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Effects of Teacher Praise and Reprimand Rates on Classroom Engagement and Disruptions of Elementary Students at Risk for Emotional and Behavioral Disorders

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ABSTRACT

Effects of Teacher Praise and Reprimand Rates on Classroom Engagement
and Disruptions of Elementary Students at Risk for
Emotional and Behavioral Disorders

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In the United States educators often feel underprepared to manage student behavior in the classroom, which management is crucial for students with or at risk for Emotional and Behavioral Disorders (EBD) to learn effectively. Research on School-wide Positive Behavior Support (SWPBS) programs has reflected how effective simple principles, such as increasing teacher praise and decreasing teacher reprimands, can be. The current study is a secondary analysis of data originally gathered from 65 teachers and 239 students across three states. Results of these analyses bring principles of effective SWPBS programs and educator needs together by identifying how teacher behaviors correlated with at-risk student behaviors in different ways than the behaviors of students who were not at risk. Using multiple linear regression, we illustrated how students at risk for EBD were more sensitive to teacher praise and reprimands than students who were not at risk, which adds support to SWPBS theory and invites teachers to consider that who they praise and reprimand is just as important as how.

Keywords: praise, reprimands, at-risk, elementary school, emotional and behavioral disorders, school-wide positive behavior support

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

Introduction

Students with emotional and behavioral disorders (EBD) face a myriad of obstacles to learning. They may have trouble making friends, experience aggressive outbursts, or have a difficult time paying attention (Conley, Marchant, & Caldarella, 2014), and are also likely to struggle academically (Nelson, Benner, Lane, & Smith, 2004). Students, along with their parents (Sailor, Dunlap, Sugai, & Horner, 2009) and teachers (Clark & Byrnes, 2015; Stough, Montague, Landmark, & Williams-Diehm, 2015), are searching for ways to overcome difficult behavioral and academic challenges that accompany EBD in order to ultimately live a meaningful life. Researchers are studying teacher and student behavior in the classroom to help facilitate this process. More specifically, they are addressing the needs of students with EBD, as well as mitigating potential negative outcomes of those who are at risk of developing EBD. For example, empirical findings illustrate that interventions, such as proactive classroom management, can decrease aggressive outbursts at school (Nelson, 1996), and students are being identified early as at-risk for EBD (Kamps et al., 2011).

Researchers and practitioners have attempted to help at-risk students (for the purpose of clarity in this paper "at-risk student" refers to any student at risk for EBD) overcome behavioral and academic challenges by suggesting various interventions, such as increasing opportunities to respond (OTR), pre-correcting behavior, and using behavior-specific praise (Reinke, Stormont, Herman, Wachsmuth, & Newcomer, 2015). One of the interactions receiving attention is the relationship between teacher praise or reprimands and subsequent student behavior (Moore Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Reinke, Herman, & Stormont, 2013). Previous research has reported that teacher praise yields positive outcomes for students without

disabilities (Conroy, Sutherland, Snyder, Al-Hendawi, & Vo, 2009), and students with EBD (Sutherland, Wehby, & Copeland, 2000). Teacher reprimands have been related to negative effects in the classroom (Kodak, Northup, & Kelley, 2007). Despite the understanding that has been gained through previous research, little is known about the relationship between teachers' natural rates of praise and student behavior in classroom settings (Floress, Jenkins, Reinke, & McKown, 2017), and only one study has attempted to model the relationship between differential rates of teacher classroom management skills and student behavior, which is of particular importance for students with or at risk for EBD (Gage, Scott, Hirn, & MacSuga-Gage, 2017). In addition, large gaps remain in the literature that lead researchers to call for more studies of large samples using consistent operational definitions (Jenkins, Floress, & Reinke, 2015).

The purpose of the current study is to understand the differential relationship between natural rates of teacher behavior and various student behaviors in elementary classrooms. The strength of this study is a large sample size from multiple states and grade levels, including consistent operational definitions across various classroom activities. The purpose of the study will be accomplished by answering the following questions:

1. How are teacher praise rates related to at-risk student engagement rates when compared to the engagement rates exhibited by peer model students?
2. How are teacher praise rates related to at-risk student disruption rates when compared to the disruption rates exhibited by peer model students?
3. How are teacher reprimand rates related to at-risk student engagement rates when compared to the engagement rates exhibited by peer model students?
4. How are teacher reprimand rates related to at-risk student disruption rates when compared to the disruption rates exhibited by peer model students?

CHAPTER TWO

Literature Review

Researchers have found variable behavior in classroom settings, and there is evidence that one intervention or teacher behavior may affect one group of students in different ways than another group. For example, at-risk students have been found to exhibit higher rates of disruptions than their peers who are not at risk (Caldarella, Williams, Hansen, & Wills, 2015), engagement levels have been found to be inconsistent for participants across time (Ladd & Dinella, 2009), and effective teaching has been found to be dependent upon the type of student being taught (Brophy & Evertson, 2010).

Despite this variability, research has alluded to the idea that teacher behavior may help predict student behavior, or vice versa (Brophy, 1981; Conroy & Brown, 2004; Pianta & Stuhlman, 2004). Whether the outcome is viewed as constructive, destructive, predictable, or inconsistent teachers and students interact in the classroom every day. The constant nature of this interaction illustrates a need to better understand what drives it, for the benefit of both teachers and students, especially students who are at risk.

Students with EBD

Researchers have studied students at risk of developing EBD (Kamps et al., 2011) and students with EBD (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). Students with EBD typically rank very low on teacher desirability (Soodak, Podell, & Lehman, 1998), receive very little teacher praise (Rathel, Drasgow, Brown, & Marshall, 2014; Rathel, Drasgow, & Christle, 2008), and are more likely to have failed academically than students with a learning disability or with no disability (Nelson et al., 2004). Students with EBD also experience unsuccessful peer relationships, antisocial behavior, internalizing behavior, aggression, academic problems, and attention problems (Conley et al., 2014). Other common classroom behaviors include using

argumentative language, making disruptive statements during classroom instruction, or not staying seated (Weeden, Wills, Kottwitz, & Kamps, 2016). The challenges that these students face are manifested in behavioral and academic ways.

In a meta-analysis including 2,486 participants with EBD (Reid et al., 2004) it was documented that the vast majority (80%) were male, and that the disorder affected academic performance across all subjects (particularly for students less than 12 years old), as well as across various classroom types (e.g., resource, general education, self-contained), ultimately impairing their ability to later function in the community. For example, a study of students with disabilities ($N = 422$; Doren, Bullis, & Benz, 1996) found that individuals with severe emotional disturbance were 13.3 times more likely to be arrested compared to their peers with other disabilities.

Unfortunately, the relationship between problem behaviors and learning is complex; for example, simply decreasing disruptions may not be enough to improve students' task engagement (Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). The Individuals with Disabilities Education Improvement Act of 2004 (IDEA) enables students with difficult behaviors to receive accommodations or modifications so they might learn effectively in their least restrictive environment, but it also means that at-risk students are being placed in general education classrooms where teachers may not be prepared to manage difficult behaviors (Clark & Byrnes, 2015). Considering such findings, it becomes easy to understand why at-risk students might not enjoy being at school, and consequently might not behave very well in the classroom.

Influences on Classroom Behavior

Understanding students. To understand how teacher behaviors correlate with at-risk student behaviors, and vice versa, it is informative to first recognize that neither party's conduct appears *ex nihilo*. Students come from different backgrounds, and it is possible that the same

classroom experience may affect different individuals in different ways. Understanding life outside the classroom may help explain subtle nuances inside the classroom, such as patterns of proactivity or reactivity. For example, sources of antisocial or aggressive behavior may be either biological or environmental and can begin to affect children before birth (Moffitt, 1993). It is also important to note the diversity of student backgrounds and that some may be quite unhealthy, such as enduring homelessness or parental drug addiction (Stevens & Price, 1992). Poverty can negatively affect a child's experience both in school (Pianta & Stuhlman, 2004) and at home (Yoshikawa et al., 2006), making it difficult for them to escape patterns of inappropriate behavior if such patterns are allowed to become established. Diverse backgrounds can also mean that what is effective for one student might not be effective for another.

In one study encompassing 1,150 hours of observation in elementary classrooms (Brophy & Evertson, 2010) it was discovered that effective teaching is dependent upon the type of student being taught. For example, students from a low socioeconomic status (SES) appear to respond best to more teacher lecture and demonstration and less interaction with peers, while students from a high SES respond better to more peer interaction. Other research has found that antisocial students might not respond initially to praise in the classroom, but are more likely to respond when other incentives, such as extra privileges, are offered (Walker, Colvin, & Ramsey, 1995). Such findings iterate the complex and subtle nature of teacher behavior in the classroom and may help explain why it has been difficult to find a dependable link between teaching processes and student outcomes: Different groups of students may respond differently, or even counterintuitively, to the same intervention.

Understanding teachers. In the classroom teachers are called upon to do many things, including respond to the needs of students who come from challenging backgrounds (Stevens &

Price, 1992). They are also placed under pressure to perform well. For example, a teacher's ability to properly manage their classroom is critical to a student's socialization, and even more so when the student lives in poverty (Kellam, Ling, Merisca, Brown, & Ialongo, 1998).

Teachers, similar to students, have their own set of previous experiences that contribute to their behavior. It is important to remember that teachers were once children and could have passed through traumatic or difficult circumstances of their own at any time previous to stepping into the classroom. Setting events (e.g., fatigue, negative interactions) can influence both students and teachers, but little research has been conducted to understand how such events affect the way teachers perform (Shores & Wehby, 1999). One poignant case study (Cambone, 1990) illustrated the dynamic requirements, and often difficult nature, of teaching. The participating teacher, already weighed down by her own personal expectations and deficiencies, was responsible for teaching multiple boys with severe emotional and behavioral problems at a residential and day school. The boys came from various backgrounds, including foster homes or having experienced sexual abuse. The teacher felt hopeless when confronted with all of her students' unique needs, but she continued working patiently. She decided to focus on group management instead of simply reacting to individual disruptions, to teach appropriate skills and competencies, and to modify the classroom environment to foster positive interactions that highlighted the strengths of each student. Despite being under a great deal of stress, she eventually concluded that teaching is not about outsmarting or defeating students. Her perception of teaching expanded to be more about sincerely caring for her students, sometimes at personal cost, to "tip the balance" in their favor so they might ultimately succeed (p. 236). When teachers are faced with similar situations the pressure to perform might leave them feeling unprepared.

Research suggests that many teachers feel unprepared to manage a classroom. In a survey of 62 experienced special education teachers, 100% thought a course on classroom management should be a requirement for both general education and special education teachers (Stough et al., 2015). Despite being experienced teachers, 83% of that same group felt underprepared for classroom management and implementing behavioral interventions. Another survey of 99 general education teachers showed that 65% wanted more resources and fewer demands, and showed that a lack of time to accomplish tasks led to increased role conflict at school and an inability to fulfill educational standards (Berryhill, Linney, & Fromewick, 2009). A different group of 99 pre-service teachers ranked managing student behavior and developing a respectful and caring classroom among their top learning needs (Clark & Byrnes, 2015).

Not all teacher training programs provide teachers what they need to be successful. In one Midwestern state only 7 of 26 (27%) higher-education programs for the training of special education teachers offered an entire course devoted to classroom management (Oliver & Reschly, 2010). The other 19 programs offered classes with content related to behavior management, but the overall training philosophy appeared to be a reactive one. Based upon the results of one recent literature review (Floress, Beschta, Meyer, & Reinke, 2017), there are many opportunities available to help students given the repeated effectiveness of a simple classroom management technique such as praise. A key part of stress is the perceived inability to fulfill one's current responsibilities with one's current resources (Fink, 2016). In that context, many teachers appear to be operating in a stressful environment because they are either not aware of, or do not know how to implement, interventions that have been demonstrated to be effective, particularly when it comes to managing student behavior in the classroom.

The stress that comes from high expectations, feeling unprepared, and in some cases not actually being prepared, affects teachers in various ways. Stress has been shown to correlate with emotional exhaustion, depersonalization, lack of personal accomplishment, and burnout (Lambert, McCarthy, O'Donnell, & Wang, 2009). A teacher might also unknowingly contribute to problems faced as an educator. For example, it has been shown that a teacher's harsh reprimanding of students is correlated with their own emotional exhaustion (Reinke et al., 2013). Teacher burnout is a global phenomenon (Aloe, Amo, & Shanahan, 2014), and in the United States 17% of teachers choose to leave the profession within their first five years (Gray & Taie, 2015). For teachers of students with EBD common reasons for leaving the profession include a lack of appropriate resources, insufficient time for paperwork, unsupportive administration, and inappropriate discipline (Cancio, Albrecht, & Johns, 2014). Considering such findings, it becomes easy to understand why a teacher might not enjoy being at school, and consequently might not behave very positively or consistently while in the classroom.

Neither teacher nor student behavior is always consistent; it could be proactive, reactive, or passive for many different reasons. In an ideal classroom students respond as expected to every effort made by the teacher, but sometimes roles become confused and the balance is temporarily disrupted (Brophy, 1981). Teachers can get caught up in a pattern of reacting to inappropriate behavior because it often has a way of demanding attention, while appropriate behavior is sometimes easier to overlook (Duke & Madsen, 1991). In such a case the teacher is simply reacting to student behavior rather than being proactive (e.g., classroom management). These phenomena have been manifested by teachers praising very little, or students disrupting often (Reinke, Lewis-Palmer, & Merrell, 2008). Research is needed to better understand the classroom experience and identify factors that influence both teacher and student behavior.

The Classroom Experience

The quality of the classroom environment is important, especially in elementary school. For example, first grade classrooms with higher levels of aggression have been shown to be predictive of highly-aggressive behavior in males all the way through middle school (Kellam et al., 1998). Research has been conducted to understand teacher-student interactions, including various behaviors of teachers (Andrzejewski & Davis, 2008; Brophy & Evertson, 2010; Hamp-Lyons, 2012), and students (Gottfried, 2014; Ladd & Dinella, 2009; Wasson, Beare, & Wasson, 1990), as well as across multiple student age groups (Brown, 2015; Chappell, Arnold, Nunnery, & Grant, 2015; Kellam et al., 1998) and cultures (Lewis & Demie, 2015; Parker, Segovia, & Tap, 2016; Rouland, Matthews, Byrd, Meyer, & Rowley, 2014). One pattern that has emerged is the interaction between teacher praise or reprimands and subsequent student behavior (Moore Partin et al., 2010; Reinke et al., 2013).

Little research has addressed the differential effects of teacher praise or teacher reprimands on the behavior of at-risk students and their peers, but various studies have addressed parts of it. For example, in a study of nine fifth graders with EBD in a self-contained special education classroom the effects of both feedback and increasing behavior-specific praise on students' on-task behavior were examined (Sutherland et al., 2000). It was found that on-task behavior increased when teacher praise increased. In a separate self-contained, residential special education classroom the effect that increasing the teacher's encouragement and approval statements (i.e., praise) had on the time two students with EBD spent waiting outside the classroom as a time-out was measured (Kennedy & Jolivette, 2008). Total time waiting decreased significantly when teacher encouragement and approval statements (i.e., praise) were used more often. In another study (Allday et al., 2012) a group of seven students, either with or

at risk for EBD, in general education classrooms responded positively to changes in teacher behavior following a professional development intervention involving behavior-specific praise. When the teachers' behavior-specific praise increased, so did the students' task engagement. For example, when one teacher's rate of behavior specific praise increased from 0.30 to 1.21 per minute one student's on-task behavior increased 16%. Although reprimands were not discussed as part of the professional development intervention they were found to decrease as praise increased.

After reviewing studies examining the relationship between teacher praise or reprimands and the behavior of at-risk students, it appears research to date has frequently been conducted with small samples in self-contained special education classrooms, and is often done using single-subject or correlational designs. It is valuable to consider the effects of praise and reprimands in the presence of each other because praise is only one perspective of a teacher's actions, and students exhibit both appropriate and inappropriate behavior in the classroom. The same teachers may also reprimand often or exhibit other reactive patterns that negate the effects of praise.

A pattern of reactive teacher behavior is a concern for at-risk students especially. Similar to how teachers form patterns (Duke & Madsen, 1991), at-risk students can also get caught up in their own negative patterns. Some students may act out in order to appear a certain way to their teacher or peers (i.e., because they have always been expected to act out). Other students may act out to decrease the stress associated with change (i.e., maintaining a predictable classroom environment; Van Acker, Grant, & Henry, 1996). Regardless of the function of behavior exhibited by students, various classroom management programs have been developed to help teachers manage complex interactions.

Classroom Management

Schools have been called "reactive organizations" due to the requirement that they respond to so many responsibilities simultaneously (Walker et al., 1996, p. 195). Classroom management programs are effective tools that can be implemented in schools to address various teacher needs, and there is no need for them to be complicated or expensive to be effective (Cook et al., 2017). For the reactive teacher, classroom management programs can provide more ways to interact with students proactively by increasing OTR, pre-correcting behavior, and using behavior-specific praise (Reinke et al., 2015). Teachers who are underprepared can use such programs to access knowledge or skills needed to more efficiently manage behavior (Allday et al., 2012). Classroom management programs have been shown to decrease elementary students' externalizing behaviors, emergency removals, suspensions, and expulsions from school (Nelson, 1996). Proactive classroom management has also been shown to protect against the effects of aggressive classroom environments in elementary school and subsequent longitudinal effects, which can follow a student into middle school (Kellam et al., 1998).

Effective management is not just about changing student classroom behavior, it also relates to academics. Elementary teachers' classroom management, relative to other variables in the classroom, has been found to have the strongest effect on student academic outcomes (Brophy & Evertson, 2010). When teachers take a proactive approach to classroom management their efforts have been shown to both decrease problem behavior and increase academic performance of students (Witt, VanDerHeyden, & Gilbertson, 2004). This may be why there has been an increase in the use of proactive classroom management strategies over time (Gable, Hester, Rock, & Hughes, 2009).

School-wide Positive Behavior Support. School-wide Positive Behavior Support (SWPBS) is a framework that brings together many effective classroom management strategies with the ultimate goals to improve both behavioral and learning outcomes for all students in the school. Educators are encouraged to be proactive about problem behavior through a three-tiered, proactive approach with an emphasis on instruction (Carr et al., 2002; Turnbull et al., 2002). In short, educators want to catch their students when they are being good (French, Henderson, Lavay, & Silliman-French, 2013). While the main tenets of SWPBS (e.g., developing supportive classroom environments, teaching important social skills, and positive reinforcement) are not novel ideas (Sugai & Horner, 2006) they have been shown to be effective when brought together in classrooms (Curtis, Van Horne, Robertson, & Karvonen, 2010). A specific SWPBS classroom management program called Class-wide Function-related Intervention Teams (CW-FIT) has been shown to be effective in general education classrooms by increasing student on-task behavior (Caldarella et al., 2015) as well as managing challenging student behaviors and improving teacher praise-to-reprimand ratios (Wills, Iwaszuk, Kamps, & Shumate, 2014). CW-FIT has also been shown to be effective for at-risk students and students with EBD in urban elementary schools by increasing student on-task behavior, decreasing student disruptive behavior, increasing teacher praise, and decreasing teacher reprimands (Kamps et al., 2011; Weeden et al., 2016).

Teacher praise. Teacher praise in the classroom has been studied as early as preschool (Floress, Berlinghof, Rader, & Riedesel, 2017), and has commonly been reported as a rate (Reddy, Fabiano, Dudek, & Hsu, 2013; Reinke et al., 2008). It has been referred to as encouragement (Abramowitz, O'Leary, & Rosen, 1987) and positive, verbal reinforcement (Kennedy & Jolivette, 2008), among other names, and it has been defined differently in various

studies. Some researchers have defined praise as a construct that is intended to reinforce student behavior (Weeden et al., 2016) or simply to recognize student engagement in a task (Embry & Biglan, 2008). Different definitions for the same construct could be one possible explanation for the competing opinions about how praise is either appropriate for use in the classroom or not appropriate. In the current study praise was defined as, "Verbal statements indicating approval of appropriate behavior (beyond the correct response to a question), to individuals or groups, as indicated by tone of voice or content." This definition is appropriate to use in the current study because it does not automatically assume that praise will function as a reinforcer to increase student engagement or decrease disruptions, but allows the construct to interact with various outcome variables.

Regardless of the name or definition, praise has been called the simplest classroom management strategy to implement, carrying with it a strong base of empirical evidence including positive effects on both student academic and social outcomes (Simonsen et al., 2008) as well as for teacher self-efficacy (Reinke et al., 2013). Praise can be given to students in various ways, including in writing (Caldarella, Christensen, Young, & Densley, 2011), verbally (Kennedy & Jolivette, 2008), or with gestures or tangible objects (Floress, Beschta et al., 2017). When used incorrectly (i.e., not contingently), praise can become a vehicle for students to shape teacher behavior, creating a reactive interaction pattern (Brophy, 1981). For example, praise that is not contingent or specific might be used by a teacher to simply balance out negative interactions with students. If this is the case, a student who behaves inappropriately may learn that in order to receive more praise all that is required is to act inappropriately more often. By exhibiting more inappropriate behavior they would then be conditioning the teacher to offer more praise. Praise is increasingly recommended to teachers, due in part to the ability to

implement it easily and with little preparation (Gable et al., 2009). It has been found to be effective for classroom management in general education classrooms (Conroy et al., 2009; Moore Partin et al., 2010; Reinke et al., 2008) and also for at-risk students specifically (Sutherland et al., 2000). Effective praise and feedback are appropriate and recommended to manage problem behavior exhibited by students with EBD (Conroy et al., 2009), but they are not implemented as often or as well as they could be (Gage et al., 2017; Shores & Wehby, 1999).

Despite the growing body of knowledge on praise and its effectiveness as a classroom management strategy, praise has also been noted to be ineffective or detrimental because it can decrease student motivation and subsequent academic performance (Dweck, 1999; Kohn, 2001). It has also been argued that when praise is the primary method by which teachers offer feedback in the classroom it creates a dependency on the teacher and can manipulate students (Larrivee, 2002). Much of this research offers theoretical discussion about the negative outcomes that may be associated with praise when it is not implemented correctly.

In schools, where praise can be a particularly effective tool for motivating and teaching, it has been "greatly underutilized" (Walker et al., 1995, p. 65), and tends to decrease as students age (Floress, Jenkins et al., 2017; Reddy et al., 2013; White, 1975). In elementary classrooms rates of verbal and nonverbal praise appear to be low for general education students (0.38-0.75 per minute, Floress, Jenkins et al., 2017; $M = 0.38$ per minute, Reddy et al., 2013; $M = 0.56$ per minute, Reinke et al., 2013) as well as for students exhibiting disruptive behaviors ($M = 0.46$ per minute, Reinke, Lewis-Palmer, & Martin, 2007) and students with EBD (0.33-1.37 per minute, Rathel et al., 2008). Additional research is required to understand how praise and reprimands function in the classroom.

In a recent review of 40 years of research regarding praise in classrooms (Jenkins et al., 2015), gaps were identified and directions for future research were recommended. Many studies to date have focused on elementary-age students in special education classrooms. Praise research has been conducted less often in general education classrooms with students who are at risk for, or who already have, EBD, and many of those studies involved small sample sizes. Considering the current state of knowledge about praise, there is a need for research conducted with large samples that also uses consistent operational definitions. The current study responds to these recommendations by analyzing data from a large sample of students across three states, from multiple classrooms, during various classroom activities, across multiple grade levels, using clear operational definitions, while simultaneously measuring student engagement and disruptions.

Teacher reprimands. Historically, teacher reprimands have been studied less than other similar corrective techniques such as time-out (Van Houten, Nau, MacKenzie-Keating, Sameoto, & Colavecchia, 1982). The construct of teacher reprimands has been referred to in various ways, including correction statements (Allday et al., 2012), negative communication (Rathel et al., 2008), and contingent punishment (Merrell, Ervin, & Gimpel Peacock, 2012). The definition of reprimand has included both verbal behavior (Caldarella et al., 2015) and gestures (Weeden et al., 2016). In the current study reprimand was defined as, "Verbal statements to individuals or groups indicating disapproval of inappropriate behavior (including threats or scolding) or desire that a specific behavior be stopped."

Reprimand rates in the classroom are generally low, both for students with behavior problems (M = 0.01-0.03 per minute, Shores, Jack et al., 1993) and without behavior problems (M = 0.67 per minute, Reinke et al., 2013). However, reprimands have been found to be more prevalent than praise in elementary classrooms (Reinke et al., 2013; Van Acker et al., 1996). The

ratio between praise and reprimands has been shown to worsen (more reprimands than praise) as students' grade level increases (Reddy et al., 2013).

There has been a relatively small amount of research completed on teacher reprimands, but results indicate how they might relate to student outcomes in the classroom. In one study, elementary students ($N = 206$) screened to be at high risk for aggression received more reprimands than their peers, which reprimands also predicted an increase in negative student behavior and noncompliance (Van Acker et al., 1996). In a single-subject study with two students, teacher reprimands were found to correlate with high rates of student problem behavior (Kodak et al., 2007). Harsh reprimands have also been found to correlate with teacher emotional exhaustion (Reinke et al., 2013). Given the potentially negative outcomes associated with teacher reprimands it would be valuable to understand better how they interact with student engagement and disruptions in the classroom.

Student engagement. Measuring student engagement is one way to understand student needs. Accordingly, it has been studied in both general education (Germer et al., 2011) and special education classrooms (Bock & Erickson, 2015; Seo, Brownell, Bishop, & Dingle, 2008). In the current study engagement was defined as either active engagement, "student action in response to assigned/approved task" or passive engagement, "student focused on assigned/approved task." Researchers studying students with EBD in general education settings have found class-wide rates of student engagement across elementary, middle, and high schools to be between 68% and 81%; statistically significant differences were noted between public and private school settings and between schools in two different states (Hayling, Cook, Gresham, State, & Kern, 2008). In separate research, rates of engagement for at-risk students in early childhood (K-2) general education classrooms have been found to be between 82% and 92%

(Caldarella et al., 2015). These higher rates for at-risk students suggest that engagement may not be as descriptive of EBD when considered alone. Engagement appears to be driven by more than student factors, for example, the environment that teachers create in the classroom.

Proactive interventions, such as training teachers to use behavior-specific praise, can improve the engagement of students with or at risk for EBD (Allday et al., 2012). Increasing OTR has also increased task engagement for students with EBD (Sutherland, Alder, & Gunter, 2003). The results of 1,197 direct observations of instructional behaviors and subsequent student behavior (Scott, Hirn, & Alter, 2014) showed a significant, positive correlation between total instructional time (59% of the class period in the average classroom) and student engagement (averaging 85%). Despite teaching behavior being observed more often in elementary grades compared to middle or high school, opportunity remains to increase teaching time and subsequently increase student engagement. In a longitudinal study (Ladd & Dinella, 2009), 383 students were observed beginning in kindergarten and followed through the eighth grade. In the sample, change or continuity of early school engagement (measured by a combination of behavioral and emotional factors) was predictive of long-term academic growth. Levels of engagement were not consistent for all participants; some maintained a steady level throughout the study (the continuity that researchers called pivotal), but others saw a fluctuation, or change, in their engagement pattern. It appears that the magnitude of engagement is not as important as its consistency when considering academic growth. For at-risk students specifically, engagement alone may not be the best descriptor of EBD, which could be one reason it is often measured or reported along with disruptive behavior.

Student disruptive behavior. Similar to engagement, disruptive behavior can be viewed as a way that students express their needs in the classroom. It has been studied in various settings

including general education classrooms (Shores, Gunter, & Jack, 1993) and alternative schools (Denune et al., 2015) by observing general education students (Reinke et al., 2008), at-risk students (Kamps et al., 2011), and students with EBD (Sutherland et al., 2003). In the current study disruptions were defined as, "Voluntary physical/motor or verbal inappropriate behavior, including gestures, intended to self-stimulate, gain attention, or escape, which may or may not detract from the learning of peers."

Disruptive behavior is something that occurs across groups in elementary schools, but students who were deemed to have behavior problems by their teachers have been observed to exhibit higher rates of disruptive behavior than their peers (Reinke et al., 2007). In a study including 294 general education students in elementary school the reported average rate of disruptions was 0.03 per minute (Scott et al., 2014). In contrast, another study (Caldarella et al., 2015) illustrated that disruptions for at-risk students in early childhood (K-2), general education settings ranged from 0.54 to 1.61 per minute. Considering the counterintuitive findings between general education and at-risk student engagement rates (at-risk students being found to have higher rates than their not-at-risk peers), rates of disruption help to create a more detailed profile of what EBD looks like in elementary classrooms. Rather than a lack of engagement alone, at-risk students or students who have EBD appear to display more disruptions than their peers, which may draw more attention and lead the teacher to see them as at risk, or consider them to have behavior problems. Previous research has addressed disruption rates in the classroom and demonstrated the ability to decrease these rates.

One study illustrated the value of being proactive and consulting with teachers when addressing student disruptive behavior (Reinke et al., 2008): Four teachers received feedback about their use of praise, which in turn increased praise rates and subsequently decreased student

disruptive behavior. In another study, the implementation of an interdependent group contingency (a class-wide, Tier 1 intervention called The Good Behavior Game) decreased disruptive behavior as measured by rule violations by an average of 61% (Hartman & Gresham, 2016). For at-risk students specifically, a proactive classroom management strategy such as CW-FIT has been shown to decrease disruptive behavior (Kamps et al., 2011), reinforcing the concept that being at-risk does not guarantee that a child will develop EBD. If a student already has EBD their disruptive behavior may be decreased by something as simple as increasing OTR in the classroom (Sutherland et al., 2003). It is important to remember that students enter a social environment when entering the classroom; one reason disruptive behavior occurs there is that peer behavior is likely the most common antecedent, as well as the most common consequence, of student disruptions (Shores, Gunter et al., 1993).

Summary

Students and teachers interact constantly in the classroom. Upon review of previous research, the positive effects that teacher praise could have, and negative effects teacher reprimands could have, on student engagement and disruptions begin to emerge. Additional research, including the identification of significant factors that help determine the relationship these variables have with each other, is constructive and beneficial not only for at-risk students and their teachers but for administrators, peers, families, and entire communities. This study investigated interactions between teachers and students by examining how rates of teacher praise and reprimands related to rates of student engagement and disruptions, both for students who were at risk and those who were not at risk for EBD.

CHAPTER THREE

Method

Setting

Data analyzed in this study were gathered from 18 elementary schools across three sites (Kansas, Tennessee, and Utah) that were part of a three-year, grant-funded efficacy trial of CW-FIT (Wills et al., 2010). The range of free/reduced lunch (FRL) for all sites was 34% to 98% (M = 68; SD = 20.77). Observations were completed across various academic subjects, including math (28.3%), language arts (13.4%), reading (12%), writing (10.5%), social studies (3.8%), literacy (3.3%), science (.8%), and other (1.7%). Approximately 4% of classrooms were special education settings. See Table 1 for descriptive data across sites and schools.

Table 1

Descriptive Data Across Sites and Schools

Site	School	Number of teachers	Number of peer comparison students	Number of at-risk students	Percent of total sample	Free/reduced lunch (%)	School size
Site 1	School 1	3	6	8	5.9	71.9	220
	School 2	2	4	6	4.2	48.2	243
	School 3	4	6	7	5.4	95.8	319
	School 4	4	6	7	5.4	59.2	578
	School 5	2	4	4	3.3	81.2	290
	School 6	4	7	6	5.4	72.7	289
	School 7	6	9	12	8.8	65.0	515
Site 2	School 8	4	10	12	9.2	69.2	425
	School 9	4	5	7	5.0	81.0	490
	School 10	2	4	3	2.9	35.9	476
	School 11	3	3	4	2.9	55.3	409
	School 12	4	7	8	6.3	34.0	630
	School 13	7	10	14	10.0	82.7	504
Site 3	School 14	4	5	6	4.6	52.0	519
	School 15	2	4	3	2.9	94.2	677
	School 16	4	8	11	7.9	98.1	475
	School 17	3	6	5	4.6	40.9	472
	School 18	3	5	7	5.0	91.5	317

Note. Schools (N = 18), teachers (N = 65), peer comparison students (n = 109), at-risk students (n = 130).

Participants

Participants included teachers (N = 65) and their nominated students (N = 239) from elementary school settings (K-6). Teachers were predominantly female (97%) and of White/Caucasian ethnicity (86%). Most had earned a Master's (45%) or a Bachelor's (44%) degree, and while the most common amount of teaching experience (18%) was one year, experience ranged between 0 and 34 years (M = 10.86; SD = 9.69). The majority of students were male (64%), of White/Caucasian (48%) or Black/African American (31%) ethnicity, and spoke English as their primary language (71%). Of the students, 8% had a disability that required an Individualized Education Plan (IEP) for the following: Specific Learning Disability/Learning Disability (52.6%), Autism Spectrum Disorder (26.3%), Specific Language Impairment (15.8%), and Intellectual Disability (5.3%). Participating students were nominated by teachers as at-risk for EBD or as peer comparisons based on their behavior and not disability status (see Table 2).

Table 2

Student Demographics: Gender, Grade, and Ethnicity by Group

	At-Risk Students (n = 130)		Peer Comparison Students (n = 109)	
Variable	Frequency	Percentage	Frequency	Percentage
Gender				
Male	99	76.2	53	48.6
Female	31	23.8	52	47.7
Missing	0	0	4	3.7
Grade				
K	20	15.4	16	14.7
1	22	16.9	18	16.5
2	21	16.2	18	16.5
3	25	19.2	24	22.0
4	16	12.3	13	11.9
5	15	11.5	12	11.0
6	5	3.8	4	3.7
SPED	6	4.6	4	3.7
Missing	0	0	0	0
Ethnicity				
Black/African American	51	39.2	22	20.2
Hispanic/Latino	17	13.1	16	14.7
White/Caucasian	60	46.2	54	49.5
Asian/Pacific Islander	1	0.8	5	4.6
Other	1	0.8	1	0.9
Missing	0	0	11	10.1

Measures

Systematic Screening for Behavior Disorders (SSBD): Stage 1. The SSBD, Stage 1 (Walker & Severson, 1992) is a screening measure used to identify children with significant behavior problems. Teachers identify and rank students on both externalizing and internalizing dimensions (operationally defined for teachers before student nomination). Test-retest reliability of the SSBD Stage 1 ranges from .72 to .79, and inter-rater agreement ranges from .82 to .94.

Social Skills Improvement System (SSIS): Teacher Form. The SSIS (Gresham & Elliott, 2008) is an 83-item, norm-referenced, standardized measure comprised of three scales: Social Skills, Problem Behaviors, and Academic Competence. The four Likert response options for the Social Skills and Problem Behavior scales range from *never* to *always*. The Academic Competence scale ranges from 1 (*lowest 10%*) to 5 (*highest 10%*). Example items include, "Says 'thank you,'" and "Fights with others." SSIS internal consistency ranges from .94 to .97, and the median test-retest coefficient is .81. Validity evidence can be found in the test manual (Gresham & Elliott, 2008).

School Social Behavior Scales - Second Edition (SSBS-2). The SSBS-2 (Merrell, 2002) is standardized and norm-referenced. The 64-item measure includes two scales: Social Competence (32 items) and Antisocial Behavior (32 items) on a Likert scale from 1 (*never*) to 5 (*frequently*). Sample items include, "Asks for help in an appropriate manner," and "Is dishonest; tells lies." SSBS-2 internal consistency ranges from .96 to .98. Test-retest reliability for grades one through five has been reported between .86 and .94. Evidence of validity can be found in the test manual (Merrell, 2002).

Classroom Performance Survey - Elementary (CPS-E). Adapted from the Classroom Performance Survey (CPS; Robin, 1998), the Classroom Performance Survey—Elementary

(CPS-E; Caldarella et al., 2016) is a rating scale of elementary student classroom performance (see Appendix A). The 17 Likert items ranging from 1 (*always*) to 5 (*never*) are divided into two main categories: Academic Competence and Interpersonal Competence. Sample items include "Completes homework on time" and "Relates positively to teachers." Range of internal consistency ranges from .79 to .92. Caldarella et al. (2016) provide validity evidence.

Direct observations. Student (engagement and disruptions) and teacher (praise and reprimands) variables being analyzed in the current study were collected via direct observations using the Multi-Option Observation System for Experimental Studies (MOOSES; Tapp, Wehby, & Ellis, 1995). MOOSES is computer-based and allows researchers to record both frequency and duration events, which has been used successfully in research similar to the current study (Reinke et al., 2013; Smith, Lewis, & Stormont, 2011). Observer training and interobserver agreement procedures were the same as in previous research (e.g., Lower et al., 2016). When the data were originally collected at-risk students were the focus of the CW-FIT grant, and were consequently observed during 15-minute sessions an average of nine times ($M = 9.32$, $SD = 1.37$), while peer comparison students were observed an average of three times ($M = 3.28$, $SD = 0.97$). All observations were completed during the same subject period. Interobserver agreement averaged 91% across observations. Definitions are summarized in Table 3.

Classroom Management Rating Form (CMRF). The Classroom Management Rating Form (CMRF) was based in part on the Classroom Atmosphere Rating Scale (CARS; Wehby, Dodge, & Greenberg, 1993), a seven-item measure designed to measure disruptive behavior at the classroom level. The nine-item CMRF includes briefer items and simplified response options that allow observers to measure the classroom environment of participating students and teachers (see Appendix B). The form includes items such as, "Students follow rules appropriate to

Table 3

Definitions of Student and Teacher Behaviors

Behavior	Definition	Examples	Measurement
Teacher praise	Verbal statements indicating approval of appropriate behavior (beyond the correct response to a question), to individuals or groups, as indicated by tone of voice or content.	"Sarah, give yourself a pat on the back for finishing all your homework." "Everyone in class made it back from the break on time, way to go."	15-minute observations, recorded via frequency codes using MOOSES
Teacher reprimands	Verbal statements to individuals or groups indicating disapproval of inappropriate behavior (including threats or scolding) or desire that a specific behavior be stopped.	"Robyn, I told you to stop throwing pencils." "Everyone needs to stop talking right now."	15-minute observations, recorded via frequency codes using MOOSES
Student engagement	Active engagement: student action in response to assigned/approved task Passive engagement: student focused on assigned/approved task	Active: student verbal response following teacher request for comments, silently working on math problems during independent work time Passive: student listening during silent reading, quietly waiting for other students to finish math problems	15-minute observations, recorded via duration codes using MOOSES
Student disruptive behavior	Voluntary physical/motor or verbal inappropriate behavior, including gestures, intended to self-stimulate, gain attention, or escape, which may or may not detract from the learning of peers.	Inappropriate gestures, shouting in class, physical violence against a peer or a teacher	15-minute observations, recorded via frequency codes using MOOSES

setting" and, "Praise (points) ratio to reprimands approximately 4:1." The nine items are scored on a rating scale from 1 (*40% of students or time*) to 4 (*90% of students or time*), with higher scores indicating better outcomes. A total percentage is then calculated by summing scores and dividing the total by 36 (nine items with four points possible per item). No psychometric data related to the CMRF have been analyzed to date, so psychometric analyses were conducted in the current study (see data analyses). During data collection CMRF scores for classrooms containing at-risk and peer comparison students ranged from 25% to 85% (M = 58; SD = 12.51).

Procedures

Participant identification. Administrators responsible for elementary education referred schools for participation. Principals then gave researchers the opportunity to hold a recruitment meeting with teachers to ask for voluntary participation in the multi-site efficacy trial. Per institutional review boards at respective universities and local school districts, teachers who volunteered to participate completed approved informed consent forms, which were similar across sites; an example of the teacher form can be found in Appendix C. Teachers were asked to identify the time of day they experienced the greatest number of student behavioral challenges, and all data collection took place during that selected time.

At-risk student identification. Stage 1 of the SSBD was completed by teachers to nominate students for the at-risk group. Teachers were free to nominate students based on classroom behavior regardless of special education status. The parents of the three top ranked students from each category (externalizing and internalizing) were contacted to obtain informed consent and student assent. Informed consent forms were similar across sites; an example of the form for parents and at-risk students can be found in Appendix D. The SSIS was completed by teachers to further assess students, who were only included in the at-risk group if their problem behavior scores were in the *above average* range. Student at-risk status was also confirmed using MOOSES: engagement levels below 75% or more than 10 disruptive behaviors in a minimum of two out of five 15-minute observations, similar to previous research (Caldarella et al., 2015).

Peer comparison student identification. Teachers were asked to identify up to four students who exhibited appropriate and cooperative behaviors in the classroom who could be observed as comparison peers to at-risk students. An additional item was included, following SSBD Stage 1, for teachers to identify and rank comparison students. Teachers were free to

nominate students based on their classroom behavior regardless of special education status. The parents of these students were contacted to obtain informed consent and student assent. Informed consent forms were similar across sites; an example of the form for parents and comparison students can be found in Appendix E. Review of MOOSES observation data confirmed differences between at-risk and peer comparison students' classroom behavior (e.g., comparison students had significantly higher rates of engagement and fewer disruptions).

Group assignment and control classrooms. As part of the efficacy trial, teachers and their nominated students were randomly assigned to either treatment or control conditions. Randomization was performed using a random number generator in Microsoft Excel, stratified by grade level (K-2 and 3-5) and type of classroom (general education and special education). Control classroom teachers were advised to use a "business as usual" approach (i.e., typical instruction and behavior management). Examples of typical classroom management strategies included behavior charts, token economies, and praise.

Data collection schedule. All data included in the current study were collected in control classrooms observing natural occurrences of teacher and student behavior. Demographic information was obtained from school records (see consent form in Appendix D). A three-week baseline phase allowed teachers to complete rating scales (SSIS, SSBS-2, and CPS-E) and observers to complete between three and five MOOSES observations of at-risk students. During the next four to six months approximately 10 additional MOOSES observations were obtained (for at-risk and peer comparison students) and one CPS-E was completed by teachers each month. One SSIS and SSBS-2 were completed by teachers at posttest. The CMRF was completed by observers during MOOSES observation sessions. Raw data were entered and stored electronically.

Data Analyses

The current study is a secondary analysis of data collected during the multi-site efficacy trial of CW-FIT. We first conducted preliminary descriptive analyses to understand the nature of the data. Next, we examined differences between at-risk and peer comparison students across demographic and target variables. We conducted a psychometric evaluation of the CMRF to assess internal consistency and factor structure, and then performed regression analyses to answer the four research questions.

Preliminary analyses. We examined the proportion of students in each group by gender and ethnicity using chi square tests of independence. We also explored potential group differences in engagement and disruption rates using independent samples t-tests.

Psychometric analyses. We assessed the psychometric properties of the CMRF in Mplus 8 and SPSS 24. We randomly selected 50% of the data (120 students) and performed an exploratory factor analysis (EFA), and a subsequent confirmatory factor analysis (CFA) with the remaining data (119 students), in Mplus (Worthington & Whittaker, 2006). Assumptions were checked for in the confirmatory factor analysis, including correct model is specified, missing data handled appropriately, no multivariate outliers, independence of observations, no extreme collinearity, and linearity between the items. Additional information about assumptions can be found in the Results section. The nested nature of the data required the use of CLUSTER=studentID and the TYPE=COMPLEX in the ANALYSIS section of Mplus. Fit indices produced by Mplus allowed for the establishment of good model fit. SPSS was used to calculate Cronbach's alpha.

Regression analyses. Multiple linear regression (MLR) was used because there is theoretical support and empirical evidence that teacher praise and reprimands can influence at-

risk student engagement and disruptions in the classroom (Conroy et al., 2009; Simonsen et al., 2008; Weeden et al., 2016). Despite not being a strong enough design to prove causation, a secondary data analysis using MLR can build on previous research addressing group differences according to similar variables (Cook et al., 2017; Hayling et al., 2008; Taylor & Hoedt, 1966) by portraying how those variables interact and in what ways a variable might be related to one group in different ways than it is to another.

To answer the four research questions and examine the relationship between rates of teacher behaviors (praise and reprimands) and student behaviors (engagement and disruptions) in the presence of relevant variables we ran a series of MLR models in SPSS 24, which were confirmed by a structural equation model (SEM: a combination of MLR and CFA; Wang & Wang, 2012). Initial models included multiple covariates, but due to problems with multicollinearity and no significant predictors of outcome, we chose to use a more parsimonious model that did not include grade level, site, or class subject. This clearer model included: student status (target = 1, peer = 0), CMRF score (latent variables: *Student Classroom Behavior* and *Teacher Classroom Management*), student gender (male = 1, female = 0), student ethnicity (Black/African American = 1, other = 0), and interactions (student status with praise, student status with reprimands). For all regression models the assumptions of linearity, independence, normality, equality of variance, and multicollinearity were considered. The assumption of independence was violated because all participating students were nested in classrooms, which required the use of CLUSTER=studentID and the TYPE=COMPLEX in the ANALYSIS section of Mplus. Fit indices produced by Mplus allowed for the establishment of good model fit. Residual plots generated by SPSS showed no departure from normality or linearity.

CHAPTER FOUR

Results

Descriptive Statistics

Descriptive statistics by group are summarized in Table 4. Rates of praise, reprimand, and disruptions were reported per minute to allow for simple conversion and comparison to any length of class period or activity. Rates for these variables have been reported per minute in previous research to allow for direct comparison to other rates (Reinke, Herman, & Sprick, 2011; Reinke et al., 2015). CMRF scores and engagement were reported as percentages.

For all students together, reprimands ($M = 0.07$, $SD = 0.07$) occurred significantly ($t = -5.540$, $p < .001$) more often than praises ($M = 0.04$, $SD = 0.05$). Praise and reprimand rates were almost equal for peer comparison students, but at-risk students received significantly more reprimands than praises on average ($t = -6.798$, $p < .001$). The mean CMRF score for all students ($M = 57.85$, $SD = 12.51$) was similar for both at-risk students and peer comparison students. At-risk students were less engaged than their peers by approximately 20%, and were disruptive approximately three times as often (see Table 4).

Table 4

Descriptive Statistics by Student Group

	At-Risk Students (*n = 130)*			Peer Comparison Students (*n = 109)*				
Variables	*M*	*SD*	Min - Max	*M*	*SD*	Min - Max	*t*	*p*
Praise Rate[a]	0.05	0.06	0 - 0.30	0.04	0.05	0 - 0.29	0.79	.43
Reprimand Rate	0.10	0.07	0 - 0.33	0.04	0.05	0 - 0.20	7.19	.001*
CMRF[b] Score	57.58	11.08	27.88 - 77.50	58.17	14.08	25 - 84.73	-0.36	.72
Engagement (%)	72.98	14.72	31.48 - 96.25	91.70	8.39	60.33 - 100	-12.31	.001*
Disruption Rate	0.68	0.51	0.03 - 3.75	0.22	0.23	0 - 1.10	9.34	.001*

[a] All rates are per one minute. [b] Classroom Management Rating Form.
* $p < .001$

Preliminary Analyses

Preliminary analyses indicate that at-risk students differed significantly from peer comparison students across multiple variables (see Table 2 and Table 4). Chi square analyses revealed a greater proportion of males in the at-risk group, $X^2(1) = 16.76$, $p < .001$, as well as a greater proportion of Black/African American students in the at-risk group, $X^2(4) = 10.24$, $p < .05$. The mean at-risk student engagement and disruption rates were significantly different than the mean peer comparison engagement and disruption rates. Reprimand rates were significantly higher for at-risk students compared to their peers. Differences between praise rates and CMRF scores were nonsignificant.

Psychometric Analyses of the CMRF

We performed psychometric analyses to examine the factor structure and model fit of the CMRF when used in elementary school settings. Appropriate cross-validation techniques (Worthington & Whittaker, 2006) were used, in which the data sample was randomly divided in half and an EFA was performed on the first half (120 students) and a subsequent CFA was performed on the second half (119 students). Missing data (4%, due to a lack of time to complete the rating form during original data collection) was addressed using the Full Information Maximum Likelihood method in Mplus. Using a combination of theory and empirical results, a two-factor model was discovered to have the best fit. This solution allowed residual errors to be correlated between items 7 and 8, which correlation was .78 ($p < .001$). These two items appeared to be accessing the same construct of teacher behavior as they both dealt in some way with the quantity of praise given to students by teachers. Item 9 was deleted because it did not relate specifically to student or teacher behavior in the classroom.

The final factor solution had acceptable fit statistics (RMSEA = .13, CFI = .96, TLI = .93, SRMR = .04) with cutoffs for RMSEA < .08 (Browne & Cudeck, 1993; Byrne, 2013; MacCallum, Browne, & Sugawara, 1996), CFI > .95 (Hu & Bentler, 1998, 1999), and TLI > .90 (Wang & Wang, 2012). These latent variables were labeled *Student Classroom Behavior* and *Teacher Classroom Management*, and found to be correlated with a value of .83 ($p < .001$). Factor loadings can be found in Table 5. Cronbach's alpha for *Student Classroom Behavior* was .96, and .83 for *Teacher Classroom Management*. With these acceptable results, we proceeded to do a SEM to confirm MLR model results including these latent variables as covariates, which are discussed further in the Regression Analyses section below.

Table 5

Factor Loadings for CMRF Factors

CMRF items	Standardized factor loadings
Student Classroom Behavior factor	
1. Level of compliance during academic instruction	0.96**
2. Students follow rules appropriate to setting	0.94**
4. Students are focused and on task	0.93**
Teacher Classroom Management factor	
3. Transitions are short with only minor disruptions	0.81**
5. Level of lesson structure (organized clear directions, sufficient work to keep students busy)	0.93**
6. Teacher ignores minor inappropriate behaviors	0.85**
7. [a]Frequent and specific praise given (points count toward frequency)	0.26*
8. [a]Praise (points) ratio to reprimands approximately 4:1	0.50**
Deleted items	
9. Three to five clearly and positively stated classroom expectations/rules are visibly posted	

Note. $N = 239$. [a]Allowed residual errors to be correlated between items 7 and 8, correlation was .78 ($p < .001$).
* $p < .01$. ** $p < .001$.

Regression Analyses

MLR models were specifically designed to examine potential factors that explain group differences, including interaction terms. Significant interactions between student status and

teacher praise or reprimands were graphed with a commonly used method: using one standard deviation below and above the mean to represent the lower (praise: 0 per minute; reprimand: 0.01 per minute) and higher (praise: 0.10 per minute; reprimand: 0.14 per minute) values in this sample. Betas, standard errors, and standardized betas can be found in Appendix F. Bivariate correlations for model variables can be found in Appendix G.

Research question 1 examined how teacher praise rates related to engagement rates of at-risk students and peer-model students. A MLR model was created to understand student engagement accounting for student status (target = 1, peer = 0), teacher praise rate, teacher reprimand rate, CMRF score (latent variables: *Student Classroom Behavior* and *Teacher Classroom Management*), student gender (male = 1, female = 0), student ethnicity (Black/African American = 1, other = 0), the interaction between student status and teacher praise, and the interaction between student status and teacher reprimands. The model yielded an R^2 of .59, explaining 59% of the variance of student engagement in the sample. The interaction between student status and teacher praise was significant ($B = 5.60$, $p < .001$), indicating that increasing teacher praise was associated with greater at-risk student engagement, but less peer comparison student engagement (*Figure 1*). Student status ($B = -15.42$, $p < .001$) and the *Student Classroom Behavior* factor of the CMRF ($B = 9.58$, $p < .001$) were also significant. All other variables were not significantly predictive.

Research question 2 examined how teacher praise rates related to disruption rates of at-risk students and peer-model students. A MLR model was created to understand student disruptions accounting for student status (target = 1, peer = 0), teacher praise rate, teacher reprimand rate, CMRF score (latent variables: *Student Classroom Behavior* and *Teacher Classroom Management*), student gender (male = 1, female = 0), student ethnicity

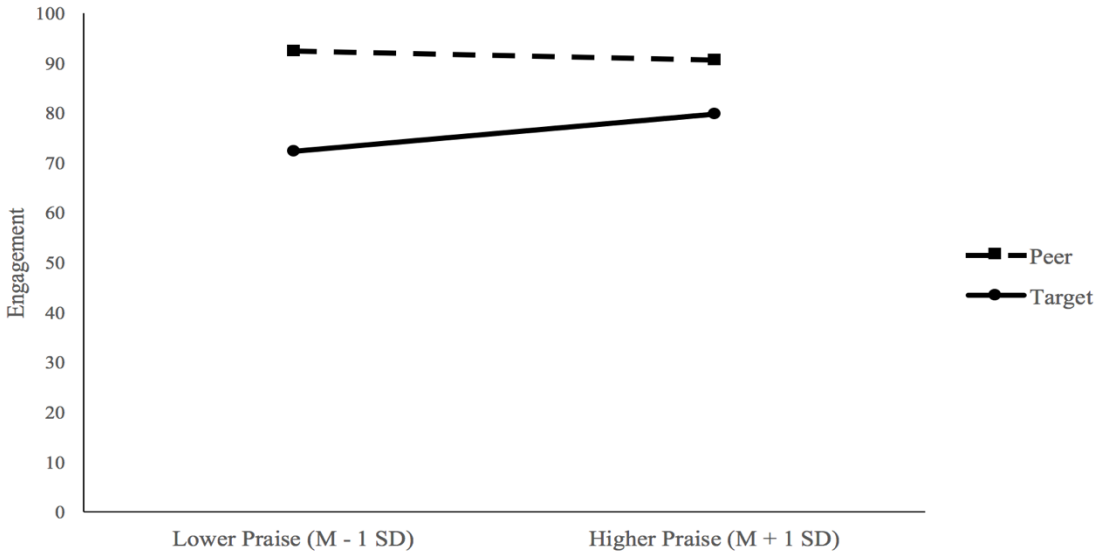

Figure 1. Interaction of student status and teacher praise rate on student engagement.

(Black/African American = 1, other = 0), the interaction between student status and teacher praise, and the interaction between student status and teacher reprimands. The model yielded an R^2 of .41, explaining 41% of the variance of student disruptions in the sample. The interaction between student status and teacher praise was not significant and the model was run a second time without the interaction term to search for a main effect for teacher praise, but there was no change in outcome. However, student status ($B = 4.99$, $p < .001$) and both *Student Classroom Behavior* ($B = -4.41$, $p < .01$) and *Teacher Classroom Management* ($B = 4.65$, $p < .05$) factors of the CMRF were significant when considering student disruptions. All other variables were not significantly predictive.

Research question 3 examined how teacher reprimand rates related to engagement rates of at-risk students and peer-model students. A MLR model was created to understand student engagement accounting for student status (target = 1, peer = 0), teacher praise rate, teacher reprimand rate, CMRF score (latent variables: *Student Classroom Behavior* and *Teacher Classroom Management*), student gender (male = 1, female = 0), student ethnicity

(Black/African American = 1, other = 0), the interaction between student status and teacher praise, and the interaction between student status and teacher reprimands. The model yielded an R^2 of .59, explaining 59% of the variance of student engagement in the sample. The interaction between student status and teacher reprimands was significant (B = -4.88, p < .01), indicating that increasing teacher reprimands was associated with less at-risk student engagement; peer comparison student engagement also decreased, but with a smaller magnitude (*Figure 2*). Student status (B = -15.42, p < .001) and the *Student Classroom Behavior* factor of the CMRF (B = 9.58, p < .001) were also significant. All other variables were not significantly predictive.

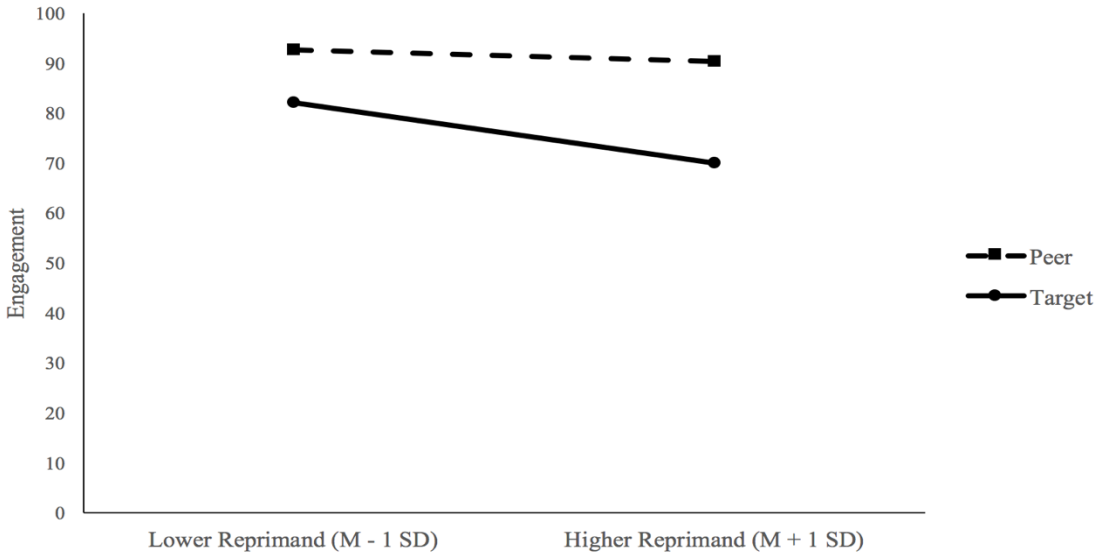

Figure 2. Interaction of student status and teacher reprimand rate on student engagement.

Research question 4 examined how teacher reprimand rates related to disruption rates of at-risk students and peer-model students. A MLR model was created to understand student disruptions accounting for student status (target = 1, peer = 0), teacher praise rate, teacher reprimand rate, CMRF score (latent variables: *Student Classroom Behavior* and *Teacher Classroom Management*), student gender (male = 1, female = 0), student ethnicity (Black/African American = 1, other = 0), the interaction between student status and teacher

praise, and the interaction between student status and teacher reprimands. The model yielded an R^2 of .41, explaining 41% of the variance of student disruptions in the sample. The interaction between student status and teacher reprimands was significant ($B = 2.24$, $p < .05$), indicating that increasing teacher reprimands were associated with more at-risk student disruptions; peer comparison student disruptions also increased, but with a much smaller magnitude (*Figure 3*). Additionally, based upon the What Works Clearinghouse (2014) standardized beta threshold of 0.25, this interaction can be considered influential for educational settings as well as statistically significant. Student status ($B = 5.01$, $p < .001$) and both *Student Classroom Behavior* ($B = -4.31$, $p < .01$) and *Teacher Classroom Management* ($B = 4.56$, $p < .05$) factors of the CMRF were significant when considering student disruptions. All other variables were not significantly predictive.

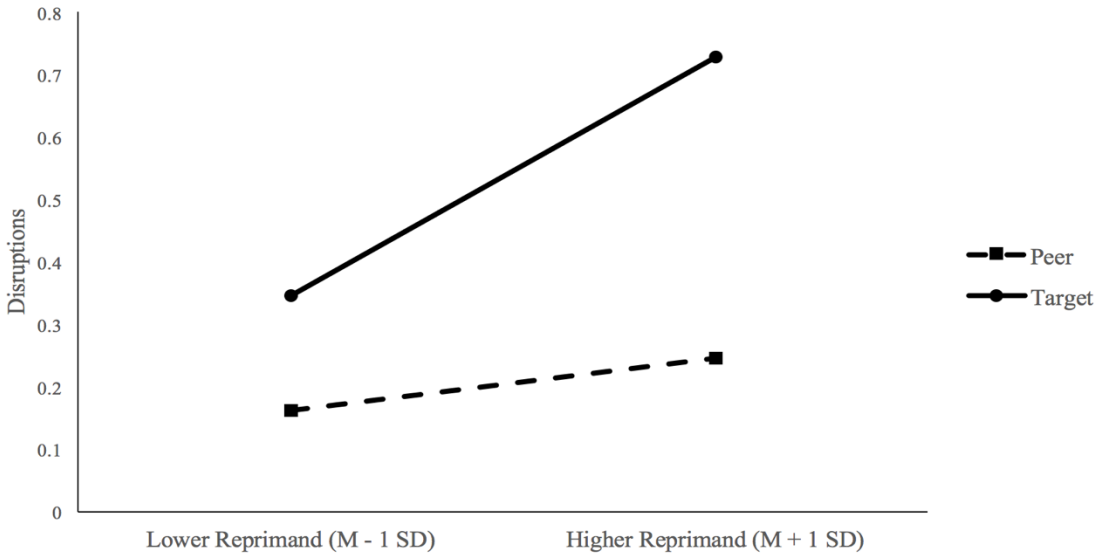

Figure 3. Interaction of student status and teacher reprimand rate on student disruptions.

CHAPTER FIVE

Discussion

The purpose of the current study was to better understand how natural rates of teacher and student behaviors relate in elementary classrooms. This was accomplished by examining how teacher praise and reprimands related differently to the engagement and disruptions of at-risk students than the engagement and disruptions of peer students who were not at risk. Considering the potential negative outcomes that at-risk students face, such as being more likely to fail academically than students with learning disabilities or students without disabilities (Nelson et al., 2004) and being more likely to be arrested than their peers with other disabilities (Doren et al., 1996), proactive efforts to mitigate these outcomes are particularly valuable. Previous research has illustrated how teacher praise and reprimands might function in classroom settings (Conroy et al., 2009; Kodak et al., 2007; Sutherland et al., 2000). The results of the current study add to previous research by clarifying the function of these teacher behaviors in elementary schools, particularly given the natural or descriptive nature of observations of both at-risk and peer comparison students.

Researchers and practitioners have worked proactively to identify students who may be at risk of developing EBD (Kamps et al., 2011). The screening process has commonly included appropriate, validated measures (Gresham & Elliott, 2008; Walker & Severson, 1992) and direct observation of student engagement and disruptions (Tapp et al., 1995). The results of the current study could also be used by practitioners as an additional tool to identify students who may be at risk, or to understand how at-risk students may respond differently to teacher behavior than other students who are not at risk.

These results will be discussed according to the four research questions listed previously. Questions one and two both focused on how teacher praise related to student engagement and disruptions, and will be discussed together. Questions three and four specifically addressed the ways teacher reprimands were related to student engagement and disruptions, and will similarly be discussed together. These findings are unique because, despite a research design insufficient to prove causation, they address the relationship between teacher and student behaviors (how they vary together) rather than simply analyzing group differences.

Praise

Little is known about the relationship between natural rates of teacher praise and student behavior in the classroom (Floress, Jenkins et al., 2017; Gage et al., 2017). Also, a recent review of 40 years of praise literature (Jenkins et al., 2015) revealed gaps in the research that have not been filled and provided directions for the current study. Despite promising findings regarding teacher praise, such as positive outcomes for both general education (Moore Partin et al., 2010) and at-risk students (Conroy et al., 2009), past research has been conducted less often with students who are at risk for, or who already have, EBD who are learning in elementary school settings. Studies have often been limited by small sample sizes as well. The results of the current study help to fill these gaps by offering results from a larger sample (n = 130) of students either at risk for, or with, EBD learning in general education classrooms. Further, this sample was gathered from 18 schools across three states and multiple elementary grade levels, with observations using consistent operational definitions across varied classroom activities and subjects. Accordingly, these results provide a richer perspective of the relationship between teacher praise and student engagement or disruptions in elementary classrooms.

Research to date has illustrated just how effective praise can be in schools. For example, increasing teacher praise has been shown to increase the task engagement of students at risk for, and with, EBD (Allday et al., 2012; Sutherland et al., 2000), and behavior-specific praise has been shown to have a significant, negative correlation with student off-task behavior (Floress, Jenkins et al., 2017). Results from the current study support these findings: As teacher praise increased, so did at-risk student engagement. Additionally, a significant interaction was found between teacher praise and at-risk status while measuring student engagement levels. This means that at-risk student engagement in this sample was particularly sensitive to teacher praise, as evidenced by peer comparison student engagement decreasing slightly as teacher praise increased. One likely explanation for this sensitivity is the small amount of praise that students with EBD typically receive from teachers (Rathel et al., 2008; Rathel et al., 2014). If these students are receiving similar amounts of praise at home or in community settings they are receiving very few positive interactions with adults overall, making the praise they do receive more salient and effective. Students who are not at risk may receive more positive adult interaction in the classroom or other settings, making additional praise less influential. The differential results reflected in this study could also help explain anti-praise literature (Dweck, 1999; Kohn, 2001). Results of the present study suggest that some students may respond counterintuitively to teacher praise, but others, such as at-risk students, clearly benefit from it.

Considering student disruptions, the interaction between teacher praise and at-risk status was not significant in this sample, signifying that praise was not correlated differently with at-risk student disruptions compared to peer model disruptions. However, the results do highlight factors that may help predict student disruptions: student at-risk status and classroom management. These two factors have been addressed in previous research. For example, students

with EBD receive very little teacher praise (Rathel et al., 2014) and classroom environment in elementary school can influence student behavior all the way into middle school (Kellam et al., 1998). These findings suggest that both student characteristics and classroom context are important when working to improve student outcomes.

No significant interaction between teacher praise and at-risk status does not necessarily mean these variables are not related to student disruptions. Other factors (e.g., teacher reprimands) could be obscuring the relationship, which is especially applicable in this case because teacher reprimands have been found to be more prevalent than teacher praise in previous research (Van Acker et al., 1996) and in the current sample. Researchers have also concluded in a previous study (Floress, Jenkins et al., 2017) that teacher praise did not correlate significantly with student disruptive behavior, possibly because there was not enough disruptive behavior exhibited to demonstrate a correlation. Low rates of student behavior in the current study could be influencing the data in similar ways.

Students with EBD have ranked low on teacher desirability (Soodak et al., 1998), but based upon the results of the current study it is important that teachers work to increase praise to help tip the balance for these students so they can succeed (Cambone, 1990). Success in this case is especially important because it means avoiding academic failure, decreasing the likelihood of being arrested, and inspiring better social and behavioral outcomes.

Reprimands

One reason reprimands have been studied less often than other corrective techniques (Van Houten et al., 1982) could be ethical concerns associated with increasing teacher reprimand rates. For example, if teacher reprimands have been found to correlate with increased noncompliance and negative student behavior (Van Acker et al., 1996), manipulating those rates

in additional research could produce harmful outcomes for students. The results of the current study not only help to clarify the relationship between teacher and student variables in a natural setting, but speak directly to the relationship between teacher reprimands and student engagement, a relationship that has been studied very little.

The results reflect that higher rates of teacher reprimands were associated with lower rates of student engagement. Classroom management and student at-risk status were significant factors in this model, and the interaction between teacher reprimands and at-risk status was also significant while measuring engagement. A significant interaction suggests that at-risk student engagement was more sensitive to teacher reprimands (decreasing with greater magnitude) than peer comparison student engagement. The sensitive nature of at-risk student engagement in this sample emphasizes how participant characteristics may affect outcomes.

Although reprimand rates are generally low in classroom settings (M = 0.03 per minute, Gage et al., 2017; M = 0.67 per minute, Reinke et al., 2013) they have been found to be more prevalent than praise statements in elementary schools (Van Acker et al., 1996). The results of the current study support both the low rates (M = 0.07) and higher prevalence (praise: 0.04-0.05; reprimands: 0.04-0.10) of reprimands found in other research. Levels of at-risk student disruptions were also found to be more sensitive to teacher reprimands compared to disruption levels of peer comparison students. This means that as teacher reprimands increased at-risk student disruptions also increased, but at a much faster rate than their peers. Previously, researchers did not find a significant correlation between rates of negative feedback (i.e., reprimands) and student disruptions (Gage, et al., 2017), but this may have been due to all student participants being selected at random. No information was gathered regarding students being at risk for, or having, EBD, which appears to be an important factor contributing to the

relationship between teacher reprimands and student disruptions based upon the findings of the current study.

Considering that reprimands have been found to be more prevalent than praise it is not surprising to observe disruptive behavior across ages and settings, which illuminates the vulnerability at-risk students face. One reason at-risk students become more disruptive could be because they are being reprimanded more often. Behavioral differences have been documented in previous research: General education students who were not at risk were found to be disruptive at a rate of 0.03 per minute (Scott et al., 2014), but in another study the disruption rate of at-risk students was found to be between 0.54 and 1.61 per minute (Caldarella et al., 2015). These are findings educators need to be aware of in the early stages of a child's education if they want to mitigate potential negative outcomes associated with EBD, especially given that the ratio between teacher praise and reprimands gets worse (more reprimands than praises) with increasing grade level (Reddy et al., 2013).

Examining all of these findings together, it appears that at-risk students are more sensitive to both teacher praise and teacher reprimands in elementary classrooms. Sensitivity to teacher variables could be a potential hallmark characteristic of being an at-risk student, which could be used in future research to help identify these students as candidates for early intervention.

Limitations and Directions for Future Research

Despite positive results, the current study included various limitations that highlight opportunities for future research. The data used in statistical analyses came from an existing data set, which limited the design of the study, generalizability, and the statistical methods available to analyze the data. The MOOSES system, while appropriate for the observation of teacher and

student behaviors, only measured verbal praise and reprimands exhibited by teachers. Many previous studies measuring praise or reprimands have measured incidences of both verbal and nonverbal/gestured behavior (see e.g., Reddy et al., 2013; Reinke et al., 2013). This could be one reason why rates in this data set were lower than many observed rates in other studies. Also, all of the observations were completed in control classrooms where rates of praise and reprimands are traditionally low. The highest praise rates in the current study were generally lower than high praise rates observed in previous research (Floress, Jenkins et al., 2017; Jenkins et al., 2015), making it difficult to say that the sample included examples of high praise classrooms. While all teachers in control classrooms were assigned at random, a limited range of data could mean limited opportunities to observe relationships among variables. Promising correlations were found between teacher and student variables, but this could have been different if the data range had been larger (e.g., more positive outcomes for praise and more negative outcomes for reprimands).

Generalizability was also affected. The identification process for peer comparison students was not as detailed as it was for at-risk students. Multiple screening measures and observations were used to confirm a student's inclusion in the at-risk group after they were nominated by their teacher, but peer comparison students were simply nominated by their teacher for exhibiting appropriate and cooperative behaviors and then included in the peer comparison group without further screening. It is difficult to say these peer comparison students could be representative of the average elementary student in a particular state or country without further information. It is important to note statistical analyses indicated that the behavior of students in the peer comparison group differed significantly (more desirable) from behavior of students in the at-risk group on multiple variables, as discussed earlier.

Statistical analyses also faced limitations primarily because the study was a secondary data analysis and not a stronger design. Consequently, correlations between teacher and student variables are not sufficient to prove causality. While results from this study are promising, they can only be said to illustrate relationships between variables and not causal contingencies.

Future research could address many of these limitations. Replications of this study could be done using a different research design, such as a randomized controlled trial (RCT), and could be expanded to include more than 18 schools in three states, which would increase generalizability. It would also be valuable to extend this research into middle school and high school settings to examine if teacher behavior has the same effects on student behavior across developmental stages. A replicated study using a RCT design would allow researchers to include a screening measure for peer comparison students, and to observe natural occurrences of teacher variables in control classrooms, but also manipulate rates of teacher praise and reprimands while measuring the effects those respective rates have on student engagement and disruptions. A larger range in data would contribute to richer statistical analyses and greater generalizability.

Implications

Some researchers have argued that the way praise is given determines how effective it can be (Brophy, 1981; Collins & Cook, 2016). While it is clear that praise must be contingent, for example, data from the current study suggest that it may be important to first consider *who*, rather than *how* to praise. Results also indicate that at-risk students may be especially sensitive to teacher reprimands, in addition to praise. This finding adds further support to SWPBS theory, highlighting how important it is for teachers to catch students being good, especially considering the negative outcomes that at-risk students are faced with throughout their education and beyond. If student engagement and disruptions are correlated with teacher behaviors, it may be possible

for school practitioners to intervene early and help students avoid developing EBD. To create effective learning environments teachers would be wise to understand both how to increase praise and decrease reprimands in their classrooms, as well as how those practices will translate to individual students.

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APPENDIX A

Classroom Performance Survey—Elementary

Student Initials/ID: _____ Teacher Name: _____

Date Completed: _____ School: _____

Condition: _____

Please read each item carefully and circle the number that best describes this student's behavior for *this week*, to the best of your knowledge.

	Always	Most of the Time	Some of the Time	Hardly Ever	Never
1. Completes class assignments.	1	2	3	4	5
2. Completes homework on time.	1	2	3	4	5
3. Records assignments consistently.	1	2	3	4	5
4. Turns in completed work.	1	2	3	4	5
5. Attends to instructions in class.	1	2	3	4	5
6. Cooperates/participates in class.	1	2	3	4	5
7. Demonstrates skills in reading assigned tests and materials.	1	2	3	4	5
8. Demonstrates adequate spelling and writing skills in work.	1	2	3	4	5
9. Performs satisfactorily on tests.	1	2	3	4	5
10. Completes assigned work with accurate computation/detail.	1	2	3	4	5
11. Completes assignments legibly.	1	2	3	4	5
12. Relates positively to teachers.	1	2	3	4	5
13. Demonstrates respect for property.	1	2	3	4	5
14. Relates positively to peers.	1	2	3	4	5
15. Communicates own needs or asks questions.	1	2	3	4	5
16. Accepts assistance when needed or offered.	1	2	3	4	5
17. Works up to potential.	1	2	3	4	5
	Above Average	Slightly Above Average	Average	Slightly Below Average	Below Average
18. Compared to other students in the class, how does this student perform?					
19. Additional skills, behaviors, or concerns you feel have an impact on this student's classroom performance and achievement:					

APPENDIX B

Classroom Management Rating Form and Definitions

1 – Very Low = 40% of students or time
2 – Moderately low = 60% of students or time
3 – Average = 80% of students or time
4 – Moderately high = 90% of students or time

Classroom management:

1.	Level of compliance during academic instruction		☐1	☐2	☐3	☐4
2.	Students follow rules appropriate to setting		☐1	☐2	☐3	☐4
3.	Transitions are short with only minor disruptions	☐ 0 – unable to code	☐1	☐2	☐3	☐4
4.	Students are focused and on task		☐1	☐2	☐3	☐4
5.	Level of lesson structure (organized clear directions, sufficient work to keep students busy)		☐1	☐2	☐3	☐4
6.	Teacher ignores minor inappropriate behaviors	☐0 – unable to code	☐1	☐2	☐3	☐4
7.	Frequent and specific praise given (points count toward frequency)		☐1	☐2	☐3	☐4
8.	Praise (points) ratio to reprimands approximately 4:1		☐1	☐2	☐3	☐4
9.	Three to five clearly and positively stated classroom expectations/rules are visibly posted		☐1	☐2	☐3	☐4

Total Score _____
Total Score Possible _____
Total Score divided by Total Possible = % yes _____

Classroom Management Rating Form - Definitions

* Refer to percent scale on the fidelity checklist.

1. Level of compliance during academic time.
   Record the percentage of students that complied with teacher instructions throughout the session.

2. Students follow rules appropriate to settings.
   Percentage of students that followed classroom rules as defined by class rules poster or school expectations. Also includes demonstrating appropriate behavior for particular activities (i.e., small group/pair-work vs. teacher leading large group activities).

3. Transitions are short with only minor disruptions.
   Percentage of students that transitioned between activities, locations, subjects, or materials smoothly and without major disruptions.

4. Students are focused and on-task.
   Percentage of students that remained focused on and engaged in the activity or lesson.

5. Level of lesson structure
   Quality of lesson structure: organized clear directions, well organized lessons, smooth operation of lessons, clear schedule of activities, few disruptions, and sufficient work to keep students busy
   - 1= Very low—much down time, lessons unclear, chaotic
   - 2= Moderately low—multiple occasions of down time or poorly structured lessons and/or disruptions
   - 3= Average—generally structured with some minor down time on 2+ occasions and/or occasional minor disruptions
   - 4= Moderately high—well structured, few disruptions

6. Teacher ignores minor inappropriate behaviors.
   Percentage of time that the teacher ignored minor inappropriate behavior. Minor inappropriate behavior is defined as behavior that is not harmful to the student or anyone else and is not extremely disruptive or disrespectful. Hitting, kicking, or cursing at the teacher would not be considered minor inappropriate behavior and probably should not be ignored.

7. Frequent & specific praise given.
   Percentage of time that students are being praised for exhibiting good behavior. When praise is given, the teacher should explicitly say *what* the students were doing well. This can be done on an individual or group basis (i.e. “Sally, nice job raising your hand to get my attention!” or “Class, I am really proud of how you have been listening respectfully.”). In addition, points awarded count toward the frequency of praise. If the points are specific (“team 1 gets a point because they

were sitting in their seats") then that counts towards the specificity criteria. The teacher should give at least 3 specific verbal praises throughout the lesson and/or accompany points with specific verbal praise every 4th time the timer goes off.

8. Praise to reprimand ratio approx 4:1.

   Percentage of the teacher's overall student interactions within the session included approximately 4 positive interactions (praise, positive comments, physical rewards, and **points awarded**) to every 1 negative interaction (reprimands, negative comments, removal of rewards). This is measured with respect to the entire class, not just individual students.

   1= Very Low—More reprimands than praises.
   2= Moderately Low—Equal number of reprimands and praises.
   3= Average—Twice as many praises as reprimands
   4= Moderately High—Four times (or more) as many praises as reprimands.

9. Three to five clearly and positively stated classroom rules/expectations are visibly posted.

   Each poster is accessible to students (i.e., written in clear language and has illustrations that all students can access). There are between three and five stated rules/expectations Each rule has 3-5 actionable/observable steps that students can reference when demonstrating that expectation/rule.
   *Posted lists of character traits, expectations without steps to meet those rules, and posters with lists of more than 6 rules/expectations are all non-example

APPENDIX C

Informed Consent Teacher Form

Dear Teacher,

Introduction
Paul Caldarella, Ph.D. and K. Richard Young, Ph.D., researchers at Brigham Young University (BYU), are partnering with researchers at the University of Kansas on an intervention study of Class-wide Function-Related Intervention Teams (CW-FIT). You are being given the opportunity to participate in a research study using CW-FIT to teach on task behavior to your class in the fall or spring of this school year. The following information is provided for you to decide whether you wish to participate in the present study.

The purpose of this project is to assist teachers in developing and implementing behavior interventions for classrooms and small groups or individual students who may be at risk for emotional or behavioral problems. You have responded to the recruitment presentation and indicated your classroom is eligible as a site for CW-FIT due to potential student behavioral risks. Risks include off-task behaviors or attention problems that interfere with learning. We are requesting permission to assist you in providing behavioral intervention in your classroom and assessing your students' progress.

Procedures
If you choose to participate, you agree to be randomly assigned to either one of two groups: Intervention, in which you will receive training in CW-FIT, participate in assessment for student classroom needs, self-monitoring and goal-setting, and individual class lessons on school rules in the fall; or Comparison, in which you agree to participate in meetings, assessments, and classroom observations, but not receive CW-FIT training until spring. The BYU personnel will (a) assist with teacher training in behavioral interventions and classroom management, (b) monitor academic performance, and (c) observe classroom behavior.

CW-FIT is based on best practices, and includes: 1) individual or class lessons on classroom/school rules, 2) schedules (check points) for teachers and students to receive feedback on behavior, and 3) student self-monitoring with goal setting and rewards for performance. Together, these procedures are described as CW-FIT. The options for student consequences for inappropriate behaviors during the study are the same as are currently used for all students at your school (e.g., loss of privileges, office referrals). Interventions are implemented for the individual child and for the whole class as a group, with BYU personnel training and assisting teachers in the implementation of CW-FIT. Assessments include teacher rating scales and interviews, and observations of student on task performance and inappropriate behaviors. BYU personnel will conduct these direct observations. Teachers will complete rating scales and interviews, some in group meetings and others individually, with total paperwork time being no more than 10 hours for teachers participating in the treatment classrooms and no more than 10 hours for teachers participating in the comparison classrooms spread out over the entire school year.

Time Commitment
BYU personnel may be in your class conducting observations for approximately 8 months during one class period of your normal school day. Treatment classroom teachers will be implementing CW-FIT over the course of 4 to 6 months during regular academic instruction; comparison teachers will be engaging in just their regular academic instruction during this time. At the conclusion of the 4 to 6 months, the comparison teachers have the opportunity to be trained in CW-FIT. You will spend no more than 10 hours outside of the regular school day participating in trainings and assessments, for which you are being compensated.

Compensation
At the end of the school year you will be compensated with a $200 check for your time spent participating in this study. This payment is considered taxable income and we will need you to complete a W-9 tax form to receive your payment.

Risks/Discomforts
We do not foresee more than minimal educational or psychological risks associated with participating. You may possibly feel some discomfort when trying to implement CW-FIT in your classroom while being observed by BYU research personnel.

Benefits
While there are no direct benefits to you, based on prior studies, we expect to see improved student learning, classroom behavior, and social interactions with peers and teachers. The results of this study will also help to further validate CW-FIT.

Confidentiality
All data gathered will be coded with an ID number and no identifying information associated with you or your students will be shared with other researchers or included in any published or presented reports. No identifying information will be associated with the ratings you provide on each student. Any information you provide will be securely stored and only BYU research personnel will have access to the data. Your permission allows a copy of all information obtained from assessment and interventions to be provided to researchers at BYU and at the University of Kansas. This information will be kept confidential in secured files and on password protected, encrypted computers. All school policies on confidentiality will be followed. BYU personnel will have relevant study information regarding you and your students available for you to review. Any information about non-research students will remain at your school and researchers will not have access to that information.

Participation
Your participation in this study is voluntary. You have the right to withdraw from this study at any time. Refusal to participate or withdrawing from this study will not affect your employment or standing at your school in any way. BYU personnel may exclude your classroom from participation in the study if the initial information collected in the classroom shows minimal student behavioral risks. You will still have the opportunity to participate in the CW-FIT training.

Questions about the Research
If you have any questions regarding this study, you may contact Dr. Paul Caldarella at paul_caldarella@byu.edu or by calling 801-422-5081 or Dr. K. Richard Young at richard_young@byu.edu or by calling 801-422-2277.

Questions about your Rights as Research Participants
If you have any questions with regards to your rights as a participant, you may contact the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602; 801-422-1461 or irb@byu.edu.

Statement of Consent
I have read, understood, and received a copy of the above consent and desire of my own free will to participate in this study. I further agree to be randomly assigned to Treatment or Comparison conditions. If in the treatment condition, I will not share study procedures with the Comparison condition teachers. If in the Comparison condition, I will not solicit information regarding study procedures.

Printed first and last name	School
Signature	Date

APPENDIX D

Informed Consent Parent Form (At-risk Student)

Dear Parent,

Introduction
Paul Caldarella, Ph.D. and K. Richard Young, Ph.D., researchers at Brigham Young University (BYU), are partnering with researchers at the University of Kansas on an intervention study of Class-wide Function-Related Intervention Teams (CW-FIT). Your child's classroom teacher is participating in this study using CW-FIT to teach on task behavior to your child's class in the fall or spring of the school year. The following information is provided for you to decide whether you wish for your child to participate in the present study.

The purpose of this project is to assist teachers in developing and implementing behavior interventions for classrooms and small groups or individual students who may be at risk for emotional or behavioral problems. Your child has been invited to participate by his/her classroom teacher as a candidate for early intervention due to classroom behaviors of concern. These behaviors include off-task classroom behaviors or attention problems that interfere with learning. We are requesting your permission to assist the teacher in assessing your child's progress and providing behavioral interventions.

Procedures
As part of this study, your child's teacher will be implementing CW-FIT with all students in her/his class during regular academic periods. CW-FIT is based on best practices, and includes: 1) individual or class lessons on classroom/school rules, 2) students receiving positive feedback (points) for appropriate classroom behavior, and 3) students learning to self-monitor and achieve classroom goals. Interventions are implemented for the individual child and for the whole class as a group. BYU personnel will train and assist teachers in the implementation of CW-FIT. Your child may be provided more individualized assistance in these three areas. The options for student consequences for inappropriate behaviors during the study are the same as are currently used for all students at your child's school (e.g., loss of privileges, office referrals). CW-FIT will be implemented during regular school hours and no additional time commitment will be required.

For research purposes, individual assessments regarding your child's behavior will be collected using teacher rating scales, teacher interviews, and a review of behavior and academic records, which may include academic assessments, individualized educational programs (IEPs), and office discipline records. In addition, BYU personnel will conduct direct observations of student on task performance and inappropriate behaviors. A brief academic measure (approximately 20-30 minutes in duration) will also be completed with your child in the fall and in the spring by BYU personnel for research purposes.

Risks/Discomforts
There may be minimal risks for students exhibiting behavior problems; these students will receive more individualized interventions (e.g., self-management cards) possibly resulting in students feeling like they are being treated differently. However, in past research studies, such risks have not been observed and we will also be working individually with other children in the classroom.

Benefits
There are no direct benefits to you or your child, though prior studies of CW-FIT have shown improved student learning, classroom behavior, and social interactions with peers and teachers. The results of this study will help to further validate CW-FIT.

Compensation
There is no compensation to you or your child for agreeing to participate in this study.

Confidentiality
All information gathered will be coded with an ID number and no identifying information associated with you or your child will be shared with other researchers or included in any published or presented reports. Any information gathered will be securely stored and only research personnel will have access to the information. Your permission allows a copy of all information obtained from assessment and interventions to be provided to researchers at BYU and the University of Kansas. This information will be kept confidential in secured files and on password protected, encrypted computers. All school policies on confidentiality will be followed. Information from assessments or observations by BYU staff will be shared in verbal or written reports with your child's teacher who is involved in this study. The only persons in your child's school who will have limited access to your child's study information are your child's teachers. You have the right to contact your child's teacher who will be able to obtain relevant study information on your child for you to review. Any information about non-research students will remain at your child's school and researchers will not have access to that information.

Participation
Your child's participation in this study is voluntary. You have the right to withdraw your child from this study at any time, which means that researchers would not collect any information on your child, though CW-FIT would still be occurring in your child's classroom. Refusal to participate or withdrawing from this study will not affect your child's status or standing at the school in any way.

Questions about the Research
If you have any questions regarding this study, you may contact Dr. Paul Caldarella at paul_caldarella@byu.edu or by calling 801-422-5081 or Dr. K. Richard Young at richard_young@byu.edu or by calling 801-422-2277.

Questions about your Rights as Research Participants
If you have any questions with regards to your rights as a participant, you may contact the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602; 801-422-1461 or irb@byu.edu.

Statement of Consent
I have read, understood, and received a copy of the above consent and desire of my own free will to allow my child to participate in this study. I have discussed this with my child and given my child the opportunity to decline to participate.

_____	_____	_____
Print Child's First and Last Name	Child's Signature	Date
_____	_____	_____
Print Parent's First and Last Name	Parent's Signature	Date

APPENDIX E

Informed Consent Parent Form (Comparison Student)

Dear Parent,

Introduction
Paul Caldarella, Ph.D. and K. Richard Young, Ph.D., researchers at Brigham Young University (BYU), are partnering with researchers at the University of Kansas on an intervention study of Class-wide Function-Related Intervention Teams (CW-FIT). Your child's classroom teacher is participating in this study using CW-FIT to teach on task behavior to your child's class in the fall or spring of the school year. The following information is provided for you to decide whether you wish for your child to participate in the present study.

The purpose of this project is to assist teachers in developing and implementing behavior interventions for classrooms and small groups or individual students who may be at risk for emotional or behavioral problems. Your child has been invited to participate by his/her classroom teacher as a candidate for monitoring performance, because he/she is a "Peer Model" for appropriate class behavior. In other words, your child displays good behavior that serves as a model for other students. We are requesting permission to assist the teacher in assessing your child's progress to see how well typical peers perform during the classroom intervention.

Procedures
As part of this study, your child's teacher will be implementing CW-FIT with all students in her/his class during regular academic periods. CW-FIT is based on best practices, and includes: 1) individual or class lessons on classroom/school rules, 2) students receiving positive feedback (points) for appropriate classroom behavior, and 3) students learning to self-monitor and achieve classroom goals. Interventions are implemented for the individual child and for the whole class as a group. BYU personnel will train and assist teachers in the implementation of CW-FIT. The options for student consequences for inappropriate behaviors during the study are the same as are currently used for all students at your child's school (e.g., loss of privileges, office referrals). CW-FIT will be implemented during regular school hours and no additional time commitment will be required.

For research purposes (for comparison with other students who may not behave as well as your child), individual assessments regarding your child's behavior will be collected using teacher rating scales, teacher interviews, and a review of behavior and academic records, which may include academic assessments, individualized educational programs (IEPs), and office discipline records. In addition, BYU personnel will conduct direct observations of student on task performance and inappropriate behaviors. A brief academic measure (approximately 20-30 minutes in duration) will also be completed with your child in the fall and in the spring by BYU personnel for research purposes.

Risks/Discomforts
We do not foresee any more than minimal educational or psychological risks associated with participation beyond what is typical in the classroom.

Benefits
There are no direct benefits to you or your child, though prior studies of CW-FIT have shown improved student learning, classroom behavior, and social interactions with peers and teachers. The results of this study will help to further validate CW-FIT.

Compensation
There is no compensation to you or your child for agreeing to participate in this study.

Confidentiality
All information gathered will be coded with an ID number and no identifying information associated with you or your child will be shared with other researchers or included in any published or presented reports. Any information gathered will be securely stored and only research personnel will have access to the information. Your permission allows a copy of all information obtained from assessment and interventions to be provided to researchers at BYU and the University of Kansas. This information will be kept confidential in secured files and on password protected, encrypted computers. All school policies on confidentiality will be followed. Information from assessments or observations by BYU staff will be shared in verbal or written reports with your child's teacher who is involved in this study. The only persons in your child's school who will have limited access to your child's study information are your child's teachers. You have the right to contact your child's teacher who will be able to obtain relevant study information on your child for you to review. Any information about non-research students will remain at your child's school and researchers will not have access to that information.

Participation
Your child's participation in this study is voluntary. You have the right to withdraw your child from this study at any time, which means that researchers would not collect any information on your child, though CW-FIT would still be occurring in your child's classroom. Refusal to participate or withdrawing from this study will not affect your child's status or standing at the school in any way.

Questions about the Research
If you have any questions regarding this study, you may contact Dr. Paul Caldarella at paul_caldarella@byu.edu or by calling 801-422-5081 or Dr. K. Richard Young at richard_young@byu.edu or by calling 801-422-2277.

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If you have any questions with regards to your rights as a participant, you may contact the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602; 801-422-1461 or irb@byu.edu.

Statement of Consent
I have read, understood, and received a copy of the above consent and desire of my own free will to allow my child to participate in this study. I have discussed this with my child and given my child the opportunity to decline to participate.

_____	_____	_____
Print Child's First and Last Name	Child's Signature	Date
_____	_____	_____
Print Parent's First and Last Name	Parent's Signature	Date

APPENDIX F

Betas, Standard Errors, and Standardized Betas for Simultaneous MLR Models

Variable	Engagement			Disruptions			Disruptions without A/P		
	B	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
Target	-15.42***	1.49	-0.50	5.01***	0.64	0.36	4.99***	0.64	0.36
Praise Rate	-1.10	1.01	-0.06	0.20	0.38	0.02	0.49	0.54	0.06
Reprimand Rate	-1.14	1.18	-0.07	0.63	0.67	0.09	0.67	0.67	0.10
CMRF – SCB	9.58***	2.55	0.40	-4.31**	1.28	-0.40	-4.41***	1.22	-0.41
CMRF – TCM	-5.55	3.49	-0.21	4.56*	1.81	0.38	4.65*	1.80	0.39
Male	-1.93	1.38	-0.06	0.85	0.65	0.06	0.81	0.67	0.06
Black/African American	1.96	1.85	0.06	0.91	0.93	0.06	0.91	0.94	0.06
A/P	5.60***	0.99	0.23	0.48	0.89	0.04	---	---	---
A/R	-4.88**	1.46	-0.25	2.24*	1.05	0.25	2.20*	1.08	0.25
R^2	.59			.41			.41		

Note. $N = 239$. SCB = Student Classroom Behavior; TCM = Teacher Classroom Management; A/P = Interaction – At-risk Status and Praise Rate; A/R = Interaction – At-risk Status and Reprimand Rate; *B* = Unstandardized Beta; *SE* = Standard Error of Beta; *β* = Standardized Beta.
*$p < .05$. **$p < .01$. ***$p < .001$.

APPENDIX G

Bivariate Correlation Table for MLR Variables

Variables	1	2	3	4	5	6	7	8	9
1. Target	---								
2. Praise Rate	.05	---							
3. Reprimand Rate	.41**	.00	---						
4. CMRF – SCB	-.04	.16*	-.44**	---					
5. CMRF – TCM	-.01	.17**	-.47**	.85**	---				
6. Male	.27**	.06	.11	-.03	.06	---			
7. Black/African American	.18**	-.01	.29**	-.24**	-.34**	.02	---		
8. A/P	.03	.78**	.03	.05	.09	.02	-.04	---	
9. A/R	.24**	.03	.84**	-.37**	-.40**	.05	.30**	.03	---
M	.54	0	0	0	0	.65	.32	.02	.20
SD	.50	.80	1	.63	.57	.48	.47	.62	.78
Min	0	-.65	-1.11	-1.57	-1.62	0	0	-.65	-1.11
Max	1	3.85	3.77	1.39	.92	1	1	3.85	3.77
N	239	239	239	239	239	235	228	239	239
Missing	0	0	0	0	0	4	11	0	0

Note. SCB = Student Classroom Behavior; TCM = Teacher Classroom Management; A/P = Interaction – At-risk Status and Praise Rate; A/R = Interaction – At-risk Status and Reprimand Rate.
*$p < .05$. **$p < .01$.