use of individual and group contingencies, a contingency should be defined. A contingency has been defined as the rules which arrange the relationship between the occurrence of behavior and its consequences. A contingency states the condition under which reinforcement will occur. For example, a child may be required to do a certain number of specified behaviors to obtain reinforcement.

Initially, individual contingencies, (contingencies dependent upon an individual's behavior for reinforcement) were applied in laboratory and classroom settings to increase academic behavior and decrease socially maladaptive behaviors. Arithmetic, reading, spelling and other academic behaviors have been increased through the use of individual contingencies (Benowitz and Busse, 1974; Semb and Semb, 1975; Thomas and Galloway, 1970). Disruptive behaviors have also been reduced using individual contingencies (Zeilberger, Samper, and Sloan, 1968; Azrin and Fox, 1971; Burchard and
Barrera, 1972). The results of these and other studies over the past decade involving the use of individual contingencies have documented the effectiveness of individual contingencies in both laboratory and classroom settings. However, in spite of the effectiveness of these contingencies, classroom teachers expressed concern over the implementation of individual contingencies into the classroom. The major concern of the teachers rested in the fact that individual contingencies were difficult to implement into classrooms of twenty-eight or more students because of record-keeping and administration of reinforcement.

These problems in implementation of individual consequences led to research focused on finding alternative contingencies which could be more easily implemented into the classroom. Studies then focused on the use of group contingencies, contingencies in which each member of the group must exhibit appropriate behavior before the group can obtain reinforcement, for the reduction of disruptive classroom behavior (Barrish, Saunders, and Wolf, 1969; Sulzbacher and Houser, 1968; Axelrod, 1973) and the improvement of academic behavior (Lovitt, Guppy, and Blatner, 1969; Hamblin, Hathaway, and Wodarski, 1971; Axelrod and Paluska, 1975). Results of studies on group contingencies indicate that group contingencies are effective in producing changes in
behavior and are more easily implemented than individual contingencies.

Statement of the Problem

This study was conducted to test the effectiveness of a group contingency, a team spelling game, in increasing the spelling performance of elementary students in addition to measuring spontaneous peer tutoring interactions which were reported by Hamblin, et al. (1971) as playing an important part in the success of group contingencies. The game used in the present study was similar to the game used by Axelrod and Paluska (1975) to increase the spelling performance of 22 third and fourth grade students. The students' spelling performances were compared under three conditions: No Game, Game, and Game Plus Tangible Reinforcement. Under the No Game condition, the students were given daily five-word tests and received no reinforcement for the correct spelling of the words. Under the second condition, Game, the students were divided into two equal teams; given daily five-word spelling tests; and received social and natural reinforcement, in the form of praise and achievement awards. The procedures under the Game Plus Tangible Reinforcement condition were the same as the Game condition with the exception of the type of reinforcement. The students received artificial or tangible reinforcers under this condition. The experimenter observed and recorded the
number of peer tutoring interactions which occurred between team members daily. A multielement baseline design was used to illustrate the differences that occurred in spelling performance and the number of peer tutoring interactions as a function of the manipulation of the three conditions.

**Literature Review**

This section includes a review of the research on group contingencies used in modifying disruptive behavior; the "good behavior game"; individual and group contingencies used to increase spelling performance; and peer influence and peer tutoring interactions which occur as a result of using group contingencies. The following research studies demonstrate the effectiveness of group procedures which could be implemented in the classroom easily and effectively.

**Group Contingency Programs and Disruptive Behavior**

A group contingency was previously defined as a contingency in which each member of the group must exhibit appropriate behavior before the group can obtain reinforcement. Although this is an accurate description of a group contingency, it is only one of the types of group contingencies that will be discussed.

Hamblin, Hathaway, and Wodarski (1971) described three types of group contingencies in an experiment designed to investigate the relationship of several group and individual contingencies to academic achievement (see p. 16 for results).
The first type of group contingency described was referred to as an average performance group contingency. Under this contingency, reinforcement was contingent upon the average academic performance of the group or a situation in which all members of the group must exhibit appropriate behavior in order to receive reinforcement. A second type of group contingency was referred to as a high group performance contingency. Under the high group performance contingency, group members may be reinforced on the basis of the highest performance of the group when dealing with academic behavior or based on one or more of the most disruptive students' behavior when dealing with social behavior. The final type of group contingency described in this experiment was referred to as a low group performance contingency. The group's reinforcement, under this contingency was based on the lowest academic performance of one or more students in the group when reinforcing academic performance and on the behavior of the least disruptive students in the group.

The authors of this experiment proposed that these distinctions between average, high, and low performance group contingencies would produce different behavior outcomes.

Sulzbacher and Houser (1968) reported that a group contingency was effective in reducing undesirable behaviors in a primary level classroom for the mentally retarded. The group contingency consisted of a special recess of ten
minutes or less dependent upon the number of undesirable behaviors exhibited by all members of the group. This group contingency was used to reduce the occurrence of the "naughty finger" (raised fist with middle finger extended), verbal reference to it, and tattling or other comments made by members of the class when a child used the "naughty finger." The results show that the occurrence of the "naughty finger" was reduced from a mean of 16 per day during baseline to a mean of 2.11 per day during the period of the group contingency was in effect.

Packard (1970) compared the effects of instructions and a group contingency in increasing the amount of attending behavior in kindergarten, third, fifth, and sixth graders during their reading periods. Attending behavior was defined as: 1) bodily position directed toward the designated academic stimuli; 2) vocal and physical silence; and 3) responding appropriately to instructions as given by the teacher to the students during the class period. Following collection of baseline data, the instructions only phase was initiated. The students were given instructions on how to behave appropriately. During this phase the students were not reinforced for appropriate levels of attending behavior. In the next phase, a group contingency, a contingency dependent on every student's behavior during the class period, was added to the
instructions given by the teacher to students concerning appropriate attending behaviors. The teacher told each of the classes that when the criterion level of attending was reached by the class as a group, each student would receive points for backup reinforcers or extra recess time depending upon the grade level. Results showed that instructions alone produced temporary increases in attending behavior, however, adding a group contingency increased the attention of the groups to a 65 to 85% criterion level.

Muller, Hasazi, Pierce and Hasazi (1975) used a group contingency to decrease the number of loitering, aggressive, and running behaviors of 455 students in grades one through eight during the lunch period. One point was awarded daily if no member of the class exhibited any of the target behaviors during the lunch period. When a class received a total of 25 points, the class received an extra half hour of recess time. The results show that the use of this group contingency dramatically reduced the number of loitering, aggressive, and running behaviors of 455 students during the lunch period.

Herman and Tramontana (1971) found that the type of reinforcement (group or individual) did not produce differential effects in reducing the rates of disruptive behavior of Head Start children during rest periods. The children were matched into two groups based on the baseline
data taken on the rates of disruptive behavior during rest periods. The two groups were then exposed alternately to either an individual or group contingency. Each student exposed to the individual contingency was told that if he remained on his mat and made no verbalizations (measured in 10 second intervals) he would receive tokens which he could trade for toys later. The subjects under the group contingency were told that if all members of the group remained on their mats and did not talk, they would receive tokens which they could trade for toys. The authors reported that the group contingency did not produce significantly higher results over the individual contingency, however, the group contingency was found at the very least as effective as the individual contingency and more easily implemented.

Axelrod (1973) in comparing individual and group contingencies, reported that the individual contingency was slightly better than the group contingency in controlling the out-of-seat and disturbing others behaviors of thirty-one mentally retarded students. During the group contingency phase, the undesirable behaviors were modified with a response cost procedure described as follows: the numbers 25, 24 ..., 0 were listed vertically on the blackboard; following an undesirable behavior by any member of the class the teacher crossed off the highest number remaining on the board and placed the name of the child concerned next to the crossed
off number; and at the end of the session, all students received the number of tokens which corresponded to the highest remaining number on the board. The same procedure was used in the individual contingency with the exception that everything was based on each individual's behavior. For Class I, the undesirable behaviors were reduced from a mean of 173.6 undesirable behavior per hour during baseline to 19.8 and 20.4 during individual and group contingencies, respectively. In Class II, the mean number of undesirable behaviors were reduced from 141.6 per hour during baseline to 8.2 during the individual contingency and 8.6 during the group contingency. Axelrod reported that even though the individual contingency produced slightly higher decreases in undesirable behaviors, the group contingency had several advantages: 1) simple record-keeping procedures; 2) administration of the reinforcers was more convenient; and 3) it permitted the use of a greater variety of reinforcers since all subjects received the same consequence.

The research reviewed above, showed that group contingencies produce changes in behavior at a rate equal to or greater than individual contingencies. These studies also indicate that group contingencies are easier to implement.

The "Good Behavior Game"

As the reports of the effectiveness of group
contingencies were published, researchers investigated ways to modify and improve these group contingency programs. One such modification came from the work of Barrish, Saunders, and Wolf (1969) at the University of Kansas. They developed a simple technique to reduce disruptive behavior which they referred to as the "good behavior game."

Barrish, et al. (1969) used the "good behavior game" to reduce the out-of-seat and talk-out behaviors of a regular fourth-grade class. During this initial evolution of the technique, the class was divided into two equal size teams with the names of the team members being written on the chalkboard. The teacher also listed the rules of the game on the chalkboard which read that during certain times the children were not to be out of their seats or talk with their classmates without permission. If any member of a team talked to his classmates or left his seat without permission a mark was placed next to the team listing of which the child was a member. At the end of the period or at the end of the day, the winners of the game, the team having fewer marks or both teams if they had fewer than five marks, were awarded special privileges (wearing victory tags, receiving a star on a chart, special projects, etc.). If a team had not received more than 20 marks in a week it would get an extra weekly privilege of going to recess 4 minutes
early. Through a series of experimental phases the authors demonstrated that the "good behavior game" was responsible for the reduction in talk-out and out-of-seat behaviors.

Medland and Stachnik (1972) through a systematic replication, showed that the game and not the classroom rules, was responsible for reductions in disruptive behavior. The game procedure was similar to that used in the Barrish, et al. study (1969), with the following exceptions: 1) the addition of a timeout procedure to be used for the exclusion of problem students for a day if that student had four or more marks in one day to avoid penalizing his team; and 2) the lights operated by the observers to signal a team as to how they were doing. The subjects were exposed to a game condition, a rules only condition, and a rules + lights condition. Under the game condition, the students won special privileges for appropriate behavior. The students received no special privileges for appropriate behavior under neither the rules or rules + lights conditions. The authors reported that the "good behavior game" reduced the disruptive behavior better than the rules only and rules + lights condition.

Darch and Thorpe (1977) compared the effects of principal attention in increasing on-task behavior under individual and group contingencies. Under the individual contingency, the students worked in the classroom for individual
points to exchange for principal attention. In the Principal Game condition, a modification of the "good behavior game," the students were divided into two teams and were informed that a bell would go off six times during the class period and when it sounded the teacher would determine whether the individuals of each team were on-task and following rules. If each member of a team was working hard, that team would receive a point and that five were necessary to win the game. The winners would be acknowledged as winners by the principal and the principal would engage in conversation with the winning team. Principal attention was found to be a strong reinforcer in increasing on-task behavior when delivered contingently upon both individual and group behavior, but the percentage of on-task behavior during the team consequence was higher than during individual consequences.

Harris and Sherman (1973) attempted to determine which components of the "good behavior game" were responsible for its effectiveness in the Barrish, et al. study (1969) and what effects the reduction of disruptive behaviors had on academic performance. Following the baseline period, the game was introduced into the math and English periods of fifth- and sixth-grade classes. In evaluating which component of the "good behavior game" was functional in controlling disruptive behavior, several experimental phases
were performed in the sixth-grade class. In one phase, the consequences for winning were eliminated. During phase two, the maximum number of marks at or below which a team would win changed. The next phase involved eliminating "feedback" to the children regarding the occurrence of disruptive behavior. In the final phase, the class was not divided into team. Harris and Sherman reported the following findings: 1) that the "good behavior game" was successful in reducing disruptive out-of-seat and talking-out behaviors; 2) that each component of the game contributed in varying degrees to the game's control over disruptive behavior; 3) that direct feedback (marks on the blackboard) did not seem to effect the occurrence of disruptive behavior in the presence of the game; 4) removing permission to leave school early as a consequence for winning the game reduced the game's effectiveness in suppressing disruptive behavior, but did not render the game totally ineffective; and 5) dividing the classroom into teams appeared to prevent a rapid increase in disruptive behaviors following the ninth mark in the no team condition. The authors of this study failed to prove that a reduction of disruptive behavior would produce an increase in academic performance.

Ferritor, Buckholt, Hamblin, and Smith (1972) reported similar results concerning the relationship between a reduction in disruptive behavior and academic performance.
In this study the effects of social behavior and performance contingencies on classroom behavior and on academic performance were investigated using third- and fourth-grade students from an inner city school. It was found that performance contingencies increased percent correct on math problems but attending declined and disruptions increased. Their findings also indicated that contingencies of reinforcement improved attending and decreased disruptive behavior but did not improve performance.

With data showing no direct relationship between reduced disruptive behavior and improved academic performance, researchers began to use the "good behavior game" procedure to increase academic behavior. Maloney and Hopkins (1973) using a procedure modeled after the "good behavior game," demonstrated that it was possible to modify sentence structure and the usage of certain parts of speech. Following baseling conditions, fourteen students were divided into two teams for the "creative writing game" phase of the study. The students were given points for using different adjectives, action verbs, and words beginning sentences. The students won the game if their team's total number of points exceeded 80% of a total possible team maximum set by the experimenter. The winning team went to recess five minutes early and received a small piece of chocolate candy. The results indicated that the "creative writing game"
significantly increased the number of different adjectives, action verbs and words beginning sentences used by these fourteen students.

Axelrod and Paluska (1975) used a procedure modeled after the "good behavior game" to increase the spelling performance of 22 third- and fourth-graders on daily spelling tests. (see p. 17)

**Summary.** The "good behavior game" is a simple technique which is easy to implement in many different settings with different types of students. Studies have shown it to be effective in changing both disruptive behavior and academic performance. Sherman and Harris (1973) determined that the division of a class into teams will reduce disruptive behavior somewhat. Their study also show the importance of adding a consequence to the effectiveness of the game. As an outgrowth of this study we have evidence which illustrates the ineffectiveness of trying to increase academic performance by reducing disruptive and attending behaviors.

**Contingencies for Increasing Spelling Performance**

Many research studies have been conducted in the field of spelling to determine which method of instruction is most effective in teaching spelling to students (Reid, 1966; Fernald, 1943; Gillingham, 1966). Results of these studies found that neither method was superior to another in
decreasing spelling errors. Recent research in spelling has shifted from trying to find the best method of instruction to using contingencies of reinforcement to increase spelling performance.

Benowitz and Russe (1974) assessed the effects of material incentives on the learning of spelling words in 14 classrooms of disadvantaged students over a four week period. Seven classes were randomly assigned to a material incentive condition and seven to a social incentive condition. The students in all classes were given pretests on Monday and a posttest on Friday. Results demonstrated that the children who were offered material incentives learned significantly more words than did the children no offered material rewards. Children in the material incentive condition learned an average of about six and half new words during each week's lesson. Children who were offered only social incentives learned on an average of about three new words during each week. Substantial effects of the material incentives continued throughout the four weeks they were contingent upon spelling performance.

A study done by Thomson and Galloway (1970) supported the hypothesis that the use of material incentives would increase the students' spelling performance. The subjects in this study were ninety-one boys and girls in three regular elementary classrooms. The ages of his subjects ranged
from eight to fourteen years. During the first three months of the school year teachers taught spelling as usual and these scores were used for baseline data. Throughout the second three-month period, the students received material reinforcement for spelling tests each week if his scores equalled or bettered his or her score of the previous week. During the final three-month period, material reinforcement was issued on an intermittent schedule. Results of this study indicated that spelling performance was increased through the use of material incentives.

Sulzer, Hunt, Ashby, Koniarski and Krams (1971) reported similar results in a study designed to test the effectiveness of a token system in increasing the rate and percentage correct in the spelling performance in a fifth-grade class. Students were given individualized materials which required them to learn 10 words per unit. In phase one, the students were given no reinforcement for the words they learned. During the next phase, the students were given points with no back-up reinforcers. Under the final phase, the students received points for learning words which could be traded for back-up reinforcers. Sulzer, et al. reported that spelling performance increased under the point only condition, but these increases in performance decreased when the points lost their reinforcing properties.
Spelling performance under a point plus back-up reinforcer condition remained high throughout the phase.

Lovitt, Guppy, and Blattner (1969) investigated a less obtrusive or more natural contingency to increase spelling performance. This investigation was conducted in a fourth-grade class of 32 pupils in a public school. The study assessed spelling performances of the group as a function of three conditions: 1) traditional procedures (i.e., word given on Monday; used in sentences; written five times; and spelling test on Friday); 2) contingent free-time individually arranged; and 3) a group contingency, listening to the radio added to the individually obtained free-time. Results demonstrated that contingent free-time was effective in increasing the mean number of 100% correct papers from 12 during baseline to 25.5 under the contingent improved the performance of only three students to 100% since the other students were already scoring 100% as a result of the individual contingency.

Hamblin, et al. (1971) investigated the relationship of an individual performance contingency, an individual attendance contingency, a low group performance contingency, an average group performance contingency, and a high group performance contingency to academic achievement in spelling. Under the individual attendance contingency, the students were reinforced for attending instead of spelling
performance. In the individual performance contingency, the students received points for assignment completion and high scores on their individual tests. Under the average group performance contingency, the students were given points contingent upon the average scores of the group. The students were given points contingent upon the three highest scores of the group under the high group performance contingency. During the final phase, low group performance contingency, the students were given points contingent upon the three lowest scores of the group on the spelling tests. Results indicated that the overall improvement of the group was best under the low and high performance contingencies, next best under the average performance group contingency and individual performance contingency conditions and worst under the individual attendance condition.

Using a procedure similar to the "good behavior game," Axelrod and Paluska (1975) studied the effects of the group contingency on the daily spelling performance of elementary school children. During the baseline phase of this study, the students were given a six word spelling test each day. During the game phase, the students were divided into two teams, given daily spelling tests and the winning team received social reinforcement (i.e., the teacher announced the winners and allowed the winning team to cheer for themselves). In the third phase of the study, the winning team
received back-up reinforcers such as candy, pencils, erasers, etc. A comparison of the group means attained during baseline and game, indicated that the game alone improved the spelling accuracy of the students only slightly. The game plus prizes produced a large improvement in the group average in spelling accuracy.

**Summary.** Research indicates that spelling performance can be increased through the addition of certain contingencies of reinforcement. Increases in spelling performance have been reported through the use of contingent free-time (Lovitt, et al., 1969) and through the presentation of material incentives (Benowitz and Busse, 1974; Sulzer, et al., 1971; Thomson and Galloway, 1970). Educators sometimes find it difficult to administer individual contingencies and therefore find group contingencies easier to manipulate (Lovitt, 1969). Group contingencies have been proven to be effective in increasing the spelling performance of many different types of children and in many different settings. These positive results have led researchers to speculate as to what is responsible for the success of these group contingencies.

**Peer Influence and Peer Tutoring**

Peer influence has been named as a possible cause of the effectiveness of group contingency programs. Schmidt and Ulrich (1969) reported that peer influence or peer
pressure was evidenced in their study using a group contingency to reduce excessive noise in a regular school classroom. When the contingency was in effect, peer pressure in the form of threatening gestures, arm moving, and facial expressions were observed being directed at more noisy members of the class.

Sulzbacher and Houser (1968) in their study evaluating a group contingency to reduce the frequency of occurrence of the "naughty finger" or verbal references to it, claimed that an advantage to using a group contingency was that it employed "the natural social consequences of peers to directly decelerate the undesirable behavior." (p. 90).

Evans and Oswald (1968) conducted a study in which they measured the acceleration of academic performance through the manipulation of peer influence. The first experiment involved 22 students from a fourth-grade spelling class. Six low achieving students from this class were chosen by the teacher as the target students for the study. During four weeks of the study, the teacher announced daily, five minutes prior to the morning recess, that the class would be dismissed immediately if the target student could correctly spell a specified word or words. If the target student could not spell the word correctly, the students had to continue with their morning classwork. For the next three weeks a second child was chosen as the target student. The
procedures used during these three weeks were identical to those above. The results show that the treatment was effective in improving the test performance of both target students. The results were replicated in two other experiments using two students in science and math classes. Anecdotal reports of the teachers indicated that there was a difference in the manner in which the fourth-grade class (spelling) and the sixth-grade class (science) reacted to the peers. The fourth-grade teacher reported several attempts by peers to influence the target students' success by urging them to study their material and offering assistance. The sixth-grade teacher reported that the peers did not try to influence the target student.

Darch and Thorpe (1977) reported that peer pressure played a part in the effectiveness of the "Principal Game" (a group contingency) in controlling on task behavior. The authors reported that peer pressure noticed during the study consisted of students' groans directed toward noisy students.

Axelrod (1973) has also noted the presence of peer pressure when a group contingency was in effect. He reported that peer pressure took the form of verbal threats which occurred 15 times during the five sessions of the group contingency. Axelrod stated that peer influence in this study served as a source of disruptive behavior rather than an eliminator of disruptive behavior.
Peer tutoring has also been associated with the success of group contingencies. In the Hamblin, et al. study (1971) of different group contingencies, they found that spontaneous peer tutoring occurred as a result of low performance contingency (group contingency in which the group is awarded on the basis of the lowest score in the class). In this study, the teacher told the students that they could help the slow students if they wanted to, but they did not have to do so. The results suggest that when the rewards for the class were contingent upon the performance of the slower students, the more able students helped slower students to learn the material.

Anecdotal reports from Axelrod and Paluska (1975) indicated that the children did better during the game plus prizes condition of the study. He stated, "During the game plus prizes stage, however, the students performed additional behaviors. They often drilled each other on the words and some youngsters studied frantically before the tests." (p. 282)

Summary. It is often noted that peer pressure and peer tutoring occur as a result of using a group contingency. With the limited research evidence (mostly consisting of anecdotal reports) on the true effects of peer influence and spontaneous peer tutoring it is difficult to state positively to what extent either peer influence or
peer tutoring contribute to the effectiveness of group contingencies. However, from the reports of these authors both peer tutoring and peer pressure have some effect on the effectiveness of group contingencies.

Summary of Review

Group contingencies can be effective in the reduction of disruptive classroom behavior such as out-of-seat and talk-out behavior (Barrish, et al., 1969; Medland and Stachnik, 1972; Axelrod, 1973). Group contingencies have also been effective in increasing attending and on-task behavior (Darch and Thorpe, 1977). However, since research has provided no evidence to support a correlation between a reduction in disruptive behavior and increased academic performance (Harris and Sherman, 1973; Ferritor, et al., 1972), researchers no longer try to improve academics by this means.

Researchers began to investigate the effectiveness of using contingencies of reinforcement to increase academic performance in a more direct manner (Benowitz and Busse, 1974; Thomson and Galloway, 1970; Sulzer, et al., 1971). Initial research in this area investigated many individual contingencies. These studies provided evidence supporting the belief that academic performance could be increased through the use of individual contingencies, however, teachers often reported difficulty in implementing these
contingencies into their classrooms because of record-keeping and administering of reinforcers (Lovitt, et al., 1969). Research has provided evidence that group contingencies are effective in increasing academic performance.

Peer pressure and peer tutoring has been noted as a possible factor in the effectiveness of group contingencies. Evidence, in the form of anecdotal reports, however, make it difficult to determine the true effects of peer pressure and peer tutoring in group contingencies.

Research Questions

The purpose of this study was to evaluate and compare the effects of two variations of the "good behavior game," a group contingency, on the spelling performances of elementary students. The procedure used in this study was used to systematically replicate a study conducted by Axelrod and Paluska (1975). This study investigated the effects of simply winning a team game and winning a team game and receiving artificial or tangible reinforcers, on daily spelling performance of elementary school children. Spelling performance and peer tutoring interactions were measured as a function of three conditions of the study: 1) No Game (baseline) condition; 2) Game (social and natural reinforcers given to winners) condition; and 3) Game Plus Tangible Reinforcement condition. The procedures of this study were similar to those used by Axelrod and Paluska,
with the following exceptions: 1) one less word per day given on the spelling tests; 2) the students received awards in addition to the teacher announcing the winners and their being allowed to cheer for themselves; and 3) measures of peer tutoring interactions were included.

Specifically the study sought answers to the following research questions:

1. Will classroom spelling performance of elementary students increase as a function of using a team spelling game?

2. Will a team spelling game plus tangible or artificial reinforcement increase classroom spelling performance over the team game plus natural reinforcers.

3. Will peer tutoring interactions be differentially exhibited by the students before the spelling tests as a function of the three conditions of the study?

4. How will the students feel about the game?
CHAPTER TWO

METHODS

This chapter describes the method used to carry out this study. The following aspects are included: subjects, setting, materials, procedures done prior to the study, daily procedures, definitions of dependent and independent variables, and a description of the experimental design used in the study.

Subjects

Six male students from a regular fourth-grade classroom served as subjects. These students were chosen by the teacher because of their poor spelling performance. The students ranged in age from 9 years 7 months to 10 years 3 months. Table 1 shows the students' ages and average percent correct on classroom spelling tests of 20 words (the rest of the class spells 28 words per week) over the twenty weeks prior to the study.

After obtaining permission from the school principal for the students to participate in the study, signed consent was obtained from the parents of each student. (See Appendix A for a copy of the consent form.)

Experimenter

The experimenter was a master's degree candidate seeking certification in Learning and Behavioral Disorders
Table 1

Subject Data

<table>
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<th>Students</th>
<th>Age yrs./mos.</th>
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<td>3</td>
<td>9-11</td>
<td>63</td>
</tr>
<tr>
<td>4</td>
<td>9-7</td>
<td>60</td>
</tr>
<tr>
<td>5</td>
<td>10-2</td>
<td>72</td>
</tr>
<tr>
<td>6</td>
<td>10-3</td>
<td>73</td>
</tr>
</tbody>
</table>
at The Ohio State University. The experimenter has a Bachelor of Science degree in general special education. Her role as the experimenter included selecting spelling words, administering spelling tests, scoring tests, giving out awards and tangible reinforcers, and collecting data on peer tutoring behaviors.

**Setting**

The study took place in a suburban elementary school serving kindergarten through sixth grade levels. The study was held in the cafeteria in the afternoon following lunch. The students were seated at a 32" x 72" rectangular table at the back of the cafeteria. The subjects sat facing each other while the experimenter sat at the end of the table.

**Materials**

1. A 7" x 11" sign which designated if the condition in effect for the day was the No Game, Game, or Game Plus Tangible Reinforcement condition (see Appendix B).

2. A time sampling form which was used by the independent observer to record peer tutoring interactions (see Appendix C).

3. Achievement awards which were given to the winning team members during the Game condition (see Appendixes D, E, F).
4. One hundred sixteen 5" x 7" sheets listing the five words for the spelling tests for the following day (see Appendix G).

5. Four word lists containing fifty words taken from Basic Goals in Spelling (McGraw-Hill, 1969), the list of Words With Irregular Spellings and Pronunciations, and the fifty states (see Appendix H).

6. A digital Timex watch used for recording peer tutoring interactions.

7. Tangible reinforcers which included ink pens, colored markers, OSU stickers, OSU fan buttons, baseball cards, marbles, and comic books.

8. Nine pages of loose-leaf paper stapled together for each of the students to write their spelling tests.

Dependent Variables

Number of spelling words correct. A word was judged correct if the letters were legible and in correct order. Number correct was calculated by totaling the number of words spelled correctly on each day's 5-word spelling test.

Peer tutoring interactions. Peer tutoring was defined as any interactions between two or more students on the same team in which words were pronounced and spelled in either oral or written form during a four-minute period before the
The following are examples of behavior not considered as peer tutoring interactions: A student talking to the whole group making a statement such as "You can spell Connecticut by spelling "connect," add an "i" and then add "cut." Statements such as "Anyone who can't spell secretaries is an ardvark,." were not considered as peer tutoring behaviors. Peer tutoring interactions were measured with a partial time sampling procedure. The experimenter observed the two teams for two one-minute periods, alternating the observation periods. A target student from one team was observed for one minute. Peer tutoring interactions were measured at the end of four ten-second intervals and recorded during the five-second intervals occurring between the ten-second intervals. A member of the second team was then observed in the same manner.

**Student response to the game.** The students' response to the spelling game was defined as a written response of "yes" or "no" to four questions asking whether they liked or disliked certain aspects of the game (see Appendix I). This questionnaire was read and completed by the students.

**Independent Variable**

**Spelling game.** The spelling game was played as follows: The students were divided into two teams of three students each. The two teams were given a five-word spelling test. Following the test the experimenter checked the test papers;
added up the team score; and announced the winners. The team which had the greater number of words spelled correctly won the game. Consequences for winning the game were an achievement award under the Game condition or a prize such as marbles, baseball cards, etc. under the Game Plus Tangible Reinforcement.

**Experimental Design**

A multielement baseline design (Ulman and Sulzer-Azaroff, 1975) was used in this study because of the following advantages. The multielement baseline design does not require a protracted baseline phase. Instead, baseline conditions and alternating independent variables are inter-spered throughout the program. Secondly, it is well suited for conducting complex behavior analyses and isolating the effects of interrelated controlling variables. Another advantage is that the experiment can be terminated as soon as the experimenter judges that experimental control has been reliably demonstrated or if time runs out for some reason. Problems associated with shifting or unstable baselines can also be avoided as a result of using this design. Finally, authors have found that administrators and teachers prefer this design because baseline conditions would be returned to every other day or every three days rather than reinstating baseline behaviors after a high level of desirable behavior has been established. Figure I., hypothetical data
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illustrates how a multielement design would be used to show the spelling performance of the group. Figure 1 shows the mean scores of the group as a whole as a function of No Game, Game, and Game Plus Tangible Reinforcement.

Procedure

Selection of spelling words. The spelling words were taken from their classroom speller and a listing of Words with Irregular Spellings and Pronunciations. The fifty states were also used since the students had to learn how to spell them. The students were pretested on fifty words at a time and given another pretest when more words were needed for the study. The words were chosen in the following manner: Twenty-five were taken from a unit in their book which the students had not yet reached and the other twenty-five were arbitrarily selected from the list of words with irregular spellings (see Appendix H).

Division of teams. The teams were divided based on percentage correct as measured over the twenty weeks prior to the study. The two students with the lowest percentages were chosen as team leaders for the initial team placement for the purpose of trying to make the two teams equal. The other four students drew slips containing the words "team I" or "team II" to determine which team they would belong to. The teams remained the same throughout the study. The students wanted to have captains for the teams. The captains
were changed every week. (The captain was to make sure that his team members learned their words.)

**Selection of prizes.** To insure that the prizes were reinforcing to the students, the experimenter made up a list of 15 potential prizes from which the students could choose the prizes that they liked. The students were asked to put a checkmark next to nine of the prizes that he would like to receive. The students' selections were then compared and a list of the prizes selected most often were given as prizes during the Game Plus Tangible Reinforcement condition.

**No Game.** During each day of the No Game condition the experimenter taped a sign on a railing near the table. Printed on the sign were the words "No Game." The experimenter then announced the spelling test saying, "It is now time for today's spelling test over the words assigned yesterday. You will have five minutes to study for the test." During four of the five minutes, the experimenter collected data on peer tutoring interactions between the subjects. Following the five-minute study period the spelling test was administered in the following manner. The experimenter pronounced each word, waited approximately 3 seconds, used the word in a sentence, waited approximately 3 seconds and then pronounced the word again. For example: "Collection." "His collection of baseball cards is great." "Collection." After approximately five seconds, the next word was
presented. After the students finished the tests, the experimenter immediately graded the papers and returned them to the students. The students were then told what the condition for the following day would be. The students were also given the word lists for the next day. The experimenter pronounced each word and used it in a sentence.

**Game.** The students were divided into two teams. Following the test, the experimenter added the teams test scores to determine the winner. The winners were announced and given achievement awards.

**Game Plus Tangible Reinforcement.** The procedures in this condition were the same as in the Game condition with the addition of prizes or tangible reinforcers. A different prize was given each day during this condition. The students were not told what the prize for the day would be until a winning team was determined.

**Reliability of Data**

An independent observer conducted reliability checks on the scoring of three spelling tests in each condition. The independent observer used a scoring key to check the tests. Inter-observer reliability checks were also made on the peer tutoring interactions of the students. The second observer and the experimenter using a time sampling procedure, simultaneously and independently recorded peer tutoring interactions during three days of each condition.
CHAPTER THREE

RESULTS

The results are divided into three sections: students' performance on daily spelling tests; peer tutoring interactions; and students' reactions to the game. Results of reliability measures will also be reported in this chapter.

Student Performance on Daily Spelling Tests

The results are reported for each student and the group on daily spelling tests in this section. See Figures 2-8.

Student 1

During the No Game or baseline condition, the range of daily test scores for Student 1 on the spelling tests were 1 to 5. Student 1's mean performance on the daily 5-word tests under the No Game condition was 2.83. When presented with the Game condition, Student 1's range in scores on the daily tests was 3 to 5 words spelled correctly, with an average of 3.83 (see Figure 2). Student 1 had a mean score on the daily spelling tests of 4.00 under the Game Plus Tangible Reinforcement condition, with a range of 3 to 5.

Student 1 spelled an average of 4.00 words correctly on the daily 5-word spelling tests during the Game Plus Reinforcement condition which represented a 0.17 difference over his performance during the Game condition and a 1.17 word difference over the No Game condition.
Figure 2. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 1.
Student 2

Under the No Game condition, the range of scores on daily 5-word tests for Student 2 was 3 to 5. His average number of words spelled correctly under the No Game condition was 3.50 (see Figure 3). Student 2 had a range of 3 to 5 words spelled correctly on the daily spelling tests under the Game condition, with an average of 3.83. Student 2 had a range of 2 to 5 words spelled correctly on the daily tests and an average of 4.00 words spelled correctly under the Game Plus Tangible Reinforcement condition.

The results show that there was less than a 0.50 difference between the mean scores of the three conditions, with a mean score of 4.00 during the Game Plus Tangible Reinforcement condition being the highest and the Game (3.83) and No Game (3.50) mean scores following closely.

Student 3

Student 3 had a range of scores on the spelling tests of 1 to 4 during the No Game condition and an average score of 2.16 (see Figure 4). Under the Game condition, Student 3 had a range of 3 to 4 words spelled correctly on the daily spelling tests and an average score of 4.16. When presented with daily spelling tests under the Game Plus Tangible Reinforcement condition, Student 3 had a range of 3 to 5 in scores and an average of 4.14 words spelled correctly.

Student 3 had the highest mean average of words spelled
Figure 3. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 2.
Figure 4. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 3.
correctly during the Game condition, with a score of 4.16. The difference in the mean scores of the Game and Game Plus Tangible Reinforcement was only 0.02, however, Student 3 had higher mean scores over the No Game condition during both the Game and Game Plus Tangible Reinforcement conditions.

Student 4

Figure 5 shows the absenteeism of Student 4 on 11 days of the study because of illness. Student 4 was present only 3 days under the No Game condition. His range in scores was 0 to 3, with an average of 1.33 words spelled correctly for the three days under the No Game condition. Student 4 participated under the Game condition for three days. The range of his score was 1 to 3 and his average score was 2.33. Student 4 was present only two days during the Game Plus Tangible Reinforcement condition and his scores for these two days were 1 and 3, making his mean score for this condition 2.00.

The results for the eight days that Student 4 participated in this study, show that his average for the Game Plus Tangible Reinforcement condition was 2.00. His average scores during the Game and Game Plus Tangible Reinforcement were higher than his average of 1.33 under the No Game condition.
Figure 5. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 4.
Student 5

Under the No Game condition, Student 5's scores ranged from 0 to 3 on the daily spelling tests (see Figure 6). His average score under the No Game condition was 1.33. When presented with the Game condition, Student 5's range of scores on the daily tests was 2 to 5, with an average of 3.83. Student 5 had a range in scores of 1 to 5 and an average score of 4.00 under the Game Plus Tangible Reinforcement condition.

The results show a higher score in the Game Plus Tangible Reinforcement condition, with a score of 4.00 which was 0.17 points higher than the Game condition. The mean scores of both the Game and Game Plus Tangible Reinforcement conditions were 2.00 words higher than the mean score of 1.83 for the No Game condition.

Student 6

During the No Game condition, Student 6 had a range in scores of 2 to 5 and an average score of 3.30 (see Figure 7). He had scores ranging from 2 to 5, with an average of 3.40 under the Game condition. When daily spelling tests were presented under the Game Plus Tangible Reinforcement conditions, Student 6 had a range in scores from 4 to 5 and an average score of 4.85.

For Student 6 the results show a higher mean score of 4.85 under the Game Plus Tangible Reinforcement condition,
Figure 6. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 5.
Figure 7. Number of words spelled correctly on daily 5-word spelling tests as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions. Student 6.
which was a 1.45 word difference over both the Game and No Game conditions. The Game condition was only a 0.10 word difference over the No Game condition.

**Group Results**

Figure 8 shows the mean scores on the daily spelling tests of all six students combined.

Under the No Game condition, the individual means for the six students on daily spelling tests ranging from 1.4 to 3.0. The group mean was 2.43 words spelled correctly on the daily spelling tests. The Game condition's range in individual mean scores for the six students on the daily spelling tests was 3.0 to 4.5. The group mean under the Game condition was 3.71. The individual mean scores for the six students on the daily spelling tests under the Game Plus Tangible Reinforcement condition ranged from 3.6 to 5.0. The average of the mean scores under this condition was 4.10.

The mean performance of all six students was 4.10 during the Game Plus Tangible Reinforcement condition was a 0.39 difference over the Game condition and a 1.67 difference over the No Game condition in the mean scores of the students. The mean individual scores on the spelling tests for all six students were lower during the No Game condition than they were under either of the other two
Figure 8. Mean number of words spelled correctly on daily 5-word spelling tests by six students as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions.
conditions of the study. Four of the six students had higher mean averages under the Game Plus Tangible Reinforcement condition. Students 3 and 4 had higher mean scores of the Game condition of the study.

**Inter-Observable Reliability**

Inter-observer reliability was taken on the students' performance on the daily 5-word tests on three days of each condition by having the independent observer check the experimenter's scoring of the tests. Reliability checks on the performance of the students on the spelling tests resulted in 100% agreement on the days when the checks were made.

**Peer Tutoring Interactions**

Figure 9 shows the total number of peer tutoring interactions by the students as a function of the three conditions of the study.

Under the No Game condition, the number of peer tutoring interactions ranged from 2 to 12. The mean number of peer tutoring interactions during this condition was 5.50 interactions. Peer tutoring interactions ranged from 4 to 14 during the Game condition, with a mean of 7.83. The number of peer interactions under the Game Plus Tangible Reinforcement condition ranged from 7 to 13, with a mean of 10.5.

The mean number of peer tutoring interactions was
Figure 9. Total number of peer tutoring interactions per day as a function of No Game, Game, and Game Plus Tangible Reinforcement conditions.
higher during the Game Plus Tangible Reinforcement condition, with an average of 10.5 interactions. This mean number of interactions under the Game Plus Tangible Reinforcement condition was 2.67 higher than the mean number of 7.83 peer tutoring interactions for the Game condition and a 5.00 difference over the No Game condition.

Inter-Observer Reliability

The range of reliability during the No Game condition was from 87.5% to 100.0%, with a mean for the three checks of 95.8%. Reliability under the Game condition ranged from 92.8% to 100.0%, with a mean of 97.6% for the three checks. Reliability ranged from 84.6% to 100.0% under the Game Plus Tangible Reinforcement condition, with a mean of 94.8%.

Student Response to the Game

The results of the questionnaire are shown in Table 2. Student response to the game was positive. All six students liked the spelling game. All six students expressed a preference for the game plus prizes. All six students responded that they would like to play the game in their classroom. Two students made cards which read, spelling is fun.
### Table 2

**Student Response to the Game on a Written Questionnaire**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of Yes Responses</th>
<th>Number of No Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you like the spelling game?</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2. Did you like the spelling game better when you got prizes for winning?</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>3. Do you think that you learned more new words while you were playing the game?</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>4. Would you like to play the spelling game in your classroom?</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>
CHAPTER FOUR

DISCUSSION

A study was conducted to evaluate the effects of a team game on spelling performance and amount of peer tutoring interaction by six elementary students. This chapter discusses the results of the study as well as its implications for classroom procedures and suggested further research.

Student Spelling Performance

Results show that the Game Plus Tangible Reinforcement condition resulted in higher performance on the daily spelling tests than the No Game condition for the six students as a group. These results support the finding of Axelrod and Paluska (1975), which suggested that a combination of both the game and prizes are needed to produce increases in spelling performance. The class average during the seven days of the Game Plus Tangible Reinforcement condition was 4.10 words spelled correctly per day, which is significantly higher than the average of 2.43 during the No Game condition. The daily scores of individual students during the Game and Game Plus Tangible Reinforcement conditions were quite erratic and overlapped (the scores under the No Game condition was higher than the Game Plus Tangible Reinforcement condition on some days) for five of
the students on at least one day of the study. This overlapping of the individual scores during the different conditions also occurred between the Game and No Game conditions. In spite of this overlapping, the Game produced higher mean scores than the No Game condition.

The Game Plus Tangible Reinforcement condition produced only a slight increase, 4.10 to 3.71 words spelled correctly, for the class as a whole over the Game condition. This slight increase contradicts the findings of Axelrod and Paluska (1975) which suggests that prizes must be added to the game in order to increase spelling performance significantly. The students' individual tests scores under these two conditions were very erratic and overlapped on many days of the study. Four of the students did better on the daily spelling tests as a function of the Game Plus Tangible Reinforcement condition while Students 3 and 4 did better under the Game condition. It should be noted that Student 4 was present on only eight days of the study, thus making it difficult to discuss the results of his scores on the basis of which condition produced the greatest increase in spelling performance.

The results suggest that the classroom teacher can produce increases in spelling performance through the implementation of the team spelling game. From the results
shown in this study and the Harris and Sherman study (1973),
the teacher may be able to produce significant results with-
out including the tangible or artificial reinforcers that
were used in the Game Plus Tangible Reinforcement condition.

**Peer Tutoring Interactions**

A second research question in this study was related
to the number of peer tutoring interactions between team
members. The results show that spontaneous peer tutoring
interactions was higher under the Game Plus Tangible Rein-
forcement condition with an average of 10.5 peer inter-
actions for the two teams combined. The average number of
peer interactions under the Game condition was 7.83 for
both teams which was also higher than the average under the
No Game condition which produced an average of 5.5 peer in-
teractions. The peer tutoring interactions were mainly ex-
hibited in one team member telling another member to spell
a word while he listened. On a few occasions, students had
the other team members write down the words after he pro-
nounced them. The appearance of spontaneous peer tutoring
interactions in this study as the result of using a group
contingency supports the findings of Hamblin, et al. (1971)
that spontaneous peer tutoring behaviors occur when award
presentation is dependent on the work of the low performance
student. Anecdotal records show that the spontaneous peer
tutoring interactions exhibited were not limited to members
of the same team. The students would help members of the other team when the game was not in effect. For example, a student might say to the whole group, "You can remember how to spell Connecticut by spelling "connect," put in an "i," and then add "cut." These interteam peer tutoring interactions were not added into the measures of peer tutoring interactions.

Evans and Oswalt (1968) reported that peer influence or peer pressure plays an important part in the success of a group contingency. Based on the observations made during this study, it must be reported that there was no peer influence in the form of the other students urging the slow students to study during this study. This study contradicts the previous findings concerning peer pressure or peer influence.

**Student Response to the Game**

Student response to the game was measured by a four-question questionnaire. All of the students responded that they liked the game. Following the completion of the study, two students drew cards for the experimenter which read "Spelling is fun" and "I liked the spelling game." They also stated that they would like to play the game with their spelling words in the regular classroom. All six students expressed a preference for the game when tangible reinforcers were given to the winners.
There are many possible explanations for why the students liked the game. One explanation would be the fact that they did not have to participate in some of the classroom spelling exercises which included taking a pre- and post-test, and sentence dictation. A second possibility might be the competition between the two teams. The experimenter was led to this conclusion because the students wanted to choose team captains and selected a name for their teams, Champions and Hawks. Also when one team would win they would make statements such as, "We won again. Our team is better than yours. When are you going to win?"

Regardless of the reason, the students seemed to like the game.

 limitations of the Study

The present study supports the findings of Axelrod and Paluska (1975) which suggested that the spelling game would increase spelling performance. There are, however, certain limitations of this study which decrease the generalizability of the findings to other settings.

The first limitation is the small number and type of students involved in the study. There are usually more students in the present study. Secondly, these students were regular classroom students which make it almost impossible to generalize the results to different types of students such as learning disabled students.
The second major concern of the experimenter is due to the fact that the study was conducted in a small number of sessions. This small number of sessions did not provide enough data to suggest that the results would be maintained over the course of an entire school year. The students might become tired of the game and the game would no longer produce the desired results. To determine if the game is producing the desired effects, the teacher would have to keep data of the students' performance.

The types of reinforcement used in the Game Plus Tangible Reinforcement condition is another concern of the experimenter. The use of artificial or tangible reinforcers such as baseball cards, balloons, marbles, etc. which are not natural resources in most classrooms brings up two questions concerning this type of reinforcer. Will the classroom teacher obtain the same results if he uses less obtrusive reinforcers? And if not, could the teacher afford or would the school buy these types of prizes for the 30 or more students each week. It should however be noted that good performance was obtained without the use of artificial or tangible reinforcement in the present study.

The measurement of student performance in terms of daily five-word spelling tests pose certain limitations for interpreting the results of the study. The small number of words spelled daily may have been a contributing factor in
the increase in spelling performance of the students instead of the game. Five words a day may have been easier to learn than a group of twenty words at one time. Use of daily five-word spelling tests provide no data concerning the game's effect on weekly tests of 20 or more words which are characteristic of most classes.

A final concern of the experimenter is that the study was conducted in the final months of the school year. There is no way to determine if the results produced at this time of year were not partially due to the end-of-the-year attitudes of the students.

The readers of this study will have to weigh the results in relation to the above mentioned limitations to determine if the game has value for the classroom teacher in increasing spelling performance.

**Implications for Classroom Practice**

The results of this study may help the classroom teacher decide whether to use the spelling game in his/her classroom to increase spelling performance. The effectiveness of the team spelling game was studied under two conditions. Under the game condition, the spelling game was used and the students were given achievement awards which are natural reinforcers which could be found in any classroom. In the Game Plus Tangible Reinforcement condition, the students were given artificial or tangible reinforcers (e.g.,
baseball cards, marbles, and playing cards) which are not normally found in the classroom. The results of this study and the study done by Axelrod and Paluska (1975) on this spelling game indicate that a combination of the game and prizes produce an increase in spelling performance.

Should the teacher consider implementing the game into his classroom, there are several decisions that he must make. The teacher must look at the literature to determine which aspect of the game produces the desired effects. This study supports Harris and Sherman's (1973) findings that the game without artificial or tangible will produce some increases in performance. It is in contradiction to the Axelrod and Paluska study (1975) which concluded that a combination of both the game and prizes are needed to increase the spelling performance of the students.

Another issue that the teacher must deal with concerns the peer pressure or peer tutoring behaviors which have been reported to go along with this type of procedure. The teacher must decide if the game produces significant enough increases in spelling performance to take a chance of peer pressure in the form of verbal threats occurring as it did in Axelrod's (1973) study as a result of the use of a group contingency. Or will the teacher introduce the game and hope that only positive behaviors such as the spontaneous peer tutoring interactions that were reported in this study.
and in a study by Hamblin et al. (1971). One suggestion that might aid in avoiding the type of peer pressure reported in the Axelrod study would require that the teacher not single out the low achieving student as was done in Axelrod's study.

Before the teacher decides to implement the game, he must decide if the classroom schedule permits the inclusion of the game procedure. He must ask himself the following questions. Are all of the students in the classroom at one time period when the game could be used? Will he have to set up more than two teams to satisfy the spelling groups in his classroom? Will the game produce spelling increases significant enough to warrant any possible changes that would have to be made in the class schedule.

The present study along with other studies indicate that this game is a simple and easily implemented procedure which can increase spelling performance, but the classroom teacher must decide how much of the game he has to use to increase spelling performance. He also has to decide if the increases in spelling performance are worth the possible appearance of undesired peer pressure.

**Suggestions for Future Research**

Results of this study suggest new areas which should be investigated by future research. Some questions for future research follow:
1. Will the game procedure produce spelling increases if used with a larger number of students?
2. Will the game produce the same results with learning disabled and other types of children?
3. Will the game maintain increases in spelling performance for an entire school year?
4. Will the game produce the same result on weekly spelling tests that were produced on daily spelling tests?
5. Does the use of the game increase retention of spelling words?
6. Will adding a perfect contingency, all students must have perfect test scores, to the game keep spelling performance at a high level?

**Summary**

Six male students from a regular classroom served as the subjects in an experiment designed to determine if a spelling game would increase the spelling performance of these students as a result of the game. The students were divided into two teams and given daily five-word spelling tests. The scores of the team members were then added together to determine the winners of the game. The winners received social or tangible reinforcement depending upon the condition in effect for the day. Measurement of peer tutoring interactions were taken daily for both teams and
added together. Results of the study showed that the spelling performance was increased as a result of the game. There was a higher number of peer tutoring interactions under the Game Plus Tangible Reinforcement condition than both the Game and No Game conditions. The students' response to the game was quite positive. All of the students expressed an interest in having the game implemented into their regular classroom.

This study illustrates that this spelling game can be effective in increasing the spelling performance of students. The implications of this study offer practical information to the classroom teacher who wishes to use this spelling game to increase the spelling performance of his or her students.
REFERENCES


Reid, H. C. Evaluating five methods of teaching spelling -- second and third grades. *Instructor*, 1966, 75, 76-82.


Appendix A

---THE OHIO STATE UNIVERSITY---

CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child's participation in) a study entitled _The Effects of a Classroom Game on Spelling Performance:_

A Systematic Replication

Queen E. Morgan

(Investigator/Project Director or his/her authorized representative)

explained the purpose of the study and procedures to be followed. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child). The information obtained from me (my child) will remain confidential and anonymous unless I specifically agree otherwise.

Finally, I acknowledge that I have read and fully understand the consent form. I have signed it freely and voluntarily and understand a copy is available upon request.

Date: ____________________________ Signed: ____________________________

(Participant)

(Investigator/Project Director or Authorized Representative)

(Person Authorized to Obtain for Participant - If Required)

PA-027 (2/79) -- To be used only in connection with social and behavioral research for which an OSU Human Subject Review Committee has determined that the research poses no risk to participants.
Appendix B

SIGNS STATING CONDITION
IN EFFECT FOR THE DAY

No Game

Game
No Prizes

Game
Plus Prizes

Actual size - 7" x 11"

68
Appendix C

OBSERVATION FORM

Date _____________

Place an x in a box if peer tutoring behaviors occur at the end of the interval.

Place a / in the box if no peer tutoring behavior is occurring.

Team ____

\[
\begin{array}{cccc}
10 & 25 & 40 & 60 \\
\end{array}
\]

seconds

Team ____

\[
\begin{array}{cccc}
10 & 25 & 40 & 60 \\
\end{array}
\]

seconds

Team ____

\[
\begin{array}{cccc}
10 & 25 & 40 & 60 \\
\end{array}
\]

seconds

Team ____

\[
\begin{array}{cccc}
10 & 25 & 40 & 60 \\
\end{array}
\]

seconds

69
To Whose Brain Has Worked Overtime to Win The Spelling Game

[Cartoon drawing of a figure with a pile of books and three thought bubbles: 'Spelling?', '100 + 88 = ?', 'geography']

Date

Signed
"Winner of the Spelling Game"

Dog Gone Right
We're All Proud!

This is to certify that has boned up on

Date ______
Signed ______
Awarded to

on

for winning

The Spelling Game!
Connecticut
Rhode Island
Colorado
Idaho
Oregon

Sample Word List
Actual Size
73
Appendix H

Spelling words taken from classroom speller

<table>
<thead>
<tr>
<th>protection</th>
<th>believe</th>
<th>companies</th>
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Spelling words continued

wild
wind
wolf
woman
women
won
would
wrong

you
young
your
Appendix I

Student Response to the Game

A Questionnaire

Write yes or no on the line after each question.

1. Did you like the spelling game better when you got prizes for winning? ________

2. Did you like the spelling game better when you got prizes for winning? ________

3. Do you think that you learned more new words while you were playing the game? ________

4. Would you like to play the spelling game in your classroom? ________