

THE DIFFERENTIAL EFFECTS OF PEER TUTORING AND PEER TUTORING
WITH A GROUP CONTINGENCY ON THE SPELLING PERFORMANCE AND
DISRUPTIVE BEHAVIOR OF FOURTH-GRADE STUDENTS IN A GENERAL
EDUCATION CLASSROOM

DISSERTATION

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ABSTRACT

Achievement gains from peer tutoring have been shown to be superior to those from traditional teacher instructional strategies. Due to the requisite high response rates, students remain actively engaged with academic materials and evidence greatly reduced levels of disruptive behavior. The purpose of this study was to investigate the effects of a class-wide peer tutoring system and an interdependent group contingency on the spelling/reading performance and the disruptive behaviors of targeted fourth-grade students. An ABCBC design was implemented to demonstrate the differential effects of peer tutoring alone and in combination with the interdependent group-oriented contingency. The group contingency was put in place throughout the school day to assess its effects on the students' behavior during non-peer tutoring periods. During the peer tutoring phases, students achieved higher spelling quiz scores and displayed lower levels of disruptive behaviors than during baseline. When the interdependent group contingency was introduced, disruptive behaviors declined even further during the peer tutoring sessions and began to decline during non-peer tutoring periods. The interdependent group contingency appeared to have modest effects on the students' spelling performance. The study findings and consumer responses to the questionnaires indicate that the use of

effective instructional and behavior management procedures such as peer tutoring and interdependent group contingencies can produce beneficial outcomes for low-achieving elementary-aged urban learners.

Dedicated to my mother, my children, my husband, my brothers and sisters and all my
well wishers

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CHAPTER 1

INTRODUCTION

Educators are daily engaged in the task of improving students' academic behavior. For academic behavior to improve, an atmosphere conducive to the task of teaching and learning is vital. For this reason, educators find themselves greatly concerned with managing students' social behavior as well. Research indicates the great concern that teachers have with disruptive behavior and their belief that both social and academic behavior impact each other. Kauffman, Wong, Lloyd, Hung, and Pullen (1991) observe that teachers rate disruptive behavior within the classroom as unacceptable and indicate that it places the student at risk for failure in any classroom setting. Teachers find disruptive behavior to be predictive of less academic engagement time, lower grades, and a poor performance on standardized tests (Wentzel, 1993).

Students with behavior problems in both special education and general education classes present an especially great challenge to teachers because their behaviors are not only harmful to them, but also interfere with both the teacher's effective teaching and disrupt learning for other students in the class. Christenson, Ysseldyke, and Thurlow (1989) point out that students' behaviors during instruction may impact the classroom

climate and the extent to which all students are actively engaged in the instruction, a major influence on students' academic outcomes. The effects of disruptive behavior are worsened by the fact that when disruptive noncompliance behavior occurs in the classroom, teachers have to take time to respond to the inappropriate behavior of a few students and in the process valuable instructional time is lost for all students (Smith & Rivera, 1995) and their academic performance adversely affected.

Given the harmful effects of disruptive behavior in the classroom and the need for improved academic performance, it is not surprising that a wide range of procedures have been developed in an effort to manage students' disruptive behavior and improve the instructional environment for all students. However, most of the procedures employed by teachers have typically relied on reprimands, penalties, loss of privileges, detention, suspension, and corporal punishment (Colvin, Kameenui, & Sugai, 1993), punitive procedures whose side effects may outweigh their benefits. These punitive procedures mainly focus on punishing the inappropriate behavior rather than reinforcing appropriate behavior to encourage its development. Fortunately, there are many more positive procedures such as token economies (Adair & Schneider, 1993; Newcomer, 1993), differential reinforcement (Deitz & Repp, 1983), home-based contingencies (Barth, 1979; Rhode, Jensen, & Reavis, 1998), self management (Cole & Bambara, 1992), social skill instruction (Cartledge & Milburn, 1995; Zaragoza, McIntosh, & Vaughn, 1991), choice-making (Dunlap, Kern-Dunlap, Clarke, & Robbins 1991), and group-oriented contingences (Le-Master, 1990, Jesse, 1990) with positive effects and very limited, if

any, adverse side effects. Group-oriented contingencies are easy to implement and teacher friendly and therefore have the potential to be implemented by teachers. The use of group-oriented contingencies is a procedure that can be used as a component of other behavior management procedures to successfully change for the better both academic and social behavior.

Students' disruptive behavior has also been found to be related to other factors such as the instructional method used (Engelman & Colvin, 1983). Effective instruction methodologies such as peer tutoring (Henningson, 1998 & Du Paul), response cards (Amendaritz & Umbreit, 1999; Kiarie, Lambert, Lo, & Cartledge, 2001; Lambert 2001), and choral responding (Sainato, Strain & Lyon, 1987) have been shown to decrease students' disruptive behavior as well as improve academic performance (e.g., Beckley & Heward, 1996; Gardner, Heward, & Narayan, 1990). Unlike traditional instructional methodologies wherein it is expected that teachers present information and students are passive listeners, effective instructional methodologies actively engage all students in the process of learning by creating opportunities for students to frequently and actively respond to the instructional material.

Peer tutoring has added advantages when compared to other effective instruction methodologies (e.g., direct instruction, response cards, and guided notes). Peer tutoring involves students interacting and working with one another. Peer tutoring therefore has the potential of contributing to increased social interactions between students (Welsch 1998) as they try to help each other learn. This opportunity for increased and probably

improved social interactions is nowhere more important than in classrooms with students at risk for behavior problems and in general education settings where students need to learn to work together and interact positively. Because peer tutoring provides opportunities for students to be engaged constantly in academically relevant material, it can contribute to reductions in disruptive behavior by denying students opportunities for down time. An added benefit of peer tutoring is that during the peer tutoring procedure, students learn very important “teacher” skills such as how to provide positive reinforcement and prompts to the learner (Maheady, Harper & Sacca, 1988). At the same time, all students receive intensive one-on-one instruction and lots of opportunities to make active responses to instructional antecedents. Spelling instruction, like other academic subjects, is one area in which student-to-student instruction can greatly improve academic performance.

However effective peer tutoring is in reducing students’ disruptive behavior, it is possible that adding an effective, easy-to-use, teacher-friendly behavior management procedure can further contribute to decreasing incidences of disruptive behavior beyond the decrease evidenced by peer tutoring alone and that the decrease in disruptive behavior could bring about an improvement in students’ academic behavior. Also, since peer tutoring is only in use during instruction, an effective behavior management could bring about great decreases in disruptive behavior in generality settings.

Purpose of the study

The research literature contains many reports of the positive effects of peer tutoring on the academic performance of varied student populations in many settings, and in a variety of subject areas (e.g., Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Greenwood, Delquadri, & Hall, 1989; Harper, Mallette, Maheady, Parkes, & Moore, 1993; Johnson & Bailey, 1974; Maheady, 1988; Maher, 1984; Moore & Heward, 1996). Along with examining academic performance, this study investigated the effects of peer tutoring on students' social behavior, an area that very few empirical studies have addressed. In addition, this study was an attempt to investigate the additive effects of a group-oriented contingency on peer tutoring on both the academic and social behavior of students. While this study focused on peer tutoring and hence adds to the peer tutoring literature base, it differs from most other peer tutoring studies in that the group contingency is neither part and parcel of the peer tutoring package nor is it placed on academic behavior. The results of this study added to the literature available on peer tutoring, spelling instruction, and behavior management and extend this literature in the ways noted earlier. No studies to date have combined an effective instruction procedure with a behavior management procedure and examined the effects of both on the academic performance and disruptive behavior of regular education students during spelling and generality settings.

Review of the Literature

Relationship Between Social and Academic Behavior

The relationship that exists between academic and social behavior has been observed informally and noted anecdotally by a number of researchers (e.g., Cartledge & Milburn, 1995). This relationship was also demonstrated experimentally in a study by Ayllon and Roberts (1974), which examined the disruptive behavior of five fifth grade boys mainstreamed in a regular education class with 33 other students. The target students were first involved in small group reading instruction after which they were assigned additional work that extended their regular reading instruction. This additional instruction consisted of about 20 minutes of skill-building activities related to the day's reading lesson, which the students completed at their seats.

Using a point system, the boys were awarded for nondisruptive behavior during the independent seatwork conditions. The results of this study showed that as the boys' accuracy on the seatwork activities improved, so did their behavior. When the boys' accuracy on assignments averaged only 50% correct, disruptive behaviors were recorded for 40-50% of the sample intervals but when their accuracy on the assignments increased to 80%, disruptive behaviors were only observed for 5% of the intervals recorded. It can be reasonably argued that when the instructional methodology is effective, students learn, formally difficult frustrating materials become easier and as students begin to enjoy the success, they focus more on academic rather than disruptive behavior.

Effective Instruction and Student Behavior

There is indeed research that points to effective instruction as a means for reducing students' disruptive behavior. Engelmann and Colvin (1983), for example, in their book in which they examine the effectiveness of a Direct Instruction approach to disruptive behavior conclude that often students with behavior problems are not appropriately placed in the curriculum. These observations are also made by Shores, Gunter, Denny, and Jack (1993) who indicate that academic assignments, requiring skills not already in the student's repertoire, can create a classroom environment that is aversive for the learner. Engelman and Colvin estimate that examining teacher presentation, accurate academic placement of students, and correcting curricular design errors can eliminate 90% of behavior problems that occur in the classroom.

Heward (2000) also indicates that effective instruction variables such as appropriate pacing, that is, the speed or rate of teacher presentation of concepts and examples of concepts to the students, order of teaching examples presented to the student, variation of teacher-presented examples, the number of examples presented to students, the frequency and duration of practice, the prompts delivered as part of instruction, and the teacher's reaction to the students' responses are all key variables that affect student behavior in the classroom.

The effects of effective instruction strategies on students' social behavior such as disruptive behavior and off-task classroom behavior have been noted both on anecdotal observations and empirical studies. Sainato, Strain, and Lyon (1987) for instance, while

mainly investigating the effects of choral responding on students' academic behavior, noted less disruptive behavior with preschoolers with special needs. These effects were also noted by Sindelar et al (1986). Shields (1996) also observed a decrease in such inappropriate behaviors as off-task and disruptive behaviors in the classroom with elementary school students in a regular classroom. These effects are corroborated by Amendariz and Umbreit (1999) in a study that was replicated by Kiarie, Lambert, Cartledge, & Lo (2001) with students with developmental disabilities.

Active Student Responding (ASR)

The positive effects of effective instruction obtained with students' behavior, both academic and social result from an increase in students' active responses (ASR). Active student responses are the means through which they learn. Barbetta, Heron, and Heward (1993) define an active student response (ASR) as an observable student response made to an instructional antecedent. ASR is a direct measure that accounts for every discrete trial made by a student in the particular instructional session and its outcome. Creating more learning trials for students to participate in is providing opportunities for ASR. Opportunity to respond (OTR) is the interaction between antecedent instructional stimuli developed by the teacher and the success of those antecedents in establishing the academic responding implied by the materials (Greenwood, Dequadri, & Hall 1984). The more the number of learning trials students participate in, the more they practice the target skills and the more they learn and the more students are engaged in making active responses to academic material, the less their opportunities for disruptive behavior.

The related literature presents five effective instruction strategies which increase students' opportunities to respond and the number of responses made to instructional antecedents per session. These strategies are choral responding, guided notes, response cards, Direct Instruction, and peer tutoring. Choral responding, by its nature, ensures that all students have an opportunity to respond to every teacher presented question. During choral responding, all students in the group orally respond in unison to a teacher-posed question (Heward, Courson, & Narayan, 1989). Learning by choral responding has been demonstrated to increase both active student responding and academic performance (Carnine, 1976; Dunlap & Dyer, 1980; Heward, et al, 1989; Johnson, 1990; Sindelar, Bursuck, & Halle, 1986; Wolery, Ault, Doyle, Gast, & Griffen, 1992).

Guided notes, which are teacher developed lesson notes with random key words omitted and blanks for students to fill as the lecture progresses, are another strategy that increases students' opportunity to respond. Research by Beckley and Heward (1996), Bullara, (1993), Courson and Heward, (1989), Hunnicut and Heward, (1991), Lazarus (1988, 1991), Lovitt, Rudist, Jenkins, Pious and Benedetti, (1985), Pados and Heward (1989), Saski, Swicegood and Carter (1983), and White and Heward (1991) variously indicate the effectiveness of guided notes over traditional notetaking strategies in improving students' academic performance.

Response cards, described as "signs or items that are held up simultaneously by all students in the class to display their responses to a question or problem presented by the teacher", (Heward, 1994 p. 299) are another effective instruction strategy. A large

number of studies on response cards have demonstrated the effects of response cards on academic behavior such as Math (Yang, 1993), art history (Banas, 1999), relational concepts (Berg, & Heward, 1994), health concepts (Rosen, 1994; Stefonsky, 1993), earth science, science (Seargent, 1994), global history (King, 1996), American history (Rindfuss, 1997), sight word acquisition (Omness, 1992), reading and math (e.g., Pappas, 1994), listening comprehension (Garcia, 1997), and social studies (Al-Attrash, 1998; Lockard, 1993) among others.

Peer tutoring, when implemented class wide involves pairing all students in a class for tutoring. The tutor provides feedback on the tutee's academic responses using phrases and prompts trained. Each tutor-tutee pair then switches roles after the time designated so that the tutor now becomes the tutee and the tutee becomes the tutor. Presenting the instructional material on flashcards can compensate for discrepancies between the academic levels of the peer tutoring pair. This happens because the tutee, who may have more academic skills than his tutor, is still challenged because the answers to the questions, or definitions to the words, or the letters of the spelling word are located on the card and are available only to the tutor. The tutor is only responsible for providing instructional feedback to the tutee (Foster-Harrison, 1997). A lot of literature (e.g., Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Greenwood, Delquadri, & Hall, 1989; Greenwood, Finney et al., 1993; Harper, Mallette, Maheady, Parkes, & Moore, 1993; Maheady, 1988; Maher, 1984; Moore & Heward, 1996) is available on the effects of peer tutoring on academic behavior.

Direct Instruction (DI) utilizes a specific DI curriculum. Founded by Zig Engelmann in 1963 and initially used by the founder to teach his own children, Direct Instruction is based on the perspective that all students can learn if they are taught effectively. DI is based on the theory that students are not responsible for their lack of learning in the classroom but that it is the teacher's responsibility to instruct children effectively.

Lesson delivery, program design, and analysis of results and program (Engelmann & Carnine, 1991; Madigan, 1998) are the three critical components involved in Direct Instruction. Lesson delivery, a component of DI that utilizes teaching strategies described above such as choral responding and an assisted note taking system similar to guided notes is the component that most directly concerns classroom teachers who use DI. Direct Instruction curriculum provides explicit directions as to what the teacher's response should be to student responses during the lesson.

Central to the Direct Instruction curriculum is a formal scripted method of providing instruction in the classroom and a high rate of active student responses (many of which are provided through choral responding) built within the lesson. Specific correction formats for errors made during choral responding are provided in the curriculum and teachers using DI are required to master them in order to provide students effective feedback during choral responding activities. To master these procedures a teacher is required to become fluent at discriminating group correct responses and responses where some students have made errors during choral responding.

DI lessons are quick paced, a characteristic that is associated with increased student achievement in the subject material (Carnine, 1976, 1981; Engelmann & Carnine, 1991). Signaling, used to provide students with a cue to respond in unison, is a distinctive feature of DI lessons. When used effectively, signaling provides for more opportunities to respond, easy detection of response errors, and fewer corrections for students (Carnine, 1976, 1981).

Peer Tutoring

As noted earlier, peer tutoring is viewed as an effective instruction strategy whose benefits outweigh those obtained with other effective instruction strategies. Foster-Harrison (1997) maintains that peer tutoring, is "the instructional assistance provided by one student to another in the same classroom, group or age, usually for the general purpose of academic skill improvement" (p.9). Peer tutoring has been explained by Maheady, Harper, and Sacca (1988) as students instructing other students while Heward, Heron, Ellis, and Cooke (1986) define peer tutoring as any academic instruction that is provided by one student to another. Peer-tutoring is an instructional arrangement in which the teacher pairs two students in a tutor-tutee relationship to promote learning of academic skills or subject-matter. Peer tutoring may involve older students tutoring younger students (cross-age) or more able students tutoring those who need more help with academic materials in the same class.

Cross-age Peer Tutoring

Barbetta, Miller, Peters, Heron, and Cochran (1991) taught sight word vocabulary to elementary schools students using a cross-age peer tutoring procedure. The subjects of their study were 6 elementary school students selected by the classroom teacher on the basis of academic need and six high school students selected by their study hall teacher on the basis of their potential to manage the tutoring procedure. The elementary school classroom teacher provided sight words which the high school students used to tutor the elementary school students. The peer tutoring procedure involved a 7- to 10- minute sight word identification practice session after which the tutors tested the tutees. The results of this study indicated that all students acquired and maintained the sight words trained in a maintenance probe conducted 4 months after the completion of the study. Generalization of the trained words was also evident when six students were able to read the trained words in the context of a sentence as well. Results of a social validity questionnaire given after the study indicated that students viewed peer tutoring very positively.

Kamps, Dugan, Potucek, and Collins (1999) implemented a cross-age peer tutoring program with peer networks consisting of students with autism and fourth-grade peers to tutor first-grade students in word recognition. Kamps et al. used an ABAB reversal design and demonstrated that the academic performance of the first graders in weekly word recognition quizzes increased during peer tutoring, that the tutors were able to implement all the tutoring steps, and that the social interactions among all the network students improved.

Using more able students to teach less academically able ones has been found to result in gains not only for the tutees but also for the tutors. This was found to be the case in a study by Chiang, Thorpe, and Darch (1980). Chiang et al implemented a cross-age peer tutoring program with second- and third-grade students with learning disabilities. The academic material targeted was recognition of three- to four- letter words such as “but”, “man”, “can”, and “date”. The tutees greatly increased the number of words they were able to recognize after the tutoring program. Although the third-grade students tutored the second grade students, they were able to recognize more complex words involving the morphemes they were tutoring on without direct instruction on these words.

The results of the Chiang et al study were replicated in another study by Houghton and Bain (1993) in which eight 14-year-old below average readers were selected by the classroom teacher to tutor another eight 14-year-old English-as-a-second-language (ESL) learners in reading accuracy and comprehension. The tutors used teacher-selected passages and were trained to use such strategies as prompting the tutee to pause when he/she made an error while reading, prompting the tutee to self-correct, and providing positive reinforcement in the form of praise upon self-correction, to the tutee. The results of this study indicated that both tutors and tutees made significant gains in the target behaviors. Both the ESL students and the below-average readers made average gains of 9.6 months and 8.2 months respectively in reading accuracy and 13.9 months and 14.37 months respectively in reading comprehension.

Cross-age tutoring is mainly preferred where it is felt that older student tutors usually have many of the prerequisite skills. This implies that training for these students may not require as many training sessions as class wide peer tutoring especially with younger children (Miller, Barbetta, & Heron, 1994).

Although higher achieving students are often selected as tutors in cross-age tutoring, Giesecke, Cartledge, and Gardner (1993) demonstrated in their study that low-achieving students could serve as effective cross-age tutors to teach sight words to other students. The subjects of this study were 4 third-grade students who served as tutees in the study and 4 fourth-grade students who served as tutors. The fourth-grade tutors were selected because of their low reading performance and their low social status among peers. Each of the 30-minute tutoring sessions consisted of tutor talk (meant to build rapport between the tutor and tutee), practice (where the tutor followed a structured procedure to tutor the tutee in identifying and reading the words), review games and the testing and charting period where a short review of the sight words targeted for the session were learned, the tutee tested, and the number of words read correctly recorded. The results of this study indicated that the tutees made substantial gains in acquiring and maintaining sight words. In a similar study with second- and fifth-grade students with behavior disorders, Cochran, Feng, Cartledge, and Hamilton (1993) found that tutors and tutees made more academic gains than their matched same-aged peers who did not participate in cross-age tutoring.

Class wide Peer Tutoring

Some researchers (e.g., King-Sears & Bradley, 1995) have argued that the cross-age model of peer tutoring may lead to some students losing out on their instructional material when they are pulled to go and tutor. King-Sears and Bradley recommend class wide peer tutoring (CWPT), an instructional management procedure which enables the teacher to engage all students in a classroom simultaneously in a variety of academic tasks. Class wide peer tutoring was originally developed to address the lack of class time during which students were actively engaged in activities that facilitated academic achievement (Greenwood, 1991), and is a direct instruction procedure that is based upon reciprocal peer tutoring of members of the same class. In CWPT, each student gets the opportunity to play the roles of tutor and tutee in the same session. As in other types of peer tutoring, in CWPT, opportunities for each student to actively respond to the instructional material are provided by a fellow student while the teacher monitors the procedure. A review of the peer tutoring literature reveals that all kinds of peer tutoring including cross-age and class wide, have been used effectively to improve both academic and social behaviors of students at various grade levels.

Peer Tutoring and Academic Performance

The effectiveness of peer tutoring with various student populations, including preschoolers (e.g., Brady, 1997), and subject areas, has been demonstrated in numerous studies (e.g., Delquadri, Greenwood, Whorton, Carta, Hall, 1986; Greenwood, Delquadri, and Hall, 1989; Harper, Mallette, Maheady, Parkes & Moore, 1993; Maheady, 1988;

Maher, 1984; & Moore & Heward, 1996). Brady (1997), for example, implemented a reciprocal peer tutoring procedure with 4 preschoolers with and 4 without disabilities. The eight students were taught to present the item (stimulus), praise correct responses, and correct their tutee's errors. The curriculum content included letters of the English alphabet and colors. The results of this study indicate that all students reached at least 90% correct on two consecutive sessions or 100% correct in one session within 14 peer-tutoring sessions. The researchers also noted longer-lasting interaction sessions during free play periods after peer tutoring was instituted.

Among the peer tutoring literature is evidence that peer-tutoring effects may be superior to those of traditional teacher-directed instruction. One example is given by Gyanani and Pahuja (1995) who report the results of a geography peer-tutoring program with junior high school students. The study contained 214 experimental and 201 control students ranging in age from 11-16. Experimental students were organized into peer tutoring groups while the controls continued to be taught by the teacher as one large group. Students were then tested on the material learned during both the one-group teacher instruction sessions and the tutoring sets. The results of this study indicate that the experimental group achieved significantly higher gains in terms of the mean scores for the group than the control subjects.

The peer tutoring findings also point to greater performance generalization compared to more traditional methods. Moore (1996) conducted her study with secondary school students with mild disabilities. In this study the researchers taught 8 secondary

school students with learning disabilities and developmental handicaps aged 16 to 20 years to complete biographic forms. A multiple baseline across four sets of biographic information was used to analyze the effects of the peer tutoring procedure. Baseline involved probing each of the students to establish the number of items they could already complete correctly before the instruction. The overall mean of items completed correctly on probes administered after training increased by 17 items out of 32 possible items while the overall percent mean for items correct on the three generalization employment application forms administered after training increased from 56% to 70%. The overall percent mean for items correct on the four generalization forms administered after training increased from 71% to 81%.

Peer Tutoring and Mathematics

The effects of peer tutoring on math performance have been investigated among both students with and without disabilities. Britz, Dixon, and McLaughlin (1989) review study findings concerning effects of peer tutoring on the math performance of low achieving students with mild disabilities or social disadvantages conducted from 1980 through 1989. In their review, the authors note that both same-age and cross-age peer tutoring have been effective in bringing about positive changes in math performance with students with special needs and typically developing students.

Scloss, Kozba, and Alper (1997) for example, used a multiple baseline across subjects design to investigate the effects of peer tutoring on the acquisition of functional math skills among 6 secondary school students with moderate retardation. During the

baseline condition, each of the students was provided with 5 one-dollar bills, shown cards with dollar amounts (e.g., \$3.99) and required to show how many one dollar bills they would give the cashier to purchase the item costing the amount indicated on the card. During intervention, the peers with assistance from the teacher tutored each other on correctly identifying the number of one-dollar bills they would provide to the cashier to purchase items. The results of this study indicate that all the subjects made substantial gains in the skills targeted and that upon being taken to a nearby community store to purchase items, the students were able to provide the correct one-dollar bills.

The Henningson and Dupaul (1993) study went a step further by examining both math performance and disruptive behavior. Henningson and DuPaul examined the effects of peer tutoring on the math performance of a student with attention deficit hyperactivity disorder described as “underachieving” especially in math in a second-grade classroom. These experimenters also used an ABAB reversal design to measure the effects of the independent variable-peer tutoring-on the two dependent variables, math performance and disruptive behavior. A 30-seconds partial interval coding system was used to observe the subject’s on-task non-fidgety behavior while curriculum-based measurement probes were used to measure changes in the math skills as a function of peer tutoring. During baseline, the teacher taught math skills for a period of 10 to 20 minutes 5 days a week after which she assigned independent seatwork. During intervention, all students were paired and trained on how to tutor each other. The target student was paired with another whose behavior in the classroom was exemplary and his academic performance in math

was rated as high. Results indicate that the subject's level of on-task behavior during initial baseline was 39% while off-task fidgety behavior was 31% on average. During the first intervention phase, the subject's on-task behavior increased to 89% and fidgety off-task behavior was only observed for 4% of the intervals. A return to baseline resulted in a decrease in on-task behavior (Mean=70%) and an increase in task-irrelevant activity (23%). Upon reimplementation of treatment, on-task behavior rose to a mean of 90% and off-task behavior dropped to 3.8%. The findings of this study indicate that peer tutoring meets the needs of students with attention-deficit hyperactivity disorder (ADHD). According to Barkley (1990) students with ADHD are challenged by the group modes of instruction as well as the conditions of delayed feedback that prevail in most classroom. However, these students can sustain their attention with an instructional mode that creates opportunities for them to engaged.

Despite generally positive results, in some cases peer tutoring outcomes have been equivocal. In a more recent study with elementary students with and without ADHD for example, DuPaul, Ervin, Hook, and McGoey (1998) compared math and spelling achievement during peer tutoring to academic performance following teacher-directed instruction. DuPaul et al also investigated the effects of peer tutoring on on-task and off-task behaviors as well as academic performance of students with ADHD. The subjects were 18 students with ADHD and 10 typical students attending grades one through five in two school districts. Their ages ranged from 6 to 10 years. The curriculum areas targeted were math and spelling and the design employed was an ABAB reversal. During

baseline, the teachers were instructed to teach using their usual strategies in both math and spelling. Class wide peer tutoring was then implemented and the target students paired with others. As with most other peer tutoring programs, the students were divided into two teams and points awarded for responses which were correct the first time, corrected responses, and good tutoring behaviors. The results of this study indicated substantial effectiveness of the program with the social behaviors but were rather inconsistent in the academic behaviors. Across students with ADHD, mean percentages of active on-task behavior for the 4 phases was 29, 80, 21, and 83 and their mean percentages of off-task behavior were 27, 8, 24, and 6%. These patterns of both on-task and off-task behavior during the study were evident for the typical peers. For the academic behavior, initial CWPT led to increases for only 5 of the 14 students with ADHD and 8 of the 10 peer comparison students. Posttest scores decreased during the return to baseline for 6 of the students with ADHD and 4 of the peer comparison students. The final implementation of CWPT led to improvements in posttest scores for 9 of the students with ADHD and 3 of the peer comparison students. Thus, changes in the academic performance associated with both the students with ADHD were variable across students. More research in this direction is warranted.

Another example of the equivocal effects of CWPT on math skills is found in a study by Allsopp (1997) who used a pretest posttest design to study beginning algebra problem-solving skills with middle school students. The dependent variables were math scores on a posttest and a maintenance test measuring basic algebra equation and word

problem-solving skills. The teachers delivered formal direct instruction in the algebra problem-solving curriculum for five weeks. The students were then pretested on their skill level with the algebra problem-solving curriculum and teacher instruction then conducted for another 5-week period after which a posttest was administered the day after the completion of the teacher instruction period. During the one-week period after the posttest, no algebra problem-solving was taught and a maintenance check was conducted. Students were then divided into groups with some practicing the skills individually and others using the CWPT after which another posttest was conducted. The results of the study indicate that both independent practice and CWPT were equally effective in improving the students' algebra skills. None produced better results than the other.

Peer Tutoring and Other Curriculum Areas

Other curriculum areas in which peer tutoring has been used to improve performance have included science, social studies, health, and art (Maheady, Sacca, & Harper, 1988), Spanish vocabulary (Wright, 1990) and striking skills in physical education (Johnson & Ward, 2001). Wright (1990) evaluated the effects of a class wide peer tutoring program in a Spanish class for students with learning disabilities and academically at risk in a secondary school. The dependent variables in this study were rate of learning of Spanish words and phrases, performance on weekly tests, and number of words and phrases maintained in a maintenance probe conducted after the study. Using a reversal design, the researchers found that the students' rate of learning of Spanish

words and phrases as well as the scores on weekly tests given increased with the implementation of the peer-tutoring program compared to no peer tutoring at all.

Johnson and Ward assessed the effects of CWPT on the striking skills of third-grade students during a 20-lesson physical education striking unit. The participants were 11 third-grade students who participated in the lesson and the effects of peer tutoring were examined on three dependent variables, that is, the number of total trials to criterion, number and percentage of total trials, and the time the teacher spent in organizing the lesson. During the baseline condition, the teacher presented the tasks in the format of: teacher explanation and demonstration, practice by the students and teacher monitoring and providing of feedback. During intervention, students were divided into groups of four and each group randomly paired. Tasks were presented on task cards and after the teacher demonstrated each task, the pairs were allotted two to two and one half minutes to practice and partners given two minutes to check on their partner's performance of the task and provide feedback. Pairs then combined their number of correct trials with their group and the number of correct trials by the group was posted. Goal setting was also incorporated. The results of this study indicate that CWPT produced superior results than teacher instruction.

Peer Tutoring and Language Arts

Researchers have demonstrated the beneficial effects of peer tutoring on student performance in story grammar, comprehension, sight word identification, vocabulary acquisition, and other general reading skills. In one of these studies (Rekrut, 1992), high

school students were taught story grammar strategies after which one group was paired with fourth- and fifth-grade students and required to tutor them once a week for six weeks. The students in the other group were not required to tutor. Results of the study indicated that the students who tutored had better scores on the story grammar posttests than those who did not.

Peer Tutoring and Students with Special Needs

A large number of studies have demonstrated the effectiveness of peer tutoring with special needs students where the students with special needs have been tutored or have engaged in a reciprocal peer tutoring relationship with typically developing students in various subject areas and grade levels, some of which were reviewed earlier in this paper. Maheady et al (1988), for example, report the effects of a class wide peer tutoring program on the academic performance of 14 students with mild disabilities and 36 nondisabled students in three tenth-grade social studies classes. Randomly assigned tutor tutee pairs belonging to one of two teams quizzed each other verbally using guides and took written weekly quizzes for points for their teams. Using an ABAB research design, the experimenters found that mean quiz scores changed from approximately 70 percent during baseline for to approximately 90% for both groups.

Other positive results are reported with students categorized as having attention deficit hyperactivity disorder (e.g., Henningson & DuPaul 1993; Du Paul, Ervin, & Hook, 1998), autism and developmental disabilities (e.g., Kamps, Barbetta, Leonard, & Delquadri, 1994), learning disabilities (Trapani & Gettinger, 1989), severe disabilities

(Staub & Hunt, 1993), mental retardation (Vacc & Cannon, 1991; Mallette, Harper, Maheady, & Dempsey, 1991), and Down's Syndrome (Cooke, Heron, Heward, & Test, 1982).

Methods for Spelling Instruction

Learning to spell words is a very important skill. As a result, researchers and other professionals in the field have developed ways to help students learn to spell words. Distributed practice, self-correction, as well as remedial methods of spelling instruction such as the Fernald method, the Gillingham-Stillman method, the Horn method, and the phonovisual method (Heron, Okyere, & Miller, 1991; Mushinski & Stormont-Spurgin, 1995) are some procedures that have been developed for teachers to use to teach spelling. Despite the availability of these methods, spelling instruction has often followed a structured and predictable procedure in which teachers introduce students to a list of spelling words on Monday, have students write each of those words several times on Tuesday, then the students write a sentence for each of the words on Wednesday, have the students look up and write the definitions for each of the words on Thursday, and on Friday, the students are given a spelling test to measure the number of words the students have learned to spell correctly. One advantage of this procedure is that students interact with the spelling words often and, due mainly to the effects of repeated exposure, some students learn to spell the words. This method does not ensure direct instruction on how to spell the word neither does it provide enough opportunities to attempt to correctly spell each word.

Self-correction

Self-correction does provide a considerable number of opportunities for a student to attempt to spell a given spelling word. Under self-correction, a student listens to a list of spelling words on a tape and writes each of the words down as it is read. The student can rewind the tape and listen to the spelling words as often and as necessary. A student then checks his/her words against a key.

This procedure has been shown to be more effective than the traditional method in raising the number of words spelled correctly by students. In one of these studies, for example, McNeish, Heron, and Okyere (1992) compared the effects of self-correction and the traditional method of spelling instruction. The subjects of their study were 5 seventh grade students in a resource room for students with learning disabilities. The experimenters found that each of the students performed better on spelling tests when instruction was through self-correction than where it was through the traditional method. Other studies which demonstrated the same results were conducted by Wirtz, Gardner, Weber, and Bullara (1996) and by Heron, Okyere, and Miller (1991).

Peer Tutoring

Peer tutoring is another method for spelling instruction that has been shown to be effective. The following section provides a review of some of this literature.

Peer Tutoring and Spelling Instruction

A number of empirical studies have demonstrated the effectiveness of peer tutoring to improve the spelling performance of students both with disabilities and in

regular and inclusive classroom environments. Delquadri, Greenwood, Stretton, and Hall (1983), for example, implemented a classwide peer tutoring procedure to increase the opportunity to respond and the spelling performance of 24 third-grade students, six of whom were identified as having a learning disability, in a general education classroom. The students used weekly teacher-selected spelling words in a tutor-tutee reciprocal relationship. Every week, the students were divided into two teams and each team divided into pairs. During each peer tutoring session, the tutor's responsibility was to read each of the spelling words aloud while the tutee both spelled the word orally and wrote it on paper. The tutor was also responsible for providing feedback to the tutee in the form of praise and to award points to the tutee according to response accuracy. The authors reported that spelling errors declined from a pretreatment level high to the low range of one to three errors per student on weekly tests.

Peach and Moore (1990) replicated the Delquadri et al study (1983) by studying the effects of peer tutoring on the number of words spelled correctly by eight students with mild mental disabilities receiving resource-room services. The researchers employed an ABAB research design in which baseline consisted of teacher-directed instruction. During intervention, four subjects identified as gifted were trained to tutor the fourth- and third-grade students. The results of this study showed that the target students improved from an average of 65.9% words spelled correctly on the weekly quizzes during baseline to 87.35% during the first intervention phase, then dropped to 70.55% during return to baseline and finally rose to 90.4% with reinstatement of peer tutoring.

Maheady and Harper (1987) also used class wide peer tutoring to teach spelling to 70 low-income third- and fourth-grade students. The experimenters used an ABAB reversal design with baseline consisting of teacher-directed instruction.

During treatment, on Mondays, two competing teams were formed and they remained the same throughout the week. Within each team, students were randomly paired to make tutoring pairs. During tutoring, the tutor dictated words to the respective tutee, who was required to simultaneously write and spell the dictated words. The tutors verbally praised and awarded two points to the tutee for every word spelled correctly. If the tutee spelled the word wrong, he/she was required to write the word correctly three times. If the spelling error was corrected, the tutee was awarded another one point. Good tutoring behaviors were also awarded up to five points per session. The spelling words were tested using the same procedure on Friday but the students were told that they could earn three points for their team for each word spelled correctly. A “Team of the Week” certificate was given to the winning team. Results of the study showed that the percentage of words spelled correctly was consistently higher during peer tutoring over baseline conditions. Murray (1987) demonstrated the positive effects of peer tutoring on spelling for three intermediate-aged students with behavior disorders. In this study, three students with higher spelling levels served as tutors. The results of this study showed that the percentage of correctly spelled words increased over baseline for all three targeted students. Mallette, Harper, Maheady, and Dempsey (1991) obtained similar results with CWPT to improve the spelling skills of nine students with mild mental retardation.

Peer Tutoring and Social Behaviors

In addition to increases in academic performance, the effects of peer tutoring for students with and without disabilities have included improved peer interaction (e.g., Sideridis, Utley, Delquadri, Dawson, & Greenwood, 1990). Sideridis et al used an ABAB reversal design to examine the relationship between class wide peer tutoring, spelling performance, and the social interaction of six students with and without mild developmental disabilities. Social interactions and eco-behavioral observations were conducted concurrently during all spelling sessions using computer software the multiple option observation system for experimental studies (MOOSES) specifically developed for that purpose. The results of this study showed that the duration of positive social interaction during the CWPT increased by approximately 50% for all students. The authors concluded that methods like peer tutoring that strengthen the regular classroom programs in ways that engage and accommodate all students are necessary in educational programs.

Staub and Hunt (1993) also investigated peer tutoring and social behaviors. Staub and Hunt (1993) found that volunteer peer high school students increased their rate of social initiation towards and interaction with severely disabled peers whom they tutored. The overall result was an increase in targeted social skills in the peers with handicaps.

Another study conducted by Welsch (1994) demonstrated the effectiveness of peer tutoring in increasing the duration of social interactions between peers who included students with multiple disabilities. Welsch investigated the effects of a peer-tutoring

package on the acquisition, generalization and maintenance of sight words and on the social skills of students with multiple disabilities. The subjects of the study included the four students with disabilities from a self-contained special education classroom as well as all students from a regular education third-grade classroom. Students were trained in how to tutor each other, provide prompts, praise and corrective feedback, and record correct responses. Social interactions between students were measured in the lunchroom three times a week. Along with increases in their number of sight words in and out of context, study findings showed that the students also increased their duration of interactions with peers. Other positive effects of peer tutoring on the social interaction of students with and without disabilities are reported in a study by Sideridis, Utley, Greenwood, Dawson, Delquadri, Palmer, and Reddy (1997). The subjects of this study were three students with mild disabilities and three typical peers (described as being low, medium, and high achievers) enrolled full-time in a general education sixth-grade classroom. During intervention, the whole class was randomly divided into two teams and students in each team randomly assigned to a team-mate. The pairs then tutored each other and awarded each other for correct responses. The multiple option observation system for experimental studies (MOOSES) was used to determine the duration of social interactions for the target students while the new code for instructional structure and student academic response (NCISSAR) was used for behavioral observations four times a week during the spelling sessions using a momentary time sampling procedure of 15-second intervals. The in-class inappropriate behaviors measured were moving around,

disruption, inappropriate talking, looking around, noncompliance and aggression.

The results of this study indicate that the percentage duration of positive social interactions per session for the three students with mild disabilities in the initial baseline was 25, 29, and 10 % respectively and that these levels increased to 83%, 76%, and 96 % during the first phase of peer tutoring. During the second baseline, these levels dropped to 9, 23, and 2 % respectively. With the reinstatement of the intervention, these levels rose to 93%, 82%, and 79 % respectively. These effects were also observed in the typical peers. The levels of disruptive behaviors for the two groups also decreased substantially during peer tutoring.

Peer tutoring has also resulted in reduced levels of off-task behavior. Du Paul et al (1998) for instance, investigated the effects of peer tutoring for 18 elementary general education students with ADHD and 10 peer comparison students on classroom behavior and academic performance. The experimenters found that class wide peer tutoring resulted in higher levels of active engagement in academic tasks and reductions in off-task behavior for most subjects.

Limitations of Peer Tutoring

Several aspects of peer tutoring programs, especially when the content is individualized according to student needs, present challenges that may need to be overcome before the program can be implemented. Teacher preparation of student folders is an activity that needs teacher time and resources. Student folders need to be checked and new materials supplied every few days as necessary for the students. The teacher

needs to ensure that he or she is able to allocate time for all these activities to ensure the efficient operation of the peer tutoring program and therefore its intended success.

Another area that demands time is the monitoring of student progress. For the peer-tutoring program to proceed as planned, student progress needs to be monitored and this requires teacher presence. This is especially the case for example, in most curriculum content areas, where students have to test each other and record the tutee's response as correct or incorrect. Some students, for various reasons may record incorrect responses as correct or vice versa. When this happens, the information obtained is incorrect and cannot be put to good use to guide student instruction. The teacher has to be very much involved to provide both corrective feedback as well as reinforcement for appropriate tutoring behaviors.

Training of the students is an activity that also requires time. Depending on the components of each program, tutor training may last anywhere from a one 30-minute session to over three 45-minute sessions each. Maheady (1997), for example, recommends tutors receive seven hours of training over a 10-week period. In Barbetta et al, tutors were trained for 45 to 50 minutes. Most tutor training programs incorporate all the five components of orientation, tutor huddle, providing prompts, praise, and corrective feedback, testing, and charting progress. The testing and charting stages may require booster sessions for some students. It is because of the amount of teacher time required to begin and maintain a successful class wide peer tutoring program that some educators implement only a few of the five steps.

Advantages of Class wide Peer Tutoring

Once the peer-tutoring program has been started and has taken off, its benefits far outweigh any challenges for some educators. Peer tutoring is cost effective, allows for individualization of materials for the students, and allows all students to practice academic material at the same time and creates opportunities for high levels of academic engagement. High levels of academic engagement are associated with improved academic performance. Peer tutoring provides for structured and positive interactions between peers. Since pairs of students can involve both students with disabilities and those without, peer tutoring enables students with disabilities to receive academic instruction inclusively in the general education settings. Peer tutoring creates opportunities for students to make active responses to instructional antecedents and to receive immediate feedback on their performance.

Along with improving academic performance, peer tutoring keeps students actively engaged in the instructional materials and minimizes chances for students to engage in disruptive behavior. Peer tutoring also allows opportunities for the development of positive relationships between students. Although positive behavior effects are documented in the research literature, there is little or no evidence of the generality of these effects, particularly the reductions in classroom disruptions, beyond peer tutoring sessions. A behavior management system might have an additive effect on peer tutoring for both academic and social behaviors.

Summary

Peer tutoring has been discussed in terms of its various forms and aspects. Peer tutoring is a method for increasing student achievement and academic responding time. It is a method through which students tutor each other under the direction of a teacher to learn and practice academic skills. Peer tutoring has been shown to be less costly in terms of teacher time and effort as well as cost of materials than teacher directed instruction. It has also been demonstrated to lead to better academic performance compared to traditional teacher instructional strategies. Due to its ability to keep students actively engaged with academic materials, academic periods conducted through peer tutoring evidence greatly reduced levels of disruptive behavior from students. Included among the many benefits of peer tutoring are improved academic performance, improvement in peer social interactions, and reductions in off-task, disruptive behaviors.

Generalization of Treatment Effects

Stokes and Baer (1977) explain generalization as the occurrence of relevant behavior under different non-trained conditions, that is, across settings, subjects, trainers, behaviors, and time, without the scheduling of the same events in those conditions as had been scheduled in the training conditions. Cooper et al. (1987) observe that “a behavior change has generality if it proves durable over time, if it appears in a wide variety of possible environments, or if it spreads to a wide variety of related behaviors” (p.86). These forms of generalization have been termed stimulus and response generalization.

Stimulus generalization (skill transfer) occurs when the use of a learned skill is observed under conditions other than the ones encountered during training (Sulzer-Azaroff & Mayer, 1977). If, for example, a student is taught to read a word in isolation and the student is observed to read the word correctly in the context of a sentence, the student can be said to have generalized the skill to identify the word. Stimulus generalization is also in effect when a student driver is trained to drive a car and then has to use the acquired skills to drive another car.

Response generalization (skill adaptation) occurs when the training of one skill causes a change in another untrained skill. Cooper et al (1987) maintain that “response generalization is the extent to which the learner performs a variety of functional responses in addition to the trained response; that is, responses for which no specific contingencies have been applied to other responses” (p.558). If, for example, a student is taught to add double digits vertically and the student is observed to be able to add the digits horizontally, response generalization can be said to be in effect. Response generalization can also be said to be in effect if, when trained to orally spell a word a student is later observed to write it correctly. Such strategies as demonstration, feedback, modeling, reinforcement, discrimination training, drill, practice, fading, and shaping are used to promote generalization since it is unlikely that generalization will occur naturally. Stokes and Baer (1977) discuss several specific techniques that instructors can use to increase the probability that trained stimulus and response will generalize to untrained settings and behaviors. These include: training and hoping that generalization of skills

will occur in other settings where they are required, teaching enough examples, programming for common stimulus, aiming for the natural contingencies of reinforcement, training loosely, and using indiscriminable contingencies.

Training and hoping. Though the least unlikely to occasion generalization of skills, training and hoping is the most common among educators. As noted earlier, it involves training the target behaviors in the target setting without programming for generalization and hoping that the generalization will occur.

Teaching enough examples. This involves teaching enough examples that encompass the range of stimulus circumstances and response requirements in the natural environment. It requires the instructor to think about the various situations or circumstances where the response is required. In teaching sight words to a first grade student, for example, the student needs to be taught to identify the word not only in isolation but also in the context of a sentence in a storybook or on a cartoon strip among other settings. Again, the word may be on the board, on a sight word list on a paper, or in the textbook. It is not very possible to include all the environments and forms in which a word may occur but the trainer needs to incorporate as many aspects as possible of the range of examples.

Training loosely. This involves varying as much as possible as many of the noncritical aspects of the stimuli as possible. This ensures that emitting the target behavior does not fall under the control of irrelevant stimuli. In having peers practice to tutor each other, for example, the teacher may have other adults present so that the

trainees learn to exhibit the behavior in the presence of others, have students practice with her sitting at her desk, or even have another student go around the class checking on pairs and providing both praise and corrective feedback as appropriate. This ensures that the students learn to exhibit the behavior with only their teacher in the class, with other adults in the class, with a student and not the teacher providing feedback, and with the teacher away from them. The behavior does not come under the control of any one of these stimuli.

Using the natural contingencies of reinforcement. Behaviors need to encounter positive reinforcement for the rate of their occurrence to increase. Target behaviors that will meet reinforcement in the natural environment are more likely to be maintained than those that which require contrived reinforcers. In a peer-tutoring program, for example, the social interaction between the peers is a natural reinforcer for each of the students.

Programming for indiscriminable contingencies. Indiscriminable contingencies are contingencies which are not predictable. They include intermittent reinforcement and variable ratio of reinforcement. The use of indiscriminable contingencies ensure that a targeted behavior will last longer because there is no certainty as to when reinforcement will be delivered. The advantages of using indiscriminable contingencies can better be seen in comparison to behavior that is on a continuous reinforcement schedule. Such a behavior quickly decreases and is in danger of extinction in the absence of reinforcement. Heward, Heron, Ellis, and Cooke (1986) trained tutors to reinforce tutee's not after every

correct response but after every third correct response. The intervention produced improved levels of academic performance in the targeted behavior of the target students.

Programming common stimuli. This involves ensuring that the most important aspects of stimuli in the generalization settings are incorporated in the training setting. This ensures the likelihood of the behavior to be emitted because of the similarity in the conditions under which the behavior was reinforced.

Given the importance of the ability to generalize skills trained in one situation to another situation some education researchers (e.g., Gerber, 1986) have actively programmed for generalization effects in their interventions. Gerber, for example, used many examples as a strategy for programming generalization. Gerber investigated generalization of spelling strategies by students with learning disabilities as a result of contingent imitation/modeling and mastery criteria. In this study, three lists of spelling words were used. The first list, List 1, contained unknown words that students were required to spell. If students failed to spell correctly any of the words, correct spelling for the word was modeled and the student asked to imitate the correct spelling of the word orally. After this, students were presented with a second list of spelling words, List 2, and asked to spell the words. This list was used to probe for spontaneous generalization of the spelling or word identification strategies learned during instruction of the spelling words on List 1. The students were then taught to spell the words on the second list. Presented with a third list, List 3, exposed to the similarities between the words on the three lists, and informed that skills they had used with the teacher to learn to spell words on the

previous two lists would enable them to spell the words on the third list, the students' ability to spell the words on List 3 was probed. The results of this study indicated that generalization was evident in the students' scores on the untrained words.

Peer Tutoring and Generalization

Like other researchers, peer-tutoring researchers have often made attempts to measure generalization in their interventions. McKenzie and Budd (1981) for example examined generalization of skills in their study in which they implemented a peer-tutoring package to increase math performance. The subjects of the study were two intermediate-level students with learning disabilities and behavior problems who were the tutees and a classmate in the same classroom. The tutoring sessions in this study took place in the afternoon during the math lesson in the special education classroom. The tutor was trained in tutoring behaviors and he and the tutees were awarded free time privileges for accuracy in performing the peer tutoring as well as correct responses from the tutees. The tutees demonstrated improved performance in math and the skills targeted during the peer tutoring sessions were observed to generalize to untrained settings.

Welsch (1998) also measured generalization effects in a study with 24 children ages six through seven with and without mild disabilities. The researcher used a multiple probe design to investigate the effects of peer tutoring on sight word acquisition and generalization. During baseline, pretests were administered using a list of sight words to establish which words would be included in each student's list. Each particular student's words were then divided into sets of five and put on index cards. Students were then

trained in the peer-tutoring procedure and a day after, the peer tutoring sessions began. The generalization measure in this study was an oral spelling test of the sight words in a mastered set. Analysis of data from the pretest and the posttests of the sight words revealed a substantial increase in the number of sight words learned by all the students. However, most of the students were not able to spell the sight words orally when presented with the opportunity.

Holman (1998) is another researcher who tested the generality of sight words learned in her study. Holman first pretested six elementary-aged students on their level of sight word recognition using a list of commonly used words then taught the students to tutor each other. Holman employed a multiple baseline across subjects design to analyze the effects of the independent variable on the dependent variables. In this study, the measure of generalization of the skill was the number of sight words read correctly in sentences. For ease of recognition of the sight words in each sentence, the experimenter had them underlined. Results of the study indicate that some students were able to read correctly most of the sight words in the context of a sentence while some were unsuccessful. The more positive results of the generalization measure in the Holman study may be accounted for by the fact that the generalization measure used, that is, reading in a sentence context sight words taught in isolation was more related to the skill than the generalization measure used in the Welsch study, that is, spelling orally sight words taught in isolation. The generalization measure in the Welsch study seems to have been more demanding for the students than the skill instructed.

Knoske's (1996) obtained positive results in a study on the effects of peer tutoring on the acquisition of plant identification with 6 students enrolled in a Horticulture Landscaping Program at a Career Center. Generalization of the skill was measured by examining the number of plants correctly identified using a different stimulus or in different settings which included a laboratory greenhouse and cooperative community sites. During baseline in this study, illustrations for 73 plants were put on index cards, and the cards divided into sets. A pretest was then given for each set cumulatively where students were required to identify each plant by its common name. A multiple probe design was used to record data on the sets of plant cards that the student had not yet been instructed on through peer tutoring and the results of sequential presentation of each set of cards to the treatment. Results indicated that most students were able to identify the plants in these other non-instructed settings.

In reviewing the research on peer tutoring, it seems clear that although the researchers realize the importance of checking the extent to which students generalize the skills learned, many (e.g., Knoske 1996; Welsch, 1998; Hollman, 1998) do not use specific strategies to program for generalization of effects. Given these observations, it seems clear that with an instructional methodology such as peer tutoring, effects of treatment generalize to untrained settings and behaviors so that specific strategies for programming generalization are not utilized.

Maintenance

Cooper, Heron, and Heward (1987) define maintenance as the extent to which a student continues to perform a target behavior after a portion or all of the intervention has been terminated. Skills trained at a particular time in a students' life need to be retained for use whenever needed. For example, a student who learns to spell a set of commonly used words may find that he/she needs to use them when writing. This indicates that the student will need to retain or maintain the correct spelling for the words trained. This points to the importance of programming for maintenance of trained skills or using instructional strategies that facilitate maintenance of skills.

Both short- and long-term maintenance of trained skills are important and researchers investigate the degree to which trained skills are maintained. Along with measuring generalization of the sight words learned, Welsch (1998) also incorporated a maintenance check. Maintenance was measured by recording the number of sight words read correctly in a particular set one to seven days after its completion. Welsch found that majority of the students maintained a large number of the sight words learned for a period of up to seven days. Holman (1998) also included a maintenance measure in her study on sight word acquisition and generalization with elementary-aged students. Maintenance was recorded as the number of sight words read correctly a week after the particular set of words was mastered. Like Welsch, Holman found that most of the students maintained the words for a period of at least a week after they had mastered them. In the Knoske study (1996), maintenance was determined by requiring the students to identify the plant

names again after seven days of the mastery of a certain set of plant names. Results indicate that the students were able to maintain most of these names when probed seven days after mastering a set.

Other high-levels of maintenance results were obtained by Harper, Mallette, Maheady, and Brennan (1993) who investigated maintenance in their study on class wide student tutoring teams and direct instruction as a combined instructional program to teach generalizable strategies for math word problems. Two weeks after the conclusion of a study in which the students were taught to solve math problems using certain strategies, the students were presented with an untrained set of word problems to solve. The students were observed to use the correct strategy in a large percentage of the problems with high accuracy rate. Another maintenance check conducted 10 weeks after the study indicated showed the same results.

As mentioned earlier with reference to generalization effects of peer tutoring interventions, peer tutoring researchers do not seem to program for maintenance of effects. Given the results of the studies reviewed, one can reasonably argue that peer tutoring facilitates maintenance of skills trained.

Managing Disruptive Behavior

When different interventions are focused on one, several, or all students in the classroom in such a way that the particular intervention is geared towards the needs, weaknesses, strengths, interests and goals of each particular student for whom it is implemented, the procedure is an individual contingency procedure. Individual criteria

and goals to be met as well as consequences contingent on specified performance are established for the particular student. It is clear that a lot of teacher time and resources are needed to run successfully such a procedure. On the other hand, a group intervention procedure basically requires the same criteria of performance for all students for a particular consequence.

Individual and Group Contingencies

Compared to individual contingencies, using group contingencies offers several advantages to educators. First, unlike individual contingencies where a particular student is monitored and individual consequences meted according to the behavior exhibited, group contingencies allow for groups of students to be managed. The teacher does not need to spend a large amount of time to tailor stimuli and target behaviors to meet an individual student's idiosyncratic needs, goals, strengths, weaknesses, and interests. Thus group contingencies are easier to administer and they save teachers time in administering consequences. Skinner, Skinner, Skinner, and Cashwell (1999) correctly observe that using an individual contingency which requires monitoring, tracking, evaluating, and refining many different contingencies, each with distinct target behaviors and criteria, reinforcers, and antecedent stimuli can require an enormous amount of time and teachers have been shown to prefer interventions that require less time (Kratochwill, Elliot, & Rotto, 1995).

Individual contingencies can create social problems in school settings while group contingencies can avoid the same. For example, when specific contingencies are

established for one student and not the others, target students and their behaviors can become conspicuous and targets for antisocial labels. Such students may be labeled as deviant by their peers. In fact, in an interview of students, Turco, Elliott, & Witt (1985) found that students prefer that individual programs designed to decrease inappropriate behaviors be kept private.

Group oriented consequences facilitate positive social interactions (Gresham, 1983) assist in building improved levels of appropriate behavior (Gresham & Gresham, 1982), and are practical for implementation in applied settings such as classrooms. Although a detailed examination of whether group or individual contingencies are more effective is beyond the scope of this chapter, literature indicates that the effectiveness of group-oriented contingencies in improving student academic and social behavior in classrooms rests on the fact that group-oriented contingencies capitalize on the influence of peers, who, rather than teachers, are the primary change agents (Tankersley, 1995). Tankersley maintains that when a group contingency is in effect, students will make a maximum effort to conform to the teacher's expectation because, for the most part, the student is fearful that the other students in the class might be denied a reward because of his or her behavior and will be angry with him/her.

Types of Group-Oriented Contingencies

Three types of group contingencies that exist in the literature are interdependent, dependent, and independent (Turco & Elliot, 1990). In an interdependent group contingency, the group is required to perform to a specified criterion but each member

contributes his or her points towards the group criterion. An interdependent group contingency would be in effect if a teacher required an average percentage accuracy of 90% on a mathematics test for a class to earn reinforcement. In a dependent group contingency, a selected group member is required to perform to a specific criterion for the whole group to receive reinforcement. A dependent group contingency would be in effect if a teacher required a 100% on-task behavior from a student who is most disruptive in class for the whole group to earn reinforcement. In this type of group contingency, the contingency for the entire group is dependent on the behavior of a selected group member. Independent group contingencies, on the other hand, require each member in the group to perform to a set criterion for him/her to receive his or her individual reinforcement. This is independent because reinforcement for any one member is not dependent upon the behavior of other group members.

Results of studies conducted to compare the relative effectiveness of the different types of group contingencies on academic and/or social behavior have yielded inconsistent results. While some studies (e.g., Shapiro & Goldberg, 1986) have shown no differences, others (e.g., Gresham & Gresham, 1982; McLaughlin, 1981; McReynolds, Gange, & Speltz, 1981) indicate some level of difference in the relative effectiveness of the different types of group contingencies. Shapiro and Goldberg (1986) for example, used an alternating treatments design to compare the effectiveness of the dependent, independent, and interdependent group contingencies on the spelling performance of

sixth grade students. After baseline, the treatment conditions were presented alternatively so that all three conditions were presented during the first 18 days in a particular session. These same treatments in the same sequence were presented during another 18 days. During baseline, students were instructed in spelling 10 words and then tested. No contingency was in effect during the six days of this phase. During the independent group contingency, all students who scored at least 90% on the tests received five token points exchangeable for other items. During the interdependent group contingency, the mean score for the group of students taking the test was calculated and if the mean was 90% or better, all students received five tokens exchangeable for another item later. During the dependent group contingency after the spelling test, the graded tests were placed in a box and one student's test randomly selected by another student. All students received five token points if that student's test was 90% or better. The results of this study indicate that whereas across the entire treatment period performance during each of the three conditions was substantially better than during baseline, no significant differences in the level of spelling performance for the three types of group contingencies for the high, middle or low-achieving students occurred.

The findings of the above-cited study are in contrast to those by Gresham and Gresham (1982). These researchers used an ABCDABCD reversal design to compare the effectiveness of dependent, interdependent, and independent group contingencies in reducing the disruptive behavior of 12 students, ages six to 10 diagnosed as educable mentally retarded (EMR) enrolled in a self-contained classroom. The five-day baseline

period involved no contingencies for disruptive behavior. The first phase of treatment was the interdependent group contingency in which the class was divided into two teams of six students each and each team's name put on the board. The teacher then explained disruptive and non-disruptive behavior and indicated that check marks would be put below each group whenever any group member was disruptive. At the end of the period, the team with the fewest check marks would earn reinforcers while the other team worked. The five days of this condition were followed by another five days of the dependent contingency in which a team captain from each of the group was chosen and a group criterion set for the acceptable level of inappropriate behavior from them. At the end of the period, the team captain with the fewest number of checkmarks earned his team a reinforcer while the other team completed worksheets. During the next five days of treatment, the students were engaged in the independent contingency in which each child competed against each other for reinforcement. Any child with five or fewer checkmarks for disruptive behavior earned a reinforcer. These three treatments were repeated in the same order. This study indicated that lower rates of disruptive behavior occurred under the interdependent group and the dependent contingency systems compared to the baseline and the independent group contingency.

Group Contingencies and the Behavior of Special Needs Students

The above-described study by Gresham and Gresham is one of the studies that indicate that group contingencies can be effectively used to decrease occurrences of

disruptive behavior with students with special needs. Group-oriented contingences have also been successful with academic behavior of special needs students.

In another study, Gresham (1983) used an ABA design to investigate the effectiveness of a home-based dependent group contingency system in controlling destructive behavior. The subject was an eight-year-old male with mild mental retardation in a self-contained special education class. His destructive behaviors included fire setting, vandalism, and various forms of aggression to people and property. Baseline data was collected five days, Monday through Friday by the mother and communicated to the researcher in the evening. At this time, no intervention was put in place. The treatment phase lasted 30 school days. During this phase, the subject received a good note from home for each day he did not commit a destructive act Monday through Friday. Earning a good note to take to school on Monday morning required the student to not exhibit destructive behavior beginning from after school on Friday through Monday morning. Each good note from home earned the subject access to juice time, recess, and five tokens (exchangeable for other items). If the subject earned five good notes in a row, he earned the whole class a party on Friday at which he was the host. If he brought a bad note, he was praised for bringing the note, reprimanded for exhibiting destructive behavior, and also lost the juice time, recess, and the five tokens. According to the results of this study, during baseline the subject exhibited three destructive behaviors every day except one. Upon implementation of the intervention, the subject exhibited destructive behavior only twice out of the 30 sessions. Upon reversal to baseline, the student

exhibited one destructive behavior in five days. These results indicate that the group contingency was instrumental in bringing about a decreased rate of destructive behavior.

The results of the Gresham study in terms of the effectiveness of a group contingency to decrease destructive behavior in a student with special needs were replicated in another study by Volgler and French (1983). The researchers used an ABAB design to examine the effects of a group contingency on the behavior of students identified as having behavior disorders. The subjects of this study were 23 students with ages 7.8 through 11.2 years. The students were divided into a "younger" and an "older" group depending on their age and were put into different classes. The younger group had a mean age of 7.8 years and the older group had a mean age of 11.2 years. Each class was then divided into two groups of about six students each. Reinforcement for either group after each three minutes of physical activity was made contingent upon their appropriate observation of a set of established classroom rules. Data on the dependent variable, on-task behavior, was collected 30 minutes a day (using a partial interval system of 20 seconds) at a minimum of four days a week for four weeks during the physical education period. Baseline data was collected without any intervention being put in place. During intervention, the group contingency was put into effect and students earned extra minutes of recess for earning fewer than four "frowny faces" during each 30 minutes of physical education. According to the results of this study, during the four phases of the study (A BAB), the two groups of students averaged substantially higher percentage levels of on-task behavior during group contingencies as compared to baseline conditions.

Raab and Giek (1991) also examined the effects of a group contingency on the behavior of 12 elementary-aged students with mild disabilities. Throughout the study, the teacher implemented a token system in which students earned tokens at variable intervals for exhibiting such appropriate behaviors as following directions, staying in assigned areas during group work, staying on task and keeping hands, feet, and objects to self. At the end of the day, each student's tokens were counted and recorded on an individual chart. Students who earned 100 tokens earned access to selecting either a tangible or an activity reinforcer. Conditions remained exactly this way during baseline. However, during intervention, the teacher divided the class into two groups. Then, at five-minute intervals, the teacher gave students evaluation forms and asked them to rate their behavior on a scale ranging from 0 (poor) to five (excellent). The teacher also rated each group's behavior with the same form. The average group rating was obtained by computing an average of the students' rating. The group rating was then compared to the teacher's rating and the group earned points depending on both their behavior and their accuracy in rating their behavior. If the group's rating differed from the teacher's rating, the group received the number of points that corresponded to the teacher's rating and if the group's rating matched the teacher's rating, the group received the corresponding number of points plus a bonus point. Points were then exchanged for reinforcers. The results of this study indicate that the group contingency was effective in decreasing the levels of inappropriate verbalizations exhibited by the students.

Although research literature extensively documents the positive effects of group contingencies on the social behavior of students with disabilities, there are findings to the contrary. Wise (1980), for example, examined the effects of a group contingency for reinforcement on aggressive assaults of a special needs population. The subjects of his study were six boys ages nine to 13 diagnosed with behavior disorders and living at a residential treatment center for children with severe behavior disorders. The major dependent variable was aggressive assaultive behavior which included kicking, slapping, punching, shoving and throwing objects at other students. No treatment of any kind was implemented during the 10 days of baseline but rather observations were made throughout the day and incidences of the dependent variable noted. During treatment, a criterion for the mean number of aggressive-assaultive incidences for the coming week was established and a day prior to the first day of the treatment condition, each student's mean number of aggressive assaults as well as the group mean for the previous week were posted on a bulletin board. Students were reinforced with a classroom determined activity when they performed according to the criterion. A return to the baseline condition was established by withdrawing the group contingency which was later reinstated during the final phase of intervention. The results of this study indicated that during the initial group contingency phase, all subjects decreased their levels of aggressive –assaultive behavior. Upon return to baseline conditions, although only three of the subjects showed an increase in aggressive assaultive behavior, the others stayed at the same level. During the final intervention phase, all students except 1 showed a decrease in the level of

aggressive assaultive incidences. Thus, the results of this study with regard to the effects of a group contingency in reducing the number of aggressive-assaultive incidences of students with behavior disorders were not conclusive.

A group-oriented procedure has also been shown to be effective with the academic performance of students with special needs. Lewis (1980) compared the effects of an independent and an interdependent group contingency on the academic performance of junior high school students diagnosed as EMR. The researchers employed an alternating treatments design in which after the baseline condition in which no reinforcement was provided, the two conditions of independent contingency (where a student had to reach a certain criterion for him/her to be reinforced) and an interdependent group contingency (where each of the students had to reach the same criterion for reinforcement to be delivered to the whole class) were alternated. According to the results of the study, the class average of mathematics problems worked correctly during both the independent (81%) and the interdependent group contingency (93%) were higher than the class average during the baseline condition (78%). The interdependent group contingency showed a greater improvement in the mean percentage of problems worked correctly than the individual contingency.

Group Contingencies and the Behavior of General Education Students

Other studies have shown that group oriented contingencies can be effective in reducing disruptive behavior among students of various grade levels in regular education classrooms. Salend and Kovalich (1981), for example, demonstrated that a group-

oriented response cost systems could reduce inappropriate behavior while Salend and Gordon used a group-oriented time out ribbon procedure to significantly reduce inappropriate verbalizations of students.

In some studies, the group-oriented contingency has been in the form of the "Good Behavior Game" (Darveaux, 1984; Dolan, Kellam, Brown, Werthamer-Larsson, Rebok, Mayer, Laudolff, Turkan, Ford, & Wheeler, 1993). Basically, to play the "Good Behavior Game" students are divided into two or more teams, team names written on the board, and criteria for appropriate behavior set. Rules for behavior are also established and if any student breaks a rule when the "game" is in effect, the teacher makes a check mark by the name of the team of which the disruptive student is a member. At the end of the time in which the game is played, any team that has fewer marks than the preestablished criterion wins. The winning team gets social or tangible reinforcement either daily or weekly in the form of a gold star on a chart, being allowed to line up first for lunch, being provided free time at the end of the day, and extra recess time. Due to team competitiveness, students usually encourage their teammates to engage in appropriate behavior to avoid losing the "game".

As was originally implemented, the "Good Behavior Game" has several negative features which include the fact that teachers are required to monitor only inappropriate behaviors (which might increase the inappropriate behaviors of students who seek negative attention), focuses on negative behaviors (which might decrease desirable behaviors such as responding to class discussions), and emphasized what the students

should not do instead of what the students should do. Due to these aspects some researchers (e.g., Darveaux, 1984) modified it in their interventions.

Darveaux examined the effects of the "Good Behavior Game" on second grade students. In his study, Darveaux incorporated "merit cards" which students earned for completing class assignments with at least 75% accuracy. A team could have one check mark for disruptive behavior erased for earning five "merit cards". Darveaux found that the intervention was effective in decreasing the students' levels of disruptive behavior and increasing both the accuracy and number of assignments completed.

The effects of the group-oriented contingency through the "Good Behavior Game" can be generalized by having the game played during various instructional and noninstructional activities as well as during various time periods (morning or afternoon) and lengths of time (e.g., from a few minutes to several hours). This was a finding of the Dolan et al (1993) study. Dolan et al conducted their study with first grade students. They began by having the students play the game for 10 minutes 3 times a week and then systematically increased the amount of time the students played the game while keeping the criterion for winning constant at a maximum of four check marks of disruptive behavior. This systematic increase in duration for the game increased until the students were playing the game a maximum of three hours a day. The results of this study indicated that the game was effective in decreasing disruptive behaviors in all the settings and at the different times it was played. Thus, its effects generalized to other behaviors, settings, and times.

Another more recent study was conducted by Martin-LeMaster (1990) who taught compliance using the “Sure I Will” incentive program to a group of students and then compared the effects of individual and dependent group contingencies on the level of compliance exhibited by the students.

In this study, Martin-LeMaster divided his research subjects into two experimental groups of three students each and one control group with two students. The first phase of treatment for each of the three groups involved a series of the compliance training lessons entitled “Sure I Will” incentive program. In this program, the subjects were taught to say “Sure I Will” to show compliance with teacher requests and to do as requested immediately, i.e., within five seconds of saying “Sure I Will”. A dependent group contingency procedure was used with the first group during treatment while an individualized contingency management procedure was used with the second group. For the dependent group contingency management procedure, reinforcement was delivered to the whole class when a randomly picked student (one of the three target subjects) reached the preset 80% classroom compliance level for the day. The individualized contingency, on the other hand required that each of the three target subjects in the group reach the 80% compliance criterion for him to be reinforced. After this treatment phase, the experimenter returned to baseline in which the students were required to say “ Sure I Will” in response to teacher requests but there was no contingency applied. Then treatment was reinstated and the students were required to both say “Sure I Will” and the contingency was applied. After baseline data was collected, the control group received

the “Sure I Will” treatment, then they were taken back to baseline where they were required to not use the “Sure I Will” response, then they used the “Sure I Will” response and finally went back to baseline. A follow-up was conducted in two months for all groups. The results of this study indicate that all subjects increased their rates of classroom compliance following compliance training with the incentive program. The results also demonstrated that students participating in the group contingency management procedure along with the incentive program made superior gains in terms of increased rates of compliance compared to those in the individualized contingency procedure and the control group. At the two-month follow-up, students participating in the group contingency management procedure also maintained the greatest long-term treatment effects.

Other researchers have examined the effects of a combination of a group contingency and other procedures on disruptive behavior. Davies and Witte (2000) for example, trained a group of third-grade students including four students with ADHD to use peer monitoring and self-management procedures embedded within a group contingency to decrease inappropriate verbalizations during class time. The researchers used an ABAB reversal design in which during baseline, data on disruptive behavior was collected in 30-minutes sessions four times a week without any intervention being put in place. Students were then trained in peer monitoring and self-management and a group contingency implemented where students sat in small groups and a chart divided into three sections (red, blue, and green) was placed on a table before them and five dots stuck

on the green section with Velcro tabs. Students were required to move a dot from the green to the blue section of the chart whenever anyone in the group exhibited inappropriate behavior. Each student was then provided an individual student behavior sheet to record their behavior. Students were reinforced if they had at least one dot remaining on the green area by the end of the intervention session. At the beginning of every intervention session, each group of students was required to hold a five-minute meeting to review their performance for the previous day and brainstorm suggestions for improvement where necessary.

The results of this study indicated that the group contingency package was very effective in reducing the disruptive behavior of target students. During baseline, the levels of disruptive behavior for the students, both regular and special were high. Upon implementation of the intervention, these levels dropped to almost zero. The levels of disruptive behavior rose again with the reinstatement of the baseline conditions and later dropped when intervention conditions were reinstated.

Limitations of Dependent and Independent Group Contingencies

This study will utilize an interdependent group contingency because, despite the advantages associated with them, the literature seems to suggest a number of limitations associated with independent and dependent group contingencies. In an independent group contingency in particular, individuals receive reinforcement based on meeting the same criteria. Cashwell, Skinner, Dunn, and Lewis (1998) note that independent group rewards may promote a social class system in schools or classes where some students get access

to rewards and others whose academic performance and social behavior are below set criteria do not. They argue that because being a member of a peer group is important, those who tend not to earn rewards may form their own group where members praise and socially reward each other's inappropriate behaviors and membership in such a group may lead to increased behavior problems (Cashwell & Vac, 1996). Turco and Elliot (1990) note that because independent group rewards include situations where one person has to lose while another wins, they may lead to sabotage where students sabotage other students' efforts and that when students learn that they cannot earn a reward, they may exhibit aversive negative behavior. Independent group contingencies raise the possibility of students with special needs never earning a reinforcer due to their disability, an effect that is not legal. Another adverse result of using independent group contingencies is that students who are denied a reinforcer may be the ones who would have benefited the most from the particular reinforcer. This may, for instance be the case in a situation where the reinforcer is an educational field trip.

Dependent group contingencies are prone to many of the drawbacks inherent in independent group contingencies. Depending on the specific procedures for selecting individuals, students on whom the reinforcers depend are likely to be identified and unduly pressured by peers to meet goals. When reinforcers are earned, students are likely to receive social reinforcement from their peers, which is likely to turn into peer threats, punishment, or social exclusion when the students fail to reach the reinforcer-earning criterion. In fact, dependent group contingencies are not considered fair because all

students are not being required to meet the same criteria. In a study conducted by Turco and Elliot (1990), the researchers not only examined the effectiveness of group contingencies on spelling performance of fifth grade students but also the acceptability of each the group contingences to the students. The researchers found that students rated the dependent group contingency as least acceptable. Another study by Shapiro and Goldberg (1986) also indicated that the students preferred the independent contingency over the dependent contingency. Dependent group contingencies can occasion antisocial behaviors among classmates as well as feelings of unfair treatment from classmates who feel they perform exceptionally but are not reinforced due to the behavior of a few students.

Interdependent Group Contingencies

Interdependent group contingences have advantages over either dependent or independent group contingencies. These advantages take care of most of the limitations cited. Skinner, Cashwell, and Dunn (1996), for instance, note that in an interdependent group contingency, no student is singled out as the source of either reinforcement or the lack of it, some students do not lose access to reinforcement while others are reinforced, and interdependent group contingencies can be easier to manage and more cost and time effective than independent group contingencies. Record keeping is easier with interdependent contingencies (Gresham & Gresham, 1982) and administering rewards can take less time when the same reinforcer is delivered in an all or none fashion. Speltz, Shimamura, and McReynolds (1982) maintain that interdependent group contingencies

may also increase prosocial cooperative behaviors, sharing of resources and social contacts among students. Because everyone in the group either gets or loses the reinforcer, chances for the creation of a class system based on students who get reinforcers and others who do not are eliminated. Again, by giving everyone in the group a common goal, interdependent group contingencies can increase students' interaction with each other in order to help meet the goal.

Despite their effectiveness, interdependent group contingencies do not eliminate all of the problems possible when any type of group contingency is used. For instance, group contingencies may be limited by the fact that a preselected group contingency may be punishing to some students who may be negatively reinforced by hindering other students' performance (Skinner et al, 1996). Again, if the criteria becomes unattainable, students may stop performing (Skinner & Watson, 1997). Other researchers also point out that when specific behaviors are targeted, students may alter the target behaviors but reduce desired behaviors or increase undesirable behaviors that are not targeted through group reinforcement (Kelshaw-Levering, Sterling-Turner, Henry, & Skinner, 2000). This however, is a weakness of all interventions since they target particular behaviors and not others.

Randomized Group Contingencies

In view of the limitations pointed out in group contingencies, some researchers have recommended that randomizing contingencies (e.g., target behaviors, reinforcers, criteria, and target students) may be a variation to consider in implementing group

contingencies. A number of empirical studies have randomized components of the group contingency intervention to avoid the cited limitations.

In one study, (Kelshaw-Levering, Sterling-Turner, Henry, & Skinner, 2000), the researchers examined the differential effects of randomizing both the reinforcers only versus randomizing all aspects of a group contingency reinforcement program. The subjects of this study were 12 second-grade elementary school students who exhibited such behaviors as being out of seat, off-task and talking out of turn in class most of the time. The researchers used an A-B-A-C-B-C (i.e., baseline, randomized reinforcers, baseline, randomized all components, randomized reinforcers, and randomized all components design. Disruptive behavior data was collected using a partial interval of 10-seconds observe and 5-s record for 15 minutes during randomized periods of time in the school day. During the first and second baseline phases, no group contingency was put in place. After the initial baseline phase, an interdependent group contingency with randomized reinforcers (similar to mystery motivators) was implemented. During this phase, the teacher first introduced classroom rules and informed students of the criteria for them to earn reinforcers. The classroom rules were then taken down during the second baseline condition and then reinstated during the all aspects randomized phase. During this phase, students were denied the opportunity of knowing the criteria for reinforcement. The researchers then returned to randomized reinforcers only condition and finally to the all-randomized aspects phase. The results of this study indicated that even randomizing only the reinforcers in the group contingency was effective in reducing the students' disruptive behavior.

Summary

Many beneficial effects of using a group-oriented contingency to manage student behavior have been noted in the foregoing section. Also discussed is the rationale for the effectiveness of group-oriented contingencies. Effective instruction strategies have also been shown to greatly decrease the amount of disruptive behavior by students and to improve academic performance in various academic materials. Effective instruction strategies do this by ensuring many opportunities to respond actively to academic instruction. This keeps students actively engaged in the academic tasks and limits opportunities for engagement with disruptive nonacademic behavior. And because effective instruction strategies effectively lead to a learning of the academic material by the students, the learners begin to enjoy their success and no longer seek attention by engaging in disruptive behavior. Combining an effective instruction procedure with a group-oriented behavior management procedure is an attempt to develop an intervention that might foster the most conducive environment for student learning. This environment might reduce disruptive behavior to levels lower than those encountered during instruction with peer tutoring.

Research Questions

1. What are the differential effects of teacher spelling instruction, peer tutoring, and peer tutoring with a group contingency on the number of words spelled correctly on daily quizzes by fourth grade students in a general education classroom?

2. What are the differential effects of teacher spelling instruction, peer tutoring, and peer tutoring with a group contingency on the level of disruptive behavior by fourth grade students in a general education classroom during spelling and other-instruction sessions?
3. What are the differential effects of teacher instruction, peer tutoring alone and peer tutoring with group contingency on the number of words spelled correctly on weekly quizzes by fourth grade students?
4. What are the differential effects of teacher instruction, peer tutoring, and peer tutoring with a group contingency on the number of target spelling words spelled correctly in the context of a sentence on weekly quizzes?
5. What are the differential effects of teacher instruction, peer tutoring, and peer tutoring with a group contingency on the number of words spelled correctly during maintenance checks?

CHAPTER 2

METHOD

This chapter describes the method used to conduct the study. Described are subjects, setting, experimenter and second observers, definition and measurement of dependent variables, procedures to ensure reliability of data, materials, experimental design, procedures, and the social validity measures.

Subjects

This study was conducted in a class consisting of 12 fourth-grade students, ages 9 to 11 years. Of the students in this class were five African-American females, four African American males, one Caucasian female, and two Caucasian males. All of the participants qualify for free or reduced lunch. At the beginning of the study, all 12 students were identified as “typically developing” but after the first treatment session, one student, an African-American male who was a target student, was removed from the class and placed in a self-contained classroom for students with developmental disabilities within the same school. Another student, an African American male identified as having severe behavior disabilities, joined the class much later. The whole class participated in all the conditions of the study but only six students were targeted. Of the

six target students, one was a Caucasian male, two African-American females, and three African-American males. Their spelling performance levels prior to the study ranged from low to average. Table 2.1 shows the characteristics of the target students.

Student	Age	Gender	Reading range	Spelling level	Ethnicity
1	9.8	F	2.1-3.1	0-49 %	AA
2	9.11	M	1.7-2.7	0-49 %	AA
3	10	M	2.1-3.1	0-49 %	AA
4	10.1	M	2.7-3.8	50-70 %	AA
5	10	M	2.1-3.1	0-49 %	C
6	10.2	F	2.5-3.5	50-70 %	AA
F= Female M= Male C =Caucasian AA= African American					

Table 2.1. Target student characteristics

Target-subject selection was mainly based on the students' level of performance in spelling prior to the study. Two-thirds of the target subjects performed at the low level while the rest were average. Also considered during target subject selection process was the level of disruptive behavior the students exhibited during the day as reported by the classroom teacher and later verified by the primary experimenter. All the target students

were reported as exhibiting daily levels of disruptive behavior in the range of 70 to 90%. These high levels of disruptive behavior were verified by the primary experimenter during the prebaseline phase of the study.

Setting

This study was conducted in an urban public elementary school located in a metropolitan area in central Ohio. The school has an enrollment of 190 students preschool through grade five. The student population was mostly African American (85%), with 14% Caucasian and 1% either Asian or Hispanic/Latino. All students received free or reduced lunch. The classroom identified for the study was a fourth-grade general education classroom with a homeroom teacher and 12 students. The academic period targeted for this study was language arts. All students in the class were involved in the various conditions of the study four mornings a week. All teacher-directed spelling lessons, quizzes, and peer tutoring of spelling word sessions for the study took place in this classroom during language arts, Monday through Wednesday 10:00-10:30 A.M. On Monday, the sessions lasted five minutes longer due to the pretests administration. Prior to the study, teacher directed spelling lessons took place at this time and on these days and a pencil-paper spelling test was administered by the classroom teacher on Friday. The spelling tests required the students to write the spelling words as the teacher read them one by one. In addition to having the students spell each of the 10 words, the teacher instructed the students to write a sentence with each of the 10 words. Letters explaining the study and its purpose as well as consent forms were sent home to

the parents or guardians of each target student to obtain parental consent for the targeted students to participate in the study (See appendix A for parent permission letter and consent form).

Experimenter and Observers

A third year doctoral student at The Ohio State University, Special Education program, served as the primary experimenter during the study. In this capacity, the primary experimenter conducted all the teacher training sessions and monitored the research conditions. The primary experimenter earned a Bachelor of Education degree at the Kenyatta University, Nairobi, Kenya and a Masters of Arts degree in both African American/African Studies and Special Education at The Ohio State University. Two undergraduate and two graduate students at The Ohio State University served as secondary observers at various times during the study. Both graduate students were studying special education and both undergraduate students were majoring in education.

The classroom teacher, a Caucasian male certified in K-8, implemented all the conditions of the study after training. The classroom teacher had a Bachelor of Arts degree in Elementary Education. His teaching experience at the time of the study was one year as an SLD tutor and two and a half years as a fourth-grade teacher.

Dependent Variables

Five dependent variables were targeted during this study. These were (a) the number of words spelled correctly on daily quizzes, (b) number of words spelled correctly on weekly quizzes, (c) number of words spelled correctly on weekly

generalization quizzes, (d) number of words spelled correctly on maintenance quizzes, and (e) number of disruptive behavior intervals for each of the target students.

Number of words spelled correctly on daily quizzes. A spelling test (see Appendix B for spelling words used) was given at the end of every teacher instruction or peer tutoring session. The test was graded by the primary researcher and the score on the number of words spelled correctly recorded (see Appendix C for recording form for number of words spelled correctly).

Number of words spelled correctly on weekly quizzes. Every Friday at 10:00A.M, the students were given a test on the 10 spelling words they had been learning throughout the week. These weekly tests were graded by the primary experimenter and later graphed. No spelling instruction took place on Friday.

Maintenance. This was recorded as the number of words spelled correctly on maintenance tests administered one and two weeks after a set of words was taught. At least two sets of 10 words each were taught during each condition of the study. One of the sets was tested for maintenance a week after it was taught and the other set was tested two weeks after it was taught. Scores on these maintenance tests were recorded and later graphed.

Generalized words. The score on generalized words was the number of words spelled correctly in the context of a sentence during the weekly test on Friday. The Friday test consisted of writing the spelling words as the teacher dictated them and

writing a sentence using each of the spelling words. The number of generalized words were recorded on the same form as number of words spelled correctly on daily and weekly quizzes.

Disruptive behavior. Disruptive behavior included both incidents of refusal to comply immediately (i.e., within five seconds) with specific teacher directions, noncompliance with teacher expectations and rules as posted on the classroom bulletin board as well as other off-task disruptive behaviors such as engaging in a conversation with others when given directions or during teacher-directed instruction, eye and body orientation in a direction opposite from the teacher during instruction, provoking others (i.e., making faces at others, teasing, laughing at or touching others), talking inappropriately, making clicking sounds with tongue, tapping objects on desk, tapping feet on the floor, pounding on the desk, pulling or dragging a desk or chair across the room, voicing disapproval with instruction, attending to other objects (e.g., looking at or playing with other objects in the desk or misusing peer tutoring flashcards or other instructional tools, writing notes to friends or drawing pictures on tutoring folders), out of seat behavior without teacher's permission (including tipping back in chair and walking around in the classroom), or making inappropriate comments toward others (e.g., "You don't know how to teach" "I don't want you to teach me" "You are so stupid"). Disruptive behavior exhibited by the targeted students was measured during the morning 30-minute spelling lessons through direct observations and also during the 30-minute math lesson preceding spelling lessons. On a few occasions, generality probes on

the behavior were conducted during the 30-minute period following peer tutoring and on days when no spelling instruction was conducted at all (i.e., on Thursday and Friday).

Observational System for Disruptive Behavior

A 10-seconds observe 5-seconds record-partial interval recording system was used to measure the presence of disruptive behavior exhibited by the targeted students during daily 30-minute spelling (and sometimes math or writing) lessons. This recording system involved observing directly whether the disruptive behavior was present at any time during a specific observational interval. Each targeted student was observed for 10 seconds and his/her behavior recorded within a 5-seconds interval. Observations continued by rotating each student until every targeted student was observed for 10 intervals (see Appendix D for sample observational form). When one or more disruptive behaviors were observed during any part of the observational interval, the letter “D” was circled for that interval and when no disruptive behavior was observed, the letter “N” was circled for that interval.

Interobserver Agreement for Dependent Variables

Interobserver agreement on academic behavior. Interobserver agreement (IOA) for words spelled correctly was measured at least two times per phase (at least 33% of the observational sessions for the study). The teacher and a second observer graded the spelling tests independently. The primary experimenter and a second observer (either the classroom teacher or another independent observer) graded the tests independently using a key provided by the classroom teacher. Then the primary experimenter calculated

interobserver agreement on the number of words spelled correctly by comparing the scores obtained by the second observer and herself and then dividing the number of student scores agreed on (agreements) by the number of agreements plus disagreements and then multiplying by 100. That is,

$$\frac{\text{Agreement}}{\text{Agreement} + \text{Disagreement}} \times 100 = \% \text{ of Interobserver Agreement}$$

Interobserver agreement data was also collected on weekly and generalization quizzes as well as pretests using the same procedures as those followed for IOA on the number of words spelled correctly on daily quizzes. Data on these three was collected two times during each phase.

IOA on disruptive behavior. IOA for disruptive behavior was also conducted at least twice per phase (33% of the observational sessions) for each experimental condition by using a second observer trained by the experimenter. The experimenter and second observer observed the same student independently but simultaneously by using the same observational and recording procedures. Interobserver agreement was determined as the percentage of agreement on the occurrence of disruptive behavior. This was calculated by dividing the number of agreements on the occurrence or nonoccurrence of disruptive behavior by the two observers by the number of agreements plus disagreements and multiplying by 100.

IOA on baseline teacher procedural integrity. The primary researcher used a list of teacher behaviors developed for the study to evaluate procedural integrity (see Appendix E) on the part of the teacher. The 10 behaviors on this checklist were: (1)

the teacher introduces the 10 words (2) the teacher teaches each of the words using the spelling method for the session, (3) the teacher redirects disruptive students in accordance with the behavior plan, (4) the teacher metes a consequence for disruptive behavior according to the behavior plan (5) the teacher reminds the students of the behavioral consequences (6) the teacher praises non-disruptive students (7) the teacher administers the spelling test according to the format agreed upon with the primary experimenter (8) the teacher ensures that all students take the daily quizzes (9) the teacher ensures that all students have their names on the test papers, and (10) the teacher ensures that all students turn their papers in to him after the test and he in turn gives the papers to the primary experimenter after every test. The teacher's baseline procedural integrity was determined from independent but simultaneous observations made by the primary experimenter and a second observer. The two observers then counted the number of behaviors observed as occurring by both observers, dividing by the total number of behaviors on the checklist and multiplying by 100. The primary experimenter provided the teacher with feedback on how well he had followed the procedures established for the baseline spelling and behavior management procedure after every spelling instruction session.

IOA on tutor behaviors. Using a procedural checklist (See Appendix F), measures were taken to evaluate whether the tutors (a) learned the tutoring behaviors taught during training sessions, and (b) demonstrated the trained behavior on a daily basis in the tutoring sessions with tutees. Tutor behaviors on the procedural checklist

included: (1) retrieving folders, (2) switching folders with partners, (3) participating in tutor huddle (i.e., sitting with tutor huddle members and taking turns reading the words to members), and (4) performing practice session (i.e., displaying flashcards, reading the words, and giving praise and corrective feedback). Two observers, the primary experimenter and a second observer, observed a student independently but simultaneously during peer tutoring sessions to determine the extent to which the student was following the trained peer tutoring strategies. IOA on tutor behavior was measured by dividing the number of procedures the two observers observed being carried out by the particular student by the total number of items on the checklist and then multiplying by 100. Two students were randomly selected for the general procedural checks for every phase. Feedback on the student performance was provided to the teacher who restated the peer tutoring activities required for the whole group as necessary.

IOA on teacher peer tutoring behavior. This was conducted using exactly the same procedures as were used to check on teacher procedural integrity during baseline. The experimenter trained a second observer to recognize the peer tutoring procedure and then provided a sequential list of the expected teacher behavior during peer tutoring program to the second observer (see Appendix G). As during baseline, two observers, the primary experimenter and a second observer, observed the teacher simultaneously but independently to determine the extent to which the teacher followed the established peer tutoring procedures. The IOA for teacher behavior was scored as the percentage of agreement between the experimenter and the second observer with respect to the steps

the teacher followed or did not follow. IOA on the teacher's procedural integrity was conducted at least two times per phase (approximately 33% of the tutoring sessions).

Subject Matter and Curriculum

A list of spelling words provided by the classroom teacher was used as the curriculum for this study. The words were derived by the teacher from the students' language arts curriculum and from a list of fourth-grade high frequency words.

Appendix B contains a list of words used in the study.

Materials

Training scripts. Scripts containing necessary information on training both the teacher and the tutors in the peer tutoring procedures were used during training.

Spelling word flashcards. Plain 3" x 5" index cards were used for spelling word flashcards. Words were printed in black ink in large bold letters by the primary experimenter. The backside of the word card was blank (see appendix H for sample word card).

Folders. Manilla office file folders were used as the peer tutoring folders. Each folder contained the name of a particular student on the tab of the manila folder and a pocket labeled with the word "GO" in a green circle (see Appendix I for a sample of both the inside and outside of the tutoring folders). All the spelling words for the current week were stored in the "GO" pocket.

Timer. A standard kitchen timer was used to time the respective sections of each peer tutoring session.

Envelopes and rubber bands. Size 4" x 6 1/2" envelopes were used to store word cards that students used for sessions throughout the study. Each set of flashcards was stored in a respective envelope for each student. Rubber bands were used to keep the word cards together.

Teacher Training for Peer Tutoring

Teacher training sessions consisting of explanation, demonstration, role-playing, and feedback were conducted before commencing the study. The experimenter provided the teacher with information including an overview of the study, the research conditions, the instructional materials, and the step-by-step procedures of implementing the various conditions of the study. The experimenter guided the teacher through each instructional step with detailed information and demonstration. Training scripts for orientation and student training sessions (i.e., tutor huddle, practice, prompting and praising) were provided and followed through with to ensure the fluency of training the teacher provided to the students. The teacher was then given the opportunity to practice the procedures with the experimenter before formally beginning the intervention. Upon commencing the peer tutoring training, the experimenter attended the student training sessions on peer tutoring provided by the teacher and monitored the teacher's training. The experimenter provided corrective feedback to the teacher.

Teacher Training for the Group-Contingency

A 20-minute teacher training session on the group contingency used was conducted with the teacher before the beginning of the peer tutoring and the group

contingency condition. The basic training procedure consisted of an introduction (in which the experimenter explained the purpose of the intervention and its logic), demonstration (in which the experimenter demonstrated the procedure to the teacher), role-play (in which the experimenter and the teacher role played appropriate and inappropriate use of the procedure), and discrimination training (in which the experimenter probed the teacher's understanding of the procedure by presenting correct and incorrect ways of using the procedure. During the training, the experimenter presented both examples and nonexamples of the correct usage of the procedure and asked the teacher to discriminate between the two.

For the group contingency, the teacher used his list of five classroom rules positioned on the wall above the bulletin board (see Appendix J) and the experimenter's definition of disruptive behavior which was explained to the students, to award a point to every student whose behavior was not disruptive at the end of every classroom period. The teacher awarded points to students by writing the numeral one (1) in the appropriate box on the points' chart. A student who earned all points for the morning session earned a star for that session before the class left for lunch. When the students returned to the class in the afternoon, the same procedure was repeated where a student earned a point for each period if he or she was not disruptive. About 25 minutes at the end of the school day, the teacher again awarded stars to the students who had earned all points for the afternoon period and proceeded to count the total number of stars the students had earned for the day. If the group had earned 18 or more stars, the whole class was

reinforced with a teacher-determined reinforcer (e.g., class game, 10 minutes of extra recess, edible treats, or sitting with a friend) for the last 15 minutes of the school day. If not, the teacher pointed out why the students had not made enough points for a reward and asked them to try harder the following day. The teacher also asked the students to stay in their seats during the last fifteen minutes of the school day and read their books. To earn a reinforcer on Friday to be determined by the teacher, the students had to earn 105 or more stars for the whole week. The students were reinforced with the same types of reinforcers (or 10 minutes of gym class) as mentioned earlier when they met this criterion. The students were asked to stay in their seats and read their books when they did not meet the criterion. The teacher trained the students in the presence of the experimenter during the first 15 minutes of the school day just before the first session of the group contingency. The experimenter provided feedback to the teacher after the first session of peer tutoring and a group contingency and also provided feedback on the teacher's consistency in applying the procedure.

Observer Training

The experimenter initially trained one second observer to participate in collecting data on disruptive behavior. Other second observers had served as second observers for the same behavior in a different environment and after the experimenter explained the procedures, they were able to conduct observations independently. As mentioned earlier, all second observers were undergraduate and graduate students at The Ohio State University. During training of the first second observer, the experimenter provided the

second observer with the definition of dependent variables and the observational procedures. The experimenter then explained the observation method to the second observer after which the two first conducted a few observations, compared their data after the observations, and discussed any disagreements. The training sessions continued until the experimenter and the second observer reached at least 90% agreement for disruptive behavior for each student. After this, both the second observer and the experimenter conducted observations of student behavior independently but simultaneously and subsequently discussed any disagreements. The percentage of agreement was calculated and recorded.

Experimental Design and Procedures

This study employed a multiple treatment reversal design (i.e., A-B-C-B-C) to investigate the relationship between the dependent and independent variables. A multiple treatment reversal design enables comparison of the effects of two or more independent variables to baseline or to one another (Cooper, Heron, & Heward, 1987). Students were studied under the five conditions of baseline, peer tutoring (PT), peer tutoring with group contingency (PT+GOC), peer tutoring (PT), and peer tutoring with group contingency (PT+GOC).

Procedures

Prebaseline. Before conducting the study, the experimenter conducted at least four observations to sample the range of students' disruptive behaviors and to observe

the disruptive behavior of the targeted students to determine their suitability as experimental subjects. These prebaseline observations were also used for second observer training.

Pretests. The first session of each week (Monday) began with a pretest to the whole class of the 10 words to be learned for the rest of the week. This was conducted to determine the number of words each of the target students could spell correctly before any spelling instruction was given. The spelling word pretest, a pencil-paper test, was scored by the experimenter and also by a second observer for interobserver agreement data. The number of correctly spelled words by the target students was recorded and later graphed.

Baseline. During the baseline condition, the teacher taught spelling words as he normally did. In this particular class, the teacher used any of three different procedures to teach each week's set of spelling words Monday through Wednesday. Each teacher-directed spelling lesson lasted for 25 minutes and the words were tested for five minutes. In the first method, the teacher said each of the ten words and asked students to raise hands if they knew how to spell it. The teacher then selected a student whose hand was raised to spell the word and then preceded to write the word on the board as the student spelled it. If the student spelled the word correctly, the teacher provided social reinforcement and put the word in a chart pocket. Then the teacher pointed out particular characteristics of the word to help the students remember how to spell it (see the example with the word "habitat" explained below"). If the student spelled it incorrectly,

the teacher selected another student to spell the word. If none of the students were able to spell the word, the teacher wrote it on the board and drew the students' attention to its spelling by pointing out its characteristics that could help the students remember its correct spelling. For example, in the word "habitat" the teacher pointed out that a student only needed to add "at" to the word "habit" to get the word "habitat". During the second part of this spelling instruction procedure, the teacher asked the students to stand up and spell the words using their hands and other body parts. The students chorally spelled each of the words both orally and using their body parts.

In the second procedure, the teacher called the students to attention and then distributed a sheet of paper to each student stating that they were to exhibit appropriate behavior in the course of the "spelling game". The teacher then proceeded to read the first word on the spelling list and write it on the board with a wet sponge. He then called on one student to fan the word until it was dry. Meanwhile, the rest of the students were directed to write the word on the paper given to them repeatedly until the 'wet' word was fanned completely dry. The teacher then asked the students to take turns reporting how many times they had written the particular word on the sheets of paper distributed to them. The student who had written the word the most times was asked to close his/her eyes and spell the word. If that student spelled the word correctly, he/she earned the reinforcement of having to fan the next word when the teacher wrote it with the wet sponge on the board. If the student spelled the word incorrectly, the student who had written the word the most number of times was asked to spell it.

In the third spelling instruction procedure, the teacher divided the class into teams of four students each. Then he assigned spelling words to the groups after which he proceeded to call out spelling words one by one and the members of the group to which each word was assigned would take turns calling out each of the letters (in sequence) of the word. If a member of the group called out the incorrect letter, the team lost and the spelling word was assigned to another group. If all members called out the correct letters to correctly spell the word, they earned a point. The winners were socially reinforced by the teacher and the other students by being applauded.

During the baseline condition, after the teacher taught the words using whichever procedure he chose for the session, he announced testing time and proceeded to read the spelling words one by one as the students wrote them down. The teacher read the spelling word, then paused for about three seconds, then read the spelling word again. This procedure was repeated for all 10 words. The teacher then read the words one more time each in sequence pausing for three seconds between words. The purpose of the second reading was to ensure that the students had written the words in sequence and to give them an opportunity to confirm their spelling. These pen-paper tests were collected and given to the primary researcher who graded, recorded, and later graphed the scores.

On Fridays, at 10:00 A.M, in addition to the dictation of spelling words, the teacher directed the students to write a sentence using each of the spelling words. The purpose of this was to check the students' ability to generalize the skill to a context different from the one they were taught. These sentences were collected, graded and later graphed.

Data on the levels of disruptive behavior for each of the target students were recorded during the baseline condition. At this time, the teacher was directed to respond to student disruptive behavior as he normally did. In this class, the teacher's behavior management procedure consisted of cuing students to change their behavior using a response cost procedure in which the teacher punched a hole into an index card hanging above the chalk board with the particular student's name on it contingent upon exhibiting inappropriate behavior. Before punching a hole in a student's card, the teacher warned the student by writing his/her name on the board. To document the levels of disruptive behavior, the experimenters observed the target students for 30 minutes, three times a week using the observational system explained earlier. Other observations were conducted during the 30-minute period proceeding the spelling lesson and other times after the spelling lesson.

Tutor training. All tutor-training was conducted prior to the first day of the peer tutoring sessions. This phase of the study consisted of one training session. The homeroom teacher served as the trainer for the students. The session lasted approximately 40 minutes and was held in the time period set aside for spelling instruction. During training, the students were given an overview of the peer tutoring procedure to be followed during every peer tutoring session and shown a sample of a peer-tutoring folder. The teacher then proceeded to address the various components of peer tutoring for example, tutor huddle and providing feedback, that is, corrective feedback, prompting and praising. The training session consisted of five training

components and followed the same procedures explained earlier (see appendix K). The teacher showed the skill, then modeled the skill, role played with the group, had the students role play in pairs, and then the whole group practiced the entire procedure.

When the teacher demonstrated the skill, he explained and showed examples and non-examples of the skills targeted. For example, the teacher showed how to present the flashcards, how to provide prompts when the tutee does not know the answer and how to praise correct responses.

The teacher then modeled each specific skill in front of the whole group. For example, when training the students to prompt, the teacher took the role of tutor and read a flashcard to a student while the whole group watched. When the student made an error, the teacher showed the group how to prompt by saying “Try again.”

The teacher had the group serve as his tutor to provide students opportunities to practice the skills (e.g., prompting and praising skills). The teacher made both correct responses and errors so that the group practiced how to respond to both correct and incorrect responses from their tutees.

During role-play with student pairs, the teacher had tutor-tutee pairs practiced in front of the group, one pair at a time as he provided feedback. The teacher provided both the tutor and the tutee with prompts or praise as necessary. When one pair was role-playing in front of the group, the rest of the students observed to determine if the pair was following the correct peer tutoring procedure appropriate to the particular skills trained. For example, when role-playing “praise”, students were directed to nod their

heads when a tutor praised his/her tutee and to alert the teacher by shaking their heads sideways if he/she did not. During practice as a group, each tutor-tutee pair practiced while the teacher circulated and monitored the student progress in demonstrating the peer tutoring skills of offering feedback, both corrective feedback and praise, as directed by the experimenter.

Peer tutoring. Peer tutoring sessions began the day after the training session ended. In the course of peer tutoring, the teacher was directed to provide consistent feedback to the students on following the peer tutoring procedures. Peer tutoring sessions were conducted during the 30-minute morning sessions for language arts. Each peer tutoring session consisted of a tutor huddle and a practice session, followed by a teacher-administered spelling test.

During the first eight minutes of each tutoring session, students were engaged in tutor huddle. All the tutors sat around one table in groups of four and practiced the words from the “GO” pocket with each other. The tutors, in turn, held their tutees word cards, one by one and read each of the words for the other tutors to take turns spelling them. If a tutor spelled the word correctly, the tutor reading the word, said “Good job”. If he/she was not able to spell the word correctly, the tutor holding the word card said “try again” and if the tutor whose turn it was to spell the word was still not able to spell the word correctly, the tutor read the word, spelled it, and asked the tutor to say the word and spell it after him/her. If neither the tutor holding the word card nor any of the other tutors was able to read the word, the tutor holding the word card raised his/her hand for the teacher

to assist. Each tutor went through the spelling words dictating them to other tutors to spell just once so that every tutor had an opportunity to dictate the words.

After the five-minute tutor huddle, the students moved to a pre-assigned spot to meet their partners and begin the tutoring practice session. Practice was a 16-minute session during which the students, the tutor and the tutee, sat at their assigned seats facing each other with the tutoring folder open between them. The tutor removed the tutee's word cards from the "GO" pocket and read them one by one to the tutee and asked him/her to spell them orally as he/she wrote them on a paper. If the tutee spelled the word correctly, the tutor provided social reinforcement in the form of praise and then proceeded to the next word card, read the word, and asked the tutee to spell it. If the tutee spelled the word incorrectly or if three seconds elapsed with no attempt from the tutee, the tutor said "Try again to spell the word ____ (the target word)." If the response was again incorrect or took longer than three seconds, the tutor read the word and spelled it to the tutee and asked him to say the word and spell it after him/her by saying "spell the word ____ (the word target word). The tutee spelled the word and wrote it on a sheet of paper provided by the teacher. If the word was not spelled correctly, the procedure was repeated until the tutee could both spell the word orally and in writing. After all the cards were presented, the tutor shuffled the cards and presented them to the tutee again. The procedure continued as many times as possible until the first 8-minute

period elapsed. At the end of the first 8-minute practice session, the tutoring partners reversed roles and engaged in a second 8-minute practice session following the same tutoring procedure as during the first 8-minute session.

After the students completed both practice sessions, the teacher collected the folders and put them away, offering students feedback on their performance of tutor behaviors. The teacher then announced the spelling test session. The teacher proceeded to administer the spelling test. The teacher read each spelling word two times with a three-second pause between each reading of the word and the students wrote the words in the same sequence on a paper distributed by the teacher. The teacher then read the list of spelling words in sequence one more time with a three-second pause between the words for the students to confirm their spelling for the words and the sequence in which they had written the words. As during baseline, the pencil-paper tests were collected, graded, recorded, and later graphed. In order to have a better control of the procedure, no words from the previous weeks were recycled but rather, all students worked on the same set of words every week.

Social reinforcement. A social reinforcement system was employed during the peer tutoring sessions. The teacher was directed to circulate the room and check on tutoring pairs throughout the session. If the students were on-task and performing the trained behaviors satisfactorily, the teacher was to provide social reinforcement. The teacher was instructed to give verbal praise for specific behaviors.

Peer tutoring and group contingency (PT+GOC). During this condition, peer tutoring was conducted as explained in the peer tutoring section earlier. However, students were trained on a group reinforcement intervention and the effects of both group contingency and peer tutoring on the dependent variables investigated. The teacher used his list of five classroom rules, as noted earlier, positioned on the wall above the bulletin board and the experimenter's definition of disruptive behavior which was explained to the students to award a point to every student whose behavior was not disruptive at the end of every classroom period. The teacher awarded points to students by writing the numeral one (1) in the appropriate box on the points' chart. A student who earned all points for the morning session earned a star for that session before the class left for lunch. When the students returned to the class in the afternoon, the same procedure was repeated where a student earned a point for each period if he or she was not disruptive.

Twenty five minutes to the end of the school day, the teacher again awarded stars to the students who had earned all points for the afternoon period and proceeded to add up all the stars the students had earned for the day. If the group had earned 18 or more stars, the whole class was reinforced with a teacher-determined reinforcer for the last 15 minutes of the school day. If not, the teacher pointed out why the students had not made enough points for a reward and asked them to try harder the following day. The teacher also asked the students to stay in their seats during the last fifteen minutes of the school day and read their books if they did not earn a reward. To earn a reinforcer on Friday to

be determined by the teacher, the students had to earn 105 or more stars for the whole week. The students were reinforced when they met this criterion and asked to stay in their seats and read their books when they did not.

Peer tutoring. This condition followed the same procedures as the first phase of peer tutoring.

Peer Tutoring with group contingency. This followed the same procedure as the first phase of peer tutoring with group contingency described above.

Weekly Test

Every Friday 10-10:30 A.M, the students did a weekly spelling test on the words for the week. The teacher followed the same procedure as he did when giving the daily spelling quizzes after spelling lessons. The teacher read the words one at a time, pausing for three seconds between the words as the students wrote them down on sheets of paper provided by the teacher. The teacher then read all the words again in the same sequence with a three-seconds pause between them for the students to confirm their spelling and sequence. These tests were graded and graphed.

Generalization

A generalization test was given at the same time as the weekly test. It was treated as the second part of the spelling test. This involved the students writing sentences using each of the spelling words for the week. Immediately after the teacher completed the spelling test, he directed the students to write sentences using the spelling words. Each spelling word was to be used only once and it was to be used in the correct tense. When

these sentences were graded, the goal was for the experimenter to see how many words were spelled correctly in the context of a sentence. The number of words generalized was the number of words spelled correctly in the context of a sentence.

Maintenance. Maintenance tests were conducted on the spelling words. During each condition, i.e., baseline, first phase of peer tutoring, first phase of peer tutoring with group contingency, second phase of peer tutoring, and second phase of peer tutoring with group contingency. Each set of words was tested either two weeks or one week after it was taught. On the days when they were administered, maintenance tests were administered on Friday afternoons. These tests were graded, the scores recorded and later graphed.

Social Validity Measure

The homeroom teacher completed a social validity questionnaire (see Appendix L). The teacher completed the first social validity questionnaire two weeks after the peer tutoring was initiated and the second one after the study was terminated. The questionnaire listed 10 or 11 questions regarding the goal (e.g., the importance of the selected academic and social behavior), procedures (e.g., the appropriateness of the materials, the ease of implementation), and the results of the study (e.g., the academic and social benefits for students).

Social validity data was also taken on the target students. This questionnaire (See Appendix M) was administered by the teacher to the whole group of students but data was only analyzed for the target students.

CHAPTER 3

RESULTS

This chapter presents the results of the study. Results reported are those on interobserver agreement on dependent variables, that is, academic performance (daily, weekly, and generalization quizzes) and disruptive behavior as well as on procedural integrity on student and teacher behavior, and social validity.

Interobserver Agreement

Interobserver agreement data was collected on academic behavior (i.e., daily, weekly, and generalization quizzes as well as on pretests), disruptive behavior, teacher procedural integrity during baseline, teacher treatment integrity during peer tutoring, and tutor behaviors during peer tutoring. The results are reported below.

IOA on academic performance. Interobserver agreement (IOA) on words spelled correctly on daily quizzes was collected twice per phase (at least 33% of the observational sessions per phase). On sessions when interobserver agreement data were collected, the primary researcher graded the tests independently, then either the teacher or a second observer graded the spelling tests independently. The primary researcher then calculated interobserver agreement on number of words spelled correctly by

dividing the number of agreements by the number of agreements plus disagreements and then multiplying by 100. That is,

$$\frac{\text{Agreement}}{\text{Agreement} + \text{Disagreement}} \times 100 = \% \text{ Interobserver of Agreement}$$

IOA on number of words spelled correctly was 100% on all sessions.

Interobserver agreement data collected twice during every phase for the weekly and generalization quizzes and pretests indicated an agreement percentage of 100%.

IOA on Disruptive behavior. IOA data for the dependent variable, disruptive behavior, was collected at least twice per phase (approximately 33% of the observational sessions) during the study by using a second observer trained by the experimenter. The experimenter and second observer observed the same student independently but simultaneously by using the same observational and recording procedures and definition for the dependent variable. Interobserver agreement was the percentage of agreement on the occurrence of disruptive behavior. This was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. Interobserver agreement ranged from 90 to 100% for each of the students for all sessions observed.

IOA on baseline teacher procedural integrity. Interobserver agreement data on baseline teacher procedural integrity was collected two times during the baseline condition. Both the primary researcher and an independent observer used a teacher-behavior-checklist (see Appendix E) previously developed by the primary researcher to simultaneously evaluate teacher procedural integrity during baseline. IOA on baseline

teacher procedural integrity was measured by comparing the checklists from the two independent observers and counting the number of steps they both agreed the teacher followed, dividing these by the total number of steps on the checklist, and multiplying by 100. The percentage IOA on procedural integrity for baseline was 100%.

IOA on tutor behaviors. Using a procedural checklist (See Appendix F), measures were taken to evaluate whether the tutors (a) learned the tutoring behaviors taught during training sessions, and (b) demonstrated the trained behaviors on a daily basis in the tutoring sessions with tutees. Tutor behaviors included: (1) retrieving folders, (2) switching folders with partners, (3) participating in tutor huddle (i.e., sitting with tutor huddle members and taking turns reading the words to members), and (4) performing practice session (i.e., displaying flashcards, reading the words, and giving praise and corrective feedback). In conducting IOA on tutor behaviors, two observers observed the same student independently but simultaneously during the peer tutoring procedure and marked on the checklists as instructed whether the students used the strategies taught. A check was marked in the box provided if the student was observed to use a certain procedure and an X was marked if they were not. The IOA on tutor behavior was measured by dividing the number of procedures both observers observed as exhibited by the total number of items on the checklist and then multiplying by 100. Two target students were selected for general procedural checks for each phase. The IOA on tutor behavior ranged from 90 to 100%.

IOA on teacher peer tutoring behavior. A sequential list of the teacher's behavior involved in the peer tutoring program was provided to the second observer to conduct procedural integrity checks. Both the primary experimenter and the second observer observed the teacher simultaneously but independently to determine the procedural steps followed. The percentage of teacher procedural integrity during treatment was calculated as the number of steps both observers agreed the teacher followed divided by the total number of steps on the checklist multiplied by 100. IOA on teacher procedural integrity data during treatment was collected at least two times per phase. IOA on teacher procedural integrity ranged from 89 to 100% with an average of 92 %.

Number of Words Spelled Correctly on Daily Quizzes During Treatment and Baseline Conditions

Figures 1 through 6 show the number of words spelled correctly on daily quizzes during baseline and each of the treatment conditions. Results for every student for every phase are described in the following section. In figures 1 through 6, the black-filled square indicates the scores on daily quizzes while the non-filled square indicates the pretest scores. The line denotes the average score per phase.

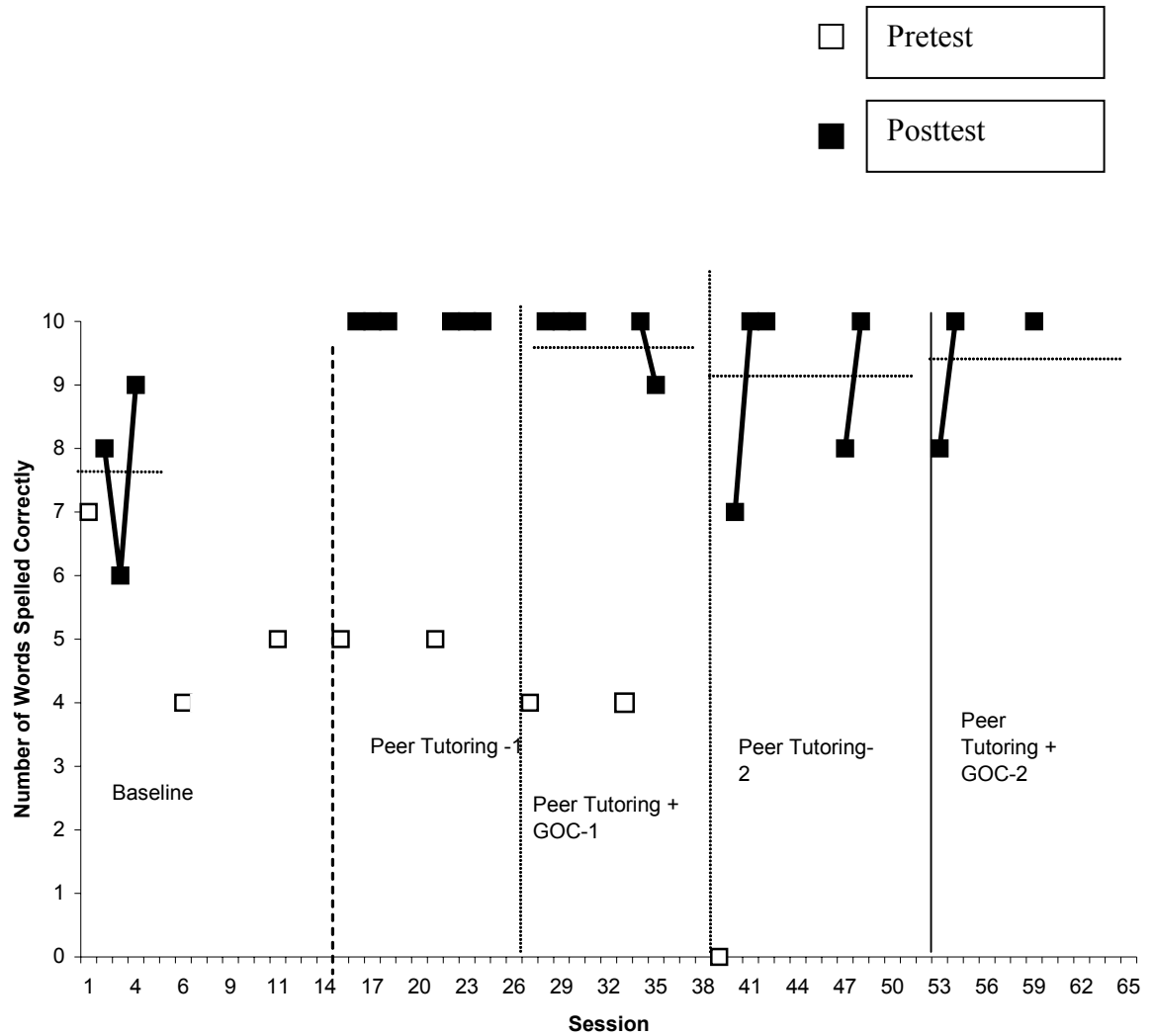


Figure 1. Number of words spelled correctly on daily quizzes by Student 1

Student 1. During teacher instruction of spelling words, Student 1 achieved an average score of 7.7 on daily quizzes. This score rose to 10 during peer tutoring and later dropped to 9.8 when peer tutoring and the group contingency were in effect. When the

group contingency was withdrawn so that the only treatment in effect was peer tutoring, this student's average score on daily spelling quizzes decreased further to 9.0 and later rose to 9.3 with the introduction of the group contingency. This student achieved the highest average score on daily spelling quizzes during the first phase of peer tutoring. When the average for each of the three conditions of the study is calculated, this student achieved an overall average of 7.7 during teacher instruction, 9.7 during peer tutoring and 9.6 during peer tutoring and group contingency indicating that this student performed slightly better during the peer tutoring alone condition.

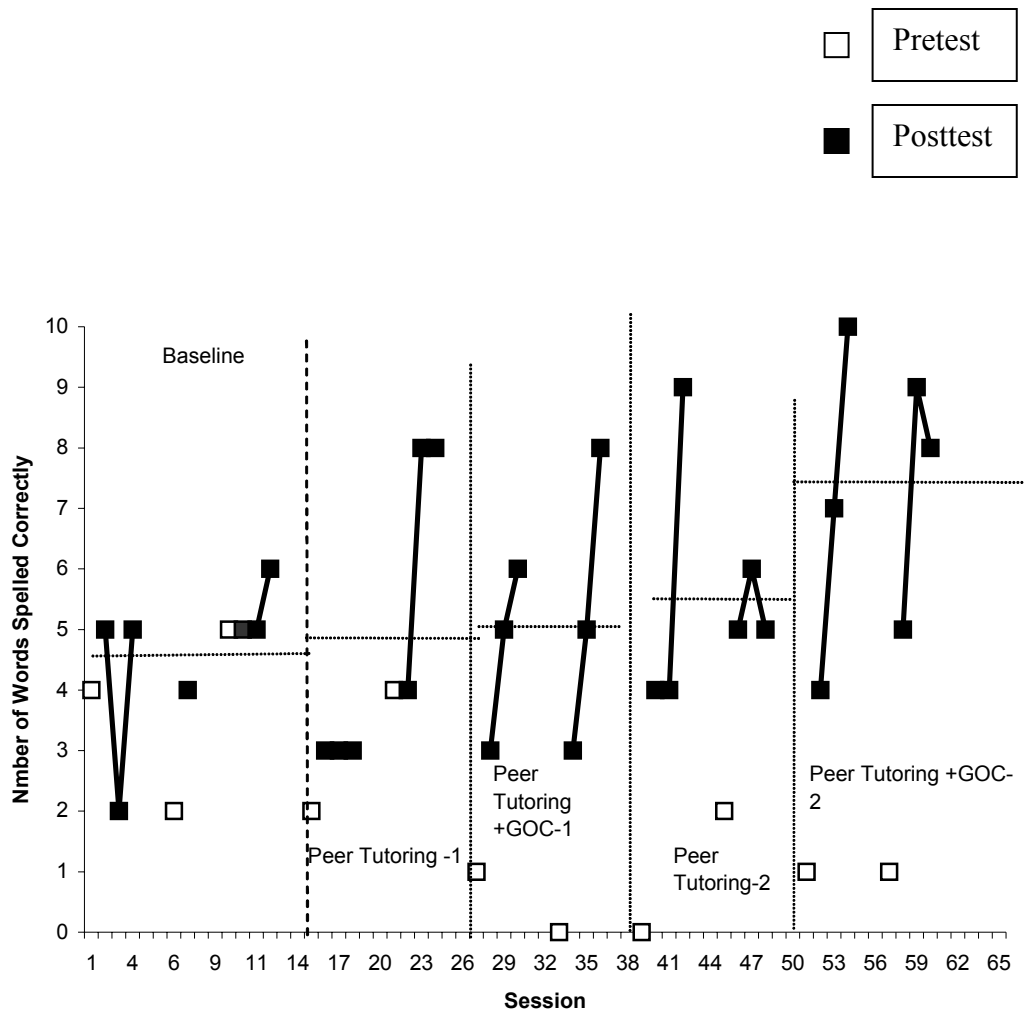


Figure 2. Number of words spelled correctly on daily quizzes by Student 2

Student 2. The average score on daily quizzes for Student 2 was 4.6 baseline and 4.8 during the first phase of peer tutoring. When a group contingency on student behavior was added to peer tutoring, the average score on number of words spelled correctly rose to 5.0, and later to 5.5 when the group contingency was removed. During

the last phase of peer tutoring with group contingency, Student 2's average score on number of words spelled correctly on daily quizzes rose to 7.2. Overall, Student 2's average number of words spelled correctly on daily quizzes for baseline was 4.6, that for the peer tutoring condition is 5.2 and that for the peer tutoring and group contingency condition is 6.1. Student 2's best average performance on daily quizzes was realized under the peer tutoring and group contingency condition.

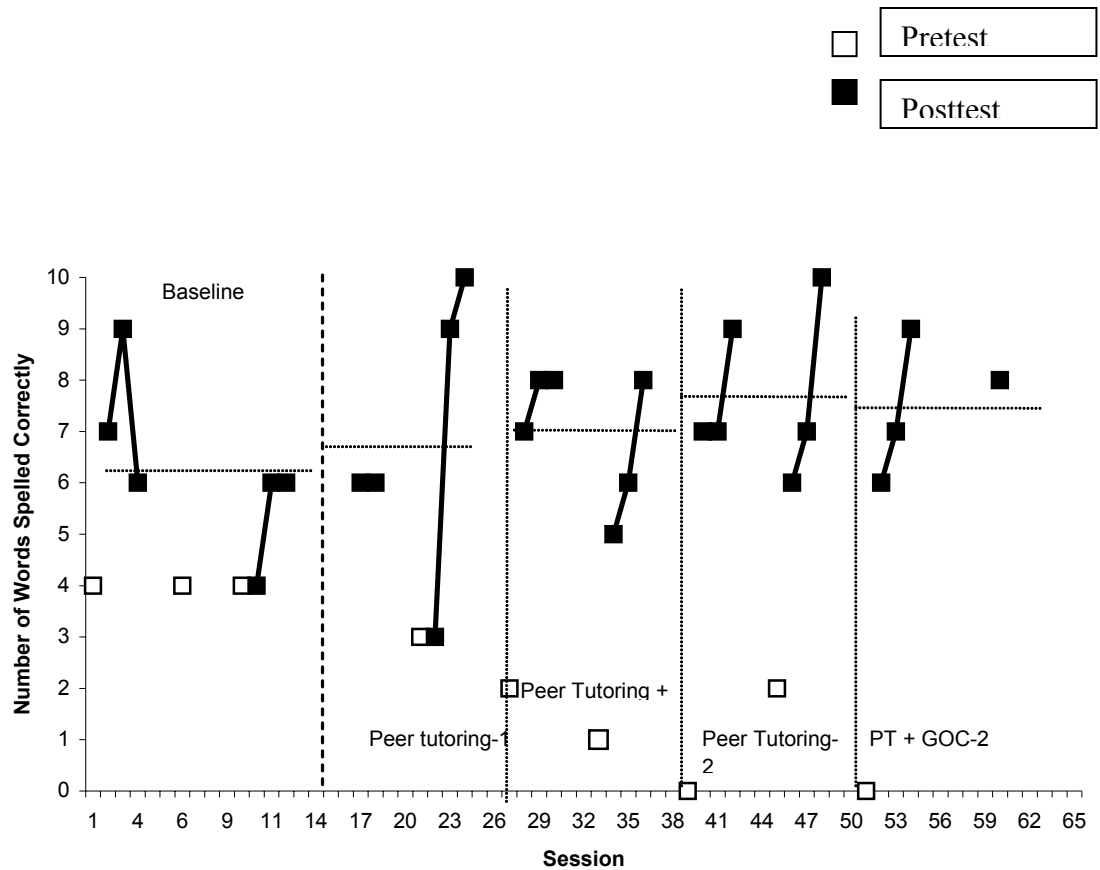


Figure 3. Number of words spelled correctly on daily quizzes by Student 3

Student 3. Student 3 started off with an average score of 6.3 on daily quizzes during baseline. This score rose to 6.8 during the first phase of peer tutoring, then to 7.0 during the first phase of peer tutoring with group contingency and 7.7 during the second phase of peer tutoring. During the final phase of peer tutoring and group contingency, this student's average score was 7.5. Overall, Student 3's average number of words spelled correctly on daily quizzes during baseline was 6.3, that during the peer-tutoring

phase was 7.3 and that during the peer tutoring and group contingency was 7.3. When the three conditions are compared, this student realized his best performance during the peer tutoring and the peer tutoring with group contingency condition.

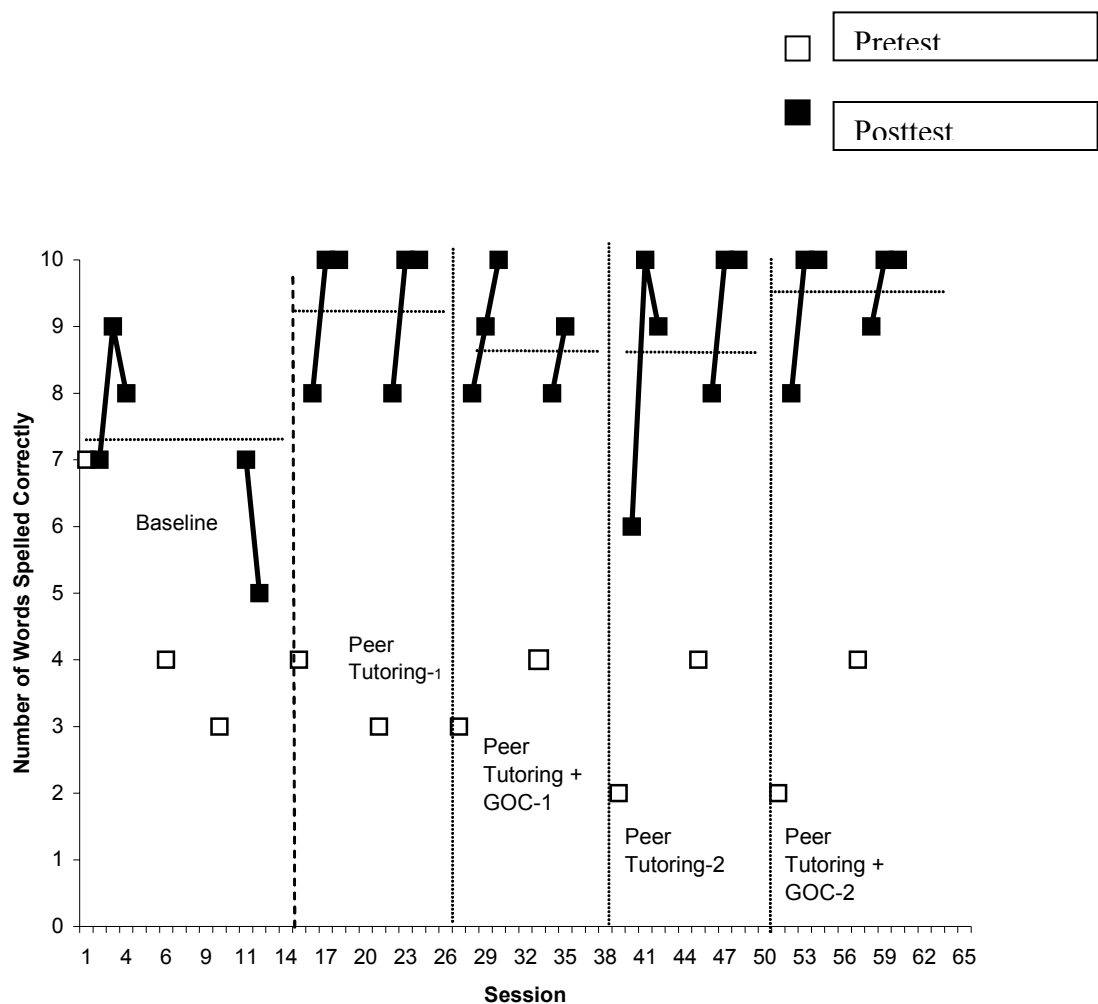


Figure 4. Number of words spelled correctly by Student 4

Student 4. From an average score of 7.2 on number of words spelled correctly during baseline, Student 4's average score rose to 9.3 during the first phase of peer tutoring and then dropped to 8.8 when both peer tutoring and the group contingency were in effect. During the second phase of peer tutoring, Student 4's average score on number of words spelled correctly on daily quizzes remained the same (8.8) as during the first phase of both peer tutoring and group contingency. However, during the second phase of peer tutoring with group contingency, Student 4's average score rose to 9.5. The overall average number of words spelled correctly on daily quizzes by Student 4 was 7.2 during baseline, 9.1 during the peer tutoring condition and 9.2 during peer tutoring with group contingency. The peer tutoring with group contingency evidenced a slightly better performance than peer tutoring alone.

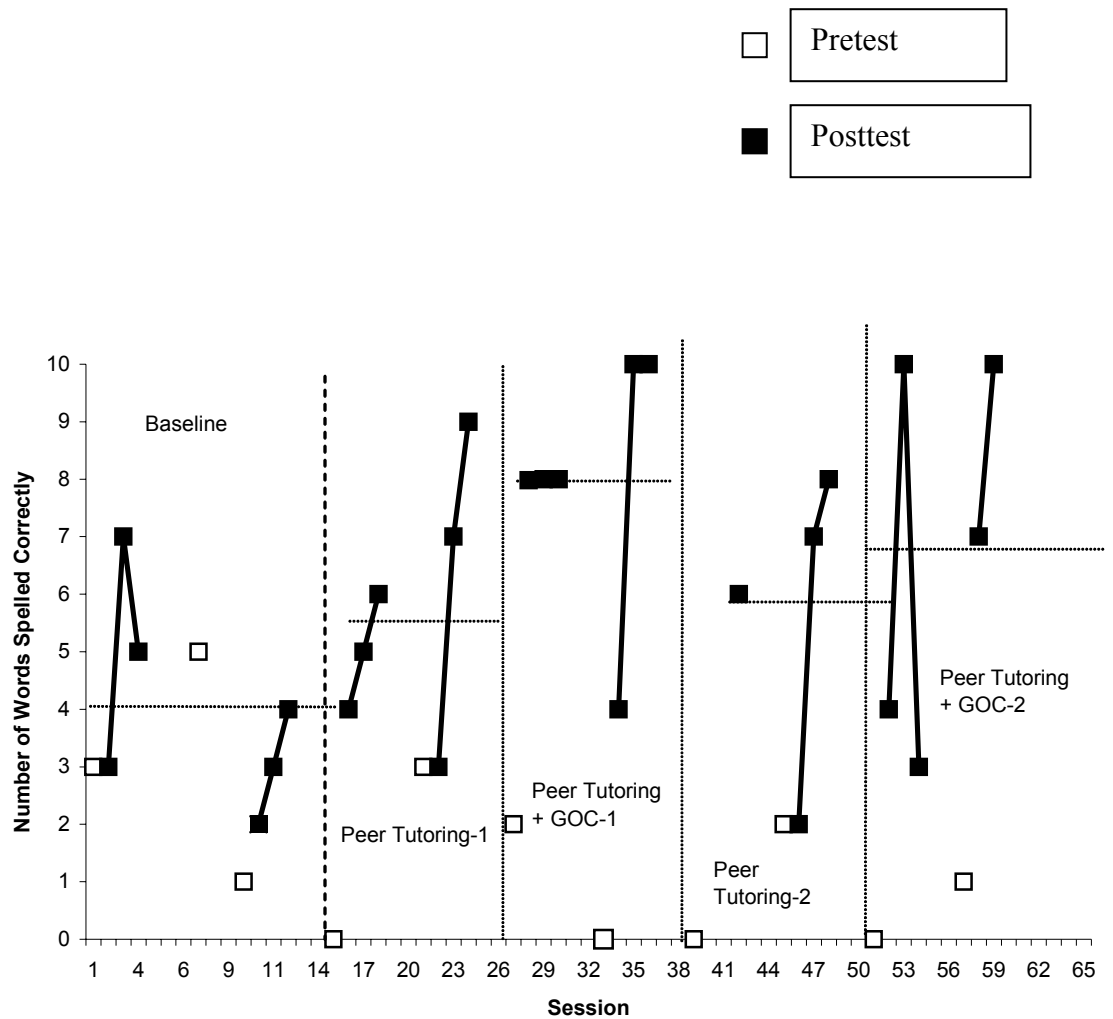


Figure 5. Number of words spelled correctly on daily quizzes by Student 5

Student 5. At baseline, Student 5's average score on daily spelling quizzes was 4.0. This score rose to 5.7 during the first phase of peer tutoring and then to 8.0 during peer tutoring and group contingency. When the group contingency was removed, this student's average score fell to 5.8 and later rose to 6.8 with the reinstatement of the

group contingency. Overall Student 5's average number of words spelled correctly during baseline was 4.0, that during peer tutoring condition was 5.8 and during peer tutoring and group contingency, this average was 7.4. For Student 5, the better average score on daily quizzes was achieved during peer tutoring and group contingency.

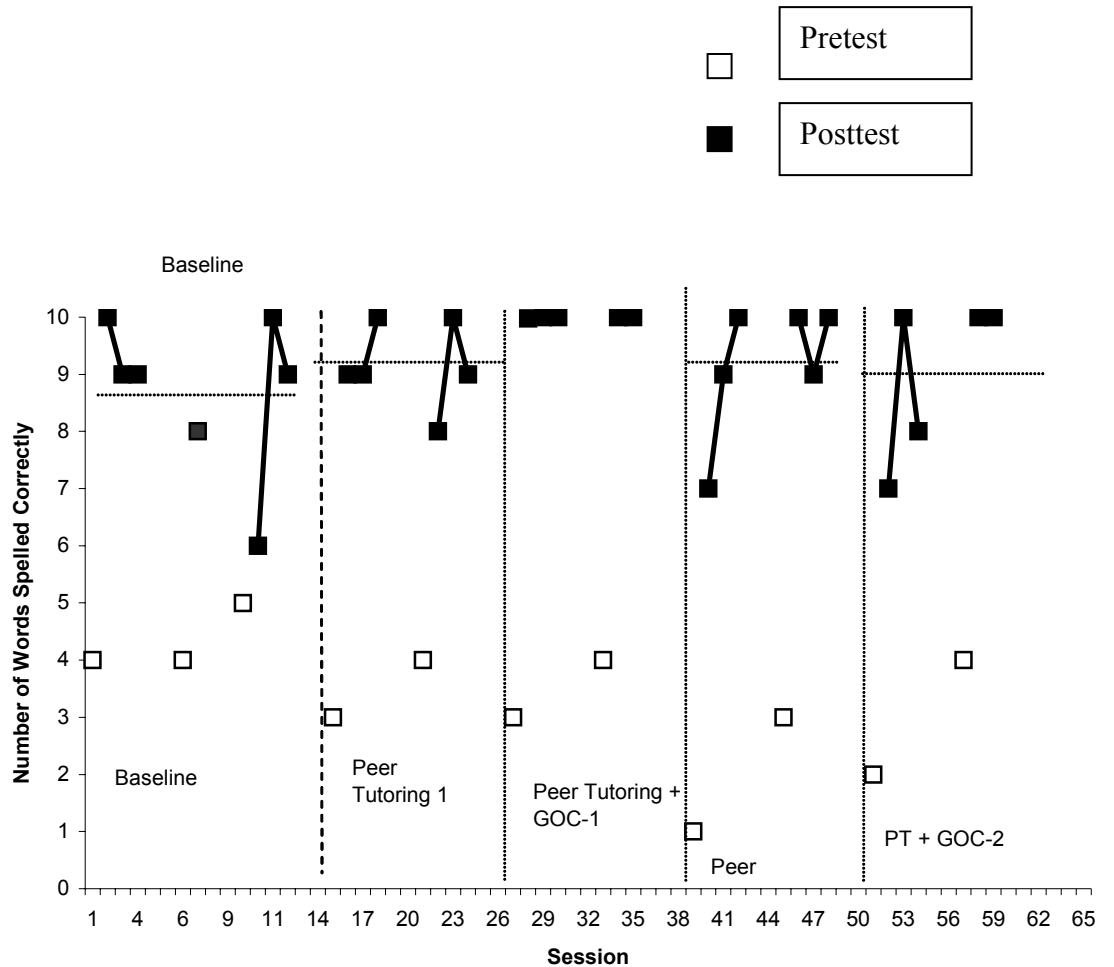


Figure 6. Number of words spelled correctly by Student 6.

Student 6. At baseline, Student 6's average score on daily spelling quizzes was 8.7. With the first phase of peer tutoring, this student's average score on daily spelling quizzes rose to 9.2 and later to 10 with the group contingency. When the group contingency was removed, Student 6's average score dropped to 9.2 and then to 9.0 when the group contingency was reintroduced. Student 6's overall average number of words spelled correctly on daily quizzes during the baseline condition was 8.7, that during the peer tutoring condition was 9.2 and during the peer tutoring with group = contingency, it was 9.5. Like students 2, 4, and 5, this student's best overall average performance on daily quizzes was achieved during the peer tutoring and group contingency condition. Table 3.1 shows a summary of the average performance on daily quizzes by all 6 target students.

Phase by phase average on daily quizzes						Overall per condition		
Student	BL	PT	PT+GOC	PT	PT+GOC	BL	PT	PT+GOC
1	7.7	10	9.8	9.0	9.3	7.7	9.7	9.6
2	4.6	4.8	5.0	5.5	7.2	4.6	5.2	7.2
3	6.3	6.8	7.0	7.7	7.5	6.8	7.3	7.3
4	7.2	9.3	8.8	8.8	9.5	7.2	9.1	9.2
5	4.0	5.7	8.0	5.8	6.8	4.0	5.8	7.4
6	8.7	9.2	10	9.2	9.0	8.7	9.2	9.5

Table 3.1. Summary of average performance on daily quizzes

Note. BL = Baseline; PT =Peer Tutoring ; PT +GOC= Peer Tutoring plus Group

Contingency

Each of the subjects made substantial gains from pre- to posttests across conditions. Following is a description of the average gain in the number of words spelled correctly on daily quizzes during baseline and treatment conditions for Students 1 through 6. Where subjects missed pretests (e.g., Students 1 and 3 during the last phase of the study), it was not possible to calculate their average gain from pre to posttests for that week or phase. Table 3.2 presents this information in summary form.

Student 1. During baseline, Student 1 made an average gain of 0.6 words from pre- to post test. During peer tutoring, this student made an average gain of 5 words from

pre- to post test. This gain increased to 5.7 words during peer tutoring and group contingency and later to 8.6 during peer tutoring alone. Data on average gain for this student from pre- to post tests during the final phase of peer tutoring and group contingency was not available. Overall, Student 1 made an average gain of 6.8 during the peer tutoring condition and 5.7 during the peer tutoring and group contingency condition.

Student 2. Student 2's average gain from pre- to post tests during baseline was 0.16. This rose to 2.2 during the first phase of peer tutoring and then to 4.4 during peer tutoring and group contingency. During the second phase of peer tutoring, average gain dropped to 4.3 and then rose to 6.0 when group contingency with peer tutoring were reinstated. Overall, Student 2 made an average gain of 4.1 during the peer tutoring condition and 5.2 during the peer tutoring and group contingency condition.

Student 3. During baseline, this student evidenced an average gain from pre- to post tests of 2.3. This gain rose to 4.3 during the first phase of peer tutoring and then to 5.4 during peer tutoring with group contingency. During the second phase of peer tutoring, this student's average gain from pre- to post tests rose to 7.3. Overall, Student 3 made an average gain of 5.8 during the peer tutoring condition and 5.4 during the peer tutoring and group contingency condition.

Student 4. The average gain from pre to post tests for Student 4 during baseline was 2.0 and during the first phase peer tutoring, it was 3.6. When both peer tutoring and group contingency were effected, this average gain rose to 5.0 and later to 5.8 when peer

tutoring was implemented without the group contingency. When the group contingency and peer tutoring condition was reinstated, this student averaged a pre- to post test gain of 6.5 on daily spelling tests. Student 4 made an overall average gain of 4.7 during the peer tutoring condition and 5.8 during the peer tutoring and group contingency condition.

Student 5. Student 5 averaged a gain of 5.0 from pre to posttests in daily spelling quizzes during baseline. During the first peer-tutoring phase, this average dropped to 4.1 and later rose to 7.0 during peer tutoring and group contingency. Upon reversal to peer tutoring, this gain dropped to 4.3 and later rose to 6.5 when group contingency and peer tutoring were put in effect. Student 5 made an overall average gain of 4.2 during the peer tutoring condition and 6.8 during the peer tutoring and group contingency condition.

Student 6. At baseline, Student 6's average gain from pre- to post tests on daily quizzes was 3.6. This rose to 5.6 during the first phase of peer tutoring and later to 6.5 when both peer tutoring and group contingency were effected. When the group contingency was removed, Student 6 evidenced an average gain from pre- to post tests of 7.1. Upon reinstatement of peer tutoring with group contingency, this gain dropped to 6.2. Student 6 made an overall average gain of 6.4 during the peer tutoring condition and 6.4 during the peer tutoring and group contingency condition.

Average gain phase by phase						Overall average gain		
Student	BL	PT	PT+GOC	PT	PT+GOC	BL	PT	PT+GOC
1	0.6	5.0	5.7	8.6		0.6	6.8	5.7
2	0.16	2.2	4.4	4.3	6.0	0.16	4.1	5.1
3	2.3	4.3	5.4	7.3		2.3	5.8	5.4
4	2.0	3.6	5.0	5.8	6.5	2.0	4.7	5.8
5	5.0	4.1	7.0	4.3	6.5	5.0	4.2	6.8
6	3.6	5.6	6.5	7.1	6.2	3.6	6.4	6.4

Table 3.2. Average gain from pre to posttests

Note. BL= Baseline; PT=Peer Tutoring; PT+GOC= Peer Tutoring with Group

Contingency

Number of Words Spelled Correctly on Weekly Quizzes

Figures 7 through 12 show graphic visuals of the number of words spelled correctly on weekly quizzes by Students 1 through 6 respectively.

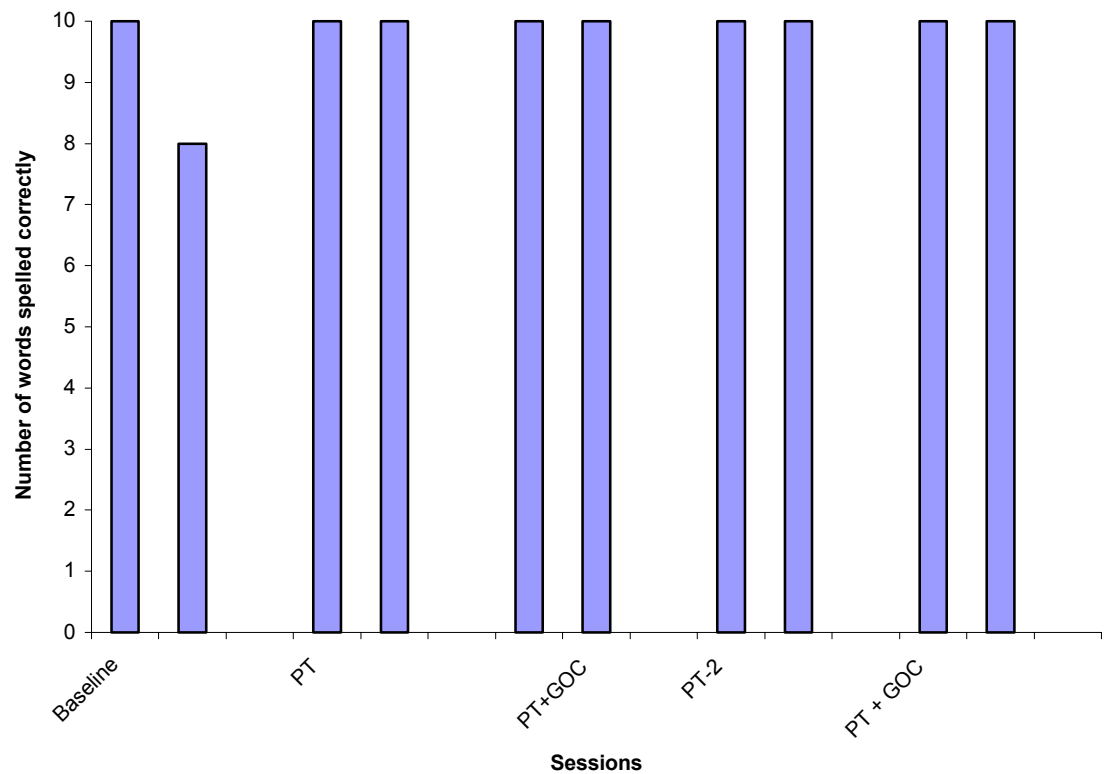


Figure 7. Number of words spelled correctly on weekly quizzes by Student 1

Note. PT= Peer Tutoring; PT+GOC = Peer Tutoring and Group Contingency

Student 1. This student spelled an average of 9.0 words correctly on weekly quizzes during baseline. This score rose to 10 during each of the subsequent phases. Student 1's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 10.

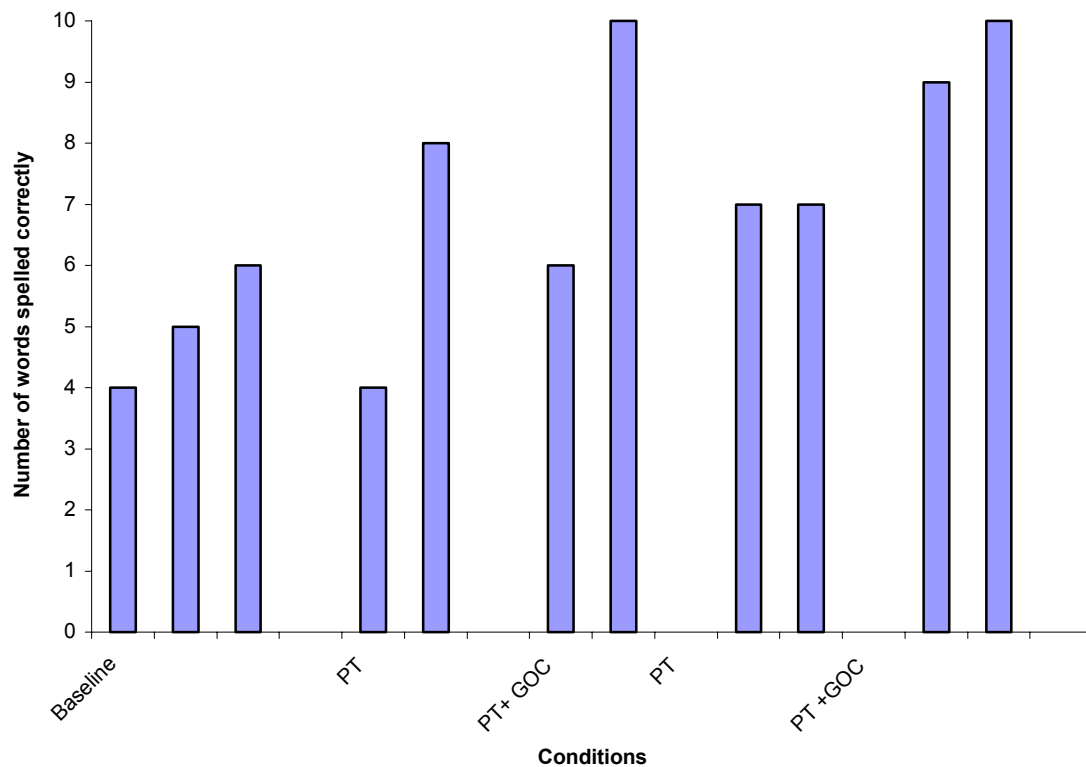


Figure 8. Number of words spelled correctly on weekly quizzes by Student 2

Note. PT= Peer Tutoring; PT + GOC = Peer Tutoring with Group Contingency

Student 2. During baseline, Student 1 spelled correctly an average of 5.0 words correctly on weekly quizzes. During the first phase of peer tutoring, this score rose to 6.0 and then to 8.0 during the first phase of peer tutoring and group contingency. When the group contingency was withdrawn, the average score on weekly quizzes for this student dropped to 7.0 before rising again to 9.5 with the reinstatement of the group contingency.

Student 2's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 6.5 and 8.8 respectively.

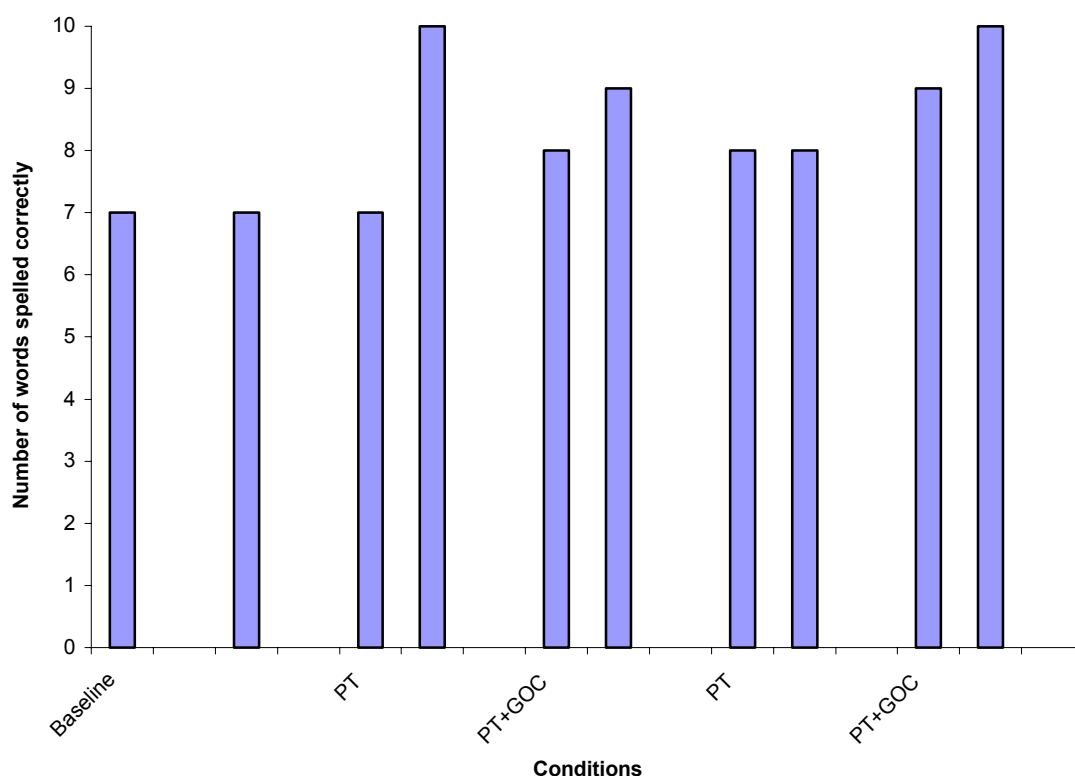


Figure 9. Number of words spelled correctly on weekly quizzes by Student 3

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

Student 3. The average score on weekly quizzes for Student 3 during baseline was 7.0. During the first phase of peer tutoring, this score rose to 8.5 and stayed the

same (8.5) during the first phase of peer tutoring with group contingency.

When the group contingency was removed, this score dropped to 8.0 but rose to 9.5 when the group contingency was reinstated. Student 3's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 8.3 and 9.0 respectively.

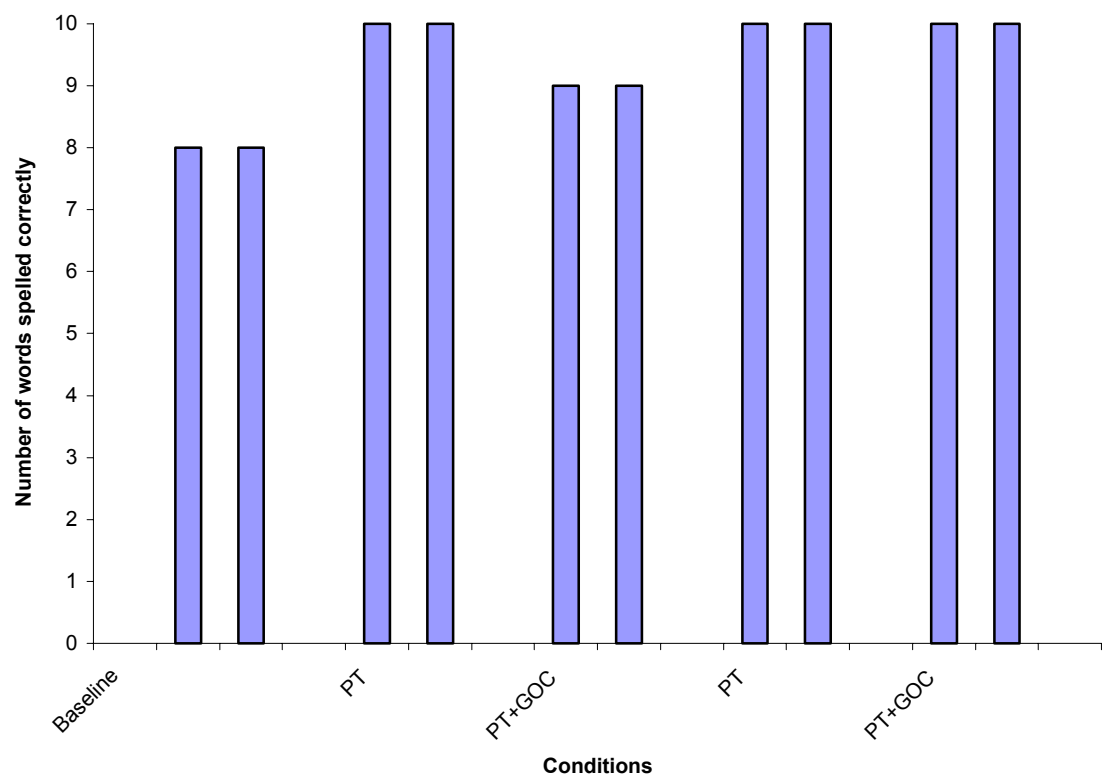


Figure 10. Number of words spelled correctly on weekly quizzes by Student 4

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring with Group Contingency

Student 4. Student 4 started off with an average score of 8.0 on weekly quizzes during baseline. This score rose to 10 during the first phase of peer tutoring and then dropped to 9.0 when the group contingency was added into the treatment package. Upon removal of the group contingency, this student's average score on weekly quizzes rose to 10 and stayed the same (10) during the next phase of peer tutoring with group contingency. Student 4's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 10 and 9.5 respectively.

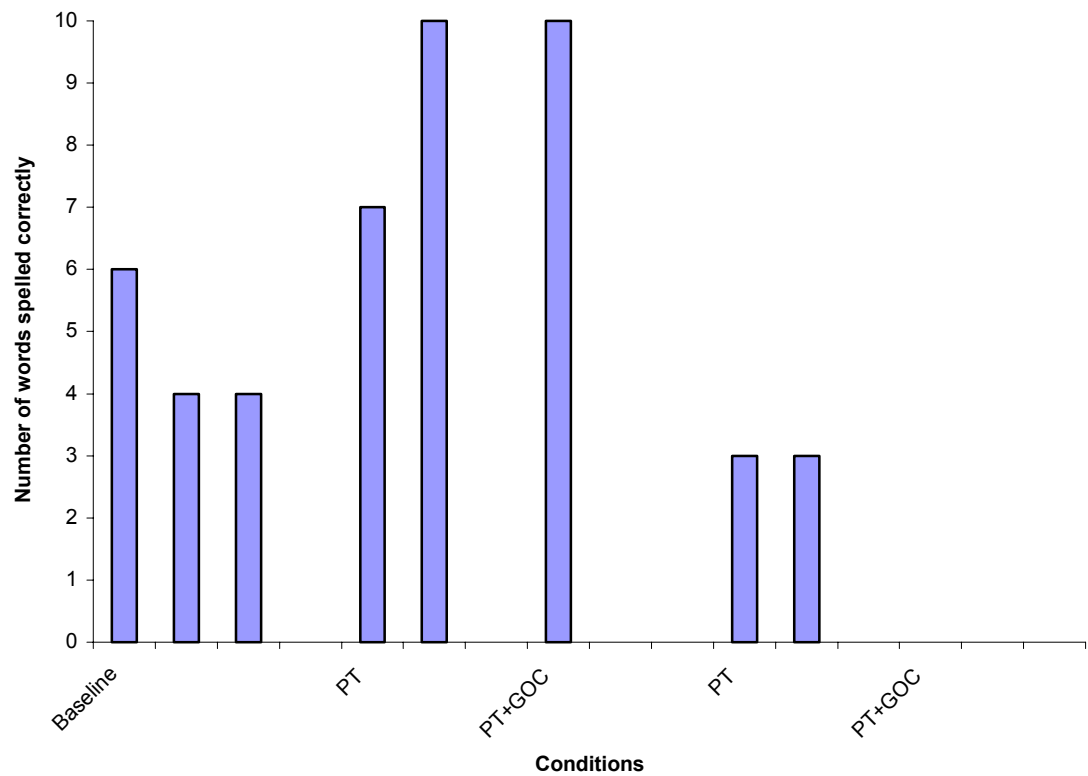


Figure 11. Number of words spelled correctly on weekly quizzes by Student 5

Note. PT = Peer Tutoring PT +GOC = Peer Tutoring with Group Contingency

Student 5. This student scored an average of 4.7 on weekly quizzes during baseline. His average score during the first phase of peer tutoring rose to 8.5 and then to 10 during peer tutoring with group contingency. During peer tutoring alone, Student 5's average score dropped to 3.0. Student 5 did not complete any weekly quizzes during the last 2

weeks of the study. Student 5's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 5.8 and 10 respectively.

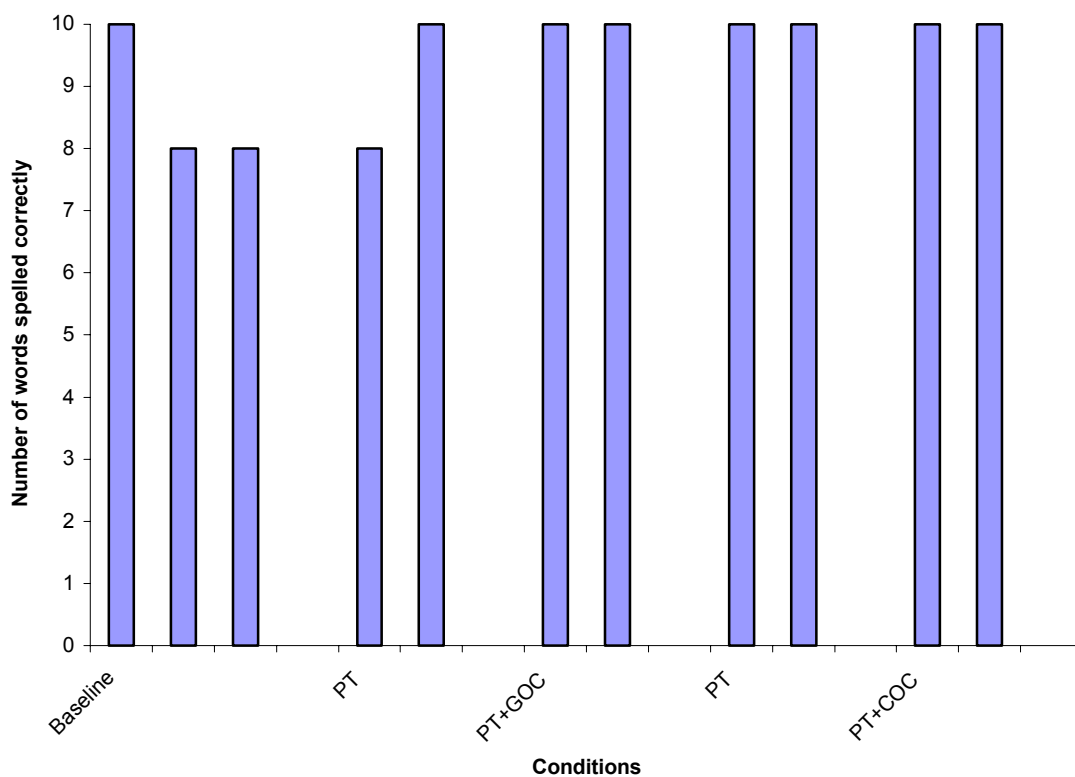


Figure 12: Number of words spelled correctly on weekly quizzes by Student 6

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring with Group Contingency

Student 6. The average score on weekly quizzes for Student 6 during baseline and the first phase of peer tutoring was 8.7 and 9.0 respectively. Student 6 scored 10 for each of the subsequent phases. Student 6's overall average number of words spelled correctly during weekly quizzes for both peer tutoring and peer tutoring with group contingency was 9.0 and 10 respectively. Table 3.3 shows a summary of the performance on weekly quizzes for all target students.

Average score phase by phase						Overall per condition		
Student	BL	PT	PTG	PT	PTG	BL	PT	PTG
1	9.0	10	10	10	10	9.0	10	10
2	5.0	6.0	8.0	7.0	9.5	5.0	6.5	8.8
3	7.0	8.5	8.5	8.0	9.5	7.0	8.3	9.0
4	8.0	10	9.0	10	10	8.0	10	9.5
5	4.7	8.5	10	3.0		4.7	5.8	10
6	8.7	9.0	10	10	10	8.7	9.0	10

Table 3.3. Summary performance on weekly quizzes for the 6 students

Note. BL = Baseline; PT = Peer tutoring; PTG = Peer Tutoring & Group Contingency

Number of Words Generalized on Weekly Quizzes

Generalization tests were administered during each of the five phases of the study. Figures 13 through 18 show graphic visuals of the number of words spelled correctly on weekly generalization tests for each of the target students 1 through 6.

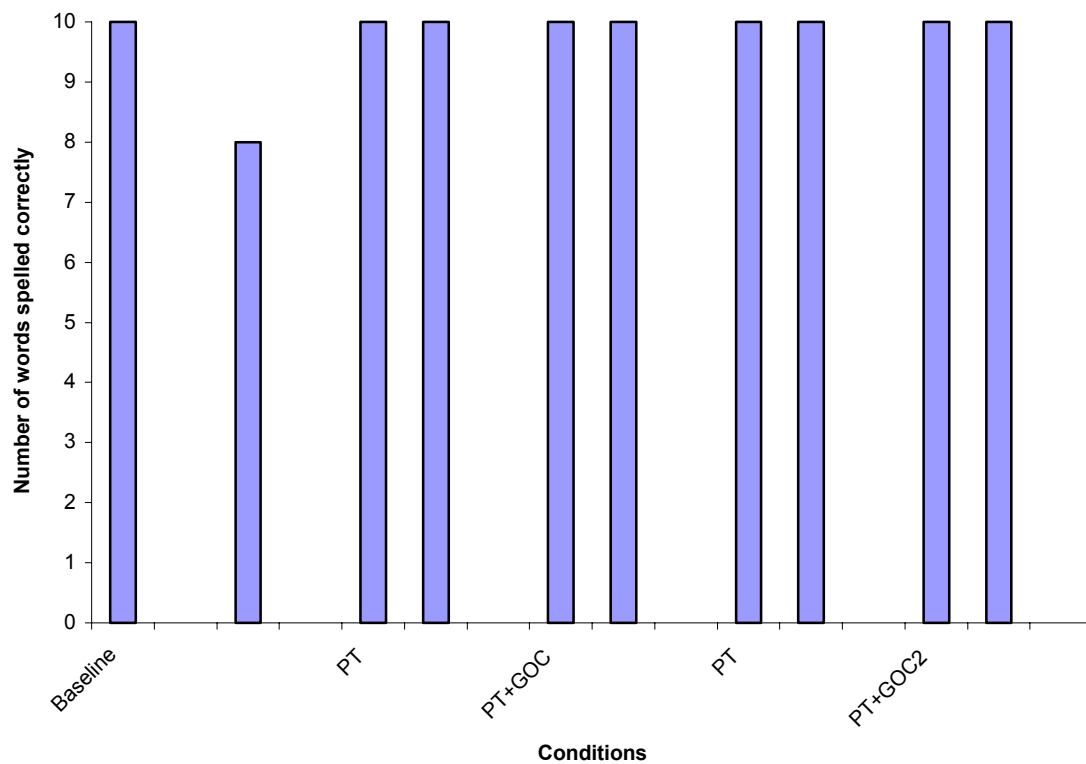


Figure 13: Number of words generalized on weekly quizzes by Student 1

Note. PT=Peer Tutoring; PT+GOC= Peer Tutoring and Group Contingency

Student 1. During baseline, Student 1 spelled correctly an average of 9 words during weekly generalization tests. During the next four phases, this student spelled correctly an average of 10 words. Overall, Student 1 achieved an average of 10 during both peer tutoring and peer tutoring with group contingency conditions on number of words generalized on weekly tests.

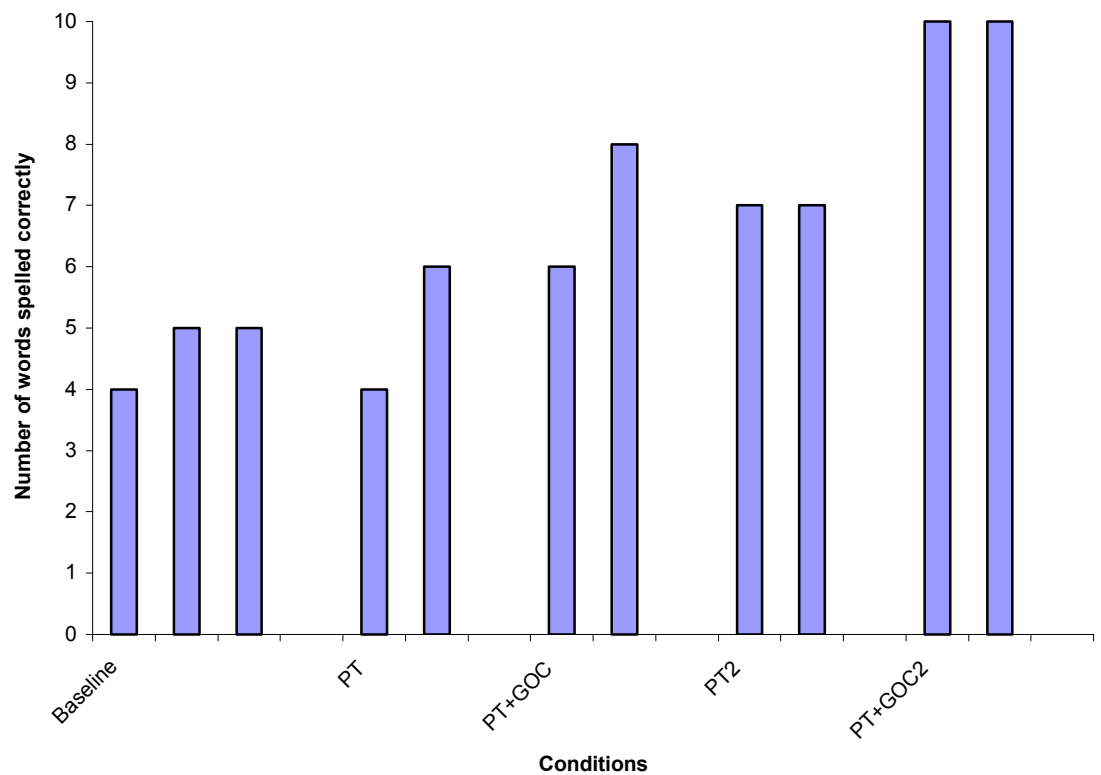


Figure 14. Number of words spelled correctly on generalization tests by Student 2

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

Student 2. The average score on words generalized during weekly generalization tests for Student 2 was 4.7 during baseline, 5.0 during the first phase of peer tutoring, 7.0 during both the first phase of peer tutoring with group contingency and the second phase of peer tutoring, and 10 during the second phase of peer tutoring with group contingency. Overall, Student 2 achieved an average of 6.0 during the peer tutoring condition and 8.5 during the peer tutoring with group contingency condition on number of words generalized on weekly tests.

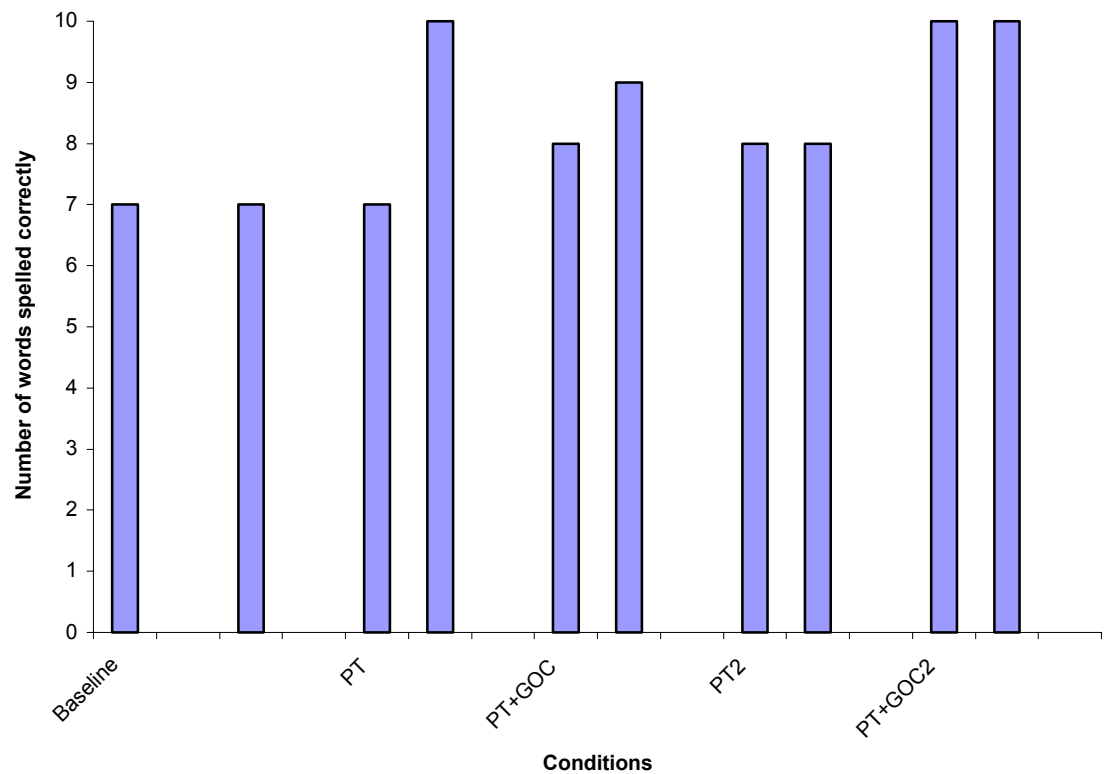


Figure 15. Number of words spelled correctly on generalization tests by Student 3

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

Student 3. During baseline, Student 3 averaged a score of 7.0 on weekly generalization tests, 8.5 during the first phase of peer tutoring and the first phase of peer tutoring with group contingency, 8.0 during the second phase of peer tutoring, and 10 during the second phase of peer tutoring with group contingency. Overall, Student 3 achieved an average of 8.3 during the peer tutoring condition and 9.3 during the peer tutoring with group contingency condition on number of words generalized on tests.

Student 4. The average number of words generalized for Student 4 was 8.0 during baseline, 10 during peer tutoring, 9.0 during peer tutoring with group contingency, 10 during the second phase of peer tutoring and the second phase of peer tutoring with group contingency. Overall, Student 4 achieved an average of 10 during the peer tutoring condition and 9.5 during the peer tutoring with group contingency condition on number of words generalized on weekly tests.

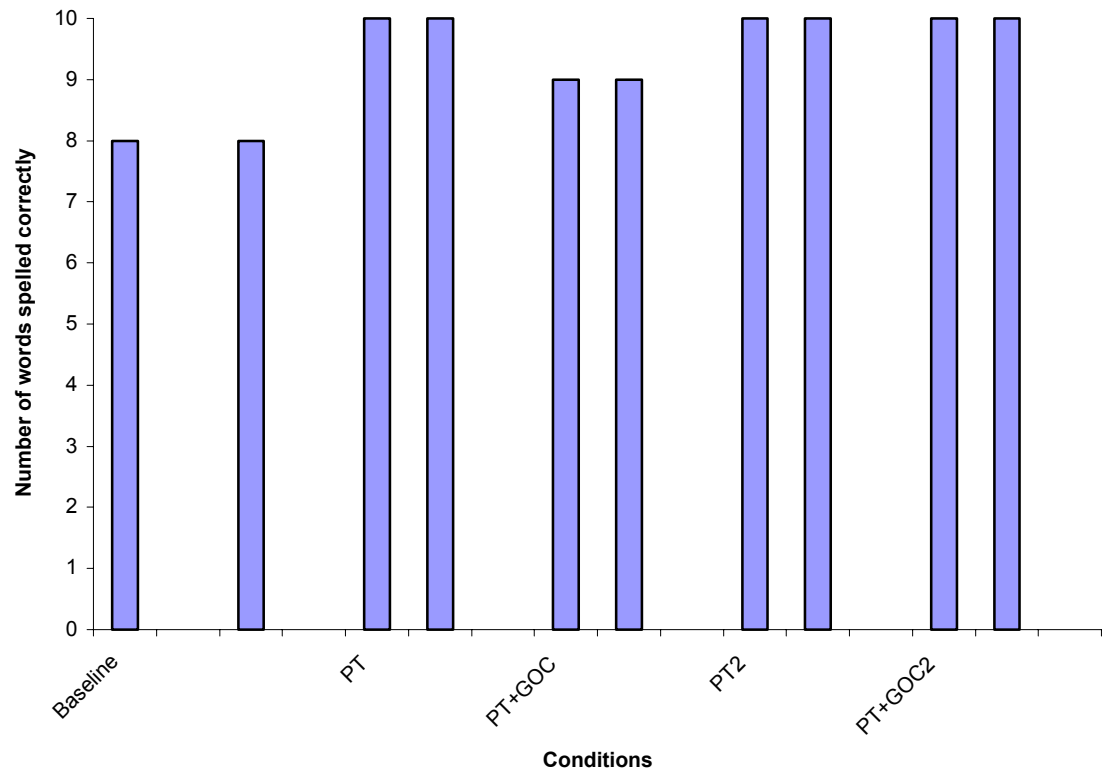


Figure 16. Number of Words spelled correctly on generalization tests by Student 4

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

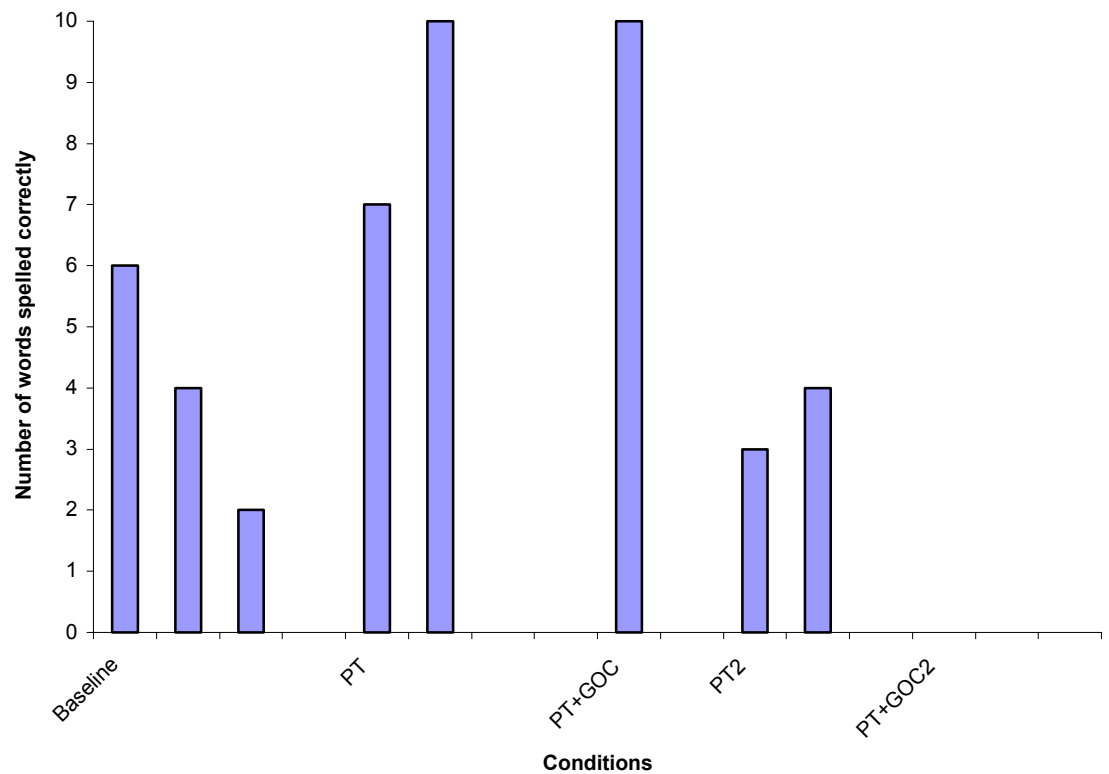


Figure 17. Number of words spelled correctly on generalization tests by Student 5.

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

Student 5. Student 5 averaged 4.0 on words generalized during baseline on the 3 generalization tests, 8.5 during the first phase of peer tutoring and 10 during peer tutoring with group contingency. This student averaged 3.5 and during the second phase of peer tutoring. Overall, Student 5 achieved an average of 6 during the peer tutoring condition and 10 during the peer tutoring with group contingency condition on number

of words generalized on weekly tests. Student 5 did not take any generalization tests during the second phase of peer tutoring with group contingency hence no data .

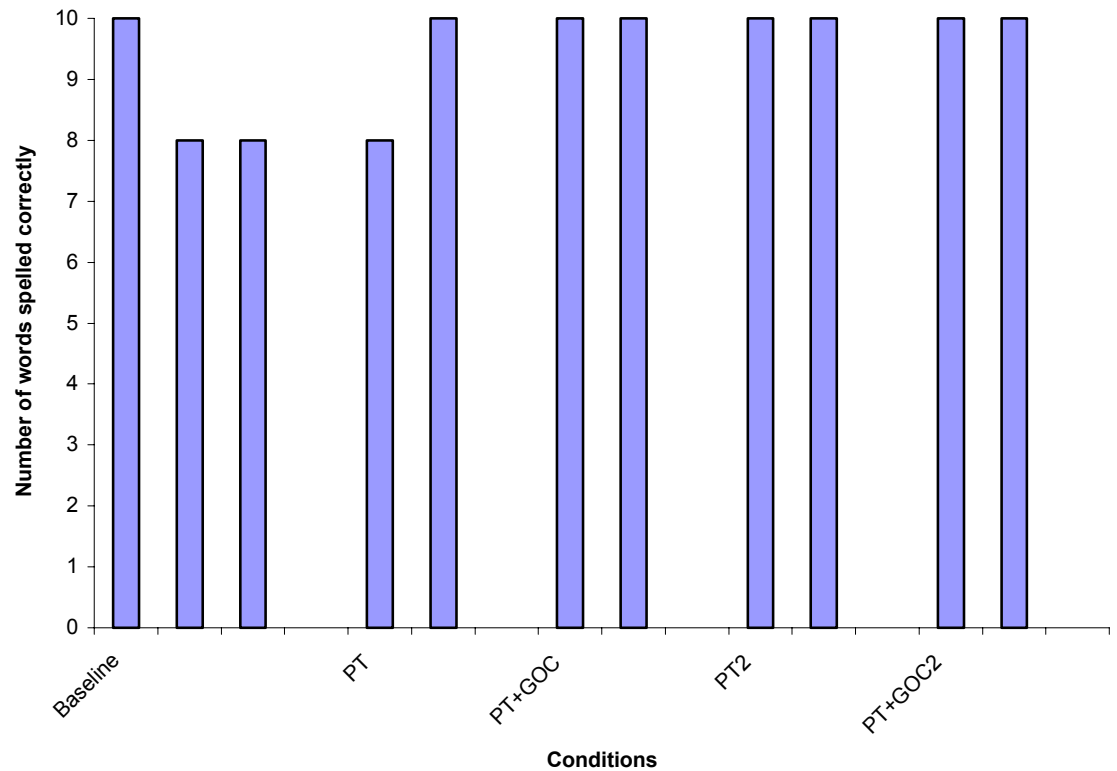


Figure 18. Number of words spelled correctly on generalization tests by Student 6

Note. PT = Peer Tutoring; PT + GOC = Peer Tutoring and Group Contingency

Student 6. Student 6 averaged 8.7 and 9.0 respectively during baseline and the first phase of peer tutoring on number of words generalized. During each of the subsequent phases, student 6 averaged 10 on the one generalization test taken. Overall,

Student 6 achieved an average of 9.0 during the peer tutoring condition and 10 during the peer tutoring with group contingency condition on number of words generalized on weekly tests. Table 3.4 presents these results in table form.

Average scores phase by phase						Overall average		
Student	BL	PT	PT+GOC	PT	PT+GOC	BL	PT	PT+GOC
1	9.0	10	10	10	10	9.0	10	10
2	4.7	5.0	7.0	7.0	10	4.7	6.0	8.5
3	7.0	8.5	8.5	8.0	10	7.0	8.3	9.3
4	8.0	10	9.0	10	10	8.0	10	9.5
5	4.0	8.5	10	3.5		4.0	6.0	8.5
6	8.7	9.0	10	10	10	8.7	9.0	10

Table 3.4. Summary of performance on weekly generalization tests

Note. BL = Baseline ; PT =Peer Tutoring; PT+GOC = Peer Tutoring and Group Contingency

Number of Words Maintained

Not enough data was collected on maintenance. Maintenance tests were scheduled on Friday afternoons and most of the target students were not able to take them on a consistent basis as scheduled.

Number of Disruptive Behaviors Intervals Per Phase

Figures 19 through 24 show the number of disruptive behaviors exhibited by each of the target students during both spelling instruction periods and other instruction during treatment and baseline conditions and table 5.0 shows the average number of disruptive behaviors for each student for each phase during both other instruction and spelling instruction sessions.

Disruptive Behavior

The section below describes the results of the intervention on the level of disruptive behavior for Students 1 through 6 as represented on Figures 19 through 24 respectively.

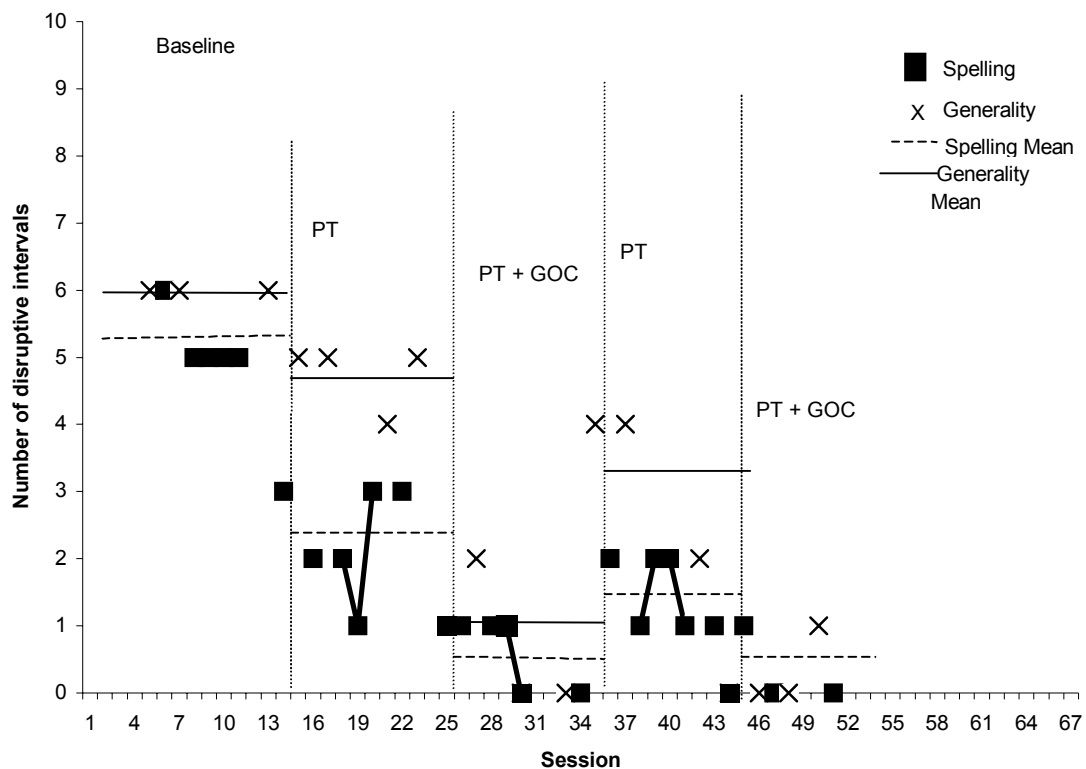


Figure 19. Number of disruptive behavior intervals by Student 1

Note. PT= Peer tutoring; PT+GOC = Peer tutoring with Group Contingency

Student 1. Data on disruptive behavior was collected 3 times during times other than spelling period during baseline. Student 1 exhibited an average of 6 intervals of disruptive behavior during other instruction during baseline. During peer tutoring, Student 1's average number of disruptive behaviors during the 4 sessions data were collected remained high at 4.8 with a range of 4 to 5 disruptive behavior intervals during this phase. When a group contingency was introduced the average number of disruptive

behaviors dropped to 1.0 (range 0 to 2). When the group contingency was removed, this student's disruptive behavior increased to an average of 3.3 (range of 2 to 4) and later dropped to 0.3 (range 0 to 1) with the reinstatement of the group contingency.

During teacher spelling instruction, Student 1's disruptive behavior intervals averaged 4.0 (range 5 to 6). When teacher-spelling instruction was replaced by peer-tutoring, disruptive behavior during the spelling lesson exhibited by this student dropped to 2.3. When the group contingency was added to peer tutoring, this student's average number of disruptive intervals during spelling dropped even further to 0.6 (range 0 to 1). When the group contingency was removed, Student 1's average number of disruptive behavior intervals increased to an average of 1.5 (range 1 to 2). This level dropped to 0.3 (range 0 to 1) with the reinstatement of the group contingency.

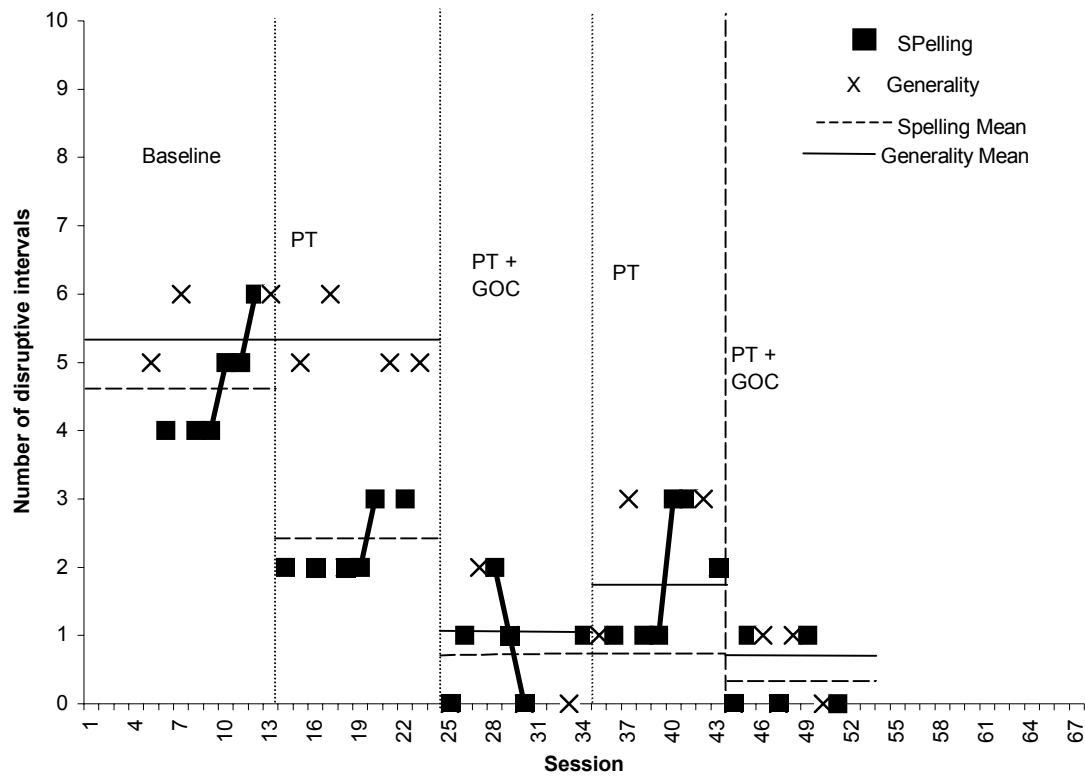


Figure 20. Number of disruptive behavior intervals by Student 2

Note. PT= Peer-tutoring; PT+GOC = Peer-tutoring with Group Contingency

Student 2. During the 3 times when disruptive behavior data was taken during periods other than spelling instruction, Student 2 averaged 5.7 (5 to 6) disruptive behavior intervals during baseline, 5.3 (range 5 to 6) during peer tutoring, 0.8 (range 0 to 2) when peer tutoring was combined with a group contingency, and 2.3 (range 1 to 3) when the group contingency was withdrawn.

When the group contingency was reinstated, the average number of disruptive behavior intervals for this student dropped to 0.6 on average with a range of 0 to 1 through out.

During teacher spelling instruction, Student 2 exhibited an average number of disruptive behavior intervals of 4.7 with a range of 4 to 6. This level dropped to 2.3 (range 2 to 3) when teacher instruction was replaced by peer tutoring and later to 0.8 (range 0 to 2) when group contingency combined with peer tutoring. Upon withdrawal of the group contingency, Student 2's average number of disruptive behavior intervals during peer tutoring rose to 1.8 (range 1 to 3) and later dropped to 0.4 when the group contingency was reinstated.

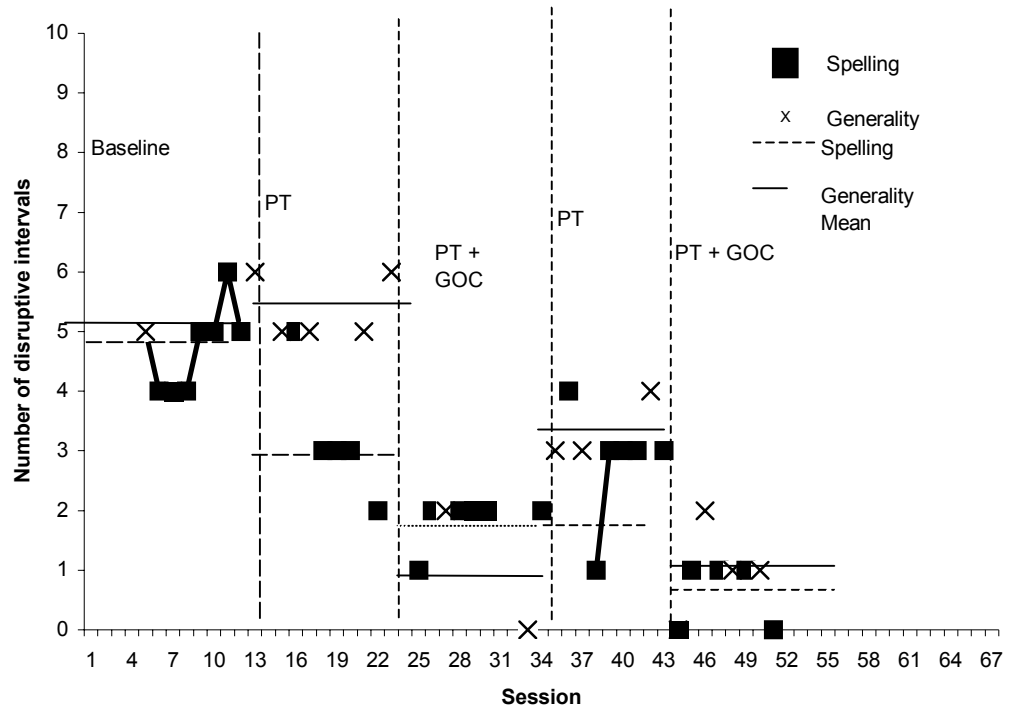


Figure 21. Number of disruptive behavior intervals by Student 3

Note. PT= Peer tutoring; PT+GOC = Peer tutoring with Group Contingency

Student 3. This student averaged 5 disruptive behaviors (range 5 to 6) during baseline when instruction other than spelling was going on. This student's level of disruptive behavior during these times remained high at 5.3 (range 5 to 6) when peer tutoring was introduced for spelling lessons. The average number of disruptive behavior intervals only decreased (to 1.0 with range 0 to 2) when a group contingency on student behavior was introduced. When the group contingency was removed, Student 3

exhibited disruptive behavior at an average of 3.3 (range 3 to 4) during periods other than spelling instruction. This level dropped to an average of 1.3 (range 1 to 2) when the group contingency was reinstated.

During teacher instructed spelling lessons, Student 3 exhibited disruptive behavior at an average of 4.8 intervals per session (range 4 to 6). The level of disruptive behavior when peer tutoring replaced teacher instruction dropped to 2.8 (range 2 to 5) and later to 1.8 (range 1 to 2) when peer tutoring was combined with a group contingency. When the group contingency was removed, the average number of disruptive behavior intervals dropped to 1.8 (range 1 to 2) and later to 2.8 (range 1 to 4). Upon reinstatement of the group contingency, the average number of disruptive behaviors for this student dropped to 0.6 (0 to 1).

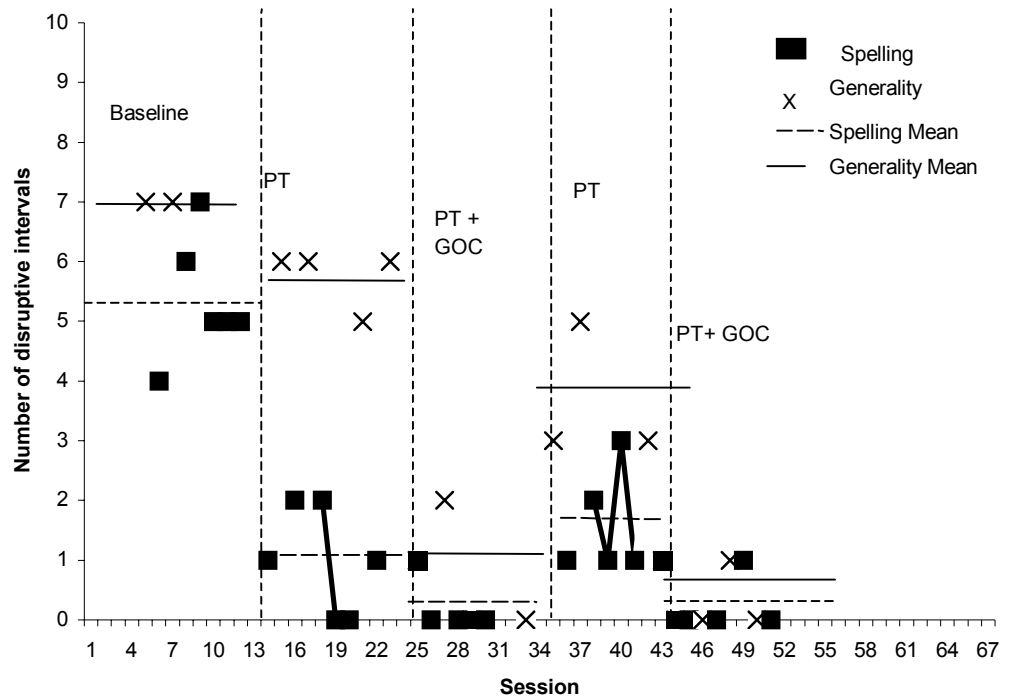


Figure 22. Number of disruptive behavior intervals by Student 4

Note. PT= Peer-tutoring; PT+GOC = Peer-tutoring with Group Contingency

Student 4. Student 4 exhibited an average of 7.0 (range 4 to 7) intervals of disruptive during periods other than spelling instruction. This level of disruptive behavior remained high at 5.8 when peer tutoring started for spelling lessons. The level of disruptive behavior only decreased (to 1.0 with a range 0 to 2) during periods other than spelling instruction when a group contingency on student behavior was introduced. Upon removal of the group contingency, the level of disruptive behavior exhibited by

Student 4 during periods other than spelling instruction rose to an average of 3.7 (range 3 to 5). When the group contingency was reinstated, this student's average number of disruptive behavior intervals dropped to 0.3.

Student 4's average number of disruptive behavior intervals during teacher instruction spelling lessons was 5.3 (range 4 to 7). When teacher spelling instruction was replaced by peer tutoring, the average number of disruptive behavior intervals exhibited by this student dropped to 1.3 (range 0 to 2) and later to 0.2 (range 0 to 1) when a group contingency on students behavior was introduced. When the group contingency was withdrawn, Student 4 exhibited disruptive behavior at an average of 1.5 during peer tutoring. Upon reinstatement of the group contingency, this student's level of disruptive behavior during peer tutoring decreased to 0.2 (range 0 to 1).

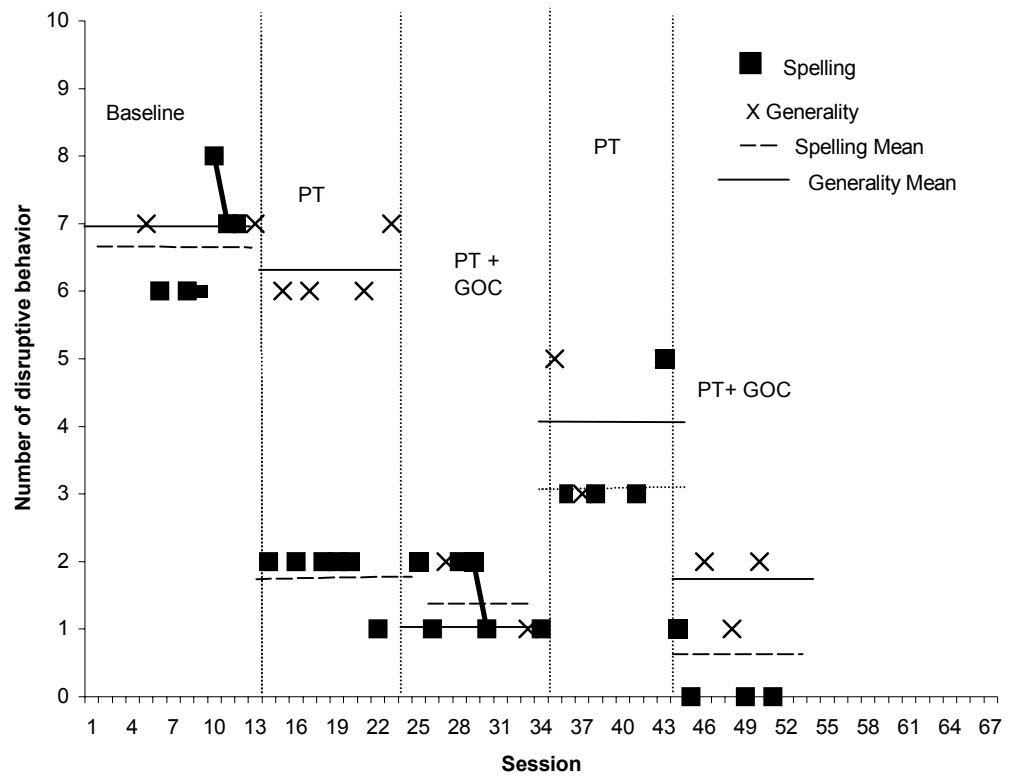


Figure 23. Number of disruptive behavior intervals by Student 5

Note. PT= Peer-tutoring; PT+GOC = Peer-tutoring with Group Contingency

Student 5. Student 5 was disruptive an average of 7 intervals per session on the two sessions in which data was collected on his disruptive behavior during other instruction during baseline. Level of disruptive behavior remained high when peer tutoring was introduced for spelling instruction. Disruptive behavior averaged 6.3 intervals per session (range 6 to 7) during this phase. However when a group contingency intervention on students' disruptive behavior was introduced, Student 5's

average number of disruptive behavior intervals during other instruction decreased to 1 with a range of 1 to 2. Upon removal of the group contingency, level of disruptive behavior during instruction other than spelling rose to 4.0 (range 3 to 4) and later dropped to 1.7 upon reinstatement of group contingency.

Data collected on disruptive behavior during spelling instruction showed the same pattern of response to the treatment as that collected during instruction other than spelling instruction for this student. During teacher directed spelling instruction, this student's average number of disruptive behavior averaged 6.7 disruptive intervals per session with a range of 6 to 8. When peer tutoring replaced teacher directed instruction, the average number of disruptive behavior intervals by this student dropped to 1.8 (range 1 to 2). When peer tutoring was combined with a group contingency on student behavior during peer tutoring, disruptive behavior during spelling instruction by this student decreased to an average of 1.5 (range 1 to 2). Upon removal of the group contingency, Student 5's average number of disruptive behavior intervals during spelling increased to 3.0 (range 3 to 5). When the group contingency was reinstated Student 5 exhibited disruptive behavior at an average of 0.3 (range 0 to 1) per session during the 4 sessions in which data was collected.

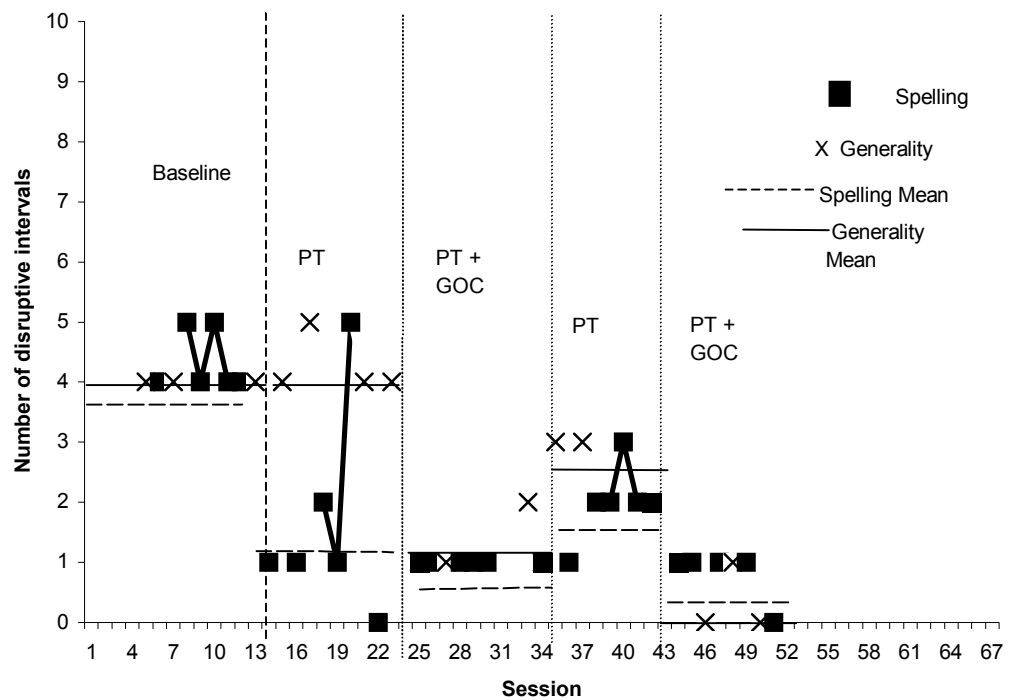


Figure 24. Number of disruptive behavior intervals by Student 6

Note. PT= Peer-tutoring; PT+GOC = Peer-tutoring with Group Contingency

Student 6. The average number of disruptive behavior intervals exhibited by Student 6 during baseline during other instruction was 4.0. During the peer-tutoring phase, this behavior remained high at 4.3 (range 4 to 5). With the introduction of the group contingency, the average number of disruptive behavior intervals exhibited by this student decreased to 1.5 (range 1 to 2) but increased again when the group contingency was removed. Upon reinstatement of the group contingency, the average number of disruptive behavior intervals by this student decreased to 0.8 (range 0 to 2).

Student 6's disruptive behavior during spelling instruction followed the same pattern as behavior during other instruction. During teacher spelling instruction, this student averaged 4.3 disruptive behavior intervals per session (with a range of 4 to 5) but this level decreased to 1.8 (range 1 to 4) when peer tutoring replaced teacher instruction as the mode for spelling instruction. With the introduction of a group contingency on the students' behavior, this student's level of disruptive behavior decreased further to an average of 1.0. Upon withdrawal of the group contingency, the average number of disruptive behavior intervals by Student 6 increased to 2.0 (range 1 to 3) but decreased again to an average of 0.8 (range 0 to 1) when the group contingency was reinstated. Table 3.5 presents the results of the intervention on the disruptive behavior in table form.

Student	Period	Phases				
		BL	PT	PT+GOC	PT	PT+GOC
1	X	6.0	4.8	1.0	3.3	0.3
	S	4.0	2.3	0.6	1.5	0.3
2	X	5.7	5.3	1.0	2.3	0.6
	S	4.4	2.3	0.8	1.8	0.4
3	X	5.0	5.3	1.8	3.3	1.3
	S	4.8	2.8	1.0	2.8	0.6
4	X	7.0	5.8	1.0	3.7	0.3
	S	5.3	1.3	0.2	1.5	0.2
5	X	7.0	6.3	1.0	4.0	1.7
	S	6.7	1.8	1.5	3.0	0.3
6	X	4.0	4.3	1.5	3.0	0.3
	S	4.3	1.8	1.0	2.0	0.8

Table 3.5. Average number of disruptive behavior intervals per phase.

Note. X = other instruction period; S = spelling instruction period

Social Validity Measure

The homeroom teacher was asked to complete a social validation questionnaire (see Appendix M) after the study was terminated. The questionnaire listed 10 to 11 questions regarding the goal (e.g., the importance of the selected academic and social behavior), procedures (e.g., the appropriateness of the materials, the ease of implementation), and the results of the study (e.g., the academic and social benefits for students). Staff in this study was found to be in favor of peer tutoring and peer tutoring with a group contingency. Overall, the teacher indicated a preference for peer tutoring to teach spelling to students noting that “the students seem to enjoy it” and that “they can teach each other”. The teacher also indicated a likelihood of using peer tutoring with other elementary students. The teacher indicated that peer tutoring was easy to implement in the class and that the peer tutoring procedures helped the students stay on task. With regard to the group reward system, the teacher indicated that it was easy to implement in his class, that it was appropriate to promote students’ academic and social performance, and that he noticed a greater decrease in students’ disruptive behavior when the group reward system was implemented. Table 3.6 shows the questions asked and the teacher’s responses.

Questions	Response
1. Spelling is an important skill and students need to have the competency in order to perform well in school and later in life.	Agree
2. Being nondisruptive and engaged in the classroom is an important skill in order for the students to learn well.	Strongly Agree
3. I noticed positive changes in the students' spelling performance after the implementation of the peer-tutoring program.	Agree
4. I noticed a decrease in some students' disruptive behavior during spelling instruction after the implementation of the peer-tutoring program.	Agree
5. Peer tutoring is easy to implement in my class.	Agree
6. Reward system is easy to implement in my class.	Agree
7. The procedures of peer tutoring help students actively engage in academic materials.	Agree
8. The reward system is appropriate to promote students' academic and social performance.	Agree
9. I noticed a greater decrease in disruptive behavior with the introduction of the group reward system.	Agree
10. I enjoyed participating in this research project.	Agree
11. I am considering the continuous implementation of peer tutoring in my elementary classes.	Agree

Table 3.6. Social Validity from the Teacher's Questionnaire

Student Questionnaire

Social validity data was also taken on the target students (see appendix N). These data were collected by having the students write their responses to the questionnaire items provided on a paper. Following is a description of the student social validity questionnaire in terms of the questions asked and the responses the students made.

Analysis of data collected from the social validity questionnaire administered to the students indicated that four students liked peer tutoring very much, one student liked it a little, and one student said it was okay. All students indicated that they liked peer tutoring either because it involved them tutoring other students, acting like teachers, or working with their friends. In response to the question of what part of peer tutoring they liked the least and the reasons why they did not like that part of the procedure, one student did not like having to take tests after the peer tutoring, one student did not like having to go over and over the words a number of times before they switched roles, one student did not like having to read the words, and one did not like having to spell the words again after they spelled them wrong the first time. Five out of the six target students preferred peer tutoring to teacher instruction in learning spelling words while one student liked both teacher instruction and peer tutoring equally. When asked whether they thought they learned more from teacher instruction or peer tutoring, five said they learned more from peer tutoring and one said he learned more from the teacher. When asked whether the rewards they got for good behavior helped them learn more, five students said they felt the rewards helped them learn and one student said the rewards

did not help. In response to what they would change in peer tutoring, some students said they would want to always peer tutor with their best friends as partners, others said they would like the best performers in the peer tutoring procedures to be given snacks, and others said they would prefer that they and their partners only go over the set of words twice and then switch roles. Some students said they would not change anything. Four students said they would like to continue with peer tutoring while two said they would not because they will be in a different grade. None of the students provided more comments when asked if there was anything else they would like to say about peer tutoring.

Overall, the students had a positive attitude towards peer tutoring. The findings of this study with regard to the positive attitude towards peer tutoring exhibited by the students are consistent with the literature on peer tutoring. Greenwood et al (1992), Kohler and Greenwood (1990), and Simmons, Fuchs, Fuchs, Mathens, and Hodge (1995) also noted that the students involved in their peer tutoring research had a positive attitude towards the program. Table 3.7 shows a summary of the results of the student the student questionnaire.

Question	Sample responses	# Students
1. How do you like peer tutoring?	1. I like it a lot/very much 2. I like it a little bit/ 3. It is okay	1. 4 students 2. 1 student 3. 1 student
2. What is the best part of peer tutoring? Why?	1. Working with a friend/when we are tutoring friends 2. We get to act like a teacher	1.4 students 2.2 students
3. What part of peer tutoring do you like the least? Why?	1.taking the tests 2.none 3.tutoring the words over and over in one session 4.Having to correct the words spelled wrong 5. The reading	1. 1 student 2. 2 students 3. 1 student 4. 1 student 5. 1 student
4. Would you rather have peer tutoring or have the teacher teach you in a group how to spell words?	1.prefer peer tutoring 2.peer tutoring is fun 3.both are good	1.4 students 2.1 student 3. 1 student
5. Do you think you learn more from peer tutoring or from teacher instruction? Why?	1.from peer tutoring 2.teacher	1.5 students 2.1 student
6. Do you think the rewards help you to learn more? Why?	1.Yes. They help us learn/do more 2.No	1.4 student 2.1 student
7. What would you change about peer tutoring if you were in charge? Why would you change that? How would you change it?	1.Partners should go over the words with each other only twice not over and over. 2.be with your best friend always 3.give snacks to the best performers 4.wouldn't change anything	1.1student 2.1 student 3.1student 4.3 Students
8. Would you like to continue peer tutoring next year? Why?	1.Yes, with different words/helps me 2.No. Its different grade	1.4 students 2.2 students
9. Is there anything else you would like to tell me about peer tutoring?	No	6 students

Table 3.7. Social Validity from Students' Questionnaire

CHAPTER 4

DISCUSSION

This chapter discusses the results of the study, which compared the relative effectiveness of teacher instruction, peer tutoring, and peer tutoring with a group contingency on both the spelling performance and the disruptive behavior of target fourth-grade students in a general education classroom. The results of this study are discussed in relation to relevant literature on peer tutoring and group contingencies. These results are also discussed with reference to the five research questions addressed by the study.

Research Question One. What are the differential effects of teacher spelling instruction, peer tutoring, and peer tutoring with group contingency on the number of words spelled correctly on daily quizzes by fourth-grade students in a general education classroom?

The results of this study show that the average number of words spelled correctly during baseline immediately increased with the introduction of peer tutoring for each of the target students. The student increases over baseline ranged from 13% to 40 % with an average of 23 %. The superior academic performance with peer tutoring over baseline in this study are felt to result from the increased opportunities for the students to make

more active responses to the material. Increased active student responding has been demonstrated to promote student academic performance in many curriculum areas (e.g., Heward, 2000). The traditional instructional method used by the teacher allowed for single student responding, severely limiting the number of responses each student could make to the instructional material during any particular instructional session. As indicated by the average gains made by the students' from pre- to post test, the students learned a large number of words at the end of the week under peer tutoring than under teacher-directed instruction.

Average scores on daily quizzes for all students across conditions reveal that although four out of the six students achieved slightly higher averages under the group contingency condition, there are no consistent differences between peer tutoring and peer tutoring with group contingency across students. One exception appears to be Student 5 but this example is insufficient to propose a functional impact of the group contingency on the students' performance in this study. One suggestion that may be safely made regarding the lack of a profound impact of the group contingency on students' academic behavior is that the group contingency in this study was not related to the academic but to the social behavior of the students. In studies where a group contingency has been placed on students' social behavior (e.g., Gresham, 1983; Volgler & French, 1983) positive effects on the dependent variable have been obtained. On the other hand, the difference in academic performance of these students with and without a group contingency, though minimal, may provide some support for the relationship

between social and academic behavior suggested by many researchers (e.g., Patterson, Reid, & Dishion, 1992; Cartledge & Milburn, 1995). When students become less disruptive, their academic performance also improves. Both peer tutoring and peer tutoring and a group contingency decreased students' disruptive.

Several published studies on peer tutoring and spelling performance (e.g., Maheady & Harper, 1987; Delquadri et al. 1983) have incorporated a group contingency on academic performance as part of the peer tutoring package and the reinforcement provided was more frequent. For example, students were awarded points immediately for academic responses made during the peer tutoring. In these studies, students were able to associate the rewards from the group contingency with their academic performance. The group contingency used in the former studies also had a competitive element where students were divided into two competing teams and points were awarded to the winning team. These elements may account for the apparent better student performance with group contingencies in these peer-tutoring studies compared to the results in the current study. It should be noted, however, that these previous studies did not make relative comparisons between group contingency and non-group contingency conditions. For the most part, the additional positive effects of a group contingency on academic performance during peer tutoring are speculative and need to be studied more directly.

Research Question Two. What are the differential effects of teacher spelling instruction, peer tutoring, and peer tutoring with a group contingency on the level of disruptive behavior by fourth-grade students in a general education classroom during spelling and other-instruction sessions?

Data collected during this study indicate that peer tutoring with a group contingency on student behavior produced the lowest average levels of disruptive behavior intervals for all students and that peer tutoring sessions evidenced less disruptive behavior intervals than during teacher-directed instruction. In contrast to conditions where students are expected to attend quietly while the teacher instructs with occasional and infrequent pupil responses, peer tutoring demands constant pupil responding, limiting opportunities for off-task or disruptive behavior. Peer tutoring engages students with the instructional material and provides a favorable learning environment. Students have the opportunity to be “teacher” as well as pupil, a novel experience that may be inherently reinforcing for many students. These positive perspectives of peer tutoring that lead to more adaptive behaviors are noted as well by other researchers (e.g., DuPaul et al. 1998; Maheady et al. 1988).

In the current study, disruptive behaviors declined during peer tutoring alone but did not reach their lowest levels until a group-oriented contingency was introduced. This outcome is consistent with other group-oriented contingency studies (e.g., Turco & Elliot, 1990; Skinner & Watson, 1997; Gresham & Gresham, 1983) showing the effects on students behaviors and is further corroborated by results obtained by Gresham (1983)

with an eight-year- old boy with mental retardation and by Kelshaw-Levering et al (2000) with second- grade students. From the findings of the current study, it may be argued that contingencies on pupil behavior may bring about desired effects but corresponding effects in academic performance will not automatically occur. On the other hand, instructional instructional strategies that are engaging and force learners to respond continuously to academic materials, are likely to improve both academic and social behaviors. The combination of effective instruction (i.e., high rates of academic responding) and behavior management will produce the best classroom learning environment. This is especially true for urban learners who tend to present significant low socioeconomic, academic and behavioral needs.

Despite the previously noted disadvantages of some group-oriented contingencies (e.g., Romeo, 1998), the interdependent group-oriented contingency seemed to work quite well in this study. Students displayed more cooperative behaviors during group contingency conditions and were observed cuing others to not be disruptive and reminding them of an expected reward at the end of the day. On some days when students missed their reward, they would single out particular students who they felt prevented them from earning the promised reward. The teacher, however, pointed out that it was the responsibility of the classmates to remind the disruptive students to behave appropriately during the school day.

Research Question Three. What are the differential effects of teacher instruction, peer tutoring, and peer tutoring with group contingency on the number of words spelled correctly on weekly quizzes by fourth-grade students in a general education classroom?

As noted earlier in the results chapter, there was an immediate increase in the number of words spelled correctly on weekly quizzes by three of the six students as soon as peer tutoring replaced teacher instruction as the method for teaching spelling words. As noted earlier, peer tutoring increased the opportunities for making learning trials by all the students over baseline. Repeated exposures to the spelling words with opportunities for students to make repeated active responses to the academic material improved the performance of the majority of the students on weekly quizzes. The three students who did not evidence immediate increases in the number of words spelled correctly on weekly quizzes until a group contingency was introduced, did, however, continue to make improvements and made substantial gains by the last phase of the study. Like other students, the overall average number of words spelled correctly on weekly quizzes by these three students was higher during peer tutoring than during baseline. Literature on peer tutoring and spelling instruction supports these findings. In particular, the results of peer tutoring on weekly quizzes obtained in this study are corroborated by those of Delquadri et al (1983), Peach and Moore (1990), Maheady and Harper (1987) and Mallette et al (1991). The results of the current study are particularly encouraging because unlike previous studies such as those cited above, the group contingency with the built-in competition between groups was not part of the peer tutoring package.

As with the results with daily quizzes, four of the students achieved slightly higher averages during peer tutoring with a group contingency than with peer tutoring alone. However, because there are no consistent differences between peer tutoring and peer tutoring with group contingency, these results do not indicate a functional relationship between the two variables. As discussed earlier, the fact that the group contingency was on social and not on academic behavior and that the students were not divided into competing groups and immediate reinforcers provided for correct responses may account for the lack of more profound improvements in the weekly quiz performance during peer tutoring with group contingency over peer tutoring alone. The results of this study may be encouraging for teachers suggesting that even without a competitive game component, high response pupil activities such as peer tutoring alone are sufficiently powerful to bring about improvements in academic performance. However, teachers may need to establish other conditions for optimal academic improvements by the students without the competitive aspect.

Research Question Four. What are the differential effects of teacher instruction, peer tutoring, and peer tutoring with a group contingency on the number of spelling words spelled correctly in the context of a sentence on weekly quizzes?

As with the number of words correctly spelled on weekly quizzes, all students with the exception of Students 2, 3 and 6 evidenced an immediate increase in the number of spelling words generalized with the introduction of peer tutoring. Despite the lack of an immediate improvement, Students 2, 3, and 6 continued to make improvements

during the study. In fact, average scores on generalized words for these two students as for the rest of the target students indicate that overall, they performed better during peer tutoring over baseline. The findings of superior performance on number of words generalized during peer tutoring over baseline are similar to the findings obtained by Welsch (1998) and Hollman (1998) with sight words. Overall, four of the students demonstrated higher averages of generalized words during peer tutoring with a group contingency than during peer tutoring alone. But again, because the differences in performance between the two conditions are minimal and are not consistent across students, a functional relationship is not clear. The same reasons suggested for the lack of profound effects of the group contingency on the other academic variables are suggested with regard to the number of words generalized.

Research Question Five. What are the differential effects of teacher instruction, peer tutoring, and peer tutoring with a group contingency on the number of words spelled correctly during maintenance tests?

There was not enough data collected to answer this question due to subject absences on most of the afternoons when data were scheduled to be collected. These specific Friday afternoons were the times allocated by the classroom teacher for these tests.

Overall, the target students in this study liked peer tutoring. They liked the opportunity to “teach each other”. Students also indicated that they would like to continue with peer tutoring next year. The two students who indicated they would not

like to continue with peer tutoring next year indicated that their reason for this was that they would be in fifth-grade and they did not think that it would be necessary.

Likewise, the classroom teacher responded favorably to the peer tutoring procedure. Following the first weekly quiz after commencing, peer tutoring, the classroom teacher observed that most of the students performed better than previously the teacher-directed instruction. He verbalized support for the spelling instruction procedure to the primary experimenter and noted that the students were engaged and seemed to “enjoy acting as teachers”.

Limitations of the Study

There are several limitations in this study that should be discussed. This study was started five months before the end of the school year rather than at the beginning of the school year. A time constraint prevented more extended training of both the teacher and the students. More thorough training might have produced more immediate effects for the three students who did not begin to show gains until the later phases of the study. It also might have resulted in higher performance levels for all of the students especially at the beginning of peer tutoring.

End of study questionnaires sent home with the students for the parents to complete and return were not returned. Out of the 12 questionnaires sent home, only one was returned. Because of the time constraints, no follow-up was made to collect this data. Pretests for every new set of spelling words were done on Monday, the same day as

the first daily quiz. The students expressed displeasure with this procedure because they had to take “two tests” on the same day. This negative view could have affected their performance adversely.

Frequent absences by some subjects (e.g., Student 5) was another limitation of this study. Absences meant that the data could not be collected on that day for that student. As the results chapter indicates, absences by students impacted on their performance in the spelling quizzes. Less data create an inadequate a picture of a student’s performance and possibly hampers the interpretation of the study’s findings.

Not enough data were collected on generalization of behavior. During the first phase of peer tutoring with a group contingency, only two data points were noted. More data may have provided a better picture of the effects of the procedure on behavior during this phase.

Another limitation is that data for behavior generalization were taken during periods adjacent to the peer tutoring periods rather than later in the school day. Effects of the group contingency may have been weakened during the afternoon periods, thereby somewhat distorting the reported effects. It should be noted, however, that since these effects are compared to baseline when the data were collected at the same time, it is safe to conclude that at least the group contingency did serve to modify behaviors during the two-hour period. Therefore reported effects may have been somewhat distorted.

A final limitation of this study pertains to the experimental design. One of the limitations of the design employed in this study, a multiple treatment reversal design, is

the possibility of multiple treatment interference. That is, the treatment in a preceding phase has an effect on the following phase. The potential for this occurrence in this study cannot be ruled out.

Implications for Classroom Practice

Peer tutoring and other effective instruction strategies have been shown to decrease student disruptive behavior and to increase active student responding and hence academic performance. However, an effective behavior management system may be necessary to work together with effective instruction, especially in classrooms with very disruptive students. This study has demonstrated the effectiveness of a fairly easy-to-use and teacher friendly behavior management procedure, group-oriented contingencies, whose combination with an effective instruction procedure, peer tutoring, has been found to substantially lower students' disruptive behavior.

The teacher in this study expressed concern with individualized spelling flashcards noting the amount of time required in the activity as well as other aspects involved in peer tutoring packages such as charting and students testing each other. This study used the same spelling lists for all students and eliminated most of these aspects to simplify the procedures. The results showed that students learned more words and continued to learn throughout the study with peer tutoring. This indicates that educators wanting to incorporate peer tutoring need not be deterred by the perceived "complexity" of peer tutoring as is detailed in the training manuals but they can always adapt the procedures to meet their needs with positive results.

Suggestions for Further Research

The effects of peer-tutoring with a group contingency need to be examined further. In fact, a replication of this study would be quite in order. Data analyzed in this study indicate minimal gains for most students above those made with peer tutoring alone. Though minimal, these gains indicate the potential of incentive systems such as group contingency on student behavior to influence student academic performance. Future studies might experiment with the effects of a group contingency on academic performance versus that on social behavior.

Another suggestion for extending this research is to incorporate goal setting and feedback on both the behavioral criterion and the academic performance for individual students and the group. In the current study, students were not provided with feedback on their performance on the academic variable.

Summary

This study mainly investigated the differential effects of teacher instruction, peer tutoring alone, and peer tutoring with a group contingency on student performance in spelling and on their social behavior. Data obtained from this study have contributed to the literature on peer tutoring and on group contingencies. The results of this study have shown that compared to teacher instruction, both peer tutoring and peer tutoring with group contingency produced superior performance in spelling. Differences in performance were not found between the conditions of peer tutoring and peer tutoring with a group contingency.

In terms of social behavior, the results of this study indicate that peer tutoring evidenced lower levels of disruptive behavior than teacher instruction of the same and that the levels of disruptive behavior for all students went even lower with the introduction of a group contingency on students behavior. When instruction other than spelling was effected by the teacher, levels of disruptive behavior were high, meaning that the teacher's existing behavior management procedure in effect was not effective. When a group contingency on student behavior was put in place, the levels of disruptive behavior by all target students immediately decreased. This indicates that for this particular group of students the group-oriented behavior management procedure used was effective.

Unlike other peer tutoring studies, this study sought to investigate the effects of combining a peer-tutoring package with a behavior management procedure on students' social behavior. In this way, this study has added new information to the literature on peer tutoring and on group contingencies for behavior management.

The skill learned in this study, i.e., spelling of high frequency reading words is important in students' and other people's lives. Spelling words correctly is a skill that is important in other contexts such as writing letters both personal and formal. As observed in several other peer tutoring studies (e.g., Welsch 1998; Hollman, 1998), generalization of learned words by most students was high during peer tutoring phases even though no specific strategies were used to program for generalization.

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APPENDIX A

Parent Permission Letter and Consent Form



Special Education
School of Physical Activity
and Educational Services

1945 North High Street
Columbus, OH 43210-1120
FAX 614-292-4255

February 8, 2002

Dear Parent

I am a professor in the college of education at The Ohio State University. My doctoral student, Mary Kiarie, and I will be conducting a research project in your child's school. We wish to see if the use of peer tutoring and a reward system will bring about improvements in both academic achievement and classroom social adjustment. Peer tutoring is a teaching strategy which requires students to respond at very high rates to the academic materials. Students are trained to work in pairs to practice the academic skills presented by the classroom teacher. The reward system involves the application of positive procedures to increase students' engagement in instructional materials and compliance to teacher directions. For example, students will receive classroom points each time they actively engage in academic materials or comply appropriately with a teacher direction. These points will then be exchanged for special privileges when a predetermined criterion is met.

We hope these strategies will reduce the need for disciplinary actions by the teacher and increase time spent learning the academic materials. Your child's classroom teacher will apply all of these procedures as part of the regular classroom activities. All of the children in the classroom will be observed but we will not use the observations for research purposes without your consent. Your child will not be removed from the classroom and will not lose any academic instructional time. In fact, we anticipate that these strategies will serve to increase the amount of time your child spends on academic tasks each day.

We also are requesting permission to videotape/photograph your child's classroom. The purpose of these pictures is to demonstrate specific teaching strategies used by your child's teacher. They will not be used to identify your child in any way. The tapes will be used in our teaching seminars to show other teachers how to implement these strategies. We need to demonstrate the use of these strategies in actual classrooms. If you do not consent to the photographs, we will locate your child outside the range of the camera but your child will remain in the classroom and continue with the classroom instructional activities.

Special Education
292-8148

Sport & Exercise Sciences
292-2504

Sections
Counselor Education,
Rehabilitation Services
& School Psychology
292-8183

Workforce Development & Education
292-5037

College of Education

Data collected on your child will include performance on daily quizzes and district-wide tests. If available we will get from your child's classroom teacher the most recent academic test score. We will observe your child's engagement in instructional materials and interactions with peers during the peer tutoring. We also will track disruptive behaviors in the classroom and disciplinary actions taken by the teacher or principal to see if there are improvements in social behaviors for all the students. All information collected about your child will be confidential. No one other than the researchers will use this information and your child will not be identified in any way to others.

Both at the middle and before the end of the school year, we will ask parents to complete a questionnaire on how effective you feel this project was on your child's academic and social performance. We expect the questionnaire to take about 10 minutes to complete. We will also ask your child in the form of interview to express how they feel about the peer tutoring and reward system, and how much they feel they've learned from this program. This informal interview will take approximately 10 minutes to complete and it will not take away any of your child's academic learning time.

We are requesting your permission so that we might use your child's classroom performance as data in this study. We also are asking permission to include your child in our classroom videotapes or photographs. Permission is purely voluntary and the decision not to permit this access will not affect the way your child will be treated or graded at school. Should you consent, please know that you can choose to withdraw your permission at any time during this project. If you have questions, please feel free to contact me at 292-7629. Thank you for your attention and cooperation.

Sincerely,



Gwendolyn Cartledge, Ph.D.
Professor



Special Education
School of Physical Activity
and Educational Services

1945 North High Street
Columbus, OH 43210-1120
FAX 614-292-4255

CONSENT FOR PARTICIPATION IN SOCIAL AND BEHAVIORAL RESEARCH

Protocol title: "Improving the School Success for Urban Learners."

Protocol number: 742213

Principal Investigator: Gwendolyn Cartledge

I consent to my child's participation in research being conducted by Dr. Gwendolyn Cartledge of The Ohio State University and her assistants and associates.

The investigators have explained the purpose of the study, the procedures that will be followed, and the amount of time it will take. I understand the possible benefits, if any, of my child's participation.

I know that my child can choose not to participate without penalty to me and/or my child. If I agree to participate, I can withdraw my child from the study at any time, and there will be no penalty.

I consent to the use of videotapes and photographs. I understand that these pictures will only be used to demonstrate classroom teaching practices. My child will not be identified by name and my child will be depicted in these tapes in positive ways.

I consent to the use of the following information from my child's academic records: test scores from weekly quizzes and bench mark evaluations.

I have had a chance to ask questions and to obtain answers to my questions. I can contact the investigators at (614) 292-7629. If I have questions about my rights as a research participant, I can call the Office of Research Risks Protection at (614) 688-4792.

have read this form. sign it freely and voluntarily. A copy has been given to me.

Print the name of the participant: _____

Date: _____ Signed: _____
(Participant)

Signed: Gwendolyn Cartledge Signed: _____
(Principal Investigator of his/her authorized (Person authorized to consent for participant, if
representative) required)

Witness: _____
(When required)

HS-027 (Rev. 05/01)

Special Education
292-8148

Sport & Exercise Sciences
292-2504

Sections
Counselor Education,
Rehabilitation Services
& School Psychology
292-8183

Workforce Development & Education
292-5037

College of Education

APPENDIX B

Spelling Words

Wk #1	Wk #2	WK#3	WK #4	WK #5	WK#6
Want	who	was	shouldn't	made	below
What	wear	except	choose	draw	experience
I'm	with	first	country	belong	eighth
Describe	another	we are	mother	obvious	happen
Predict	your	weather	father	whisper	encourage
Symbol	Decrease	anniversary	participate	unusual	loose
Habitat	experiment	mystery	principal	claimed	continue
Threw	yesterday	competition	increase	especially	success
Know	tomorrow	evacuate	disagree	climb	group
Who	audience	fragile	parents	piece	above
WK # 7	WK # 8	Wk # 9	Wk # 10	Week #11	
Sign	victory	library	mixture	Nervous	
Listen	whistle	please	random	piano	
Realize	weight	sorry	wrinkle	break	
Discuss	rumor	search	model	patience	
Specific	rescue	contain	equipment	balloon	
Include	invisible	triple	delicious	learn	
High	rhyme	business	limit	often	
Medium	width	kitchen	zero	already	
Require	length	fabulous	repeat	carefully	

Enough

height

double

recent

schedule

APPENDIX C

Recording Form for Number of Words Spelled Correctly on Daily, Weekly,
and Generalization quizzes

Student	Pretest	Mon	Tues	Wednes	Weekly (Friday)	Generalized
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

APPENDIX D

Disruptive Behavior Observation Form

Date: _____ Session: _____ Observer: _____

Stud. name											Total D
1	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
2	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
3	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
4	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
5	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
6	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
7	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
8	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
9	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	
10	D N	D N	D N	D N	D N	D N	D N	D N	D N	D N	

Recording notes:

(D) Disruptive behavior

(N) Nondisruptive behavior

Comments:

APPENDIX E

Teacher procedural checklist

Date: _____

Observer: _____

Procedural	YES	NO
1) The teacher introduces the 10 words		
(2) The teacher teaches each of the words using the spelling method for the session		
(3) The teacher redirects disruptive students		
(4) The teacher metes a consequence for disruptive behavior according to the behavior plan		
(5) The teacher reminds the students of the behavioral consequences		
(6) The teacher praises none disruptive students		
(7) The teacher administers the spelling test according to the format agreed upon with the primary experimenter		
8) The teacher ensures that all students take the daily quizzes.		
(9) The teacher ensures that all students have their names on the test papers.		
(10) The teacher ensures that all students turn their papers in to him after the test and he in turn hands the paper to the primary experimenter after every test.		
Total		

APPENDIX F

Tutor Behavior Procedural Checklist

Date: _____ Session: _____ Observer: _____				
Tutor's name: _____ Tutee's name: _____				
Tutor Behavior Procedural Checklist				
		YES	NO	N/A
1.	Student gets his or her folder.			
2.	Student switches folders with his or her partner.			
3.	Student participates in tutor huddle.			
4.	Student sits with the tutor huddle members at assigned area.			
5.	Student takes turns reading words to members.			
6.	Student repeats the words to members when prompted.			
7.	Student participates during practice phase.			
8.	Student pronounces the word clearly			
9.	Student provides praise when partner responses correctly.			
10.	Student provides corrective feedback when partner responses incorrectly.			

APPENDIX G

Teacher Tutoring Behavior Procedural Checklist

Date: _____ Session: _____ Observer: _____			
Teacher's Behavior Procedural Checklist			
Did the teacher:		YES	NO
1.	Prompt students to get their folders		
2.	Announce "Tutor huddle"		
3.	Prompt students to switch folders		
4.	Set timer for 8 minutes for tutor huddle		
5.	Announce "STOP" once timer rings		
6.	Announce "First Practice"		
7.	Set timer for 8 minutes for first practice		
8.	Circulate the room and monitor students' behavior		
9.	Provide reinforcement and/or corrective feedback during 1 st practice		
10.	Announce "STOP" once timer rings		
11.	Announce "Second Practice"		
12.	Set timer for 8 minutes for second practice		
13.	Circulate the room and monitor students' behavior		
14.	Provide reinforcement and/or corrective feedback during 2 nd practice		
15.	Announce "STOP" once timer rings		
16.	Announce "SPELLING TEST"		
17.	Announce "Peer Tutoring has ended"		
18.	Announce "put all cards back in the folders"		

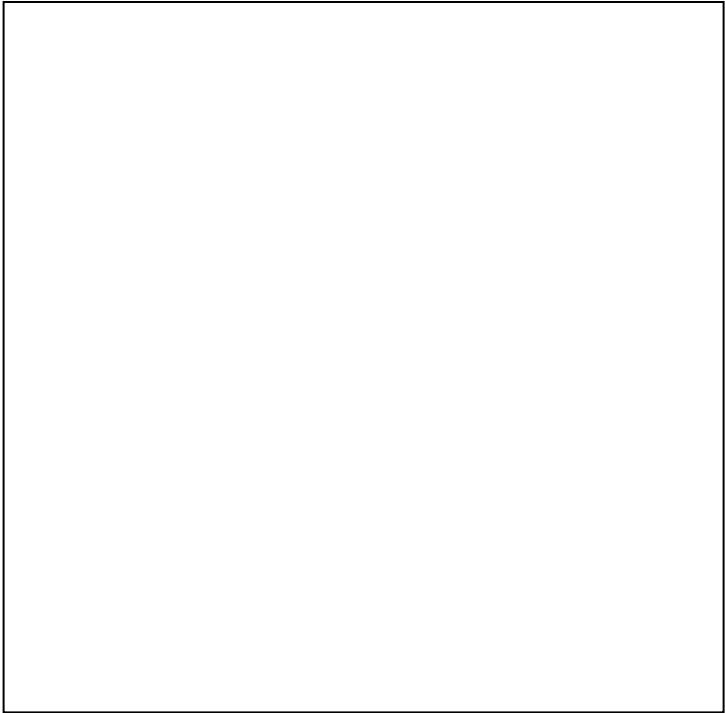
APPENDIX H

Sample of Spelling Word Card



about

(Front of Card)

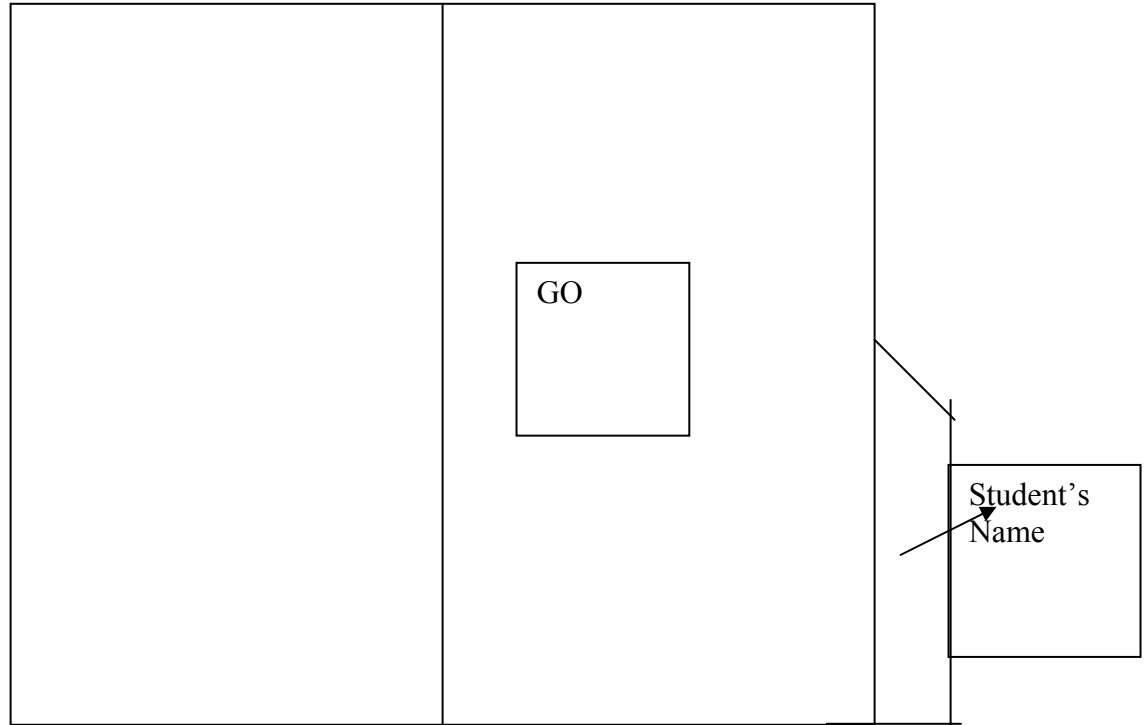


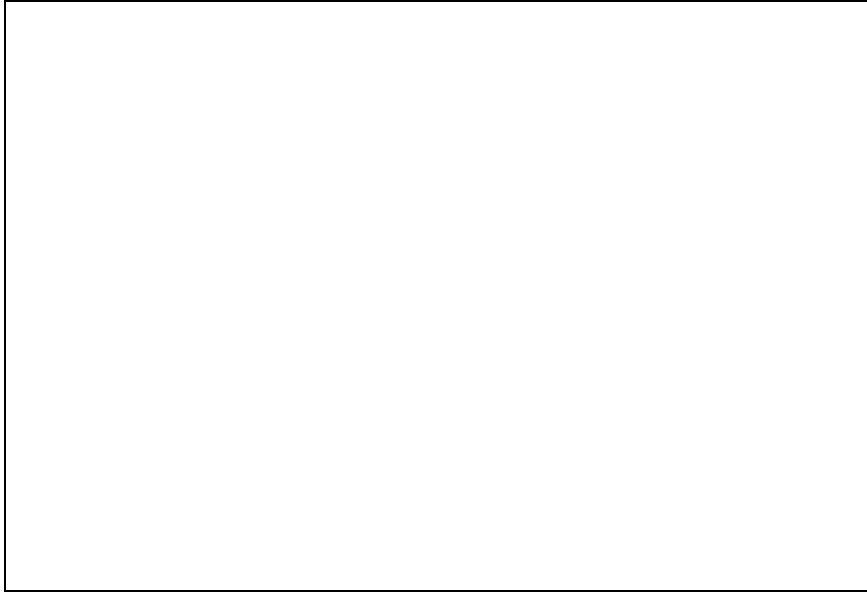
(Back of Card)

APPENDIX I

Tutoring Folder

(inside of folder)





(outside of folder)

APPENDIX J

Five Classroom Rules and Five Behavioral Expectations

Five Classroom Rules

- 1.Raise your hand to speak
2. Stay in your seat unless otherwise directed
- 3.Follow directions the first time they are given
- 4.keep your hands to yourself
- 5.Use indoor voices

Behavioral Expectations

- 1.Accept mistakes when you make them and apologize
2. Respect others
- 3.Do not talk when others are talking
- 4.Work quietly
- 5.Turn in work on time

APPENDIX K

Peer Tutoring Procedures for Student Training

1. Orientation
 - Children can be good teachers.
 - When you teach just one person at a time, you are called a tutor.
 - Each of you will be learning how to teach one another to read words.
 - Everyone will have the chance to be a tutor.
 - Show folder and briefly describe function of parts.
 - Explain that the class will soon be practicing how to be good tutors.
 - Lead students to construct the folders.
2. Training sessions
 - Tutor huddle, Prompting, and Praising
 - (1) Show the skill (overhead transparencies)
 - (2) Model the skill (teacher be the tutor and select one student to model the skill)
 - (3) Role play with the group (teacher be the student and the whole group as tutor)
 - (4) Role play with student pairs (one pair at a time to practice the skill in front of the group)
 - (5) Practice as a group (have the entire group practice while teacher models)
3. Daily peer tutoring sessions
 - 8-minute Tutor Huddle
 - 8-minute first practice
 - 8-minute second practice
 - Spelling Test

APPENDIX L

Social Validity Questionnaire (Teacher Form)

Teacher's Name: _____

Date: _____

This questionnaire consists of 11 items. For each item, you need to indicate the extent to which you agree or disagree with each statement. The four possible responses are: Strongly Disagree (SD), Disagree (D), Agree (A), and Strongly Agree (SA). Please indicate your response to each item by circling one of the four responses to the right.

<u>Questions</u>		<u>Responses</u>			
1.	Spelling is an important skill and students need to have the competency in order to perform well later in life.	SD	D	A	SA
2.	Being nondisruptive and engaged in the classroom is an important skill in order for the students to learn well.	SD	D	A	SA
3.	I noticed positive changes in the students' spelling performance after the implementation of the peer tutoring program.	SD	D	A	SA
4.	I noticed a decrease in some student's disruptive behavior during spelling instruction after the implementation of the peer tutoring program.	SD	D	A	SA
5.	Peer tutoring is easy to implement in my class.	SD	D	A	SA
6.	Reward system is easy to implement in my class.	SD	D	A	SA
7.	The procedures of peer tutoring help students actively engage in academic materials.	SD	D	A	SA
8.	The reward system is appropriate to promote students' academic and social performance.	SD	D	A	SA
9.	I noticed a greater decrease in disruptive behavior throughout the day with the introduction of group reward system.	SD	D	A	SA
10.	I enjoyed participating in this research project.	SD	D	A	SA
11.	I am considering the continuous implementation of peer tutoring in my elementary classes.	SD	D	A	SA

APPENDIX M

Social Validity Questionnaire (Parent Form)

Child's Name: _____

Date: _____

This questionnaire consists of 9 items and four possible responses indicating the extent to which you agree with the statement. These responses are: Strongly Disagree (SD), Disagree (D), Agree (A), and Strongly Agree (SA). Please indicate your response to each item by circling one of the four responses to the right.

<u>Questions</u>	<u>Responses</u>	SD	D	A	SA
1. Spelling performance is an important skill and my child needs to have the competency in order to perform well later in life.					
2. Being nondisruptive and engaged with academic activities in the classroom is an important skill for my child in order for him/her to learn well.					
3. I noticed positive changes in my child's spelling performance after the implementation of the peer tutoring program.					
4. My child talked about the peer tutoring at home in a positive way.					
5. My child likes the rewards from the study.					
6. The reward system is appropriate for my child to promote his or her academic and social skills.					
7. I would like my child to continue on peer tutoring and reward system.					
9. I am glad my child participated in the peer tutoring program.					

APPENDIX N

Social Validity Questionnaire (Student Form)

Child's Name: _____

Date: _____

Questions

1. How do you like peer tutoring?
2. What is the best part of peer tutoring? Why?
3. What part of peer tutoring do you like the least? Why?
4. Would you rather have peer tutoring or have the teacher teach you in a group how to spell words?
5. Do you think you learn more from peer tutoring or from teacher instruction? Why?
6. Do you think the prizes help you to learn more? Why?
7. What would you change about peer tutoring if you were in charge? Why would you change that? How would you change that?
8. Would you like to continue peer tutoring (next year)? Why?
9. Is there anything else you would like to tell me about peer tutoring?

APPENDIX O

Map of the Classroom

