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Training teachers to give effective commands: Effects on student compliance,
academic engagement, and academic responding

by

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A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Psychology (School Psychology)

Major Professors: Carla A. Peterson and Daniel J. Reschly

Iowa State University

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**Training teachers to give effective commands: Effects on student compliance,
academic engagement, and academic responding.**

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The present study, using a multiple baseline design across subjects, evaluated whether training teachers to give effective commands alone and in combination with verbal praise for appropriate classroom behavior and compliance would result in increased compliance, academic engagement and academic responding. Results indicate that increasing effective teacher commands resulted in increased rates of student compliance of 7% for Student One, 15% for Student Two, and 17% for Student Three during the effective commands alone phase of the study. Total compliance was increased over baseline 17% for Student One, 28% for Student Two, and 23% for Student Three across all phases of the study. Academic engagement and academic responding combined was increased 10% for Student One, 5% for Student Two, and 16% for Student Three during the effective commands alone phase of the study. Academic engagement and responding combined was increased over baseline levels, 16% for Student One, 14% for Student Two, and 25% for Student Three across all phases of the study. Results are discussed in terms of identifying strategies that will result in increased compliance and

academic engagement and responding through the use of antecedent conditions that are beneficial to an entire class setting.

INTRODUCTION

Teachers are challenged to set the tone for instruction in their classrooms and engage their students in academic lessons. It is important that students are compliant to teachers' instructions so that available learning time is not wasted. Managing students' inappropriate behaviors is a time consuming task that reduces the amount of time teachers spend on teaching and the amount of time students spend on academic tasks. In urban school districts, student behavior that is incompatible with academic responses and on-task behaviors has been recorded to occupy 15% to 25% of class time in first through fourth grades (Greenwood, 1991). Strategies to assist teachers gain student compliance and increase the amount of time students are engaged in academic activities are needed. Presently, the majority of strategies to improve compliance focus on consequences of behavior instead of antecedents of appropriate behavior. This study examined the antecedent of quality teacher commands delivered alone and in combination with verbal praise on compliance rates and, in turn, on rates of academic engagement and academic responding.

Improving parents' commands so they are specific and direct has been shown to increase children's compliance to instructions (Forehand & McMahon, 1981; Hembree-Kigin & McNeil, 1995). An effective instructional delivery package, including specific and direct commands, has also been shown to increase child compliance to teacher instructions (Ford, 1998); however, this instructional delivery package included the components of eye contact and contingent reinforcement in the forms of verbal praise and/or physical touch making it difficult to determine the individual effect of quality commands. This study proposed to systematically examine two components of Ford's (1998) effective instructional delivery package: 1) the effect of quality teacher commands without the confounds of eye contact and contingent reinforcement and 2) the effect of quality teacher commands with verbal praise for appropriate behavior (without eye contact). The effect of these components on student compliance to academic and task related commands, academic engagement, and academic responding was evaluated.

The model proposed begins with quality commands given by teachers that increase student compliance. Increased student compliance, in turn, results in increased academic engagement and academic responding. This model was developed by combining the parent

training literature that has indicated effective commands increase compliance with studies that indicate increased compliance is correlated with increased academic engagement and academic responding.

The parent training literature is more extensive than classroom-based research in examining the effect of commands on compliance, as well as determining which characteristics make commands most effective. Research on the use of effective commands by parents when giving instructions to their children indicates increases in compliance (Roberts, McMahon, Forehand, & Humphreys, 1978). The qualities of commands considered effective include being specific and direct, given in a firm voice, phrased positively, given one at a time, and followed by a five second wait period (Forehand, 1977; Forehand & McMahon, 1981). This type of command has been called an alpha command in the parent training literature.

In the classroom setting, Ford (1998) tested an effective instructional delivery package on student compliance in kindergarten and first grade classrooms. Ford's instructional delivery package included commands that were directive, descriptive, and stated positively while given at close proximity, in a quiet-toned voice, with eye contact. The commands were also followed by a five second wait period for compliance or noncompliance with contingent reinforcement for compliant behavior. As mentioned previously, the inclusion of the characteristics of eye contact and contingent reinforcement make it difficult to determine the effects of the commands alone. The results, even with these confounds, are quite exciting. The use of this effective instructional delivery package produced increased rates of children complying, within five seconds, to a teacher's command when given the first time. These increased rates of compliance were as much as 43 percent over baseline measures when the effective instructional delivery package was tested alone (Ford, 1998). When the effective instructional delivery package was accompanied by increased verbal praise and physical contact at times when the student was engaged in appropriate classroom behavior, student compliance to teacher instructions within five seconds increased up to 61 percent over baseline measures (Ford, 1998). Based on these results, the effect of teachers giving quality commands would be anticipated to improve child compliance. The extent to which improvements in compliance can be anticipated by only improving the quality of

commands is uncertain at this time; however, they are predicted to be less than the results obtained when combined with eye contact and contingent reinforcement.

Eye contact is controversial due to the argument that it contributes to behavioral momentum (Neef, Shafer, Egel, Cataldo, and Parrish, 1983). The theory of behavioral momentum is summarized by stating that the likelihood of the child complying with an undesirable request increases if that command immediately follows a request or a series of requests to which the child is likely to comply. Increased rates of compliance in Ford's (1998) study could have been attributed to more difficult commands being given after compliance to a simple command such as "Look at me" had been achieved.

Giving contingent reinforcement after the command had been completed is also a confounding component of Ford's (1998) effective instructional delivery package. Children have been shown to exhibit increased compliance to parent instructions when verbal praise is given following compliance (Eyberg, Boggs, & Algina, 1995). Verbal praise from teachers has been found to be effective in increasing child compliance (Atwater & Morris, 1988; Schutte & Hopkins, 1970). The component of contingent reinforcement implemented at the same time as quality commands and eye contact makes it difficult to determine what part of the effective instructional delivery package was most effective.

Good student compliance is necessary when the link between compliance and academic engagement is considered. Studies have indicated that teachers using effective classroom management strategies have increased student academic engagement; however, these studies are only correlational. This study enhances that literature by providing data that are not correlational. Instead, it illustrates that as a particular intervention to increase student compliance is implemented, academic engagement and academic responding increase as a result of that intervention.

In summary, this study examined the effects of: a) effective commands alone, and b) effective commands combined with the use of verbal praise for appropriate classroom behavior on students' compliance to academic task and task related behavioral commands, as well as rates of academic engagement and academic responding. Effective teacher commands were defined as being directive, descriptive, and stated positively while given at close proximity, in a quiet-toned voice, and followed by a five second wait period. By

including only these components in the effective commands phase, the study was not influenced by the other factors of eye contact and contingent reinforcement that were included in Ford's (1998) study. Three students working with materials at their instructional level with overall compliance rates of less than 60% were identified. Their teachers underwent two training sessions: a) Giving effective commands and b) Implementing verbal praise for appropriate classroom behavior while continuing to give effective commands. This study was a multiple baseline across subjects design consisting of three phases: 1) baseline, 2) effective commands alone, 3) effective commands with verbal praise. The teachers' percentages of effective commands and type of commands given, as well as the students' compliance rates, academic engagement, and academic responding behaviors were recorded in all phases. Visual inspection techniques were utilized to analyze results.

LITERATURE REVIEW

The research literature describing classroom commands, student compliance, and student academic engagement, and academic responding is reviewed in this section. Improving children's compliance to adult commands is important in the home setting in order to maintain control over the child's behavior. In the school setting, teachers are challenged to maintain instructional control over their classrooms in order to promote academic learning. The importance of compliance is highlighted by its correlation with academic engagement and academic responding that have in turn been linked to increased student achievement (Borg, 1980; Karwiet, 1983; Greenwood, Delquadri, Stanley, Terry, & Hall, 1985)

Command training is an effective method for producing gains in compliance to adult commands as indicated by the parent training literature. Compliance has been improved by the use of effective teacher commands; however, few studies have been done in school settings. The existing studies done in school settings are unclear regarding the level of contribution of various factors to gains in compliance. The gains may have been due to individual or combined factors including: improved commands or factors such as eye contact, contingent reinforcement, or providing verbal praise and physical touch contingent on appropriate behavior (Ford, 1998; Hamlet, Axelrod, & Kruschner, 1984). At present, studies are inconclusive regarding the essential components of effective commands.

Compliance

Compliance in the classroom is a necessity for effective teaching (Martens & Kelly, 1991). Rhode, Jensen, and Reavis (1993) suggest that compliance rates below forty percent may prevent a child from benefiting from instructional opportunities. Student compliance and establishing and maintaining an orderly learning environment are results of effective classroom management procedures (Doyle, 1985). Well managed classrooms are correlated with spending more time engaged in academic tasks, progressing in material at a more rapid pace, and demonstrating higher levels of academic achievement (Brophy, 1983; Gettinger, 1986; Good, 1979). Although the need for compliance has obvious importance in the classroom, the majority of research on gaining compliance has come from the parent training research.

Within the parent training literature, compliance and noncompliance have been defined in many different ways. Definitions differ in the amount of time given for compliance and whether a task must be initiated or completed in the time allowed. The most consistent definition of compliance is the initiation of a response within five seconds of the initial parent command (Houlihan, Vincent, Ellison, & Jones, 1994; Forehand & McMahon, 1981; Roberts & Hatzenbuehler, 1981; Roberts, McMahon, Forehand, & Humphreys, 1978; Wruble, Sheeber, Sorensen, Boggs, & Eyberg, 1991). Roberts and Powers (1990) extended this time period for initiation of the response to 5-15 seconds following teacher-presented instructions. Others have defined compliance as initiating a specific motor response within 15 seconds of a command (Glass, 1988; Schutte & Hopkins, 1970). Shriver and Allen (1997) investigated compliance time by comparing the latency for compliance to parent commands of clinic-referred and non-referred children ages 2-10. They suggested that a 10 second criteria for compliance may be most appropriate and that the use of short latencies (e.g. 5 seconds) to determine noncompliance may be overly conservative and result in a high false-positive rate.

Studies that have defined compliance as the completion of a specific behavior within a specified time limit after a command has been given vary greatly in the time allowed for completion. Neef et.al, (1983) required that the specific behavior be completed within 10 seconds of the command being presented. This time period has been extended to 20 seconds (Houlihan & Jones, 1990; Parrish, Cataldo, Kolko, Neef & Egel, 1986) and to 30 seconds (Goetz, Holmberg, & LeBlanc, 1975).

While the definition of compliance varies between research studies in the parent training literature, the criteria for inclusion of subjects in research studies remains consistent. The precedent for defining who is and is not compliant was set by Forehand in 1977. A criterion of a 60 percent compliance rate for parental commands was determined to distinguish between normal and clinical populations (Forehand, 1977). Subsequent studies have also adopted the criterion of less than 60 percent to define noncompliance (Houlihan & Jones, 1990; Roberts, McMahon, Forehand, & Humphreys, 1978).

Various strategies have been attempted to increase child compliance. "Time-out" is one such strategy commonly used in the parent training literature to address noncompliance.

(Forehand & McMahon 1981; Hembree-Kigin & McNeil, 1995; Christopherson, 1987).

Time-out is defined as removing the child from a reinforcing environment and placing the child in one that is less reinforcing (Forehand & McMahon, 1981). The use of verbal praise and appropriate physical touch are two strategies often used to create a more reinforcing environment for children (Christopherson, 1987; Mathews, Friman, Barone, Ross, & Christopherson, 1987). The reinforcing properties of verbal praise and appropriate physical contact may account for much of the effectiveness of time-out due to the contrast created between being placed in time-out for inappropriate behavior and remaining in the typical environment (Jones & Downing, 1991; Shriver & Allen, 1996). The use of physical touch and verbal praise were found to increase mean levels of compliance by 45 percent, 33 percent and 29 percent over mean baseline levels of compliance with the three children (Marlow, Tingstrom, Olmi, & Edwards, 1997).

Verbal praise alone can also be an effective reinforcer for children. Verbal praise from a parent is correlated strongly with higher rates of child compliance (Eyberg, Boggs, & Algina, 1995). Verbal praise from teachers is effective in increasing child compliance (Atwater & Morris, 1988; Schutte & Hopkins, 1970) and increasing time on-task (Brodén, Bruce, Mitchell, Carter, & Hall, 1970; Madsen, Becker, & Thomas, 1968). School psychologists frequently use praise as an intervention procedure in schools and rated praise most often among intervention strategies that they use (Shapiro & Lentz, 1985). Verbal praise is a reinforcer easily introduced or increased in the environment. Other forms of reinforcement (privileges, edibles, tokens) are less likely to be used due to cost, satiation, time, skill to implement, and intrusiveness to the ongoing activity of homes or schools.

In summary, compliance has been defined in many ways with variation in the amount of time given for the child to initiate or complete the task directed in the command. This study adopted the definition of compliance as the child initiating compliance within five seconds of the command being stated. Verbal praise increases compliance when implemented alone and in combination with other behavior modification procedures. This study also examined whether verbal praise in combination with giving effective commands results in increased compliance over the delivery of effective commands alone. Increased compliance to instructions in classrooms is desirable based on correlational research

indicating that students in well-managed classrooms spend more time engaged in academic tasks.

Commands

The use of command training to improve the instructions given to children is part of an effective strategy to increase child compliance. Forehand (1977) initially illustrated the benefits of giving effective commands in his work training parents to increase child compliance. Forehand (1977) described and categorized commands as alpha (effective) and beta (ineffective) commands. Table 1 presents the properties of alpha and beta commands.

Table 1: Properties of alpha and beta commands (Forehand, 1977; Forehand & McMahon, 1981)

Alpha Commands	Beta Commands
Specific and direct	Vague
Given in a firm, quiet-toned voice	Question form
Phrased as a "Do" command	Do not specify observable behavior to be performed by the child
Given one at a time	Chains of commands
Followed by a 5 second wait period before additional directives are given	Does not allow the child to complete the command before additional directives are given
Given in language the child can understand	Followed by a rationale or other verbalizations

Alpha commands are specific, direct, and concise instructions that warrant a distinct outcome (Forehand, 1977). Forehand and McMahon (1981) recommended that the parent get the child's attention by calling the child's name and waiting for eye contact before giving the command. The command is then given in a firm voice and phrased as a "do" statement, as appropriate behavior is easier to reinforce. Alpha commands are given one at a time. If the completion of several tasks is desired, separate commands should be issued for each task. A five second wait period is also characteristic of alpha commands. Additional directives

and other verbalizations should not be given until the child initiates compliance or until five seconds have passed (Forehand & McMahon, 1981).

Beta commands are commands that do not offer the child a clear opportunity to respond (Forehand, 1977; Peed, Roberts, & Forehand, 1977). A chain of commands is considered a beta command because it is a string of unrelated activities that most likely will put the child on information overload (Forehand & McMahon, 1981). Beta commands are also defined as being vague; they do not specify observable behavior to be performed by the child and, therefore, set up an ambiguous situation for the child. Commands in the form of a question are also considered to be beta commands. Commands in question form imply that the child has the option of choosing whether to do as the parent has asked. Commands that begin with "Let's..." are also considered beta commands and are inappropriate if the parent does not intend to be involved in the activity. Beta commands also include commands that are followed by a rationale or other verbalizations. If a rationale is to be given, it should precede the command because the rationale inadvertently obscures the directive if given after the command (Forehand & McMahon, 1981).

Alpha commands increase child compliance. Roberts, McMahon, Forehand, and Humphreys (1978) trained mothers to use well-specified single commands (alpha commands) followed by a five second wait period rather than vague, interrupted commands (beta commands). They observed increases in child compliance from baseline levels of 35 percent to 63 percent as a result of command training alone.

Beta commands have the opposite effect of alpha commands. Glass (1988) showed that commands given at a high rate, especially beta commands, may escalate negative interactions. Additional studies indicate that the use of beta commands lessens the likelihood of compliance (Forehand & Scarboro, 1975; Peed, Roberts, & Forehand, 1977; Roberts & Powers, 1988; Schoen, 1986; Williams & Forehand, 1984).

Some studies have attempted to apply some of the specific qualities of commands examined in the parent training literature to classroom settings. Hudson and Blane (1985) determined that commands that resulted in compliance were given at close proximity, with a pleasant tone of voice, and with greater eye contact. Working in preschool classrooms (Elrod, 1987) has shown that very young children understand direct requests significantly

better than indirect requests. In their classroom research, Houlihan and Jones (1990) examined the value of stating commands positively. In their study, they reinforced compliance with alpha commands stated positively in one condition and negatively in a second condition. Their results showed compliance improved regardless of whether commands were stated positively or negatively and that compliance to commands phrased positively did not appear to generalize to commands stated negatively or vice versa in any phase with any subjects. Whether the command was stated positively or negatively did not result in significant differences in compliance rates; however, an unwanted side effect to stating commands negatively was noticed. Children increased misbehavior when commands were stated negatively, which resulted in children being told to “don’t ...” which resulted in obtaining reinforcement if they complied with the don’t request. (Houlihan & Jones, 1990).

Eye contact as an antecedent to effective instructions has also been studied in classroom-based research. Hamlet, Axelrod, and Kuerscher (1984), found that if eye contact was required during the entire time instructions were given and then followed by the teacher saying “Thank you”, this procedure resulted in increased mean levels of compliance up to 40 percent over baseline measures. Some studies, regardless of being implemented with parents or teachers, include eye contact as part of the training of effective commands (Ford, 1988; Hudson & Blane, 1985) while others do not (Roberts, McMahon, Forehand, & Humphreys, 1978). Since increased compliance to commands has been achieved with and without eye contact as an antecedent to the delivery of the command, eye contact was not included in command training in this study to eliminate possible confounds of behavioral momentum (Neef, et.al, 1983).

Command training also has been combined with verbal touch/physical touch to modify students’ behaviors in the school setting. Ford (1998) investigated the use of verbal praise and physical touch combined with the effective instructional delivery package, in two different phases of a multiple-baseline study. In one phase, verbal praise and physical touch were contingent on compliance to instructions. In another phase, verbal praise and physical touch were given for engaging in appropriate classroom behavior regardless of whether it was a response to a command or spontaneous. Subjects in this study included three clinic-referred children in kindergarten and one first-grade student. When the effective

instructional delivery package with contingent reinforcement was implemented, all four subjects' compliance to teachers' first time given instructions increased. The extent of the increases in mean levels of compliance ranged from 21 percent to 44 percent over baseline measures. When the phase in which verbal praise and physical touch, combined with the effective instructional delivery package, were given for engaging in any appropriate classroom behavior, increases in compliance were shown over the previous phase of the effective instructional delivery package with contingent reinforcement. These increases between phases ranged in mean levels from 12 to 17 percent. Overall increases in mean levels of compliance to first time given teacher commands after both phases had been implemented were 38 to 61 percent greater than baseline measures.

The benefits of training teachers to give effective commands increase its viability as an intervention option. Command training is monetarily cost-free. This intervention takes little physical effort to implement, is not time consuming, can be used with the entire class of students, and is not intrusive to the classroom environment. Due to these features, command training holds a greater likelihood of treatment compliance and treatment integrity over interventions that require more physical effort to implement, are more time consuming, are specific to an individual student, or are intrusive in the classroom.

In summary, improving the commands given to children increases rates of compliance. Increases in compliance occur regardless of whether eye contact is included in the criteria of defining an effective command. Based on these results, commands in this study will be defined as being specific and direct, given in a firm, quiet-toned voice, phrased positively, given one at a time, and followed by a five second wait period.

Academic Behaviors

Academic engagement and academic responding are much desired behaviors in the classroom and are correlated with academic achievement and influenced by multiple factors. Definitions of academic engagement and academic responding were taken from the work of Greenwood et. al, (1995) for the purpose of this study and are more thoroughly described in this section.

Academic Engagement

Since academic engagement is identified as a moderate predictor of academic achievement (Borg, 1980; Karweit, 1983), strategies to increase academic engagement should, in theory, result in higher academic achievement. High rates of academically engaged time have been identified consistently as a component of effective instruction (Anderson, 1984; Fisher and Berliner, 1985; Good, 1983; Karweit, 1983, 1985).

Academically engaged time is correlated with effective classroom management practices and the quality of instruction, as well as the students' perceptions of tasks and directions (Good, 1983)

Academically engagement behaviors are defined as behaviors associated with the academic task, but do not involve active responding to the instruction. Paying attention is an example of academic engagement. Paying attention is defined as looking at the teacher while he/she is teaching, looking at a peer while a question is being asked, and watching media presentations associated with the lesson (Greenwood et.al., 1995). Other academic engagement behaviors include raising one's hand to signal a request for assistance; looking for, using, or handling curriculum materials; and transitioning to a new activity or location at the teacher's request (Greenwood et.al., 1995).

The appropriateness of the academic task has also been identified as a key instructional element for increasing academically engaged time (Denham & Lieberman, 1980). The moderate relationship between academically engaged time and student achievement may be influenced by the appropriateness of the instruction given to the student (Good, 1983).

Another critical instructional element is active monitoring of student performance by the teacher (Anderson, 1984). Active monitoring includes monitoring the student's task completion, as well as the student's accuracy of responses (Denham & Lieberman, 1980). Monitoring performance allows the teacher to give immediate and academically oriented feedback, and is identified as a critical instructional element for increasing students' academically engaged time (Anderson, 1984; Stalling, 1975). The teacher's system of monitoring and providing feedback allows the flow of classroom activity to be maintained (Karweit, 1983).

Classroom management that allows the flow of classroom activity to be maintained assists in maintaining student attention (Kounin, 1977). Teacher behaviors such as continuously scanning the classroom, using nonverbal signals for re-engaging the student, monitoring a subset of students while instructing others all assist in maintaining the flow of classroom activity (Brophy, 1986).

In addition to the critical instructional elements already identified, allowing sufficient time to be allocated to academic instruction assists in increasing student engaged time. Carefully sequencing materials and tasks, having clear teaching goals and structured tasks, and providing continuous, active, and well-paced instruction all contribute to students' academically engaged time (Anderson, 1984, Stallings, 1975).

The relationship between instructional behaviors and high rates of academic engagement varies according to various teaching practices (Anderson, 1984 reviewed Kounin and Gump, 1974). Engaged time is lowered when students participate in a whole class recitation when compared to small teacher-led groups. Student paced activities (self-paced) result in lower rates of engaged time than teacher-paced (externally paced) activities. Low rates of engaged time also typically occur when there are a variety of activities occurring simultaneously or when the majority of students are working alone. At the other end of the spectrum, variety is associated with high levels of engaged time in seatwork settings, but not in recitation settings.

In summary, there are many instructional elements that result in increased rates of academically engaged time. Classroom management strategies and appropriateness of instructional materials are among those elements. This study contributes to the literature by examining the relationship between the specific intervention strategy of giving quality commands with and without verbal praise for appropriate behavior and academically engaged time.

Academic Responding

Academic responding includes the student behaviors of writing on academic materials, answering teachers' questions, supplying a motor response to a requested task (e.g., pointing to the picture), reading aloud or silently, and asking questions related to academic material. Responding in the forms of work (engaging in task completion

behaviors) and volunteering (indicating a willingness to participate) were identified by Cobb (1972) as essential student survival skills. Teacher-student interaction is fostered by a brisk instructional pace, immediate and corrective feedback, and active student participation. Clarity of task directions and frequent monitoring of student's understanding of answers are also essential to effective instructional presentations which, in turn, improve achievement (Good, 1983).

Academic responding behaviors are important in part because of their relationship to teacher feedback. If a student is not responding to academic instruction and asking and answering questions, it is difficult for the teacher to give the student feedback and monitor student errors. Providing the student with corrective feedback is important to student learning. Effective feedback is given in the form that provides a student with an increased opportunity to respond. This is done by providing cues to increase the rate of accurate responses. Telling what makes an answer right or wrong is also a component of effective feedback. Errors should be corrected by providing cues and prompts to guide the student to the correct answer, not just identified as correct or incorrect.

Academic responding also allows students to engage in relevant practice of the material. This allows the student to practice the skill in varied ways (Haring & Eaton, 1978). Practice also allows skills to be brought to the point of automaticity which is important for student success (Rosenshine, 1983; Samuels, 1982).

In order to be beneficial, the student must practice tasks appropriate for that individual. The appropriateness of the task can be measured by the student's success rate (Marliave & Filby, 1985). When students are engaged in guided practice, the success rates should be at least 70 percent (Marliave & Filby, 1985). In independent activities, the success rates should be 90-100 percent (Marliave & Filby, 1985).

In summary, academic responding is an integral part of student behavior due to its link to obtaining teacher feedback. Academic responding also allows the student to engage in relevant practice with material. For these reasons, as well as the correlation between academic responding and increased academic achievement, academic responding is an important variable that will be monitored in this study to determine if the specific

intervention strategy of giving quality commands with and without verbal praise for appropriate behavior can be implemented to increase time spent academically responding.

Purpose of the Study

Research has not determined if the use of effective commands alone in the school setting increases academic engagement and responding. Effective commands, with eye contact and contingent reinforcement, do produce increases in mean levels of compliance ranging from 21 to 44 percent over baseline measures. The questions examined in this study were whether effective commands, NOT accompanied by eye contact and contingent reinforcement, increase rates of in compliance, academic responding, and academic engagement.

Research Questions and Hypotheses

Following are the specific research questions and hypotheses addressed in this study:

1. What is the result of training teachers to use effective commands on student's compliance, academic engagement, and academic responding behaviors?

Hypothesis: *Increasing the percentage of effective teacher commands will result in increased rates of student compliance to commands involving academic tasks, as well as to task related behavioral commands.*

Hypothesis: *Increasing the percentage of effective teacher commands will result in increased rates of student academic engagement.*

Hypothesis: *Increasing the percentage of effective teacher commands will result in increased rates of student academic responding.*

It was decided that if the implementation of effective commands alone did not raise student compliance to at least 90%, question two would be addressed. Question two was addressed for all three students

2. What is the result of effective teacher commands combined with verbal praise on student's behavior?

Hypothesis: *Increasing the percentage of effective teacher commands combined with verbal praise will result in increased rates of student compliance to commands involving academic tasks, as well as to task related behavioral commands.*

Hypothesis: *Increasing the percentage of effective teacher commands combined with verbal praise will result in increased rates of student academic engagement.*

Hypothesis: *Increasing the percentage of effective teacher commands combined with verbal praise will result in increased rates of student academic responding.*

METHODS

Subjects and Setting

Three students in general education classrooms and their teachers participated in this study. Two children were in second grade, and one child was in fourth grade. The students exhibited compliance with first time presented teacher instructions at a rate of at least 20 percent less than two randomly chosen same sex classroom peers from the sample of peers recorded on videotape. Table 2 presents the compliance levels of target students and peers during preliminary observations.

Table 2: Compliance rates of target students and same sex peers during preliminary observations

	Target Students' Compliance Rate	Peers' Mean Compliance Rate
Student 1 (Cory)	38%	75.5%
Student 2 (Nate)	52%	91%
Student 3 (Andy)	33%	86%

All target students were working on materials at an appropriate instructional level during the time periods in which they were observed. Curriculum-based measurement probes were used to examine the student's reading fluency or math fact fluency to determine if the student's academic materials were an appropriate match to the students' skill levels.

The fourth grade student, Andy, was observed during reading instruction. Reading probes from his fourth grade curriculum were administered to determine total words read correctly in one minute and percentage level of accuracy. Andy read a median of 121 words correct per minute at a level of 98.5% accuracy. Results were compared to published criteria for the fourth grade level in order to determine if an instructional match existed (Howell, Fox, Morehead & Zucker, 1993). Howell et. al's criteria for acceptable performance at the fourth grade level is 70-100 words correct per minute with 95-100% accuracy to benefit from

instruction and 140 words correct per minute for independent reading. Andy's materials were determined to be at a level appropriate for Andy to benefit from instruction (Howell et. al. (1993).

The two second grade students, Cory and Nate, were observed during math instruction; each child was given math probes consisting of math facts in the areas of addition, subtraction, and multiplication. The number of digits correct in two minutes was calculated and compared to published criteria (Deno & Mirkin, 1977) and peer performance. Although both students met the instructional placement criteria of 18-29 digits correct only in the area of addition, their performance in all areas was comparable to their classmates' medians indicating that their performance on materials was comparable to peers and at an appropriate instructional level. Table 3 indicates the number of digits correct in two minutes and the range in which peers scored on the same measure.

Table 3: Number of digits correct in two minutes for students one and two compared to class ranges and medians in the areas of addition, subtraction, and multiplication.

	Target Addition	Class Range Addition/ Median	Target Subtraction	Class Range Subtraction /Median	Target Multiplication	Class Range Multiplication /Median
Student 1 (Cory)	19	4-94 25	14	7-49 18.5	10	1-19 3
Student 2 (Nate)	29	3-47 18	7	0-25 12	0	0-15 3

The three regular education teachers were selected to participate based on the school principal's recommendations and having a student with compliance concerns that had not been referred for special education to address these concerns. All teachers were assured in writing that their willingness to be involved in the study would not influence their evaluations and no individually identifiable data would be released. The identified teachers

agreed to participate in the two intervention training sessions and permit videotaping of the target child's classroom behaviors.

Once the students' participation in the study was recommended, the target students' parents/legal guardians were asked to give written informed consent for their children's participation. A letter was sent to the parents of the other children in the target students' classrooms alerting them that videotaping would be performed in their child's classrooms. A release obtaining permission to videotape in the classroom for research purposes had previously been obtained by the school, and this notice was done as a courtesy and allowed the parents to request that their student not be videotaped if they had objections to the taping. Only one parent voiced concerns regarding videotaping, and it was agreed that the student in question would not be filmed. In the absence of any other objections, implied consent was assumed.

Measures

To evaluate the impact of each intervention phase, teacher training on effective commands alone and training on effective commands with verbal praise, data were collected through use of videotaping. The target students were videotaped for the entire period in which reading or math instruction was being given or seatwork time in the instructional area was provided. This instruction occurred during the same time each day and videotapes were gathered approximately three times per week based on the availability of the student and excluding days on which schedule conflicts (i.e., assemblies, student pictures, etc.) arose. The videotapes were coded using two systems, compliance and academic engagement/academic responding/competing behaviors with each tape being observed and coded twice, once with each system.

Independent Variables

The independent variables were interventions provided by the teachers to the target students. Participating teachers were taught by the author during individual and separate sessions 1) delivery of effective commands, and 2) effective commands combined with verbal praise.

In the training session on effective commands, teachers were trained to give more effective (alpha) commands to students. Effective commands were defined as concise

instructions that (1) elicit a distinct outcome, (2) are precise and temporally isolated, (3) are specific and direct, and (4) are given one at a time followed by a wait period. Effective commands also included the characteristics of close proximity, quiet voice tone, directive, stated positively, and descriptiveness (See Table 4).

Table 4: Definitions of Alpha and Beta Commands

Alpha Commands	Beta Commands
Specific and direct	Vague
Stated positively	Stated negatively
Given in a firm voice	Question form
Phrased as a "Do" command	Does not specify observable behavior to be performed by the child
Given one at a time	Chains of commands
Followed by a five second wait period before additional directives were given	Does not allow the child to complete the command before additional directives were given
Given in language the child can understand	Followed by a rationale or other verbalizations

In addition, multi-step alpha and multi-step beta commands were differentiated by the number of verbs in the command. If the command had only one verb, it was defined as an alpha command (ex. "Underline that and then" or "Put the name, date, and heading on your paper"). If the command had more than one verb, it was defined as a beta command (ex. "When done, put your pencil at the top of your desk and stop rolling your pencils" or "Get paper, put on the heading, and write three sentences").

After being instructed on the qualities of effective and ineffective commands, the teachers were given a list of commands typically given in their own rooms and asked to change the ineffective commands to effective commands. The teachers were also shown videotapes of their own classrooms (taped from the baseline phase of the study) and asked to

identify effective or ineffective commands. For each effective command identified, the teacher was praised by the instructor. For each ineffective command identified, the teacher was asked to describe what he/she could have said in order to make the command effective. Materials utilized during the teacher training are included in Appendix A. The teacher training sessions ranged from 36 minutes to 48 minutes in length. Specific amounts of time spent on each segment of the training are listed in Table 5.

Table 5: Number of minutes spent on different segments of effective command training

Teacher	Rules, Rationale, and Examples	Making Commands More Effective Written Practice	Videotape Examples Discussion
Cory's Teacher	9	17	22
Nate's Teacher	8	10	23
Andy's Teacher	12	10	14

During all phases, the teachers' commands and childrens' compliance were monitored to determine whether the teacher was implementing the intervention with integrity. This was accomplished via use of the established coding system (see Appendix C). The occurrence of each teacher command and the number of times each command was repeated were coded. Each command was coded as an alpha or beta command according to the criteria detailed in Table 4. The type of response the command requested (academic vs. task related behavior) was coded (see Table 6). The student's response to the command (compliance, noncompliance, or negative behavior) was also coded as well as the teacher's response to the student (verbal approval or no response).

In the second training segment, effective commands with verbal praise, teachers were trained to provide verbal praise for appropriate classroom behaviors that occurred at any time and for compliance with teacher commands, while continuing to give commands in the

Table 6: Definitions of Academic tasks and Task-related Behaviors

Academic tasks	Task-Related Behaviors
Writing	Attend to task
Playing an academic game	Raise hand/Signal for help
Reading aloud	Looking for materials
Reading silently	Moves to a new academic station
Verbal exchange regarding academics	Playing appropriately
Asks academic question	Verbal exchange regarding management of
Answers academic question	the task

format taught during the first training session. Verbal praise was defined as the teacher giving a positive verbal statement (e.g., “You are doing a nice job”) or a statement explicitly related to student behavior (e.g. “I like the way you are sitting quietly”) within five seconds of child compliance or when the student was observed to be displaying appropriate classroom behavior. Training on the use of praise included a brief explanation that many student behaviors occur in order for the student to access attention. The teacher was then asked to identify his/her typical response to various classroom behaviors and self-evaluate whether appropriate or inappropriate behaviors typically resulted in giving attention to students.

This self-evaluation was followed by an explanation that if only great behavior is praised, the number of times a student receives attention for inappropriate behavior will outnumber the times attention is received for appropriate behavior. This creates an environment in which students learn to act inappropriately to gain teacher attention. Reasons to praise, types of praise, and benefits of labeled and unlabeled praise were also discussed. Videotaped examples of praising/not praising students were shown from videotapes collected during previous study phases, and the teachers were asked to practice identifying the students’ acceptable behaviors that warrant praise (see Appendix B for materials). The teacher training sessions for this segment ranged from 33 to 53 minutes in length. Specific amounts of time spent on each segment of the training are listed in Table 7.

Table 7: Number of minutes spent on different segments of praise training

	Explanation, Self evaluation, and Rationale	Videotaped Examples and Discussion
Cory's Teacher	22	20
Nate's Teacher	25	28
Andy's Teacher	20	13

To ensure that teachers were implementing the intervention with integrity, teachers' percentage of commands given in alpha format, as well as the number of verbal praises, were monitored during each observation. Effective commands were monitored on an ongoing basis throughout the study to ensure that teachers were delivering a level of 80 percent alpha commands, as measured by alpha commands/total commands and that the level of alpha commands did not spontaneously increase without training. Once the teachers began the effective commands phase, the teacher was coached and given feedback on a daily basis regarding his/her performance until a level of 80 percent alpha commands on two consecutive days was reached. The teachers continued to receive feedback on a daily basis throughout the rest of the intervention phases. If the teacher's level of alpha commands fell below 80 percent on two consecutive days at any time following the onset of the effective commands phase, the teacher was again coached along and given feedback regarding his/her performance until a level of 80 percent alpha commands on two consecutive days was again reached. Since teachers typically do not exhibit a high rate of verbal praise and physical touch (Atwater & Morris, 1988), it was not predicted that teachers would begin adding verbal praise before that phase was taught. The number of verbal praises was monitored throughout the study to assure that this assumption remained accurate.

Dependent Variables

To evaluate the impact of the intervention phases on student compliance rates, student compliance and noncompliance to teacher commands was coded. If the student initiated

compliance to the teacher's command within five seconds of the command being given, it was coded as compliance to the request. If the student did not initiate compliance to the command within five seconds, the behavior was coded as noncompliance. Percentages of total compliance, compliance to academic commands, and compliance to task related behavioral commands were calculated. Coding forms are presented in Appendix C.

To evaluate the impact of the intervention phases on the rate of student academic responding behavior, the percentage of total time engaged in academic responding behaviors was calculated. The definitions and coding system of academic engagement and academic responding were derived from the code definitions from the Mainstream Version of the Code for Instructional Structure and Student Academic Response (MS-CISSOR) taxonomy of the EcoBehavioral Assessment Systems Software (EBASS) (Greenwood et.al., 1995). A fifteen second momentary time sampling procedure was used to compute the overall percentage of time the child was engaged academically, engaged in academic responding, or engaged in competing behaviors. The definitions that comprise these codes are briefly described in Table 6 with the entire coding definitions and coding forms presented in Appendix D.

The academic engagement variables included: raising hand; play or interacting appropriately (approved of by the teacher); manipulating materials; transitioning, walking/running to a new area or station when complying (moves); talk management but not academic, e.g., borrow pencil, ask for help (talk management); and looking directly at the teacher or a peer (pay attention).

The academic responding variables included: marking academic materials (writing); manipulating elements/materials of an academic task (task participation); reading aloud; reading silently; and verbalizing about academic subject/materials, instructions, or appropriate subject matter topics (talk academic).

Variables coded for competing behaviors included: aggressive behaviors; disruptive behaviors such as yelling, crying, loud talk, and destruction of materials; inappropriate verbal behavior including laughter and talk about recess or lunch (talk inappropriate); looking away from the academic task (look around); noncompliance to the teacher's directive or a standing class rule; self-stimulating behaviors; and self abusive behaviors.

Inter-rater Reliability

Inter-rater reliability was coded on 20% of the classroom observations. Coding was initially completed by the author. A fellow graduate student in school psychology, Stacy Slavens Volmer, assisted with the inter-rater agreement checks. For the compliance code, a Kappa statistic was calculated to provide an estimate of agreement between observers corrected for chance (Cohen, 1965). A Kappa statistic was also calculated for the code measuring academic engagement, academic responding, and competing behaviors with academic engagement and academic responding combined. A Kappa statistic was calculated with the following formula: $k = \frac{P_o - P_c}{1 - P_c}$. P_o was defined as agreements on occurrences and nonoccurrences divided by the total number of agreements and disagreements. P_c was computed by multiplying the number of occurrences for observer one times the number of occurrences for observer two plus the number of nonoccurrences for observer one times the number of nonoccurrences for observer two. The sum of these is divided by the total number of intervals squared (Cohen, 1965).

Design

A multiple baseline-across subjects design was utilized. This design allows the effects of each intervention component to be evaluated. Intervention effectiveness is considered to be demonstrated when changes in the students' behavior are observed at the point at which the intervention was introduced. The number of baselines included in a study contributes to the strength of the demonstration of intervention effects. At least two baselines are required in a multiple baseline-across subjects design study with typical studies utilizing three or more baselines. As the number of baselines that show a predictable pattern of behavior increase, the strength of the intervention resulting in behavior change is considered to be clarified (Kazdin, 1982). This study utilized three baselines.

Baseline information on the compliance behavior of all three students was obtained. Once the baseline data were stable for one student, intervention was implemented for that student while the baseline phase continued for the remaining students. Cory's baseline data were the first to achieve stability, followed by Nate's baseline data, and then Andy's baseline data. During this period, the behavior of the student receiving the intervention was expected to change while the behavior of the other students was expected to continue at baseline

levels. This pattern was continued until all students received both intervention phases, effective commands alone and effective commands with praise (See Figure 1).

In all phases, levels of effective teacher commands and the student's compliance, engagement, and responding behaviors were recorded. Phase One of the study was Baseline. Phase Two of the study was Effective Command training alone. A level of 80% alpha commands, as measured by the percentage of alpha commands/total commands during the instructional period observed, was needed for this phase to be considered implemented with integrity. Phase Three of the study was the effective commands with verbal praise component. Phase shifts were based on stability of total student compliance. Shifting phases based on compliance was chosen in order to make similar comparisons to previous studies that also based phase shifts on compliance. Stability was defined as a minimum of three consecutive data points that fell within fifteen percent of the mean and did not show a systematic trend (Kazdin, 1982). Phase Three was to be implemented only if 90% total compliance was not achieved in Phase Two (Effective command training alone). Since this level of total compliance was not achieved for any of the three students, Phase Three (Effective commands with verbal praise) was implemented for all students. Phase Three was continued until the data stabilized in the area of total compliance.

Subject: Cory	Baseline	Effective Commands	Effective Commands w/ verbal praise
Subject: Nate	Baseline	Effective Commands	Effective Commands w/ verbal praise
Subject: Andy	Baseline	Effective Commands	Effective Commands w/ verbal praise

Figure 1: Illustration of a Multiple Baseline Design-Across Subjects Design

Data Analysis

Each student's overall percentage of compliance, compliance to academic task requests, and compliance to task related behavior requests were graphed and total compliance data were analyzed through visual inspection techniques (Kazdin, 1982). Students' percentage of time in academic engagement and responding behaviors combined, academic engagement alone, and academic responding alone were also graphed and combined academic behaviors were analyzed through visual inspection techniques. Data were plotted in a noncumulative fashion using a simple line graph for each subject on each day data were collected. Data points indicate individual observations. Changes in mean, level, latency of change, and slope were examined as well as change in level ratios and change in slope utilizing the split-middle technique.

Changes in mean were analyzed by calculating the mean within each phase of the study. Means were graphed and visually compared across phases to determine overall effects of each condition.

Changes in level were analyzed to determine the immediate effects of implementing intervention phases. Changes in level were examined by considering the difference between the last day of one phase and the first day of the next phase. Latency of change and non-overlapping data points between phases were also considered. Together, these visual inspection indices indicate intervention effectiveness. Effective interventions have the characteristics of more immediate change after the intervention implementation and less overlap of performance levels before and after intervention implementation.

Changes in trend were examined to determine systematic changes in the direction and rate of behavior change. A split-middle technique was utilized to analyze changes in trend including a celleration line. Data were initially plotted in a noncumulative fashion using a simple line graph for each subject on each day data were collected. The application of the split-middle technique required that data points within each phase of the study be divided equally by time period with a solid vertical line being drawn to divide the two equal groups of data points. Once the data points within the phase were divided in half, each of the halves were divided in half again (again assuring an equal number of data points on each side of the division) and a dotted vertical line was drawn. Next, the median rates of behavior for the

first and second half of the phase was determined such that half the data points were above and below this point. A horizontal line was drawn through the median point of each half of the phase until the horizontal line intersected with the dotted vertical line. This procedure was completed for each half of each phase. The intersection points for each half of each phase were then connected. The line was adjusted by moving it up and down without changing the slope until the median split, with half of the data points falling above and below this line, was obtained. The direction of the line, ascending or descending, indicates whether increases or decreases of the behavior are exhibited.

Using the celleration line, the rate of change for a given time period was calculated. To determine the rate of change for a week period, the point on the celleration line at day x and at day $x + 7$ was determined. The numerically larger value was divided by the smaller value.

The change in level ratio and the change in slope between phases were calculated to determine the differences in behavior across phases. To calculate the change in level, the last data point on one phase and the first data point in the following phase was determined. The larger data point was then divided by the smaller data point to produce a ratio. This ratio expresses how much higher (or lower) the intersection on the different celleration lines for the phases. Calculation of the change in slope was very similar with the larger slope being divided by the smaller slope. This also produced a ratio to express the differences in rate of behavior change between phases.

RESULTS

Inter-rater Reliability

Twenty percent of the sessions (twelve) were randomly selected within subject to be rated for inter-rater agreement in the areas of compliance and academic engagement, academic responding, and competing behaviors. These data yielded an average Kappa of .87 (range .82 to .94) for observed sessions rated with the compliance code. Agreement was rated on the identification of alpha and beta commands and compliance to commands. For sessions observed and rated for academic engagement and academic responding combined, and competing behaviors for academic tasks, the data yielded an average Kappa of .90 (range .87 to .95).

Treatment Integrity

Effective Commands

Data on the percentage of effective commands during each phase were collected to determine if and to what extent the teachers were administering effective commands, as well as if they were implementing effective commands prior to training in this phase. Table 8 summarizes data on effective commands the teachers administered during each phase. Due to an extremely low number of academic commands being given, the total percentages are considered to be the most valid information.

The number of commands given per observation was also monitored to determine whether the number of commands given per observation significantly influenced the percentages reported in Table 8 above. The number of commands given per observation is reported in Table 9 below across each student/teacher and phase. The numbers of task-related behaviors and total commands per observation have enough commands to produce reliable percentages; however, the number of academic commands given per observation was too low to produce reliable results.

The number of praises per observation across students, teachers, and phases was also monitored to determine if integrity existed and the number of praises per observation increased when the effective commands with praise phase was implemented and not before. Results indicate that the number of praises per observation did not significantly increase until the effective commands with praise phase was implemented. Table 10 reports the mean

Table 8: Mean percentages and ranges of effective commands per observation across students/teachers and phases

		Baseline		Effective Commands		Effective Commands with Praise	
		Mean	Range	Mean	Range	Mean	Range
Student 1 Teacher (Cory)	Academic	87	60-100	88	67-100	82	0-100
	Task related	43	22-57	78	55-91	77	69-85
	Total	46.25	22-63	83	67-93	78.78	70-83
Student 2 Teacher (Nate)	Academic	84	50-100	91	67-100	92	83-100
	Task related	62	46-81	79	60-89	83	60-95
	Total	64.00	47-84	81.38	67-91	84.75	66-93
Student 3 Teacher (Andy)	Academic	50	0-100	100	100	95	80-100
	Task related	51	43-60	84	78-92	92	75-100
	Total	51.80	35-71	86.5	83-93	92.5	77-100

Table 9: Mean number and ranges of commands per observation across students/teachers and phases

		Baseline		Effective Commands		Effective Commands with Praise	
		Mean	Range	Mean	Range	Mean	Range
Student 1 Teacher (Cory)	Academic	3	0-5	4	0-7	3	0-5
	Task related	21	18-23	28	18-40	28	14-38
	Total	24	18-28	32	18-44	30	14-43
Student 2 Teacher (Nate)	Academic	3	0-8	3	0-6	6	2-10
	Task related	18	13-31	18	9-27	19	14-25
	Total	22	14-34	21	17-33	26	16-32
Student 3 Teacher (Andy)	Academic	.4	0-1	2	0-6	3	1-5
	Task related	15	6-21	10	5-14	11	8-13
	Total	15	7-21	13	10-15	14	13-14

Table 10: Mean number and ranges of praises per observation and rate of praises per minute across students/teachers and phases

		Baseline Phase			Effective Commands Phase			Effective Commands with Praise Phase		
		Mean	Range	Ratio	Mean	Range	Ratio	Mean	Range	Ratio
Cory's Teacher	Individual	0.50	0-1	0.02	3.5	1-8	0.12	10.89	2-17	0.34
	Class	0.50	0-1	0.02	0.88	0-3	0.03	2.67	0-7	0.08
	Total	1.00	0-2	0.04	4.38	1-11	0.15	13.56	6-20	0.39
Nate's Teacher	Individual	0.13	0-1	0.00	0.50	0-1	0.02	5.50	4-8	0.16
	Class	0.88	0-3	0.03	0.00	0-0	0.00	1.00	0-2	0.03
	Total	1.00	0-3	0.03	0.50	0-1	0.02	6.50	4-9	0.19
Andy's Teacher	Individual	0.00	0-0	0.00	0.00	0-0	0.00	3.50	1-5	0.10
	Class	0.40	0-1	0.01	0.25	0-1	0.01	0.25	0-1	0.01
	Total	0.40	0-1	0.01	0.25	0-1	0.01	3.75	1-6	0.10

number of praises per observation, the range of the number of praises per observation, and the ratio of praises per minute across student/teachers and phases.

Compliance

Total Compliance

Table 11 summarizes the mean total compliance rates across observation sessions for all three subjects. Mean baseline total compliance rates for Student One (Cory) were 49% across four observations, for Student Two (Nate) 56% across eight observations, and 44% for Student Three (Andy) across five observations.

Mean total compliance rates for Students One, Two, and Three during the effective commands phases were 56% across eight observations, 71% across eight observations, and 61% across eight observations, respectively. Increases in total compliance rates from baseline to the effective commands phase were 7% for Student One, 14% for Student Two, and 16% for Student Three

During the Effective Commands with Praise phase, mean total compliance rates for Students One, Two, and Three were 66% across nine observations, 84% across four observations, and 67% across four observations, respectively. Increases in total compliance

Table 11: Mean Percentage Compliance Rates Across Students and Phases

		Baseline	Effective Commands	Effective Commands with Praise
Student One (Cory)	Academic	36	68	48
	Task related	57	55	68
	Total	49	56	66
Student Two (Nate)	Academic	70	63	86
	Task related	56	72	83
	Total	56	71	84
Student (A) Three's Teacher	Academic	100	63	95
	Task related	43	59	61
	Total	44	61	67

rates from the effective commands phase to the effective commands with praise phase were 9% for Student One, 13% for Student Two, and 6% for Student Three.

The level of change in compliance rates between phases was also calculated as an indicator of intervention effectiveness. These levels are listed in Table 12.

Results for all three students are consistent with the hypothesis that increasing the percentage of effective teacher commands resulted in increased rates of student compliance to commands. The mean percentage of total compliance and the mean percentage of alpha commands given by the teacher across all phases are illustrated in Figures 2-5. Figures 2-4 illustrate individual student data while Figure 5 illustrates data for all three students and allow for comparisons across phases and students.

In addition to changes in means and levels, additional visual inspection was conducted. Data for the Effective Commands Alone Phase are summarized in Table 13 and Table 14 summarizes the data for the Effective Commands with Praise Phase. Results for both phases are discussed below.

Figure 2: Overall compliance means and levels across phases for student one (Cory) and means of effective commands across phases for teacher one

Figure 3: Overall compliance means and levels across phases for student two (Nate) and means of effective commands across phases for teacher two

Figure 4: Overall compliance means and levels across phases for student three (Andy) and means of effective commands across phases for teacher three

Figure 5: Overall compliance means and levels and means of effective commands across phases and students

Table 12: Levels and Changes in Levels of Percentage Points of Compliance Rates Across Students and Phases

		Baseline Level	Change in Level from Baseline to Effective Commands	Effective Command Level	Change in Level from Effective Commands to Effective Commands w/praise	Effective Commands w/Praise Level
Student One (Cory)	Academic	67	0	67 - 100	-50	50
	Task-related	62	-7	55 - 45	14	59
	Total	42	16	58 - 56	2	58
Student Two (Nate)	Academic	33	-33	0 - 67	23	90
	Task-related	45	36	81 - 67	11	78
	Total	43	37	81 - 73	9	82
Student Three (Andy)	Academic	100	0	100 - 100	-20	80
	Task-related	42	0	42 - 60	3	63
	Total	42	0	42 - 64	13	77

Table 13: Visual inspection summary data for compliance during Effective Commands Alone Phase

	Change in Mean	Change in Level	Latency	Slope	Change in level ratio	Change in slope
Student One (Cory)	7	16	Yes	-1.20	1.59	1.27
Student Two (Nate)	14	37	Yes	-1.04	1.21	-1.02
Student Three (Andy)	16	0	No – 2 nd day	-1.15	1.62	-1.15

Table 14: Visual inspection summary data for compliance during Effective Commands with Praise Phase

	Change in Mean	Change in Level	Latency	Slope	Change in level ratio	Change in slope
Student One (Cory)	9	2	No	-1.06	1.26	1.14
Student Two (Nate)	13	9	Yes	1.09	1.13	1.05
Student Three (Andy)	6	13	Yes	1.39	-1.07	1.20

Change in level ratios were evaluated to describe shifts in the data when the intervention phases were introduced (Kazdin, 1982). The change in level ratio for Student One between the Baseline and Effective Commands Phase was 1.59. Change in level ratios for Student Two and Student Three were 1.21 and 1.62 respectively. The change in level ratio between the Effective Commands Phase and the Effective Commands with Praise phase was 1.26 for Student One. Change in level ratios for Student Two and Student Three were 1.13 and -1.07 respectively. These changes in level ratios support the hypothesis that compliance was increased when intervention phases were introduced with the exception of the introduction of the Effective Commands with Praise phase for Student Three. It appears that slightly greater improvements in compliance were noted between the Baseline and Effective Commands phases than between the Effective Commands and Effective Commands with Praise Phases.

The latency of change was examined in order to evaluate the changes in performance between the termination of one phase and the onset of the next phase. Latency of change data indicated that the implementation of the Effective Commands Phase resulted in immediate changes in student performance for Students One and Two. Student Three's performance did not change on the day implemented but improved dramatically on the second day of the phase, although the number of praises differed by only one praise. The

in student performance for Students Two and Three and did not result in improvement beyond ordinary variability in the data for Student One. The lack of latency of change for Student One may have been influenced by the integrity of the implementation of the Effective Commands with Praise intervention. Six praises were given on the first day of this phase. Following feedback to Student One's teacher, fourteen praises were given on the second day of the Effective Commands with Praise phase resulting in a dramatic increase in compliant behavior from Student One.

Changes in slope of the celeration line using the split-middle technique were also observed. The change in slope between the Baseline and Effective Commands phase was 1.27 for Student One. Changes in slope for Student Two and Student Three were -1.02 and -1.15 , respectively. The change in slope between the Effective Commands Phase and the Effective Commands with Verbal Praise phase was 1.14 for Student One. Changes in slope for Student Two and Three were 1.05 and 1.20, respectively. These results indicate an improvement in the rate of compliance during the Effective Commands Alone phase for Student One only. The greatest rates of improvement in compliance were during the Effective Commands with Praise phase for all three students.

In conclusion, when changes in mean levels (See Figures 2-5), change in level ratios, latency of change, and changes in trend were analyzed (See Figures 6-8), data suggested that improvement occurred in overall rates of compliance. Improvements were noted for both the Effective Commands Alone and Effective Commands with Praise phases.

Compliance to Task-Related Commands

Table 11 summarizes compliance rates to task-related commands across observation sessions for all three subjects. Mean baseline compliance rates to task-related commands for Student One (Cory) were 57% across four observations, for Student Two (Nate) 56% across eight observations, and 43% for Student Three (Andy) across five observations.

Mean compliance rates to task-related commands for Students One, Two, and Three during the effective commands phases were 55% across eight observations, 72% across eight observations, and 59% across eight observations, respectively. Increases in compliance rates to task related commands increased from baseline to the effective commands phase 16% for

Figure 6: Overall compliance levels and trends across phases for student one (Cory) and changes in level ratios and changes in slope of celeration lines

Figure 7: Overall compliance levels and trends across phases for student two (Nate) and changes in level ratios and changes in slope of celeration lines

Figure 8: Overall compliance levels and trends across phases for student three (Andy) and changes in level ratios and changes in slope of cellation lines

both Student Two and Student Three, while Student One demonstrated a decrease in compliance to task-related commands of 2%.

During the Effective Commands with Praise phase, mean compliance rates to task-related commands for Students One, Two, and Three were 68% across nine observations, 83% across four observations, and 61% across four observations, respectively. Increases in compliance rates to task-related commands from the effective commands phase to the effective commands with praise phase were 13% for Student One, 11% for Student Two, and 2% for Student Three.

The level of compliance between phases was also calculated as an indicator of the effectiveness of the intervention. These levels are listed in Table 12. Results are consistent with the hypothesis that increasing the percentage of effective teacher commands with praise results in increased rates of student compliance to task-related behavioral commands for Students Two and Three while a decrease of 2% was observed for Student One. The mean percentage of compliance to task-related commands and the mean percentage of alpha commands given by the teacher across all phases are illustrated in Figures 9-11. Further visual analyses were not conducted on the task related behavioral commands data due to the strong parallel with the total compliance data and the total compliance data being a more reliable indicator of intervention effects.

Compliance to Academic Commands

Table 11 also summarizes compliance rates to academic commands across observation sessions for all subjects. These results should be interpreted with extreme caution as there were very few academic commands given during the observations in which compliance to the command could be observed. For Student One (Cory), a mean of 3.2 academic commands were given per observation. For Student Two (Nate), a mean of 3.5 academic commands were given per observation, and Student Three (Andy) was given a mean of 1.9 academic commands per observation. During the observation sessions, Student One had five sessions in which no academic commands were given while Student Two had two sessions with no academic commands and Student Three had six sessions with no academic commands.

Figure 9: Task-related command compliance means and levels across phases for student one (Cory) and means of task-related commands for teacher one

Figure 11: Task-related command compliance means and levels across phases for student three (Andy) and means of task-related commands for teacher three

Mean baseline compliance rates to academic commands for Student One (Cory) were 36% across three observations, for Student Two (Nate) 70% across seven observations, and 100% for Student Three (Andy) across two observations.

Mean compliance rates to academic commands for Students One, Two, and Three during the effective commands phases were 68% across six observations, 63% across seven observations, and 63% across six observations, respectively. Compliance rates to academic commands increased from baseline to the effective commands phase 32% for Student One and decreased 7% for Student Two and 37% for Student Three

During the Effective Commands with Praise phase, mean compliance rates to academic commands for Students One, Two, and Three were 48% across seven observations, 86% across four observations, and 95% across four observations, respectively. Changes in compliance rates to academic commands from the effective commands phase to the effective commands with praise phase indicated a decrease of 20% for Student One and increases of 23% and 32% for Students Two and Three respectively.

Due to the low number of commands given during each observation, no reliable conclusions can be drawn regarding compliance to academic commands; therefore, no further visual inspection of these data was conducted. The mean percentage of compliance to academic commands and the mean percentage of alpha commands given by the teacher across all phases are illustrated in Figures 12-14.

Academic and Competing Behaviors

Academic Engagement and Academic Responding Combined

Table 15 summarizes the rates of academic behaviors (academic engagement and academic responding combined) across observation sessions for all three subjects. Mean baseline academic behaviors for Student One (Cory) were 59% across four observations, for Student Two (Nate) 71% across eight observations, and 59% for Student Three (Andy) across five observations.

Mean academic behaviors for Students One, Two, and Three during the effective commands phases were 69% across eight observations, 76% across eight observations, and 75% across eight observations, respectively. Increases in academic behaviors from baseline

Figure 12: Academic command compliance means and levels across phases for student one (Cory) and means of effective academic commands for teacher one

Figure 13: Academic command compliance means and levels across phases for student two (Nate) and means of effective academic commands for teacher two

Figure 14: Academic compliance commands means and levels across phases for student three (Andy) and means of effective academic commands for teacher three

to the effective commands phase were 10% for Student One, 5% for Student Two, and 16% for Student Three.

During the Effective Commands with Praise phase, mean academic behaviors for Students One, Two, and Three were 75% across nine observations, 85% across four observations, 84% across four observations, respectively. Increases in academic behaviors from the effective commands phase to the effective commands with praise phase were 6% for Student One, and 9% for both Students Two and Three.

Table 15: Mean percentage of observation period students were academically responding or academically engaged

		Baseline	Effective Commands	Effective Commands with Praise
Student One (Cory)	Responding & Engaged	59	69	75
Student Two (Nate)	Responding & Engaged	71	76	85
Student Three (Andy)	Responding & Engaged	59	75	84

The levels and changes in levels between levels of academic engagement and academic responding were also calculated as an indicator of the effectiveness of the intervention. These levels are listed in Table 16.

Results for all three students are consistent with the hypothesis that increasing the percentage of effective teacher commands results in increased rates of student academic engagement and academic responding when these two categories are combined. Figures 15-18 illustrate the mean percentage of academic behaviors across all phases. Figure 15-17 illustrate data for individual students while Figure 18 illustrates data for all three students and allow for comparisons across phases and students.

In addition to changes in means and levels, data were also visually inspected using change in level ratios, latency, slope, and changes in level ratios and slopes. Data for the

Figure 15: Means and levels of academic engagement and academic responding combined for student one (Cory)

Figure 16: Means and levels of academic engagement and academic responding combined for student two (Nate)

Figure 17: Means and levels of academic engagement and academic responding combined for student three (Andy)

Figure 18: Means and levels of academic engagement and academic responding combined across phases and students

Effective Commands Alone Phase are summarized in Table 17 and Table 18 summarizes the data for the Effective Commands with Praise Phase. Results for both phases are discussed below.

Table 16: Levels and Changes in Levels of Percentage Points of Rates of Academic Engagement and Academic Responding Combined and Competing Behaviors Across Students and Phases

		Baseline Level	Change in Level from Baseline to Effective Commands	Effective Commands Level	Change in Level from Effective Commands to Effective Commands w/praise	Effective Commands w/Praise Level
Student One (Cory)	Academic & Task-related	60	10	70 - 81	-6	75
	Competing	40	-10	30 - 18	8	26
Student Two (Nate)	Academic & Task-related	61	22	83 - 76	15	91
	Competing	39	-22	17 - 34	-25	9
Student Three (Andy)	Academic & Task-related	47	-2	45 - 62	8	68
	Competing	52	3	55 - 39	-7	32

Table 17: Visual inspection summary data for academic engagement and academic responding combined during Effective Commands Alone Phase

	Change in Mean	Change in Level	Latency	Slope	Change in level ratio	Change in slope
Student One (Cory)	10	10	Yes	1.14	1.17	1.01
Student Two (Nate)	5	22	Yes	-1.09	1.21	1.02
Student Three (Andy)	16	-2	No – 2 nd day	-1.10	1.39	1.10

Table 18: Visual inspection summary data for academic engagement and academic responding combined during Effective Commands with Praise Phase

	Change in Mean	Change in Level	Latency	Slope	Change in level ratio	Change in slope
Student One (Cory)	6	-6	Questionable	-1.09	1.03	-1.05
Student Two (Nate)	9	15	Yes	-1.04	1.67	1.05
Student Three (Andy)	9	8	No	1.10	-1.02	1.10

Change in level ratios were also evaluated to describe shifts in the data when the intervention phases were introduced (Kazdin, 1982). The change in level ratio for Student One between the Baseline and Effective Commands Phase was 1.17. Change in level ratios for Student Two and Student Three were 1.21 and 1.39 respectively. The change in level ratio between the Effective Commands Phase and the Effective Commands with Verbal Praise phase was 1.03 for Student One. Change in level ratios for Student Two and Student Three were 1.67 and -1.02 respectively. These changes in level ratios support the hypothesis that compliance was increased when intervention phases were introduced with the exception of the introduction of the Effective Commands with Praise phase for Student Three

The latency of change was evaluated in order to evaluate the changes in performance between the termination of one phase and the onset of the next phase. Latency of change data indicated that the implementation of the Effective Commands Phase resulted in immediate changes in student academic performance for Students One and Two. Student Three's performance did not change on the day implemented but improved dramatically on the second day of the phase. The implementation of the Effective Commands with Praise phase resulted in immediate changes in student performance for Students Two and did not result in improvements for Students One and Three. The absence of immediate change for Student One may have been influenced by the integrity of the implementation of the

Effective Commands with Praise intervention. Six praises were given on the first day of this phase. Following feedback to Student One's teacher, fourteen praises were given on the second day of the Effective Commands with Praise phase resulting in an increase in compliant behavior and academic behaviors from Student One.

Changes in slope of the celleration line using the split-middle technique were also observed. The change in slope between the Baseline and Effective Commands phase was 1.01 for Student One. Changes in slope for Student Two and Student Three were 1.02 and 1.10, respectively. The change in slope between the Effective Commands Phase and the Effective Commands with Praise phase was 1.05 for Student One. Changes in slope for Student Two and Three were 1.05 and 1.10, respectively. These results indicate an improvement in the rate of academic behavior for the Effective Commands Alone and Effective Commands with Praise phases for all three students.

In conclusion, when changes in mean levels (See Figures 15-18), change in level ratios, latency of change, and changes in trend were analyzed (See Figures 19-21), results suggested that improvement occurred in rates of academic behavior. Improvements were noted for both the Effective Commands Alone and Effective Commands with Praise phases.

Competing Behaviors

Behaviors that compete with academic engagement and academic responding were also evaluated. Mean baseline competing behaviors for Student One (Cory) were 41% across four observations, for Student Two (Nate) 29% across eight observations, and 41% for Student Three (Andy) across five observations.

Mean competing behaviors for Students One, Two, and Three during the effective commands phases were 31% across eight observations, 24% across eight observations, and 25% across eight observations, respectively. Decreases in competing behaviors from baseline to the effective commands phase were 10% for Student One, 5% for Student Two, and 16% for Student Three

During the Effective Commands with Praise phase, mean competing behaviors for Students One, Two, and Three during the effective commands phases were 25% across nine observations, 15% across four observations, 16% across four observations, respectively. Decreases in competing behaviors from the effective commands phase to the effective

Figure 19: Academic data levels and trends across phases for student one (Cory) and changes in level ratios and changes in slope of cellation lines with academic engagement and academic responding combined

Figure 20: Academic data levels and trends across phases for student two (Nate) and changes in level ratios and changes in slope of celleration lines with academic engagement and academic responding combined

Figure 21: Academic data levels and trends across phases for student three (Andy) and changes in level ratios and changes in slope of celleration lines with academic engagement and academic responding combined

commands with praise phase were 6% for Student One, 9% for Student Two, and 9% for Student Three.

Academic Engagement Alone

Table 19 summarizes the rates of academic engagement behaviors separate from academic responding behaviors and competing behaviors across observation sessions for all three subjects. Mean baseline academic engagement for Student One (Cory) was 38% across four observations, 49% for Student Two (Nate) across eight observations, and 34% for Student Three (Andy) across five observations.

Mean academic engagement for Students One, Two, and Three during the effective commands phases were 43% across eight observations, 51% across eight observations, and 64% across eight observations, respectively. Increases in academic engagement from baseline to the effective commands phase were 13% for Student One, 2% for Student Two, and 30% for Student Three.

During the Effective Commands with Praise phase, mean academic behaviors for Students One, Two, and Three were 54% across nine observations, 51% across four observations, 62% across four observations, respectively. Student One exhibited an increase in academic engagement from the effective commands phase to the effective commands with praise phase of 11%. Student Two's academic engagement behavior remained stable at 51% while Student Three exhibited a decrease of 2% in academic engagement behavior from the effective commands phase to the effective commands with praise phase.

Academic Responding Alone

Table 19 also summarizes the rates of academic responding behaviors independently from academic engagement behaviors and competing behaviors across observation sessions for all three subjects. Mean baseline academic responding for Student One (Cory) was 21% across four observations, 22% for Student Two (Nate) across eight observations, and 25% for Student Three (Andy) across five observations.

Mean academic responding for Students One, Two, and Three during the effective commands phases were 26% across eight observations, 25% across eight observations, and 11% across eight observations, respectively. Increases in academic responding from baseline

Table 19: Mean percentage of observation period students were academically responding, academically engaged, or exhibiting competing behaviors

		Baseline	Effective Commands	Effective Commands with Praise
Student One (Cody)	Responding	21	26	21
	Engaged	38	43	54
	Competing	41	31	25
Student Two (Nate)	Responding	22	25	34
	Engaged	49	51	51
	Competing	29	24	15
Student Three (Andy)	Responding	25	11	22
	Engaged	34	64	62
	Competing	41	25	16

to the effective commands phase were 5% for Student One and 3% for Student Two while Student Three demonstrated a decrease in academic responding behaviors of 14%.

During the Effective Commands with Praise phase, mean academic behaviors for Students One, Two, and Three were 21% across nine observations, 34% across four observations, 22% across four observations, respectively. Student Two exhibited an increase in academic responding from the effective commands phase to the effective commands with praise phase of 9%. Student One's academic responding behavior decreased 5% and returned to the same level as baseline. Student three demonstrated an 11% increase over the previous phase; however, the level of academic responding behaviors remained below baseline numbers by 3%.

The levels of academic engagement, academic responding, and competing behaviors between phases were also calculated as an indicator of the effectiveness of the intervention. These levels are listed in Table 20 below and are illustrated in Figures 15-18 and Figures 22-24.

Results did not support the hypotheses regarding the effects of effective commands alone and in combination with verbal praise on increased rates of student academic engagement alone or academic responding alone due to inconsistent results across subjects. These results; however, may have been significantly influenced by the type of task provided in the classroom and the opportunities to be academically engaged or academically

Figure 22: Academic means and levels for student one (Cory) across phases by academic engagement, academic responding, and competing behaviors

Figure 23: Academic means and levels for student two (Nate) across phases by academic engagement, academic responding, and competing behaviors

Figure 24: Academic means and levels for student three (Andy) across phases by academic engagement, academic responding, and competing behaviors

responding dependent on the teaching procedures. Figures 22-24 illustrate the mean percentage of academic engagement alone, academic responding alone, and competing behaviors across all phases.

Table 20: Levels and Changes in Levels of Percentage Points of Rates of Academic Engagement, Academic Responding, and Competing Behaviors Across Students and Phases

		Baseline Level	Change in Level from Baseline to Effective Commands	Effective Commands Level	Change in Level from Effective Commands to Effective Commands w/praise	Effective Commands w/Praise Level
Student One (Cory)	Responding	28	5	33 - 30	-6	24
	Engaged	32	5	37 - 51	-1	50
	Competing	40	-10	30 - 18	8	26
Student Two (Nate)	Responding	30	-3	27 - 19	18	37
	Engaged	31	25	56 - 57	-3	54
	Competing	39	-22	17 - 34	-25	9
Student Three (Andy)	Responding	36	-30	6 - 6	18	24
	Engaged	12	27	39 - 56	-12	44
	Competing	52	3	55 - 39	-7	32

DISCUSSION

Results of this study indicate that improvements in rates of compliance and academic behaviors were observed when the effective commands alone phase was implemented. Results of the effective commands with praise phase indicated further improvements in rates of compliance and academic behaviors. It appears that increases in compliance may be attributed to the intervention while effects of the intervention on academic behaviors is questionable due to latency concerns; however, overall levels of academic behaviors did increase.

Results of the Effective Commands Alone phase were examined regarding total compliance and total academic behaviors. Results were analyzed with visual inspection techniques including: change in mean level, change in level, change in level ratio, latency, slope, and change in slope. When all these techniques were combined to examine the intervention of increasing effective commands on compliance, results for Student One were very clear and indicate positive changes in all areas. Student Two's results were fairly clear and indicate positive changes in all areas except change in slope. A change in mean level occurred, but the change in slope was small. Results for Student Three indicated that improving teacher's commands did not appear to improve the student's compliance significantly. Improvements were noted on the indicators of change of mean and change in level ratio. No change was noted in change of level or latency, and a negative change in slope was indicated. In conclusion, it appears that implementing the effective command intervention resulted in increased rates of compliance for Students One and Two. The latency aspect of the visual inspection technique would suggest that these changes may be attributed to the implementation of the effective commands intervention.

Visual inspection techniques were combined to examine the intervention of increasing effective commands on academic behaviors. Results for Students One and Two were clear and indicate positive changes in all areas. Results for Student Three were not as clear and indicated positive changes for changes in mean, change in level ratio, slope, and change in slope while showing a slight decrease in the change in level and no changes in latency for the first day, but improvements on day two of the intervention phase. In conclusion, it appears that implementing the effective command intervention resulted in increased rates of:

academic behavior on visual inspection indicators for Students One and Two and possible increases for Student Three. The latency of change aspect of the inspection technique would suggest that these changes may be attributed to the implementation of the effective commands intervention.

These improvements in total compliance and academic behaviors are supportive of the hypothesis that increasing effective teacher commands would result in increased rates of student compliance and academic behaviors. Total compliance was increased 7% for Student One, 14% for Student Two, and 16% for Student Three. Increases in academic behaviors were noted at levels of 10%, 5%, and 16% for Students One, Two, and Three, respectively during the effective commands alone phase of the study. These results are believed to be important for all three of the students.

Attempts were made to determine whether compliance differed by the type of command, academic or task related behavioral commands. The vast majority of commands given were task related behavioral commands. Very few academic commands were given that had an observable result and the number of academic commands differed greatly day by day due to differences in the way materials were presented (e.g., choral response, call on individual students). Due to the low number of academic commands, meaningful comparisons between academic commands and task related behavioral commands could not be made and the total commands analyses are considered to be most valid.

This research question also addressed the result of training teachers to use effective commands not only on students' compliance, but also on students' academic engagement and academic responding. Due to differences in teacher presentation styles of material influencing the amount of opportunities to respond academically, the most valid analyses are the combination of academic engagement and academic responding reported previously.

Results of the Effective Commands with Praise phase were also examined regarding total compliance and total academic behaviors. Results were analyzed with visual inspection techniques including: change in mean level, change in level, change in level ratio, latency slope, and change in slope.

When all these techniques were combined to examine the intervention of increasing effective commands in combination with praise for appropriate classroom behavior on

compliance, results for Student One were fairly clear and indicate positive changes in all areas except latency of change; however, change appeared to parallel the ratio of praises given by the teacher and compliance increased as the ratio of praises increased. Student Two's results were clear and indicate positive changes in all areas. Results for Student Three also indicated positive changes in all areas except for change of level ratio. In conclusion, it appears that implementing the effective command intervention resulted in increased rates of academic behaviors on visual inspection indicators for all three students. The latency of change aspect of the inspection technique would suggest that these changes may be attributed to the implementation of the effective commands with praise intervention.

Visual inspection techniques were combined to examine the intervention of increasing effective commands in combination with praise for appropriate classroom behavior on academic behaviors. Results for Students One varied and indicated increases in the mean and change in level ratio and decreases in the change in level, slope, and change in slope as well as no effect for latency. Student Two's were clear and indicate positive changes in all areas. Results for Student Three indicated positive changes in all areas, but no effect for latency. In conclusion, it appears that implementing the effective command with praise intervention resulted in increased rates of academic behavior for Students Two and Three and possible increases for Student One. The latency of change aspect of the inspection technique was not observed for two of the three students which causes one to question whether these changes may be attributed to the implementation of the effective commands with praise intervention.

Practical significance

One might ask if these results only indicate significant change on paper and make for interesting graphs or do they really make a difference for students in the classroom. The best indicator available is whether rates of compliance improved to a level where they became comparable to peers. During preliminary observations, peers were observed to comply at a rate of 75.5%, 91%, and 86% in Student One's, Two's, and Three's classrooms respectively. Following the implementation of the intervention phases, Student One's compliance increased from 49% to 66%. For Student Two, compliance was increased from 56% to 84% compared to peers at 91%. For Student Three, compliance was increased from 44% to 67% compared

to peers at 86%. In all three cases, the rate of compliance did not increase to the same rate as peers, but the discrepancy in compliance was significantly reduced. Rates of peer academic engagement and academic responding are not available; however when the students' rates of academic behavior are compared to baseline measures, improvements are evident. Student One increase academic behaviors 16%, Student Two increased 14%, and Student Three increased academic behaviors 25%. Even without peer comparison information, it appears these increases would have made a practical difference for these students.

Teachers were also asked their perceptions of the interventions on the students and their classrooms. All three teachers indicated that they were comfortable with the intervention of giving effective commands and two of the three teachers indicated that they felt comfortable with increasing the number of praises in conjunction with effective commands. The one teacher that did not feel comfortable with increasing praises indicated that students at her grade level should not need frequent praise and only implemented the intervention as a requirement of the study. All three teachers did agree that they perceived that the interventions had benefited the target students, as well as the other students in the classroom. One parent asked the author if the intervention could be continued the next year due to the positive changes she had observed in her son in the home setting since the interventions were implemented. The assistant to the author that assisted in videotaping only and was not trained in the area of education would consistently report that things appeared to be improving in Student One's classroom and the teacher appeared more in control of the classroom. Although these reports are antedotal, all indicate observable improvements for students.

Based on results of this study yielding significant improvements in compliance and academic behaviors, the use of effective commands alone or in combination with verbal praise for appropriate classroom behavior could be recommend to teachers. Verbal praise appears to have an additional contribution over effective commands alone, especially regarding compliance and would be the first recommendation to be made; however, increasing effective commands alone would in no way be detrimental to students.

Future Research

When compared to Ford's (1998) results in which effective instructional delivery was defined as delivering the command with eye contact, in a relatively close proximity, stating the instruction as a directive in a quiet-toned voice, allowing for a five-second wait period for a response or nonresponse, and following compliance with contingent verbal and/or physical reinforcement, results of this study were not as dramatic, but they were not expected to be since all components were not included. Ford demonstrated improvement in compliance over baseline measures ranging from 20.68% to 43.94% for the four clinic-referred five and six year-old subjects in her study. Subjects in the present study were not clinic-referred and were older so results cannot be compared directly; however, increases in compliance without the confounding factors of eye contact, close proximity, and verbal and/or physical contingent reinforcement were observed to be in the range of 7-17 percent. Although there are significant confounding factors preventing direct comparisons of the studies, the question of whether increases of approximately 13% to 27% can be attributed to eye contact and the behavioral momentum associated in requesting compliance to a simple command such as "Look at me" before making a more difficult request or the factor of close proximity remains to be investigated.

Hamlet, Axelrod, and Kuerscher (1984) demonstrated that compliance rates increased in mean levels up to 40% over baseline measures when eye contact during the entire time instructions were given was required and then followed by the teacher saying, "Thank you". These results suggest that eye contact may be the the most powerful component of instructional delivery when student compliance is the goal. Further research may continue to evaluate the effects of various components alone and in combination. For example, one might ask "What are the results of adding the component of effective commands or close proximity after the effects of the initial component of eye contact have been demonstrated?" to determine if these factors add anything if eye contact is already in place. Additional studies might evaluate the components of effective commands with close proximity without contingent reinforcement or a combination of effective commands with close proximity and eye contact without contingent reinforcement. There are many possible combinations and discovering which components or combinations of components result in the greatest

improvements in compliance and academic behaviors will provide information on how to best train teachers to manage their classrooms.

Investigation of grade levels at which various components are most effective also needs to be considered. One might wonder if changing these antecedents results in the most dramatic change for certain age groups and for other age groups that the strategy is not effective in addressing compliance concerns. The present study's effects were shown to be the weakest for Student Three, the fourth grade student. Further investigation on whether this occurred due to age would provide information on which grade level teachers should implement these types of strategies as part of their classroom management.

The effects on students that are not considered to be initial concerns also need to be addressed. For example, Student One's same-sex classroom peers had a rate of 75.5% compliance during preliminary observations. Teacher report indicated that the compliance of students other than the target student were also increased; however, these effects were not formally evaluated.

Research evaluating various components will allow further understanding of where efforts should be focused to increase compliance and academic behaviors in order to get the greatest response for the least amount of change. Most teachers are working hard to maintain classroom management and are typically willing to make some changes to their behavior as long as they are perceived to be fairly non-intrusive and of possible benefit to the entire class of students. This study has attempted to further the research to determine which components of effective instructional delivery should be stressed when attempting to assist teachers increase compliance and academic behaviors of their students. Giving more effective commands and increasing verbal praise have demonstrated that they have the potential to increase compliance rates and academic behaviors, especially at the second grade level. Additional components may yield more dramatic results and determining the contribution of individual components will allow those working with teachers to know where to best focus their efforts in teacher training in order to promote the most positive outcomes for kids.

APPENDIX A: EFFECTIVE COMMANDS TRAINING

Overview of Effective Command Training

The effective command training consisted of three components: 1) Rules, rationale, and examples, 2) Making commands more effective exercise, and 3) Videotaped examples. During the rules, rationale, and examples portion, the “Giving Effective Commands” handout was followed. Discussion regarding the rationale and examples differed based on each teacher’s questions. Following this material, the teacher was asked to complete the “Making Commands More Effective” worksheet. The teacher was asked how they thought the commands listed could be improved. Once the teacher had given a response, the qualities of the commands that were modified (e.g., making the command positive instead of negative) were emphasized. After this exercise was completed, videotaped segments of the teacher giving effective commands and ineffective commands were shown illustrating the child’s response to each type of command.

Teacher	Rules, Rationale, and Examples	Making Commands More Effective	Videotape Examples
P2	*	*	*
N2	*	*	*
M4	*	*	*

*Amount of time spent on each exercise

Giving Effective Commands

Rule	Rationale	Examples
Make commands <u>direct</u> , not indirect	Eliminates any ambiguity about whether the teacher expects the student to obey Makes is clear that the student, not the teacher is to do the task	Direct: Sit down in your seat Indirect: Would you like to sit down in your seat? Or Let's all take a seat.
Make commands <u>single</u> and <u>small</u> , not compound	Easier for the student to obey smaller commands that are not overwhelming Some children can't remember multiple part commands The child gets more opportunities for praise	Get out your math book. (wait) Put your pencil at the top of your desk. (instead of ...Get out your math book and put your pencils at the top of your desk)
State commands <u>positively</u> . (Tell the child what to do, instead of what not to do). Avoid using the words, "Don't", "Stop", "Quit", and "Knock it off"	Oppositional children rebel against "stop" and "don't": commands Tells the child what he can do instead When reinforcement is provided contingent with compliance to commands, misbehavior is likely to increase.	Child: (talking to classmate) Teacher: Sit quietly (instead of ...Stop talking). Child: (playing with pencil) Teacher: Put your pencil at the top of your desk (instead of ...Don't roll your pencil).
Make commands <u>specific</u> , not vague	Lets child know exactly what is expected Eliminates confusion Makes it easier to decide whether the student has obeyed	Get out a pencil and a piece of paper for math (instead of ... Get out your math materials; all you need is a pencil and paper.)
Use a <u>neutral</u> tone of voice instead of pleading or yelling	Children need to learn to respond to commands given in a normal, conversational voice. Makes interactions more pleasant for both student and teacher	Use your inside voice. (instead of ...Quiet down now!! or It would really make your teacher happy if you would quiet down!)
<u>Wait</u> 5 seconds for the child to comply	Gives the child time to react to the command that has been given before another command is given.	Put your header on your paper...(wait) Number from 1 to 10...(wait) Raise you hand to indicate you are ready. Put you header on your paper, number from 1 to 10, and raise your hand to indicate that you are ready
Be <u>polite</u> and respectful, while still being direct	Makes interactions more pleasant Models good social skills Less like to cause an oppositional child to disobey	Please get out your reading book Wait quietly, please.

Making Commands More Effective

How could the following commands be revised to make them more effective?

1. Where do you need to be and how many
many times have I told you? 1. _____

2. Put your pencils down and look up here. 2. _____
3. Think about what you need to be doing
right now. 3. _____

4. Excuse me, this is not talk time. 4. _____
5. I don't want you out of your seat. 5. _____
6. You should have your page torn out,
put your book away, close your mouth,
and show me you are ready. 6. _____

7. Don't start and don't talk. 7. _____
8. I'm going to ring the bell and we'll see
who can listen 8. _____

9. I'm looking for quiet people. 9. _____
10. You will get a crayon out – don't do it yet 10. _____
I'm not done with the instructions _____

APPENDIX B: EFFECTIVE COMMANDS WITH PRAISE TRAINING

Teacher Training – Effective Commands with Praise Phase

Modified explanation of the function of behavior

- A) #1 Rule of childhood – If things are boring – make them interesting
- B) Two reasons why kids typically do things
 - Get something
 - Get out of something
- C) Emphasize that their students really try to get their attention
- D) Options to get attention
 - Misbehavior
 - Appropriate behavior

What do you typically do in the following situations?

Situation	Response
Student is making noise.	_____
Student is quietly listening	_____
Student is drawing during work time	_____
Student is bothering peer	_____
Student is working quietly	_____
Student is blurting comments	_____
Student asks a question w/o Raising hand	_____

Which of the following behaviors typically get your attention (positive or negative) most reliably?

_____ Making Noise	_____ Being Quiet
_____ Listening	_____ Off-task behavior
_____ Disrupting others	_____ Working Independently
_____ Raising hand to be call upon	_____ Blurting Out

Praise – Vehicle to give attention to students for appropriate behavior

A) Behavior shouldn't have to be great to be praised

- Behavior that is just “OK” should be praised
- Doing as requested should be praised

B) Reasons to praise

- Causes the positive behavior to increase
- More positive behavior leads to more on-task behavior
- More positive behavior leads to more opportunities to learn new skills
- Decrease negative behavior
- Lets the child know what you like
- Increases the child's self-esteem
- Improves your relationship with your students
- Make both teacher and student feel good!

C) Two types of praise

1) Unlabeled

- Positive feedback
- Doesn't tell the student the behavior he/she is being praised for.
- Examples (Wow, Good Job, Terrific, Thank you)

2) Labeled

- Positive feedback
- Tells the student what behavior he/she is being praised for.
- Examples (I like the way you are sitting quietly, You have wonderful ideas for this story, I proud of you working independently, Thank you for following my instructions)

Videotape Examples/Practice

A) Watch self praising and not praising students

B) Practice identifying behaviors the students are doing that are “OK”

What could you do in the following situations?

Situation	Response
Student is making noise.	_____
Student is quietly listening	_____
Student is drawing during work time	_____
Student is bothering peer	_____
Student is working quietly	_____
Student is blurting comments	_____
Student asks a question w/o Raising hand	_____

APPENDIX C: CODING SYSTEM FOR COMPLIANCE

CODING FORM FOR RECORDING TEACHER-STUDENT INTERACTIONS

Min	1 Tch Sdent Tch	1 Tch Sdent Tch	1 Tch Sdent Tch	1 Tch Sdent Tch
1	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
2	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
3	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
4	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
5	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
6	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
7	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

56	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
57	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
58	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
59	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg
60	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg	Acad. Task-Rel I-Alpha I-Beta G-Alpha G-Beta R R R Cpy P R R R Ncpy No R R R Neg

Abbreviations: Acad. = Academic task request; Task-Rel = Task Related behavior request; R = teacher repeat command; I-Alpha = teacher original command in alpha format and given to an individual student; I-Beta = teacher original command in beta format and given to an individual student; G-Alpha = teacher original command in alpha format and given to a group of students; G-Beta = teacher original command in beta format and given to a group of students; Comply = student compliance to the initial command within 5 seconds; Ncpy = student noncompliance (failure to comply to the initial command in 5 seconds); Neg = student negative behavior; P = teacher praise; No = No teacher response

End Time _____

Date _____

5

[illegible]

	6				7				8				9				10			
	1	3	4	6	1	3	4	6	1	3	4	6	1	3	4	6	1	3	4	6
	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0
R																				
Writing																				
Task participate																				
Read aloud																				
Read silently																				
Talk academic																				
Not listed																				
E																				
Raise hand																				
Play appropriate																				
Manipulate mat																				
Moves																				
Talk manage																				
Attention																				
Not listed																				
OFF																				
Aggression																				
Disrupt																				
Talk inapprop																				
Look around																				
Noncomply																				
Self-stim																				
Self abuse																				
Not listed																				

DEFINITIONS:

ACADEMIC RESPONSES – Academic responses are student responses made directly to an academic task. Academic responses are responses to arithmetic problems, answers to teacher's academic questions, reading words from a book, writing in the answer to a workbook question, etc.

1. (WRITING) –marking academic task materials, (e.g., paper, ditto sheet, blackboard, workbook pages, etc., with pencil, pen, or crayon). Drawing pictures is not coded (WRITING), rather as Task Participation.
2. (TSKPARTIC) –manipulating elements of an academic task used individually or shared with peers. Task participation is an active academic response. The task participation code covers the appropriate motor or manipulative responses made using games or materials designed to teacher both academic, play, and leisure skills. Task participation does not include writing responses.
Examples include manipulating one's fingers to count silently or pointing to picture cards. Included are all motor and manipulative responses produced in academic games such as Boggle, in coloring, pasting, and using scissors, in using an abacus, computer, or calculator, in teacher imitation
3. (READALOUD) –looking at materials like a book or blackboard, and reading aloud what is written.

4. (RDSILENT) –looking at materials including books, workbooks, worksheets, or written materials, or blackboard for at least 2 seconds, and has eye movements indicating the child is scanning words, numbers, or letters. Reading is coded when the materials being read are on the student’s desk or table (3 foot radius), held in the student’s hands, or written on the blackboard, computer, etc. Tasks like readers and workbooks must be held open to a page.
5. (TALKACA) –verbalizing, singing, or signing about their academic subject/materials, teacher instructions, or other appropriate, subject matter topics. The content of the conversation must be talk about the academics or, asking and answering academic questions.
Code talk academic when the student is talking to the teacher, or him/herself, or talking to a peer about academic matters. For example, a student could be saying, “Which is larger on this page, seven or four?” Also code talk academic when the student is relating a poem, story, or opinion from memory, or during show and tell, or while making a speech
Note: Talk academic is recorded when the target is talking but None, if he or she is listening
6. (NOACARSP) –not engaging in any responses covered by academic responses codes 1-5 immediately above

ACADEMIC ENGAGEMENT RESPONSES –not direct responses to the instructional curriculum, but are preparatory to, or otherwise enable, academic responses. Behaviors like: looking as teacher while giving instructions, seeking materials (e.g. pencil), or moving from a desk to begin a reading group, are all examples of task management behaviors.

1. (RAISEHAND) –observed with a hand raised.
2. (PLAYAPPRO) –engaged in play or social behaviors that are not academic, but are approved by the teacher. Play appropriate may involve toys and/or talk. Play appropriate is recorded if the play/interaction is social and organized by the students.
3. (MANIPMTL) –looking for, using, or handling curriculum materials. Examples included looking for materials in the desk, using answer sheets, reference materials, or handling curriculum materials such as flipping through the pages of a dictionary or tossing a pencil back and forth from one hand to the other.
4. (MOVES) –walking or running to a new area or station in the classroom. Moves often occurs when the activity is transition, when the child is seeking help, or when seeking materials away from desk.
5. (TALKMGMT) –conversation with a peer and the substance of the conversation is not about the academic activity or task (otherwise coded as talk academic), but it is about issues related to task management.
6. (ATTENTION) –looking directly at the teacher or a peer who may be asking or answering a question, or who is otherwise teaching the target student. Attention is a passive response, and it requires that the student is looking at the teacher or peer who is teaching. Attention is also coded when a child is looking at a teacher lecturing, or when watching a movie or video, or a materials being presented as illustration by the teacher. If the student is looking at someone who is not teaching or involved in the same academic task, code not task management (NOMGMT).

7. (NOMGMT) –not engaging in any response covered in student task management response codes, 1-6 above.

COMPETING RESPONSES –unacceptable in the context of academic instruction, academic responding, conventional classroom conduct, or that breaks classroom rules. Examples include behaviors like hitting, yelling, making loud noises, leaving the room without permission, breaking class rules, talking about non-academic matters among others. If more than one competing behavior is occurring at the Beep, record the one response that seems to most interfere with the current academic task.

1. (AGRESSION) –hitting or pretending to hit, fighting, kicking, slapping, poking, pulling hair, etc. If any of these behaviors are directed at the target him/herself, record it as self-abuse, not aggression.
2. (DISRUPT) –producing noise levels or behaviors loud enough to attract the attention of the other students or the teacher. A noise or loud verbalization that attracts attention, whether accidental or intentional is recorded as a disruption. Examples include yelling, crying, banging, breaking, or destruction of materials. Also include loud talk.
3. (TALKINAPP) –talking to a peer or teacher about either nonacademic or non-task management matters. Examples include: laughter or, silly talk or, talk about what will go on at recess, after school, or rude remarks toward teacher.
4. (LOOKARND) – looking away from the academic task. Examples include: a child looking out of a window, up at the ceiling, or at the floor instead of at his read. Included also looking at someone’s paper during and exercise examine or gazing up at the lights.
5. (NONCOMPLY) –not complying with the teacher directive or standing classroom rule. Engaging in behaviors that are not approved by the teacher. For example, working on a spelling task during math class without teacher approval. Included also: manipulating or playing with taboo items such as squirt guns, small toys brought to school, paper airplanes, or shooting rubber bands, throwing erasers or paper clips, passing notes.
6. (SELF-STIM) –active and repetitive sensory-motor behaviors.
7. (SELFABUSE) –biting, slapping, hitting, or pinching him or herself. Include also head banging with or against any object (e.g., a toy, wall, table, fist, etc.).
8. (NOINAPPRO) –not engaging in any of the aforementioned competing behaviors (items 1-7), or if the target student is appropriately engaging in time-out.

Responding: Student is actively involved in behaviors appropriate for the activity in which the child is involved.

Attending: Student is looking at the teacher who is lecturing, giving directions, or discussing; observing another student; focusing on instructional or play materials.

Not Engaged: Student is not actively involved in behaviors appropriate for the activity and/or not attending.

DEFINITIONS:

Responding: Student is actively involved in behaviors appropriate for the activity in which the child is involved. Examples include academic work behaviors (reciting the alphabet, copying or tracing letters or numbers, matching, sorting, counting objects, or rote counting); pretending behaviors (talking on a toy phone, pretending to cook dinner on a toy stove, making a car noise while making a car go); manipulating behaviors (putting together puzzles, building with blocks); gross motor behaviors (running, climbing, hopping, skipping, throwing, kicking, catching); singing/reciting behaviors (singing, fingerplays, moving to music); selfcare behaviors (eating, toileting, dressing, grooming); transition behaviors (moving to a different center, walking in line, selecting new materials, cleaning up).

Attending: Student is looking at the teacher who is lecturing, giving directions, or discussing; observing another student; focusing on instructional or play materials. The student is not engaged in any interfering behaviors.

Not Engaged: Student is not actively involved in behaviors appropriate for the activity and/or not attending. Examples include off-task behaviors (sitting and watching the class sing when the teacher has asked the entire group to sing, running in the classroom when the teacher has asked the students to walk to the next center, talking out loud when the class has been asked to sit and listen); self-stimulation behaviors (flapping, whirling, pacing, banging/hitting self, toe walking); sensory-motor behaviors (rubbing surfaces, licking/smelling toys, visual scrutiny, lining up objects, whirling/spinning objects, staring, covering eyes/ears); acting out behaviors (hitting, fighting, kicking, slapping, poking, pulling hair, taking a toy from another child, making hostile comments, crying, tantruming, shouting or yelling).

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