

THE EFFECT OF
CLASSROOM MANAGEMENT STRATEGIES
ON MATH FLUENCY GROWTH RATE

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Abstract: A classroom management intervention consisting of providing effective commands and behavior-specific praise statements was implemented in four first-grade general education classrooms. The effects of this intervention on classwide averages of math fluency growth rate were examined using visual analysis of a multiple-baseline graph as well as calculations of phase slopes. The results of the study showed that the average math fluency scores for all three classrooms increased as a result of the intervention. One major implication of these results is the gains that were observed with very little effort. Directions for future research include conducting a similar study with a more representative population, training teachers to run the intervention, and using a different dependent variable.

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CHAPTER I

INTRODUCTION

Student Learning

Education systems exist to assist children in developing the skills necessary to function competently and productively as adults in the communities in which they live (Abbott, O'Donnell, Hawkins, Hill, Kosterman, & Catalano, 1998). Specifically, the main skill area that is the focus of education systems is the acquisition of academic skills in order to increase academic performance. There are many risks associated with low academic performance. Some of the short-term risks include increased behavior problems (Algozzine, Wang, & Violette, 2011), retention (Bali, Anagnostopoulos, & Roberts, 2005), and placement in more restrictive educational environments (i.e., special education; Gottlieb, Gottlieb, & Trongone, 1991). Some of the long-term risks include an increased likelihood of substance abuse, delinquency, teenage pregnancy, violence, and school dropout (Abbott et al., 1998). It is evident from these risks that ensuring students have optimal opportunities to be successful in school should be of utmost concern for teachers, administrators, and other school personnel.

Cohen, Lotan, and Leechor (1989) note that much of the variance in student performance can be accounted for by classroom differences. More specifically, research has demonstrated that student learning has been consistently related to classroom

management and learning opportunities (Brophy & Good, 1986, as cited in Abbott et al., 1998).

Classroom Management

Classroom management has been defined in many different ways; Tal (2010) defines classroom management as “the ability of the teacher to lead the class...toward achieving the socio-emotional welfare and learning of the students” (pg.144). Malone and Tietjens (2000) define classroom management as “how teachers maintain order in a classroom” (pg. 160). Little and Akin-Little (2003) define classroom management as ‘a set of procedures that, if followed, should help the teacher maintain order in the classroom and involve both antecedent and consequent procedures that can be combined to provide a comprehensive approach to classroom management’” (as cited in Little & Akin-Little, 2008, pg. 228).

In a study conducted by Stichter, Lewis, Whittaker, Richter, Johnson, and Trussell (2006), teachers who used ineffective classroom management strategies experienced consistent student disturbances and an increased number of verbal interruptions. While it may seem that these disruptions add up to nothing more than mere annoyances, this is certainly not the case. A study conducted by Vitaro, Brendgen, Larose and Tremblay (2005) found that hyperactivity and inattention in Kindergarten was more predictive of high school dropout than aggression or oppositional behavior. Furthermore, Clunies-Ross, Little, and Kienhuis (2008) noted that children who exhibit behavior problems are more at risk for developing serious disorders in adolescence, such as conduct disorder. In a longitudinal study conducted by Fergusson, Horwood, and Ridder (2005), conduct problems between the ages of seven and nine years were associated with the following

domains after confounding variables such as economic disadvantage, family conflict, child abuse, ethnicity, and gender were controlled for: crime (including violent offenses and imprisonment), substance use (including nicotine and illegal drug dependence), mental health (including major depression/anxiety disorders, antisocial personality disorder, and attempted suicide), and sexual relationships (including 10+ sexual partners, teen pregnancy, and domestic violence). In light of these research findings, it would not be unreasonable to suppose that a higher number of children with untreated behavior problems in a school or district may eventually lead to a higher number of high school drop-outs and a higher number of adolescents with conduct disorder or other serious disorders in that district. Due to all of these risks associated with behavior problems, actions should be taken to improve the behavior of children in schools.

Certain systems-level interventions such as School-Wide Positive Behavioral Interventions and Supports have been shown to be effective in decreasing the number of office referrals and school suspensions (Luiselli, Putnam, Handler, & Feinberg, 2005). However, Stronge, Ward, Tucker, & Hindeman (2008) contend that a key aspect of any major improvement in school systems and in students' education is changing the behavior of teachers. Similarly, Leflot, van Lier, Onghena, and Colpin (2010) suggest improving the "professional functioning" (pg. 881) of teachers and other professionals in order to prevent and respond more effectively to behavioral difficulties.

The negative consequences of teachers using ineffective classroom management strategies are not limited to only students; in a study conducted by Clunies-Ross and colleagues (2008), workload and student misbehavior were the two biggest contributors to teacher stress. Furthermore, Hastings and Bham (2003) found that various aspects of

student classroom behavior (e.g., disrespect, lack of student sociability, and lack of attentiveness) differentially predicted various aspects of teacher burnout (e.g., emotional exhaustion, depersonalizing students, and lack of feelings of personal accomplishment). Research has consistently shown that teacher stress affects the teacher's performance, physical and emotional well-being as well as that of their families', and the school as a whole (Clunies-Ross et al., 2008).

The Effect of Classroom Management on On-Task Behavior

Currently, a large portion of teachers use consequent rather than antecedent methods of classroom management (Clunies-Ross et al., 2008; Little & Akin-Little, 2008). Consequent methods are used after a child has exhibited an undesired or inappropriate behavior in an attempt to remediate that behavior. Examples of consequent methods include correcting the child, removing privileges, or reprimanding the child. Teachers who primarily use consequent classroom management methods are more likely to respond to inappropriate behaviors than appropriate behaviors (Clunies-Ross et al., 2008). While certain situations may necessitate the use of consequent methods, using antecedent methods provides for a larger portion of class time to be used for academic instruction and activities rather than disciplinary actions for individual students (Little & Akin-Little, 2008). Furthermore, research suggests that using antecedent methods of classroom management eliminates most inappropriate classroom behaviors and increases the students' attention to the lesson and appropriate academic activities (Clunies-Ross et al., 2008).

The Effect of On-Task Behavior on Student Learning

A major mediating factor between student learning and classroom management is student engagement; according to Simonsen, Fairbanks, Briesch, Myers, and Sugai (2008), classrooms that are more structured tend to facilitate more appropriate social and academic behaviors. Similarly, research has demonstrated the link between the use of effective classroom management strategies and many positive outcomes, including increased on-task behavior and academic engagement. (e.g., Leflot et al., 2010; Nafpakititis, Mayer, & Butterworth, 1985, as cited in Beaman & Wheldall, 2000; Reinke, Lewis-Palmer, & Merrell, 2008). According to Coddling & Smyth (2008), there is “a strong positive relationship” (p. 325) between the amount of time a student spends actively engaged in learning and that student’s academic performance. Furthermore, students who spend more time engaged in academic activities often read at higher levels, are better writers, and perform better on standardized tests (Bohn, Roehrig, & Pressley, 2004).

According to the American Psychological Association (APA; 1993), aggression and disruptive classroom behavior in early childhood contribute to low school performance and inadequate peer relations. Unstructured classroom time increases the likelihood of disruptive behavior (Little & Akin-Little, 2008), and disruptive behavior can occupy time reserved for teaching and learning, which directly impacts academics and student performance (Clunies-Ross et al., 2008; Freiberg, Huzinec, & Templeton, 2009). In order to prevent the likelihood that these disruptive behaviors occur, Little and Akin-Little (2008) contend that academic activities should account for at least seventy percent of classroom time. Based on this research, it would be reasonable to hypothesize

that the use of effective classroom management strategies may have a functional relationship with student academic performance. However, although these relationships have been demonstrated, studies controlling for the effect of teacher instruction are scarce (e.g., Coddling & Smyth, 2008; Dobbs-Oates, Kaderavek, Guo, & Justice, 2011).

The Role of Instruction

According to Kurz and Elliott (2011), research has focused on the following three key aspects of teacher instruction: time on instruction, content of instruction, and quality of instruction. Research suggests that instruction accounts for a large portion of the variance in student behavior; a study conducted by Rose & Medway (1981) showed that the instructional style of the teachers in the study accounted for one-third of the variance in the behavior of the students. In order to explore the link between classroom management and student learning, a study controlling for teacher instruction should be conducted.

As is evidenced from previous research (Clunies-Ross et al., 2008), student behavior can have a large impact on learning. By using evidence-based classroom management methods, teachers can help improve behavior problems and, thus, academic performance. However, there is little research that reveals a causal link between classroom management methods and learning rate. However, due to the suggested link between behavior problems and academic performance (Clunies-Ross et al., 2008), it seems obvious that improving classroom management methods and, thus, decreasing the number of problem behaviors in a class, would increase student learning. The purpose of this study is to determine if there is a causal relationship between classroom management and student academic performance.

- Does improving the use of evidenced-based classroom management strategies increase student academic performance?

CHAPTER II

REVIEW OF THE LITERATURE

Student Learning

Education systems exist to assist children in developing the skills necessary to function competently and productively as adults in the communities in which they live (Abbott et al., 1998). Specifically, the main skill area that is the focus of education systems is the acquisition of academic skills in order to increase academic performance. There are many risks associated with low academic performance. Some of the short-term risks include increased behavior problems (Algozzine et al., 2011), retention (Bali et al., 2005), and placement in more restrictive educational environments (i.e., special education classrooms; Gottlieb et al., 1991). Furthermore, if a student does not acquire basic reading skills during their early school years, they are at greater risk of experiencing academic, social-emotional, and economic problems later in life (Wharton-McDonald et al., 1998). Some of the long-term risks include an increased likelihood of substance abuse, delinquency, teenage pregnancy, violence, and school dropout (Abbott et al., 1998). It is evident from these risks that ensuring students have optimal opportunities to be successful in school should be of utmost concern for teachers, administrators, and other school personnel.

Cohen and colleagues (1989) note that much of the variance in student performance can be accounted for by classroom differences. More specifically, research has demonstrated that student learning has been consistently related to classroom management and learning opportunities (Brophy & Good, 1986 as cited in Abbott et al., 1998).

Classroom Management

Definition and Components of Effective Classroom Management

Classroom management has been defined in many different ways. Teachers often view classroom management as a list of tricks or suggestions (Landau, 2009, as cited in Tal, 2010) that are able to “fix” any problem in the classroom. However, the following definitions of classroom management suggest that there is more to classroom management than some would believe: Tal (2010) defines classroom management as “the ability of the teacher to lead the class...toward achieving the socio-emotional welfare and learning of the students” (Tal, 2010, pg.144). Malone and Tietjens (2000) define classroom management as “how teachers maintain order in a classroom” (pg. 160). Little and Akin-Little (2003) define classroom management as ‘a set of procedures that, if followed, should help the teacher maintain order in the classroom and involve both antecedent and consequent procedures that can be combined to provide a comprehensive approach to classroom management’” (as cited in Little & Akin-Little, 2008, pg. 228). Stichter and colleagues (2009) define classroom management as “those general environmental and instructional variables that promote consistent classroom-wide procedures of setup, structure, expectations, and feedback” (pg. 69).

There are three main components of classroom management. These components include making the most of the time allotted for instruction, arranging instruction to promote academic engagement as well as academic achievement, and using antecedent behavior management strategies (Sugai & Horner, 2002). Kern and Clemens (2007) assert that classwide interventions typically address the needs of the majority of students in a classroom and require less effort on the teacher's part than interventions for individual behavior problems. In order for classroom management to be considered effective, many different elements must be present, including the use of classroom rules and expectations (Hart, 2010; Kern & Clemens, 2007; Little & Akin-Little, 2008), reinforcement of appropriate behavior, responding to inappropriate behavior, positive relationships and interactions between staff and students (Simonsen et al., 2008), established procedures for chronic misbehavior, and a classroom environment that facilitates learning (Hart, 2010). Of these elements, formulating a set of classroom rules is a "logical first step," and may be the most important component, according to Kern & Clemens (2007), due to the fact that rules clarify to the students what behavior is expected of them. Kern & Clemens (2007) noted that previous research has demonstrated that the consistent use of classroom rules has been linked to better student behavior at the classroom level as well as school-wide. The following guidelines for clear classroom rules have been established: (1) The number of classroom rules should be limited to five, (2) Students should help the teacher formulate the class rules, (3) Rules should be simple, brief, and positively stated, (4) Rules should be displayed in a prominent place in the classroom, (5) Rules should be specific, (6) Rules should describe and focus on behaviors that are observable and measurable, (7) Teachers should set aside

time to teach and model the rules to her class, (8) Rules should be associated with consequences (Kern & Clemens, 2007; Little & Akin-Little, 2008). Although classroom rules are essential, they are not effective in reducing inappropriate behaviors when they are not used in conjunction with a behavior management plan that includes various types of reinforcement (e.g., verbal praise, privileges, tangibles) and consequences (Kern & Clemens, 2007; Little & Akin-Little, 2008; Simonsen et al., 2008).

Another classroom management strategy that has been shown to be effective is using effective commands; according to Kern and Clemens (2007), there are five key features of an effective command. These features include getting the student's attention, stating the command in the form of a "do" statement, providing only one instruction at a time, using a firm but calm voice, and waiting for the student to respond. Benefits of instructing teachers how to provide effective commands include low cost, low effort, brief implementation, ability to be used classwide, and non-intrusive. Because of these benefits, using effective commands as an intervention is more likely to be acceptable to teachers and is also more likely to have higher treatment integrity compared to interventions that require more effort, time, individualization, and intrusiveness (Matheson & Shriver, 2005).

In a study conducted by Matheson and Shriver (2005), teachers were instructed how to appropriately provide effective commands and praise statements to students when the students complied with requests and engaged in academic behaviors. The results of the study demonstrated that the rate of student compliance and the rate of student academic behavior both increased when teachers used effective commands at a higher rate. Increased rates of both student compliance and academic behaviors were also

observed when teachers used praise statements at a higher rate along with effective commands (Matheson & Shriver, 2005).

Use of Time Allotted for Instruction

Unstructured classroom time increases the likelihood of disruptive behavior (Little & Akin-Little, 2008), and disruptive behavior can occupy time reserved for teaching and learning, which directly impacts academics and student performance (Clunies-Ross et al., 2008; Freiberg et al., 2009). The amount of time teachers spend teaching and the amount of time students spend working on academic tasks are both reduced when teachers have to manage students' inappropriate behaviors (Matheson & Shriver, 2005). In order to prevent the likelihood that these disruptive behaviors occur, Little and Akin-Little (2008) contend that academic activities should account for at least seventy percent of classroom time. However, according to Hollowood and colleagues (1995), only 50 to 60 percent of time that is allotted for instruction is actually used for this purpose (as cited by Gettinger & Seibert, 2002).

Transitions are often an area of difficulty in classrooms; in fact, research has shown that up to 25 percent of non-learning classroom activities can be accounted for by transitions (Fisher et al., 1978, as cited by Coddling & Smyth, 2008). Some effective methods of decreasing time spent on transitions include providing reminders of upcoming changes, providing information about upcoming events in terms of content and duration, and using visual schedules (Kern & Clemens, 2007). Other factors that contribute to lost instructional time include gaining the attention of the students and getting started on lessons.

Academic Engagement and Student Learning

The relationship between academic engagement on student learning has been well-documented in the research literature (i.e., Coddling & Smyth, 2008; Ross & Medway, 1981; Sutherland, Wehby, & Copeland, 2000). More specifically, academic engagement is a predictor for student learning (Matheson & Shriver, 2005); students who spend more time engaged in academic activities often read at higher levels, are better writers, and perform better on standardized tests (Bohn et al., 2004).

According to Austin & Agar (2005), off-task or disruptive behavior leads to fewer educational opportunities for students. In a classroom, a child who frequently exhibits off-task or disruptive behaviors can lead to decreased learning time for the other students in the class (Little, 2003, as cited in Clunies-Ross et al., 2008). This is likely because the teacher's attention is being focused toward the student exhibiting problem behaviors rather than being focused toward instruction. This results in more time being spent on discipline (Giallo & Little, 2003, Little, 2003, as cited in Clunies-Ross et al., 2008). Based on this progression, presumably, off-task or problem behaviors in the classroom can have a negative effect on the amount of learning that takes place, the well-being of the teacher, and the classroom environment as a whole (Little & Hudson, 1998, as cited in Clunies-Ross et al., 2008). Furthermore, research has shown not only a positive correlation between effective classroom management and academic engagement but also a faster progression through academic skills (Matheson & Shriver, 2005).

Despite the fact that most education professionals recognize the relationship between academic engagement and student learning, students in general spend up to half their instructional time engaged in activities such as classroom procedures, transitions,

discipline, and other off-task behaviors (Coddling & Smyth, 2008). According to Sutherland and colleagues (2000), the typical percentage of academic engagement in general education classrooms based on direct observations ranges from 75 to 85 percent.

Engaging and responding to academic tasks requires students to comply with teacher instructions. If students do not comply with teacher instructions, the level of academic engagement and responding is likely to be low. Therefore, compliance with teacher instructions may be essential to increasing academic engagement and responding (Matheson & Shriver, 2005). One way to increase academic engagement is to increase the use of effective classroom management procedures. In a study conducted by Bohn and colleagues (2004), students who were in classrooms with teachers who focused on classroom rules and procedures for the first few days of school were more engaged and had higher achievement. Furthermore, Bohn and colleagues (2004) noted two studies that found establishing good classroom management at the beginning of the year led to more order in classrooms and higher achievement at the middle of the year in 3rd grade and junior high classrooms.

Short-Term Risks Associated with Poor Classroom Management

Other than negatively influencing student learning, there are many other risks associated with the use of ineffective classroom management methods. In a study conducted by Stichter and colleagues (2006), teachers who used ineffective classroom management strategies experienced consistent student disturbances and an increased number of verbal interruptions. Approximately six percent of students in an average classroom have behavior problems that require intervention. In addition to these students, there are typically many others who exhibit minor inappropriate behaviors that

interfere with their own or other students' learning (Farrell, 2005, Little 2003, as cited in Clunies-Ross et al., 2008). According to Hart (2010), these minor disruptions (such as talking out, being out of seat, etc.; Leftlot et al., 2010) occur most often, and their cumulative effects can be especially harmful; retention (Bali, Anagnostopoulos, & Roberts, 2005) and placement in more restrictive educational environments (i.e., special education; Gottlieb, Gottlieb, & Trongone, 1991) are two examples of these cumulative effects.

Long-Term Risks Associated with Poor Classroom Management

According to Reinke and colleagues (2008), the use of ineffective classroom management methods is also related to negative effects on students' academic, behavioral, and social functioning across time. One of these long-term effects is teacher burnout; teachers who lack effective classroom discipline experience more stress and burnout. Hastings and Bham (2003) found that various aspects of student classroom behavior (e.g., disrespect, lack of student sociability, and lack of attentiveness) differentially predicted various aspects of teacher burnout (e.g., emotional exhaustion, depersonalizing students, and lack of feelings of personal accomplishment). Research has consistently shown that teacher stress affects the teacher's performance, physical and emotional well-being as well as that of their families', and the school as a whole (Clunies-Ross et al., 2008). The most common teacher complaints are related to disruptive behaviors such as inattention, overactivity, and noncompliance (Goldstein, 1995, as cited in Little & Akin-Little, 2008). According to Reinke and colleagues (2008), disruptive classroom behavior is defined as "any statements or actions by an individual student or group of students that [disrupt] or [interfere] with ongoing classroom activities

for the teacher (e.g., talk outs during instruction, any behavior reprimanded by the teacher, questions or comments unrelated to the task) and/or one or more peers (e.g., hitting or poking a peer, fighting, noises, or actions that clearly [distract] classroom peers)” (pg. 319-320). Aside from problem student behavior being linked to teacher burnout, Clunies-Ross et al. (2008) noted that children who exhibit behavior problems are more at risk for developing serious disorders in adolescence, such as conduct disorder. In a longitudinal study conducted by Fergusson and colleagues (2005), conduct problems between the ages of seven and nine years were associated with the following domains after confounding variables such as economic disadvantage, family conflict, child abuse, ethnicity, and gender were controlled for: crime (including violent offenses and imprisonment), substance use (including nicotine and illegal drug dependence), mental health (including major depression/anxiety disorders, antisocial personality disorder, and attempted suicide), and sexual relationships (including 10+ sexual partners, teen pregnancy, and domestic violence).

A study conducted by Ingersoll (2001) revealed that schools with lesser degrees of student discipline problems experienced significantly lower levels of turnover among teachers. In order to prevent or lessen this occurrence, Little and Akin-Little (2008) suggest that future research focus on developing programs that include training in effective classroom management skills at the undergraduate and graduate levels—before teachers begin working in their own classrooms.

Behavioral Methods

The goal of using behavioral methods of classroom management is to increase appropriate behaviors through reinforcement and to decrease inappropriate behaviors

through extinction (removing reinforcement by ignoring inappropriate behavior). In addition, behavioral methods focus on changing the environment in such a way that the antecedents which frequently precede inappropriate behaviors are no longer present (Hart, 2010). According to Kern and Clemens (2007), the disciplines of education and human behavior have acknowledged the link between the behavior of individuals and their immediate environment. However, this relationship has not been applied when applying intervention methods for student behavior. Many students exhibit appropriate behaviors contingent upon naturally occurring reinforcers, including positive teacher attention, good grades, or completing academic tasks. However, these reinforcers may not be salient enough to elicit appropriate behaviors from all students (Little & Akin-Little, 2008). In order for interventions to have a significant, lasting effect, the environmental events that trigger inappropriate student behavior must be altered; one way to use this idea in practice is to change the events that immediately precede inappropriate or undesirable academic or social behaviors (Kern & Clemens, 2007).

Antecedent vs. Consequent Methods of Behavior Management

Research suggests that classroom management is most effective when teachers use antecedent rather than consequent methods (Clunies-Ross et al., 2008). Consequent methods are used in an attempt to remediate an undesired or inappropriate behavior after a child has exhibited that behavior. Examples of consequent methods include correcting the child, removing the child's privileges, sending the child to time out, giving the child a detention or suspension, or verbally reprimanding the child. While the intent of consequent methods is to decrease inappropriate behaviors, primary use of these methods may actually reinforce inappropriate behaviors (Leflot et al., 2010; Little & Akin-Little,

2008) and discourage appropriate behaviors (Beaman & Wheldall, 2000). A study conducted by Wehby, Tally, and Falk (2004) revealed that this phenomenon may occur because students learn to exhibit inappropriate behaviors in order to escape academic tasks or to obtain teacher attention. Antecedent methods are preventative and positive in nature; they are used to alter the environment before inappropriate behaviors occur or intensify and, thus, decrease the likelihood of those behaviors occurring. Examples of antecedent methods include establishing classroom rules and reinforcing appropriate behavior (Clunies-Ross et al., 2008).

Johnson and colleagues (1996) demonstrated the potential outcomes of using an antecedent approach. Three classroom management interventions were examined in terms of their effectiveness with seventh grade students. The three interventions were (1) use of a weekly syllabus and academic assessments for individual students, (2) self-monitoring, and (3) actively teaching five classroom rules. All three interventions were linked to an increase in appropriate behavior and a decrease in inappropriate and disruptive behavior. However, actively teaching classroom rules was the most effective (as cited in Kern & Clemens, 2007).

According to Kern and Clemens (2007), antecedent methods have many benefits. One benefit is that the use of these methods decreases the likelihood that the inappropriate behaviors will occur by eliminating or changing the events that precede these behaviors. Decreasing the likelihood of these behaviors is essential for creating an environment that facilitates learning. Another benefit is that eliminating or changing the events that precede inappropriate behaviors typically leads to an immediate decrease in the number of inappropriate behaviors. Improving the instructional environment is

another benefit of antecedent methods; because the events that precede appropriate behaviors are increased, the likelihood of appropriate behaviors occurring increases which, in turn, leads to increased levels of work completion and student achievement (Kern & Clemens, 2007; Reinke et al., 2008). At the classwide level, antecedent methods establish positive, organized, predictable, and motivating classroom environments (Sugai, Horner, & Gresham, 2002, as cited in Kern & Clemens, 2007).

Regardless of these findings, research has demonstrated that many teachers tend to use ineffective methods of classroom management (Infantino & Little, 2005); for example, general education teachers are not likely to use praise with their students, and even less likely to use praise with those students who exhibit inappropriate behaviors (Kern & Clemens, 2007; Leflot et al., 2010). In fact, Leflot and colleagues (2010) found that, overall, teachers consistently use consequent methods such as reprimands and suggest improving the “professional functioning” (pg. 881) of teachers and other professionals in order to prevent and respond more effectively to behavioral difficulties.

According to Bohn and colleagues (2004), one of the differences between more and less effective elementary-level teachers is that more effective teachers tend to use antecedent methods of classroom management such as praise for specific behaviors or achievements. Furthermore, disciplinary events rarely occur in the classrooms of more effective teachers (Bohn et al., 2004), which demonstrates the preventative nature of antecedent methods. This finding supports the notion that consequent methods of classroom management are not as effective in managing student behavior as antecedent methods (Clunies-Ross et al., 2008). Furthermore, the level of student on-task behavior

tends to decrease when consequent methods are employed (Beaman, 2006 as cited in Clunies-Ross et al., 2008; Leflot et al., 2010).

Little (2005) noted that minor inappropriate student behaviors are the most concerning for teachers (as cited in Clunies-Ross et al., 2008). Examples of these behaviors include talking out, being out of seat, attending to activities other than the assigned task, disobeying teacher directions or requests, and engaging in any other off-task behaviors (Leflot et al., 2010). Research suggests that using antecedent methods of classroom management eliminates most of these minor inappropriate behaviors and increases the students' attention to instruction and appropriate activities (Clunies-Ross et al., 2008; Sutherland et al., 2000). Using more praise also leads to shorter reprimands for inappropriate behavior and decreases teacher stress and burnout (Good & Brophy, 1994, 2000, as cited in Clunies-Ross et al., 2008)

Teacher Use of Verbal Praise

One specific antecedent method that can easily be incorporated into classrooms and has been shown to be effective at increasing appropriate behaviors (Kern & Clemens, 2007), decreasing inappropriate behaviors (Leflot et al., 2010), and increasing overall academic engagement in general education classrooms is verbal praise (Sutherland et al., 2000). Reinke and colleagues (2008) defines praise as “any verbal statement or gesture that [indicates] teacher approval of a desired student behavior...beyond confirmations of correct academic responses” (pg. 319). Verbal praise has also been shown to allow for more instructional time in the classroom, increase students' intrinsic motivation, facilitate students' feelings of competence (Sutherland et al., 2000), and increase the appropriate

behavior of students who observe others being praised for appropriate behavior (Kern & Clemens, 2007).

A study conducted by Wharton-McDonald and colleagues (1998) examined the difference between a high-achieving classroom and a lower-achieving classroom in terms of the amount of teacher praise provided to the students. The results of the study showed that students in the high-achieving classroom received more praise for effort and attention given to the assignment in addition to praise for responding correctly. Furthermore, students in the lower-achieving classroom were rarely praised; when praise was provided it was typically for writing neatly or staying quiet during instruction (Wharton-McDonald et al., 1998).

One of the characteristics of teachers in high-achieving classrooms was the use of effective classroom management, including preventing or positively redirecting inappropriate student behaviors. Another characteristic of teachers in high-achieving classrooms was the use of consistent expectations and consequences; their students were aware of the expectations and the consequences associated with engaging in inappropriate behavior. Time management was another characteristic of high-achieving classroom teachers; time management included managing transition time, minimizing interruptions by other adults, and maximizing time spent on academic activities. In contrast, teachers of low-achieving classrooms struggled to carry out morning routines and begin academic instruction (Wharton-McDonald et al., 1998).

Behavior-Specific Praise Statements

Praise has been shown to be most effective when the specific behavior being reinforced is identified and verbally expressed to the student (Brophy, 1981, as cited in

Sutherland et al., 2000; Kern & Clemens, 2007). A behavior-specific praise (BSP) statement directed at an individual student can also serve as a prompt for appropriate behavior to the other students in the class as well as an alert that teacher attention is accessible if appropriate behavior is exhibited (Kern & Clemens, 2007). In a study conducted by Sutherland and colleagues (2000), it was found that the on-task behaviors of students increased as teachers increased their use of BSP statements. Furthermore, the on-task behaviors of the students decreased when the teachers discontinued their use of BSP statements. Regardless of this finding, behavior-specific praise statements account for only a small portion of praise students receive (Sutherland et al., 2000).

Sutherland and colleagues (2000) noted that more research is needed to determine if using behavior-specific praise statements affects students' on-task behavior during potentially aversive classroom instruction and academic tasks (Sutherland et al., 2000).

Role of the Teacher

One of the key aspects of influencing student behavior at the individual level as well as classwide is the classroom procedures of the individual teacher (Beaman & Wheldall, 2000; Hart, 2010). Furthermore, Stronge and colleagues (2007) contend that teachers must be the center of any major improvement in school systems and in students' education. "Seemingly more can be done to improve education by improving the effectiveness of teachers than by any other single factor" (Wright et al., 1997, p. 63, as cited in Stronge et al., 2007). Based on this assertion, it would be reasonable to believe that as teaching improves, student achievement will also improve (Stichter et al., 2006).

According to a review of the literature by Stronge and colleagues (2007), there are many dimensions of teacher effectiveness that have been documented in the literature.

These dimensions include instruction, student engagement, classroom management, and behavioral expectations. In a study conducted by Stichter and colleagues (2006), effective teachers experienced disruptive student behavior approximately once every two hours. Conversely, ineffective teachers experienced disruptive student behavior approximately once every 12 minutes. Classroom management is an important aspect of teaching due to the fact that it is linked directly to the level of student involvement and student academic achievement (Reinke et al., 2008).

Research has shown that “two of the most consistently purported instructional practices for the classroom environment thought to positively impact the effects of instruction as measured by student outcomes are strong classroom management and an increase in the number of student opportunities to respond” (Stichter et al., 2009, pg. 69). Furthermore, Wharton-McDonald, Pressley, and Hampston (1998) contend that “expert classroom management” (pg. 122) is one of the factors that is characteristic of effective teaching. More specifically, teacher behaviors such as contingent praise and reprimand can be used to increase appropriate academic and social student behaviors and decrease inappropriate student behaviors (Beaman & Wheldall, 2000). However, many teachers are controlled by and react to student behaviors rather than the reverse (Brophy, 1981 as cited in Beaman & Wheldall, 2000).

According to Mendro (1998), research has suggested that teachers have large, additive, long-term effects on student achievement. The negative impact of ineffective teachers on their students’ academic achievement can persist for as long as three years before being fully corrected; according to the Dallas Independent Public Schools, teachers have a large effect on students’ learning, even after the students have moved to a

higher grade; “If a student has a high performing teacher for just 1 year, the student will remain ahead of peers for at least the next few years of schooling. Unfortunately, if a student has an ineffective teacher, the influence on student achievement is not remediated fully for up to 3 years” (Stronge et al., 2007, pg. 168). Because of this finding, Texas maintains the legal stance that students’ academic progress is the responsibility of the teacher; since 1995, students’ academic performance has been a mandatory component of all teacher evaluation procedures statewide (Senate Bill 95-1, 1995, as cited in Mendro, 1998). If there are large significant differences in teacher effectiveness, there should be more emphasis in the areas of research and educational reform given to identifying effective teachers and the characteristics of effective teachers (Nye, Konstantopoulos, & Hedges, 2004). Therefore, the nature of the relationship between teacher behavior and student outcomes should be examined and discussed.

According to Evertson & Weinstein (2006), classroom management is not given enough attention in teacher training despite its documented importance and complexity (as cited in Tal, 2010). Preparing teachers to use effective strategies may have a large impact on the probability that teachers will implement those strategies; according to Reinke and colleagues (2008), teachers are more likely to use effective strategies continually if they feel confident in their capability (Reinke et al., 2008). Additionally, research has demonstrated that interventions that require less time to implement are more preferable to teachers (Elliott, Witt, Galvin, & Peterson, 1984, as cited in Sutherland et al., 2000).

A study conducted by Beaman and Wheldall (2000) revealed that teachers are proficient at recognizing appropriate academic behaviors and rewarding them. However,

their proficiency at recognizing and reward appropriate social behaviors is not as high. More specifically, teachers often show their approval rather than disapproval for academic behavior, but for social behavior, disapproval is shown more often than approval. “Merrett and Wheldall (1987b) argue that teachers are ‘very quick to notice social behavior of which they disapprove and continually nag children about it... But they hardly ever approve of desirable social behavior... In other words, children are expected to behavior well and are continually reprimanded if they do not’” (as cited in Beaman & Wheldall, 2000). Despite the existing research that documents the need for structure in the schools as well as the effect it has on learning (Carter, 1990; Dinkes, Citaldi, & Lin-Kelly, 2007; Doyle, 1986; Emmer, 1987; Erickson, Mattaini, & McGuire, 2004; Evertson, Emmer, & Worsham, 2003; Evertson & Weinstein, 2006; Freiberg, Connell, & Lorentz, 2001; Pittman, 1985; Rosenholtz, 1989, as cited by Freiberg et al, 2009), there is a lack of effective interventions targeting student behavior being used in classrooms (Clunies-Ross et al., 2008). For example, inappropriate social behavior often results in inappropriate or non-contingent teacher attention, which may maintain or increase the students’ inappropriate behavior (Beaman & Wheldall, 2000).

In a study conducted by Gottlieb and Polirstok (2005), numerous empirically-supported techniques shown to improve student learning (Lloyd, Forness, & Kavale, 1998 as cited by Gottlieb & Polirstok, 2005) were taught to teachers during a professional development training. These techniques included creating behavior-specific classroom rules, fostering student ownership of both academics and behavior, increasing contingent praise or reprimand based on classroom rules, using more praise in relation to reprimands, developing reinforcement hierarchies, creating reinforcement procedures that

were efficient in terms of time and record keeping, selectively ignoring behaviors, and gradually reducing frequent disruptive behaviors (Gottlieb & Polirstok, 2005). For one school in the study, results showed a 61 percent decrease in behavior referrals compared to the previous year, a 63 percent decrease in special education referrals, and an 8.3 percent increase in the number of children reading at or above grade level (Gottlieb & Polirstok, 2005). Furthermore, the number of children reading at or above grade level for all three schools that participated in the study increased 3.5 percent while the number of children reading at or above grade level for the other 12 schools in the district decreased 1.5 percent (Gottlieb & Polirstok, 2005).

According to Reinke and colleagues (2008), “targeting the classroom system to increase effective classroom management practices delivered to all students is more efficient than targeting individual students because it is likely to reduce current student behavioral and academic difficulties as well as prevent future student problems on a broader scale” (pg. 316). The appropriate use of an effective behavior management system is a prerequisite for effective academic instruction. More instruction time is available if less time is spent on behavior management (Gottlieb & Polirstok, 2005).

Role of Instruction

According to Kurz and Elliott (2011), research has focused on the following three key aspects of teacher instruction: time on instruction, content of instruction, and quality of instruction. Furthermore, Matheson and Shriver (2005) contend that one characteristic of effective instruction is facilitating high rates of engaged time. Research suggests that instruction accounts for a large portion of the variance in student behavior; a study conducted by Rose & Medway (1981) showed that the instructional style of the teachers

in the study accounted for one-third of the variance in the behavior of the students. In order to explore the link between classroom management and student learning, a study controlling for teacher instruction should be conducted.

Interval Recording

Interval recording has been used in behavioral research for decades (Kelly, 1977). A study conducted by Sutherland and colleagues (2000) used a momentary time-sampling observation. One-minute intervals were used to observe on-task behavior in a classroom that was separated into four sections. Each section was observed in a different order across each observation. These different orders were randomly assigned before the study began. During each 15-minute session, the observer would code the behavior of the students sitting in the specified section, then move to the next quadrant, etc. The observer would code the students' behavior as being on task if all of the students in a section were on-task for the duration of the intervals they were observed. At the end of the observation session, three of the sections would have been observed four times and one section would have been observed three times (Sutherland et al., 2000). After collecting baseline data, the observer reported the rate of behavior-specific praise statements that was observed during the baseline phase. The observer also provided examples of behavior-specific praise statements and discussed the positive impact of using behavior-specific praise on the students' on-task behavior. Six behavior-specific praise statements was chosen as the goal for the intervention phase based on the rate of behavior-specific praise statements during the baseline phase and the teacher's belief that the standard was attainable. The teacher was reminded of this goal prior to each session and provided feedback at the end of each session (Sutherland et al., 2000). The results of

this study showed that there was a correlation between the on-task behavior of the students and the number of behavior-specific praise statements; on-task behavior increased as the number of behavior-specific praise statements increased and decreased as the number of behavior-specific praise statements decreased (Sutherland et al., 2000).

Interobserver Reliability

Because observations will be a major component of the current study, the validity and reliability of this method should be considered. The following threats to validity have been discussed in research: inadequately defined behaviors, low interobserver reliability, subject reactivity to the observer, target behaviors that are situation-specific, inappropriate code selection, and observer bias (Merrell, 1999 as cited in Volpe, DiPerna, & Hintze, & Shapiro, 2005). Furthermore, Volpe and colleagues (2005) noted that in order to prevent observer drift, it is important to occasionally check inter-observer reliability.

In order to prevent these threats to validity, Reinke and colleagues (2008) used multiple methods in training observers for data collection. These methods included providing written definitions with examples of each behavior as well as non-examples, practice coding of a taped classroom, and practice coding in the actual classrooms involved in the study. The observers were required to attain 85 percent agreement for each variable before collecting data. Before collecting baseline data, observations were conducted for two weeks to ensure reliability and to allow the classroom teacher and students to acclimate to the observers being present. Weekly meetings were held, and continuous checks for interobserver reliability were also conducted. If interobserver reliability for any of the observers fell below 85 percent, that observer would be

accompanied by a lead observer (who was consistently reliable) until the interobserver reliability reached 85 percent. Finally, the observers were unaware of the research questions throughout the duration of the study (Reinke et al., 2008).

CHAPTER III

METHODOLOGY

The purpose of the current study was to determine if intervening on classroom management by increasing effective commands and behavior-specific praise statements resulted in an increase in student learning as measured by the students' average math fluency scores on a school-wide math intervention service project, titled "Two-a-Days."

Participants and Setting

The participants of this study were students from four first-grade general education classrooms from one elementary school in a southern community. Informed consent was obtained from the principals, teachers, and parents prior to data collection. The school was selected based on their participation in a daily school-wide math intervention service project designed to improve accuracy and fluency of basic math facts. This project was titled "Two-a-Days."

Design and Procedure

Independent Variable

The independent variable in this study was an intervention package that consisted of providing effective commands and behavior-specific praise statements. Specifically, the intervention consisted of increasing effective commands and behavior-specific praise statements above baseline rates.

Effective commands. For this study, an effective command was defined as any short statement that elicited a *specific* behavior, used only one verb, and was given in isolation (Matheson & Shriver, 2005). Examples of effective commands that meet these criteria include “Please sit in your seats,” “Take out a pencil,” and “Turn to your next worksheet.” Non-examples include “Get ready to do your math probes,” “What are we supposed to be doing right now?” and “Sit down, and take out your math folders.” Frequency counts of effective commands were taken during the baseline and treatment phases. This number was then divided by the duration of the intervention (in minutes) to yield average rate of effective commands per minute.

Behavior-specific praise statements. For this study, a behavior-specific praise statement was defined as any statement that provided praise, identified the student receiving praise, and identified the behavior for which they were being praised (Hart, 2010). Examples of behavior-specific praise statements that meet these criteria include “Seth, good job sitting quietly in your seat,” “Rachel, I really like how you’re getting out your math materials,” and “Thank you for going to your seat, Lauren.” Non-examples include “Jason is ready,” “This table is doing a great job,” and “Awesome job, Tara!” Frequency counts of behavior-specific praise statements were taken during the baseline and treatment phases. This number was then divided by the duration of the intervention (in minutes) to yield average rate of behavior-specific praise statements per minute.

Dependent Variable

Growth Rate of Student Math Fluency. For the Two-a-Days project, each student received their own folder with two math probes for every day of the current week. Each morning, the folders were passed out to the students and an instructional script was

read over the intercom system of the school. The students were given two minutes to complete the first probe, a short break to switch probes, and two minutes to complete the second probe. The math task on all the probes for every student was “addition to 10” for the duration of the study.

Graduate assistants scored the probes each day. During scoring, the number of digits correct were totaled and then divided by two to yield a score of digits correct per minute (DCPM).

Performance Feedback/Goal-Setting Phase

Because performance feedback and goal-setting have been widely researched and have been shown to be effective in increasing appropriate classroom behaviors and academic performance, a performance feedback/goal-setting phase was included after the treatment phase in order to show sensitivity of the measures. In this phase, the classroom teacher showed the class a graph of their average performance across time. Goal lines were gradually placed on the graph, and the students were instructed to work as fast and as accurately as possible in order to reach their goal. For each goal that was met, the teacher used the SmartBoard to place a image of a piece of popcorn in a popcorn bucket. The students were told that when the popcorn bucket was full, they would have a popcorn and movie party—an incentive chosen by the students as a class prior to the beginning of the performance feedback/goal-setting phase.

Materials

Intervention Recording Forms

For this study, a form was used to record use of effective commands and behavior-specific praise statements (See Appendix A – Intervention Recording Form;

IRF). The IRF was used to ensure consistency across graduate assistants and to aid future researchers should they wish to replicate the current study. In a study conducted by Sutherland, Adler, and Gunter (2003), decreases in the number of disruptive behaviors, increases in percentage of on-task intervals, and increases in correct responses were observed when an average of approximately 3.5 instructional prompts per minute were provided. Furthermore, a praise-to-correction ratio of 3:1 or 4:1 seems to be most effective when it is provided contingent upon student behavior (Good & Grouws, 1977, as cited in Stichter et al., 2009). Therefore, the IRF allowed for four effective commands and four behavior-specific praise statements to be provided per minute. Additionally, graduate assistants were instructed to refrain from providing any student-directed statement that did not meet the criteria for effective commands or behavior-specific praise statements.

Audio Recording

An audio recording was used to prompt the interventionists to move to the next interval on the IRF. The audio recording consisted of verbal prompts every ten seconds.

Math Probes

Students completed two math probes each day. Only the first probe for each day was scored so that a math fluency score could be determined. Each probe was labeled according to the day of the week and the probe number (i.e., Monday #1, Monday, #2, Tuesday, #1, etc.).

Interventionist Training

Graduate research assistants enrolled in the author's doctorate program served as the interventionists for this study. All interventionists received training in order to ensure

understanding of each type of statement (i.e., effective command, behavior-specific praise statement), consistent interval recording procedures, and initial interobserver reliability. Training methods included providing written definitions of each code and conducting practice observations prior to collecting baseline data in order to ensure reliability and to allow the students to adjust to unfamiliar people in the classroom (Reinke et al., 2008).

Interobserver Reliability

In order to avoid threats to validity, observers were required to reach 85 percent agreement with a lead observer (an advanced student who is consistently reliable in practice observations). Interobserver reliability was measured periodically to ensure that 85 percent agreement was maintained.

Experimental Design and Data Analysis

A multiple-baseline design was used in this study. Visual analysis and slope calculations were used to interpret the effect of the independent variable.

CHAPTER IV

RESULTS

Figure 1 shows a multiple-baseline graph for the first three classrooms in the study. This graph represents changes in average math fluency scores for each class across baseline, treatment, and performance feedback phases. Furthermore, changes in the mean math fluency score from the beginning to the end of each phase were calculated as well as the slopes for each phase. Class D's data are not depicted in the graph due to a limited amount of data available for the treatment phase. Therefore, they should not be interpreted. In Table 1, slopes and changes in mean math fluency scores are reported for each classroom by phase of the study.

	Baseline		Treatment		PF/GS	
	<i>Slope</i>	<i>Change in Mean</i>	<i>Slope</i>	<i>Change in Mean</i>	<i>Slope</i>	<i>Change in Mean</i>
Class A	-2.251	-7.21	0.1358	2.03	0.228	3.34
Class B	0.1749	1.65	0.5361	5.24	0.3005	6.51
Class C	0.2367	1.7	0.4603	16.15	-0.0568	0.63
Class D*	0.2855	16.49	0.25	2.97	---	---

Table 1. Slopes and changes in mean math fluency scores for each classroom by phase of the study.

*Class D's data should not be interpreted due to a limited amount of data available for the treatment phase.

Using visual analysis and examining slopes and changes in mean math fluency scores, the treatment intervention package resulted in increased slopes and larger growths in mean math fluency scores for three of the four classrooms that participated in the study.

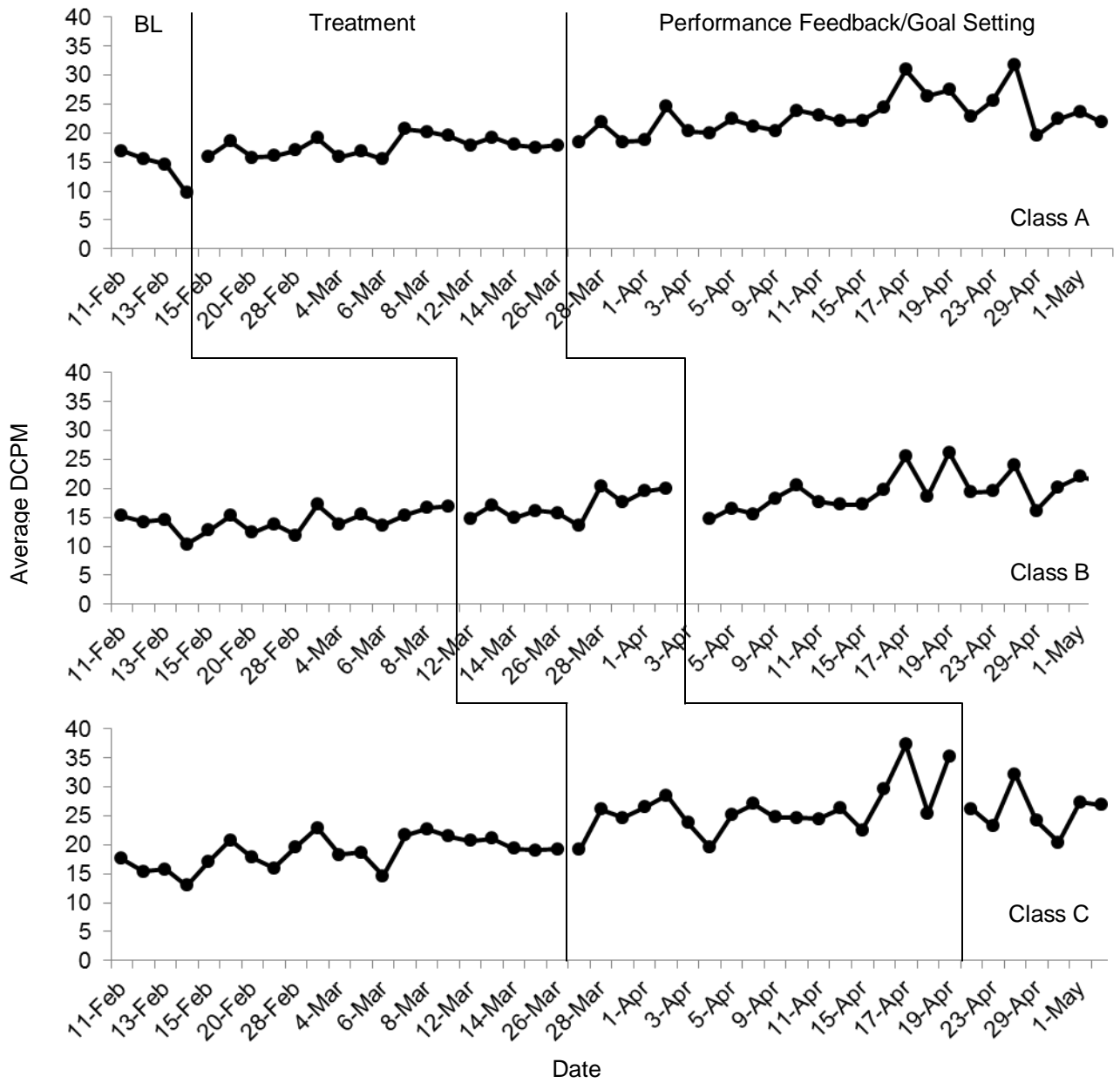


Figure 1. Multiple-baseline graph representing changes in average math fluency scores for each class across baseline, treatment, and performance feedback/goal-setting phases

Interobserver Reliability

Interobserver reliability was measured for 31.9 percent of the observations conducted to ensure that 85 percent agreement was maintained. The average percent agreement for effective commands was 91.29 percent. The average percent agreement for behavior-specific praise statements was 90.51 percent.

CHAPTER V

DISCUSSION

Research has demonstrated the link between the use of effective classroom management strategies and many positive outcomes, including increased on-task behavior and academic engagement (e.g., Leflot et al., 2010; Nafpakititis, Mayer, & Butterworth, 1985, as cited in Beaman & Wheldall, 2000; Reinke, Lewis-Palmer, & Merrell, 2008). The current study was conducted to determine if a causal relationship exists between the use of two evidence-based classroom management strategies and student academic performance as measured by growth rate of math fluency.

The current study provides a couple of implications for classroom application. The first implication would be the ease of implementation; for general use in a classroom (i.e., as “Tier 1” classroom management) no materials would be needed to use these strategies. The second implication is the possibility of larger gains in math fluency tasks as a result of implementation. More specifically, results show that with little effort, the growth rate of students’ math fluency could potentially double.

Limitations

One limitations of the current study was restriction in population. All participants were first grade students from the same school. Another limitation was that the students were accustomed to the Two-a-Day procedures; although the students were only in first

grade, they had been participating in the two-a-day procedures for a few months using a quantity discrimination task. Due to their familiarity with the two-a-day procedures, the students may have become lax in completing the probes. Furthermore, graduate students (versus the classroom teacher) were responsible for the intervention procedures. In terms of limitations related to the actual materials, there was variability across math probes, and the probes included addition problems containing ones and zeroes. Finally, the students' writing fluency was not taken into account which could have a major impact on the speed with which they responded to the math problems and, thus, their math fluency growth rate.

Directions for Future Research

In the future, the current study or a similar study should be conducted with a larger, more representative population; it would be beneficial to use students from different grade-levels, different schools, and different areas of the country. Furthermore, teachers should be trained to run the intervention. To ensure replicability, color-coded cards or audio cues using in-ears could be used as signals to provide behavior-specific praise statements and effective commands. Furthermore, a different dependent variable could be used. The students were well-acclimated to the two-a-day procedures in the current study, and larger gains may be seen using a novel task. Also, math probes with limited variability and excluding math problems containing ones and zeroes may result in different growth rates. Finally, an alternate method of responding should be considered in order to control for individual students' writing fluency.

REFERENCES

- Abbott, R. D., O'Donnell, J., Hawkins, J. D., Hill, K. G., Kosterman, R., & Catalano, R. F. (1998). Changing teaching practices to promote achievement and bonding to school. *Journal of Orthopsychiatry*, 68, 542-552.
- Algozzine, B., Wang, C., & Violette, A. S. (2011). Reexamining the relationship between academic achievement and social behavior. *Journal of Positive Behavior Interventions*, 13, 3-16.
- American Psychological Association. (1993). *Commission on youth and violence*. Washington, D.C.: American Psychological Association.
- Austin, J. L., & Agar, G. (2005). Helping young children follow their teachers' directions: The utility of high probability command sequences in pre-K and kindergarten classrooms. *Education and Treatment of Children*, 28, 222-236.
- Bali, V. A., Anagnostopoulos, D., & Roberts, R. (2005). Toward a political explanation of grade retention. *Educational Evaluation and Policy Analysis*, 27, 133-155.
- Beaman, R., & Wheldall, K. (2000). Teachers' use of approval and disapproval in the classroom. *Educational Psychology*, 20, 431-446.
- Bohn, C. M., Roehrig, A. D., & Pressley, M. (2004). The first days of school in the classrooms of two more effective and four less effective primary-grades teachers. *The Elementary School Journal*, 4, 269-287.

- Clunies-Ross, P., Little, E., & Kienhuis, M. (2008). Self-reported and actual use of proactive and reactive classroom management strategies and their relationship with teacher stress and student behaviour. *Educational Psychology, 28*, 693-710.
- Codding, R. S., & Smyth, C. A. (2008). Using performance feedback to decrease classroom transition time and examine collateral effects on academic engagement. *Journal of Educational and Psychological Consultation, 18*, 325-345.
- Cohen, E. G., Lotan, R. A., & Leechor, C. (1989). Can classrooms learn? *Sociology of Education, 62*, 75-94.
- Dobbs-Oates, J., Kaderavek, J. N., Guo, Y., & Justice, L. M. (2011). Effective behavior management in preschool classrooms and children's task orientation: Enhancing emergent literacy and language development. *Early Childhood Research Quarterly, 26*, 420-429.
- Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Show me the child at seven: The consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry, 46*, 837-849.
- Freiberg, H. J., Huzinec, C. A., & Templeton, S. M. (2009). Classroom management—a pathway to student achievement: A study of fourteen inner-city elementary schools. *The Elementary School Journal, 110*, 63-80.
- Gettinger, M., & Seibert, J. K. (2002). Best practices in increasing academic learning time. In A. Thomas (Ed.), *Best practices in school psychology IV* (pp. 773–787). Bethesda, MD: National Association of School Psychologists.

- Gottlieb, J., Gottlieb, B. W., & Trongone, S. (1991). Parent and teacher referrals for a psychoeducational evaluation. *Journal of Special Education, 25*, 155-167.
- Gottlieb, J., & Polirstok, S. (2005). Program to reduce behavioral infractions and referrals to special education. *Children & Schools, 27*, 53-57.
- Hart, R. (2010). Classroom behaviour management: Educational psychologists' views on effective practice. *Emotional and Behavioural Difficulties, 15*, 353-371.
- Hastings, R. P. & Bham, M. S. (2003). The relationship between student behavior patterns and teacher burnout. *School Psychology International, 24*, 115-127.
- Infantino, J., & Little, E. (2005). Students' perceptions of classroom behavior problems and the effectiveness of different disciplinary methods. *Educational Psychology, 25*, 491-508.
- Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38*, 499-534.
- Kelly, M. (1977). A review of the observational data-collection and reliability procedures reported in the Journal of Applied Behavior Analysis. *Journal of Applied Behavior Analysis, 10*, 97-101.
- Kern, L. & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in the Schools, 44*, 65-75.
- Kurz, A. & Elliott, S. N. (2011). Overcoming barriers to access for students with disabilities: Testing accommodations and beyond. In M. Russell & M. Kavanaugh (Eds.), *Assessing students in the margins: Challenges, strategies, and techniques* (pp.31-58). Charlotte, NC: Information Age Publishing.

- Leflot, G., van Lier, P. A. C., Onghena, P., & Colpin, H. (2010). The role of teacher behavior management in the development of disruptive behaviors: An intervention study with the good behavior game. *Journal of Abnormal Child Psychology, 38*, 869-882.
- Little, S. G., & Akin-Little, A. (2008). Psychology's contributions to classroom management. *Psychology in the Schools, 45*, 227-234.
- Luiselli, J. K., Putnam, R. F., Handler, M. W., & Feinberg, A. B. (2005). Whole-school positive behavior support: Effects on student discipline problems and academic performance. *Educational Psychology, 25*, 183-198.
- Malone, B. G., & Tietjens, C. L. (2000). Re-examination of classroom rules: The need for clarity and specified behavior. *Special Services in the Schools, 16*, 159-170.
- Matheson, A. S., & Shriver, M. D. (2005). Training teachers to give effective commands: Effects on student compliance and academic behaviors. *School Psychology Review, 34*, 202-219.
- Mendro, R. L. (1998). Student achievement and school and teacher accountability. *Journal of Personnel Evaluation in Education, 12*, 257-267.
- Nye, B., Konstantopoulos, S. K., & Hedges, L. V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis, 26*, 237-257.
- Reinke, W. M., Lewis-Palmer, T., & Merrell, K. (2008). The classroom check-up: A classwide teacher consultation model for increasing praise and decreasing disruptive behavior. *School Psychology Review, 37*, 315-332.

- Rose, J. S., & Medway, F. J. (1981). Teacher locus of control, teacher behavior, and student behavior as determinants of student achievement. *Journal of Educational Research, 74*, 375-381.
- Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children, 31*, 351-380.
- Stichter, J. P., Lewis, T. J., Wittaker, T. A., Richter, M., Johnson, N. W., & Trussell, R. P. (2009). Assessing teacher use of opportunities to respond and effective classroom management strategies: Comparisons among high- and low-risk elementary students. *Journal of Positive Behavior Interventions, 11*, 68-81.
- Stronge, J. H., Ward, T. J., Tucker, P. D., & Hindeman, J. L. (2007). What is the relationship between teacher quality and student achievement? An exploratory study. *Journal of Personnel Evaluation in Education, 20*, 165-184.
- Sugai, G., & Horner, R. H. (2002). Introduction to the special series on positive behavior support in schools. *Journal of Emotional and Behavioral Disorders, 10*, 130-135.
- Sutherland, K. S., Wehby, J. H., & Copeland, S. R. (2000). Effect of varying rates of behavior-specific praise on the on-task behavior of students with EBD. *Journal of Emotional and Behavioral Disorders, 8*, 2-8.
- Tal, C. (2010). Case studies to deepen understanding and enhance classroom management skills in preschool teacher training. *Early Childhood Education Journal, 38*, 143-152.

- Vitaro, F., Brendgren, M., Larose, S., & Trembley, R. E. (2005). Kindergarten disruptive behaviors, protective factors, and educational achievement by early adulthood. *Journal of Educational Psychology, 97*, 617-629.
- Volpe, R. J., DiPerna, J. C., Hintze, J. M., & Shapiro, E. S. (2005). Observing students in classroom settings: A review of seven coding schemes. *School Psychology Review, 34*, 454-474.
- Wehby, J. H., Tally, B. B., & Falk, K. B. (2004). Identifying the relation between the function of student problem behavior and teacher instructional behavior. *Assessment for Effective Intervention, 30*, 41-51.
- Wharton-McDonald, R., Pressley, M., & Hampston, J. M. (1998). Literacy instruction in nine first-grade classrooms: Teacher characteristics and student achievement. *The Elementary School Journal, 99*, 101-128.

APPENDICES

Appendix A – Intervention Recording Form

Teacher: _____ Date: _____
 Number of students: _____ Time: _____
 Interventionist: _____ Reliability: _____

Directions: Using the key as a guide, provide behavior-specific praise statements (B) and/or effective commands throughout the intervention (E). Circle the appropriate letter in each interval. Place a bracket () where the observation ends. Record the total number of each in the box at the left.

Provide BSPS	Provide EC	Provide both
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<p><u>Behavior-specific praise statements</u></p> <ul style="list-style-type: none"> • Provides praise statement • IDs student being praised • IDs the bx for which they are being praised <p>TOTAL B = _____</p> <p><u>Effective commands</u></p> <ul style="list-style-type: none"> • Elicits a <i>specific</i> behavior • Uses only one verb • Given in isolation <p>TOTAL E = _____</p>

	:00	:10	:20	:30	:40	:50
0:	1 B E	2 B E	3 B E	4 B E	5 B E	6 B E
1:	7 B E	8 B E	9 B E	10 B E	11 B E	12 B E
2:	13 B E	14 B E	15 B E	16 B E	17 B E	18 B E
3:	19 B E	20 B E	21 B E	22 B E	23 B E	24 B E
4:	25 B E	26 B E	27 B E	28 B E	29 B E	30 B E
5:	31 B E	32 B E	33 B E	34 B E	35 B E	36 B E
6:	37 B E	38 B E	39 B E	40 B E	41 B E	42 B E
7:	43 B E	44 B E	45 B E	46 B E	47 B E	48 B E
8:	49 B E	50 B E	51 B E	52 B E	53 B E	54 B E
9:	55 B E	56 B E	57 B E	58 B E	59 B E	60 B E
10:	61 B E	62 B E	63 B E	64 B E	65 B E	66 B E
11:	67 B E	68 B E	69 B E	70 B E	71 B E	72 B E
12:	73 B E	74 B E	75 B E	76 B E	77 B E	78 B E
13:	79 B E	80 B E	81 B E	82 B E	83 B E	84 B E
14:	85 B E	86 B E	87 B E	88 B E	89 B E	90 B E
15:	91 B E	92 B E	93 B E	94 B E	95 B E	96 B E
16:	97 B E	98 B E	99 B E	100 B E	101 B E	102 B E
17:	103 B E	104 B E	105 B E	106 B E	107 B E	108 B E

Appendix B – IRB Approval Form

Oklahoma State University Institutional Review Board

Date: Wednesday, September 05, 2012 Protocol Expires: 9/4/2013
IRB Application No: ED10121
Proposal Title: The Impact of School Wide Tiered Interventions on the Math Fluency and Accuracy Performance of Students
Reviewed and Processed as: **Modification/Continuation**
Status Recommended by Reviewer(s) **Approved**
Principal Investigator(s) :
Gary J Duhon
423 Willard
Stillwater, OK 74078

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office **MUST** be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

Signature 

Shelia Kannison, Chair, Institutional Review Board

Wednesday, September 05, 2012

Date

VITA

Kellen LeAnne Hughes

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE EFFECT OF CLASSROOM MANAGEMENT STRATEGIES ON
MATH FLUENCY GROWTH RATE

Major Field: Educational Psychology (Option: School Psychology)

Biographical:

Education:

- Completed the requirements for the Doctor of Philosophy in School Psychology at Oklahoma State University, Stillwater, Oklahoma in May 2014.
- Completed the requirements for the Master of Science in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in 2010.
- Completed the requirements for the Bachelor of Science in Psychology at Illinois State University, Normal, Illinois in 2009.

Experience:

- Multiple practica experiences including observation, shadow, therapy, school-based, and clinic
- External consultant for schools who request assistance with students with severe behavior problems
- External consultant for Behavioral Solutions, LLC under the OSDE OTISS grant
- APPIC Pre-Doctoral School Psychologist Intern for Streator Elementary District #44 in Streator, Illinois

Professional Memberships:

- American Psychological Association
- Illinois School Psychologists Association
- National Association of School Psychologists
- Oklahoma School Psychology Association
- Oklahoma State University School Psychology Graduate Organization