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A Pilot Study for Improving Classroom Systems Within Schoolwide Positive Behavior Support

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Abstract

Despite the overall success of Schoolwide Positive Behavior Support, there is evidence teachers do not effectively utilize Schoolwide Positive Behavior Support features in the classroom. Classrooms are important systems within a Schoolwide Positive Behavior Support framework as this is the location within the school that students spend the majority of their time. This is especially important for students with emotional and behavioral disorders as teacher proficiency with classroom management affects the progression and malleability of the disorder. The purpose of this study was to examine the use of a manualized classroom management program to improve classroom atmosphere and teacher use of classroom management practices within schools already utilizing Schoolwide Positive Behavior Support with fidelity. Results suggest significant improvements in teacher use of certain classroom practices (e.g., praise) and classroom systems. Strengths and limitations of the study are presented along with implications for research and practice.

Keywords

classroom management, classroom systems, schoolwide positive behavior support, praise

Despite years of research and continued focus on classroom management issues, translating research on evidence-based classroom management programs into practice remains elusive (Cappella, Reinke, & Hoagwood, 2011; Woodbridge et al., 2014). Researchers are increasingly acknowledging that classroom management is more complex than it may appear (Farmer, Reinke, & Brooks, 2014; Scott, 2017) and requires teachers to not only address the entire classroom system but also manage individual students within that context (Farmer et al., 2014). Contributing to this challenge is the fact that teachers lack adequate training on classroom management (Flower, McKenna, & Haring, 2017; Oliver & Reschly, 2010), leading to an increased need for research in how to effectively train preservice and inservice teachers (Scott, 2017). To highlight the critical need in the field of education, several journals have recently dedicated entire issues to classroom management (see *Journal of Emotional and Behavioral Disorders*, Vol 22, Issue 2, 2014 and *Teacher Education and Special Education*, Vol 40, Issue 2, 2017). A recurring theme is the need to have systems in place to train and support teachers (Motoca et al., 2014; Poduska & Kurki, 2014; Reinke et al., 2014). Schoolwide Positive Behavior Interventions and Supports (SWPBIS) is one potential solution to improving classroom systems because of the emphasis on systems to support teacher behavior (Office of Special Education Programs [OSEP] Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015). Given its widespread use, SWPBIS can affect large numbers of students and teachers, making it an important area to examine the impact on classroom management practices. However, the complexity of implementing effective classroom management practices is also apparent within SWPBIS efforts, which is described next.

SWPBIS

Researchers have reported the use of punitive and zero tolerance approaches common in schools may be increasing problem behavior instead of reducing it (American Psychological Association Zero Tolerance Task Force, 2008; Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008; Safran & Oswald, 2003). In response to this issue, SWPBIS was developed as a systematic approach to promoting positive

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student behaviors while preventing and reducing problem behavior (Carr et al., 2002; Lewis & Sugai, 1999; Lewis, Sugai, & Colvin, 1998; OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015; Sprague et al., 2001). SWPBIS provides a framework for schools to establish a three-tier continuum of behavioral support where each prevention level addresses increasing levels of student need (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015; Sugai & Horner, 2002). Primary prevention, or universal support, addresses all students in the school by increasing and reinforcing positive-desirable behavior and minimizing problem behavior. Secondary prevention is for students at risk and not responding to primary prevention, where strategies are used to increase protective factors and minimize risk factors. Tertiary prevention requires individualized attention to reduce the severity of problem behaviors (Horner et al., 2009; OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015; Sugai & Horner, 2002). In addition, SWPBIS targets three settings within schools (classroom, nonclassroom, and individual students) to organize goals to address specific contexts (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015; Sugai & Horner, 2002).

The core systems of universal PBIS include (a) a leadership team with active administrator participation; (b) efficient routine, schedule, and structure for conducting efficient team meetings; (c) commitment statement for establishing a positive schoolwide social culture; (d) procedures for ongoing data-based monitoring, evaluation, and dissemination; (e) procedures for selection training and coaching of new personnel; and (f) procedures for evaluation of personnel related to PBIS implementation (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015). In addition, core practices of universal PBIS include (a) set of schoolwide positive expectation and behaviors that are defined and taught (e.g., Be Safe, Be Respectful, Be Responsible), (b) procedures for establishing classroom expectations and routines that are consistent with schoolwide expectations, (c) continuum of procedures for encouraging expected behavior (e.g., schoolwide token economy), (d) continuum of procedures for discouraging problem behavior, and (e) procedures for encouraging school–family partnerships (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015). School teams are trained in the above core features and guide the implementation process. Although classroom expectations and routines should be consistent with schoolwide expectations, classroom teachers do not receive training on classroom management—rather, the school team helps guide teachers. The extent to which this happens varies by school. Existing classroom management practices tend to stay in place but may be linked to the schoolwide plan.

Although SWPBIS has been found to improve overall school contexts through evidence of reductions in office referrals (Barrett, Bradshaw & Lewis-Palmer, 2008; Bradshaw, Mitchell, & Leaf, 2010; Horner et al., 2009; Lewis et al., 1998; Sprague et al., 2001) and suspensions (Barrett et al., 2008; Bradshaw et al., 2010), the classroom context remains an area teachers typically report needing additional strategies (Ern, 2007; Pavri, 2004; Reinke, Herman, & Stormont, 2013). This is especially important for students with emotional and behavioral disorders as teacher proficiency with classroom management affects the progression and malleability of the disorder (Breeman et al., 2016; Kellam, Ling, Merisca, Hendricks Brown, & Ialongo, 1998). There is also evidence suggesting teachers do not effectively utilize SWPBIS features in the classroom (Reinke et al., 2013). In fact, researchers found that teachers praise less than what is recommended (4 positives:1 negative), a critical classroom management practice (Reinke et al., 2013). If schools are implementing SWPBIS at high fidelity, yet teachers are not utilizing their classroom management principles, they may be feeling less capable in their ability as a teacher (Reinke et al., 2013). This suggests there is a discrepancy between what schools as a whole are doing and what is going on in the classroom. Effective classroom management practices to support teacher behavior are needed to synthesize high SWPBIS implementation in classroom settings.

Classroom Management Practices

Reviews of classroom management have produced recommendations for use of a variety of strategies found to be most effective (cf. Emmer & Stough, 2001; Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008; Gilberts & Lignugaris-Kraft, 1997; Lohrmann, Talerico, & Dunlap, 2004; Oliver, Wehby, & Reschly, 2011). Similarities across reviews identify three broad categories consistent with effective classroom management strategies. Specifically, effective classroom management strategies to produce desired student outcomes include (a) effective use of praise, (b) proactive teaching and reinforcement of appropriate behavior, and (c) effective behavior correction and reduction strategies. When teachers use these classroom management strategies, reductions in inappropriate student behavior are noted with increases in on-task student behavior and improved academic functioning (Leflot, van Lier, Onghena, & Colpin, 2010; Reinke, Lewis-Palmer, & Merrell, 2008; Sutherland & Wehby, 2001). A review of these three procedures is provided next.

Praise

Praise in particular is a powerful classroom management strategy although it is typically underutilized by teachers

(Jenkins & Floress, 2015). Praise and attention for appropriate behavior, have been linked to increased student engagement in class (Martens, Lochner, & Kelly, 1992; Moore, Robertson, Maggin, Oliver, & Wehby, 2010; Sutherland, Wehby, & Copeland, 2000). Moreover, significant reductions in problem behavior also have been found with teacher use of praise. For example, teacher use of praise reduced problem behaviors for students in general education classrooms (Conroy, Sutherland, Vo, Carr, & Ogston, 2013; Fullerton, Conroy, & Correa, 2009; Hemmeter, Snyder, Kinder, & Artman, 2011; Reinke, Lewis-Palmer, & Martin, 2007; Smith, Lewis, & Stormont, 2010) and for students at risk for behavioral disorders (Fullerton et al., 2009). Teachers who use higher rates of praise also have lower disruptive student behavior, leaving more time for academic instruction (Moore et al., 2010). It has been recommended that teachers use a 4:1 ratio of positive to negative interactions (Sugai & Horner, 2002; Trussell, 2008). However, teachers can benefit from positive to negative interactions as low at 1:1 and still see reductions in problem behaviors (Pisacreta, Tincani, Connell, & Axelrod, 2011). Classroom management plans incorporating research-based strategies that also incorporate an increased emphasis in providing praise may greatly improve the classroom settings within SWPBIS.

Proactive Teaching of Social Skills

One way to teach appropriate behavior is to teach critical social skills. The research base establishing the importance of proactively teaching social skills is replete despite limitations with whether these skills generalize to other settings (Cook et al., 2008). When schools and teachers adopt an instructional approach to behavior, outcomes include reductions in inappropriate behavior (Langland, Lewis-Palmer, & Sugai, 1998), significant improvements in social competence (Cook et al., 2008), and a positive relationship with academic functioning (Elliott, Malecki, & Demaray, 2001). It has been recommended that social skills be task analyzed and broken down into specific steps that can then be memorized (McGinnis & Goldstein, 1997). For example, complying with adult attention can be broken down into the following steps: (a) look at the person, (b) say OK, (c) do it right away, and (d) check back (Hensley, Powell, Lamke, & Hartman, 2011). Teaching these skills in context with multiple opportunities for practice and behavior correction when necessary are important aspects to the teaching process (Snider & Battalio, 2011).

Behavior Correction

Corrective feedback is a necessary component not only for instruction (Coyne, Kame'enui, & Carnine, 2007) but managing behavior as well (Alberto & Troutman, 2009). Behavioral correction is responding through the use of prompts or reprimands that provide instruction to the student as to the behavioral error to correct the error and teach more appropriate behaviors (Reddy, Rabiano, Dudek, & Hsu, 2013). Effective responses to inappropriate behavior can improve classroom behaviors (Abramowitz, O'Leary, & Rosen, 1987; Forehand & Long, 1996). Research indicates error corrections that are direct, brief, and explicit following inappropriate behavior are more effective (Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). However, behavior correction alone without the use of high rates of praise is not recommended (Sugai & Horner, 2002).

Well-Managed Schools (WMS)

Recommendations from research in the field of SWPBIS and others identify praise, proactive teaching of social skills, and behavior correction as pivotal to student success (Cameron, Connor, & Morrison, 2005; Langland et al., 1998; Lewis & Sugai, 1999). An example of a manualized classroom management program incorporating the tenants of SWPBIS and effective classroom management practices is WMS (Hensley et al., 2011). WMS is a manualized classroom management program based on the teaching-family model (Wolf et al., 1976) and the Boys Town Family Home Program (Davis & Daly, 2003) originally designed for at-risk youth in residential treatment programs but adapted for use in general education classrooms as part of the Boys Town education model. Developed in 1979 to train classroom teachers specific ways to teach social skills, praise appropriate behavior, and correct inappropriate behavior, the main components that make up WMS include (a) building positive relationships and classroom climate, (b) teaching social skills, (c) reinforcing classroom expectations and social skills to increase appropriate behavior, and (d) responding to inappropriate behavior. Each of the four components of the WMS described above can be classified under the broad categories identified as evidence-based practices in research reviews (e.g., Emmer & Stough, 2001; Gilberts & Lignugaris-Kraft, 1997; Oliver et al., 2011) and the Institute of Education Sciences (IES) Practice Guide, *Reducing Behavior Problems in the Elementary Classroom* (What Works Clearinghouse [WWC]; Epstein et al., 2008). However, WMS provides a unique approach to classroom management by embedding social skills instruction into daily instructional activities and using naturalistic opportunities to reteach skills using teaching interactions. WMS is not a consequence-based intervention as is typical of other classroom management approaches; rather, WMS focuses on increasing ratios of praise to corrections with an emphasis on behavior specific praise. WMS fits well within SWPBIS by providing teachers with necessary practices to teach and reinforce social skills within the classroom thereby improving classroom system (Sugai & Horner, 2006).

Data collected from an evaluation of districtwide implementation of WMS was analyzed to examine potential differences in student outcomes based on varying levels of implementation fidelity across classrooms. Data from the analyses indicate higher fidelity of program implementation is associated with significantly greater student outcomes than lower implementation fidelity (Burke, Oats, Ringle, O'Neill Fichtner, & DelGaudio, 2011). In other words, teachers who (a) used proactive prompts and embedded teaching of social skills, (b) reinforced social skills with praise, and (c) used effective correction procedures for students who misbehave, had (a) higher levels of student compliance, (b) higher demonstrated levels of student academic engagement, and (c) significantly fewer students with suspensions compared with teachers who used these strategies with lower fidelity. Although there was no comparison group or pretest data, this initial analysis suggests WMS implementation may positively affect student outcomes.

In a more recent analysis of data from the same data set, researchers explored possible mediational relationships between specific classroom management practices and student outcomes (Oliver et al., 2012). Results of a path analysis using implementation fidelity to predict student outcomes indicated a significant indirect effect on academic outcomes through student off-task behavior. The path between implementation fidelity and off-task behavior was negative and statistically significant, and the path between off-task behavior and out-of-school suspensions (OSS) was positive and significant. The path between implementation fidelity and off-task behavior indicates that higher implementation fidelity was associated with lower levels of off-task behavior. The product of these two paths represents the indirect effect of implementation on OSS, which indicates that higher fidelity was associated with lower off-task student behavior, which in turn, was associated with significantly lower OSS.

A second path analysis examining specific classroom management components of WMS to predict student outcomes found that the direct effects on student OSS, controlling for the mediational relationship, were significant for three components: (a) compliance per correction ($B = -1.26$, $SE = 0.542$), (b) prompts per minute ($B = 1.511$, $SE = 0.642$), and (c) corrections per minute ($B = 0.61$, $SE = 0.294$). There were no significant direct effects on grade point average (GPA). Two core components, compliance per correction (unstandardized indirect effect = .213) and prompts per minute (unstandardized indirect effect = .14), demonstrated significant indirect effects on GPA at the .05 alpha level. There were no significant indirect effects on OSS. In addition, the core components explained 56% of the variance of the mediator and off-task behavior, and 17% of the variance of GPA (Oliver, Lambert, Mason, & Epstein, 2013). Although collectively these data suggest WMS implementation can have significant impact on teacher and student behavior, the affects of WMS need to be tested experimentally.

The current study is the first experimental pilot test of WMS and advances prior WMS research by using an experimental design with a treatment and control group and pre-post data. The purpose of this study was to examine the use of a manualized classroom management program, WMS, to improve classroom atmosphere and teacher use of classroom management practices within schools already utilizing SWPBIS with fidelity. Schools were assigned to treatment or control to examine the effects of WMS to improve the classroom setting. It is hypothesized that teachers assigned to the WMS condition will have significant rates of praise, prompts, and corrections as previous research suggests, However, it is unclear if these effects will be attenuated due to the use of SWPBIS in both conditions.

Method

Setting and Participants

Two elementary schools participated from a medium size district in a large Midwestern state. The district serves 3,200 students with a teacher-to-student ratio of 22:1. Both schools were implementing SWPBIS with fidelity based on scores on the Schoolwide Evaluation Tool (Sugai, Lewis-Palmer, Todd, & Horner, 2001) and the Self-Assessment Survey (Sugai, Horner, & Todd, 2003). Table 1 provides a comparison of school characteristics. Twenty elementary teachers participated out of 29 teachers in both schools. Teachers were 95% White females ranging in age from 25 to 59 ($M = 36.4$, $SD = 10.5$), with 2 to 34 years ($M = 12.74$, $SD = 9.29$) teaching experience. Almost all had received a master's degree or higher (90%). Teachers in the treatment condition did not differ significantly from teachers in the control condition on any of the demographic characteristics. A total of 80 randomly selected students participated, four from each classroom. Half of the students were male ($N = 40$), 68% White ($N = 54$), and ranged in age from 5 to 11 ($M = 8$). Students were in Kindergarten through fifth grade and were representative of the school characteristics.

Design and Procedures

Experimental design. The two schools, rather than 20 teachers, were randomly assigned to either treatment or control conditions to control for potential contamination. Schools were also chosen as the unit of randomization because students moved between teachers and therefore treatment effects would potentially be attenuated for students spending part of the day in a treatment classroom and part of the day in a control classroom. As a way to select students that would be representative of the classroom, students were selected by identifying the first male and female from the

Table 1. School Characteristics.

Characteristics	Treatment school A	Comparison school B
Poverty percentage	57.82	41.7
English language learners percentage	19.71	13.87
School mobility rate	14.57	14.71
% minority	47.77	36.14
Enrollment	403	271
SET score	N/A	83%
SAS score	73%	N/A

Note. SET = Schoolwide Evaluation Tool; SAS = Self-Assessment Survey.

top of the teacher's class roster and the first male and female from the bottom of the teacher's class roster. Measures were collected at four different time points across the study including pretest, posttest, and twice in between.

Experimental conditions. All 10 study teachers from the treatment school received 2 days of professional development at the beginning of the school year in WMS and four, quarterly coaching sessions (i.e., four total) from certified, trained Boys Town consultants across the school year (approximately 3 months apart). Training consisted of lecture, demonstrations, role-play, practice, and feedback. Coaching consisted of 20-min observations with a 10-min postconference to provide performance feedback. Data obtained from the observation were used to structure the performance feedback session. Performance feedback consists of a brief 10-min meeting with the teacher to provide feedback regarding implementation. The specific steps are (a) describe procedures that were performed correctly and provide praise for at least one, (b) describe any steps or procedures that were missing or incorrect, and (c) provide corrective feedback and modeling regarding proper implementation. Teachers received training at the beginning of the school year and continued implementation throughout the entire school year. Control teachers in "business-as-usual conditions" did not receive any training and were not provided any consultation or performance feedback. Teachers used a variety of classroom management practices (e.g., card systems) that were unrelated to WMS and which were already in practice prior to the study. Observations of control classrooms were conducted in the exact manner as the treatment classrooms to determine use of practices in control classrooms (e.g., proactive strategies, praise).

Observer training and observations. Observers were research assistants and former teachers experienced with conducting classroom observations. Observers were initially trained in an analog setting on components of WMS by a certified, trained, Boys Town consultant. This initial training lasted 6 hr and consisted of lecture and video presentations of WMS implementation. During this time, observers also received training by the first author on the use of study observation measures (described below in "Measures" section). Operational definitions of each independent variable were provided and discussed. To establish interobserver agreement, observers then conducted 20-min in vivo observations in classrooms where teachers were implementing WMS but were not part of the current study. Observers were independent (i.e., did not provide feedback to teachers) and blind to condition, that is, they were not provided information regarding which classrooms were assigned to treatment or control condition. Observers were considered trained when each observer reached 95% interobserver agreement (agreements/agreements + disagreements × 100) across all observation measures with a trained observer for three consecutive sessions.

Quarterly observations occurred in both treatment and control classrooms (four total across the school year). Observations occurred toward the back of the room out of view of students to reduce observer reactivity but in a location where observers could easily see student and teacher behavior. Observations lasted 20 min during which time the observers coded for the independent variables described below. At the conclusion of the observation, the observers completed ratings of the classroom atmosphere, also described below.

Measures

Classroom management practices. The Structured Classroom Observation–Form V (SCO-V; Burke, Hensley, & Maybank, 2001) was used to record frequency data of teacher use of praise, proactive strategies, and behavioral corrections in both treatment and control classrooms. Operational definitions of each variable were developed and used by observers. The SCO-V is structured with columns for each of the broad areas (i.e., proactive, praise, correction) and allows the observer to simply circle the appropriate behavior (e.g., PP = Proactive Prompt). The same procedures were used to collect and calculate the ratio of praise per minute, prompts per minute, and behavioral corrections per minute. Observers collected frequency data on the number of teacher praise statements using the SCO-V. Previous research on the SCO-V has found evidence for convergent validity and reliability as well as reliability (Burke et al., 2011). Praise was defined as any positive statement (e.g., Thank you for raising your hand) or gesture (e.g., thumbs up) following academic or social behavior, indicating approval that is over and above an evaluation of adequacy or acknowledgment of a correct response to a question. The number of praise statements divided by the number of minutes of the observation was calculated to get a ratio of praise per minute. This

procedure and calculation was used for both proactive strategies per minute and behavioral corrections per minute below. Proactive strategies included (a) prompts—verbal comments (e.g., remember to raise your hand before you answer a question) or gestures (e.g., points to written expectation on poster) made by the teacher to remind students of expected behavior to follow next, (b) blended teaching—teaching of a behavioral skill during an academic lesson, and (c) planned teaching—teaching of a behavioral skill as a stand-alone lesson. Behavioral corrections were defined as verbal comments (e.g., please stop talking and get back to work) or gestures (e.g., finger to mouth indicating quiet) made by the teacher to a student, group of students, or whole class indicating disapproval of a social behavior or redirection. Corrections also include corrective teaching interactions in which the teacher identifies the misbehavior, describes the appropriate skill to replace the behavior, and then provides a rationale for using the behavior. Behavioral corrections were required to occur after student behavior. A ratio of the rate of praise to behavioral correction was calculated by dividing rates or praise per minute by corrections per minute.

Classroom atmosphere. Classroom atmosphere was assessed using the Classroom Atmosphere Rating Scale (CARS; Wehby, Dodge, & Greenberg, 1993). The CARS assesses the overall conditions in the classroom regarding important influences of social and academic achievement of students and is not specific to WMS, providing an overall measure of important dimensions of classroom climate. The CARS assesses five domains: (a) structural characteristics, (b) instructional behaviors, (c) classroom management strategies, (d) student behavior, and (e) aggregate personal and behavior characteristics across the classroom (Wehby et al., 1993). Observers rated 20 items on a scale of 1 to 5 (e.g., *very high* to *very low*) with the remaining three questions relating to aggregate personal and behavioral characteristics of the classroom based on teacher responses to questions (e.g., "The classes academic functioning is . . ."). The CARS has been shown to have excellent internal consistency with alpha coefficients ranging from .95 to .96.

Fidelity. Fidelity was measured three ways. First, fidelity of training was measured through direct observations of training activities using the WMS Model Fidelity Form. The first author rated 26 content items presented for each day of training on a scale ranging from 0 to 2 (0 = *no*, 1 = *partial*, 2 = *yes*) and quality of implementation on a 5-point Likert-type scale ranging from *agree* to *disagree*. Second, fidelity of coaching/performance feedback sessions was measured through direct observations of 25% of coaching sessions using a Consultation Performance Feedback: Procedural Fidelity Form. The form consists of rating of eight steps ranging from 0 to 2 (0 = *no*, 1 = *partial*, 2 = *yes*). Procedural fidelity and training fidelity were both calculated by adding the ratings and dividing by the total number possible and then multiplying by100 to obtain a percentage. Finally, implementation fidelity was measured using the SCO-V. Implementation fidelity is measured using direct observations of teacher use of proactive prompts, blended teaching, proactive teaching, general praise, specific praise, effective praise, corrective prompts, corrective teaching, and guided self-correction. Frequency counts for each behavior are taken and then converted to rates based on the number of occurrences divided by the number of minutes. These results are then compared against benchmark requirements.

Social validity. Social validity of WMS was assessed using a questionnaire at the conclusion of the study. Teachers provided ratings to nine questions on a scale of 1 to 5 with lower numbers indicating less satisfaction with the treatment and higher numbers indicating higher satisfaction with the treatment. Teachers rated items relevant to (a) overall support, (b) fit/ease of the intervention for their classroom, (c) time/burden required, and (d) their perception that the intervention produced positive effects.

Interrater agreement. A second observer was present for 33% of the observations to obtain interrater agreement. Agreement was obtained for direct observations of teacher implementation (proactive strategies, praise, and corrective strategies) and the CARS. Across observation periods, agreement for proactive strategies was 90%, 97% for praise, and 94% for corrective strategies. Agreement for the CARS was calculated two ways. First, exact agreements were defined as exact ratings from both observers. Agreements within one rating were also scored. Both types of agreements were calculated by dividing agreements by disagreements plus agreements and multiplying by 100. Exact agreement across observations was 83% and agreement within one rating was 96%.

Data Analysis Plan

The relationship between treatment condition and teacher and classroom level outcomes was examined using a series of regression models where the condition indicator (*treatment classrooms* = 1 and *control classrooms* = 0) and pretest score were used to predict the posttest score for each outcome. As the treatment condition was coded as 1 and the control condition as 0, positive regression coefficients indicate that the treatment condition demonstrated higher outcomes, and vice versa if the coefficients were negative. Data from the last observation point were used as the outcome in each of the regression models. Finally, to facilitate the analysis, treatment was modeled at the teacher level, rather than the school level, as there was only one school per condition in this pilot study.

Results

Pretest Equivalence

Prior to conducting the treatment impact analyses, we evaluated the equivalence of groups prior to treatment. To this end, we used independent *t* tests to determine the pretest equivalency of the groups. None of the mean difference tests were statistically significant for pretest measures. Standardized mean differences ranged from 0.04 (Proactive) to 0.51 (Classroom Atmosphere) indicating negligible to moderate differences between conditions at pretest. Table 2 lists the unconditional means (and standard deviations) for the pretest measures.

Treatment Impact

Table 3 provides the unstandardized regression coefficient (*B*), the standard error (*SE*), the standardized regression coefficient (β), and *p* value for the treatment indicator for each outcome that was tested. In this case, the unstandardized regression coefficients represent the mean difference between the classrooms in the treatment and control conditions. The standardized regression coefficient represents this same mean difference, but is reported in standard deviation units.

Two of the five outcomes exhibited statistically significant mean differences between the treatment and control conditions. Teachers in the treatment condition used significantly more praise statements compared with teachers in the control condition (1.38 vs. 0.90 per minute). This represents a Cohen's *d* of 0.81 or a difference of nearly 10 instances of praise over a typical 20-min observation—a seeming large practical effect. Teachers in the treatment condition also exhibited significantly more desirable scores on the CARS compared with teachers in the control condition (4.67 vs. 4.52), indicating that these teachers were using more classroom management strategies with higher quality (e.g., gaining student attention, praising consistently, using reprimands appropriately).

In addition to regression analysis findings, we also calculated the standardized mean difference between the treatment and control condition and report these effect sizes in the Cohen's *d* metric using a pooled standard deviation (Table 3). Positive effect sizes represent that teachers in the treatment condition had higher (more desirable) scores on the outcomes compared with teachers in the control condition. These effect sizes can be interpreted using classical guidelines given by Cohen (1988) as large (>0.8), medium (>0.5), or small (>0.2). Using Cohen's categories, the effect sizes for the two significant regression analyses indicate that the effects are both medium to large. When compared with other effect sizes found for classroom management studies (cf. Oliver et al., 2011), the effect sizes found in this study were larger than expected. This is also affirmed when we evaluate the unstandardized difference such as described above for praise per minute (i.e., a difference of 0.48 instance of praise per minute).

Table 2. Unconditional Pretest and Posttest Mean Scores (Standard Deviation).

	Treatment condition	Control condition
Pretest measures		
Proactive per minute	0.21 (0.18)	0.22 (0.21)
Praise per minute	0.81 (0.42)	0.97 (0.43)
Corrections per minute	0.28 (0.20)	0.34 (0.21)
Praise per correction	4.26 (2.82)	3.86 (2.44)
CARS total	4.05 (0.33)	4.22 (0.36)
Posttest measures		
Proactive per minute	0.40 (0.25)	0.37 (0.24)
Praise per minute	1.38 (0.70)	0.90 (0.48)
Corrections per minute	0.40 (0.22)	0.33 (0.27)
Praise per correction	5.92 (7.32)	4.31 (3.17)
CARS total	4.67 (0.19)	4.52 (0.22)

Note. CARS = Classroom Atmosphere Rating Scale.

Fidelity

Fidelity was collected in three ways. Procedural fidelity (i.e., accuracy of study procedures) for both training and coaching were collected through direct observation. Observations of training activities yielded 95% training fidelity across both days and procedural fidelity of 25% of coaching sessions observed was 100%. Finally, treatment fidelity of WMS was calculated as the percentage of teachers meeting benchmark requirements for (a) proactive strategies, (b) praise strategies, (c) praise to correction ratio, (d) student on-task rates, (e) relationship building, (f) physical environment, and (g) behavior compliance. On average, across observation sessions and categories, 78% of teachers met benchmark requirements (range = 71%–84%).

Social Validity

Teachers in the treatment group were given an intervention rating profile to rate WMS at posttest. Results suggest overall high ratings of WMS ($M = 4.3$, $SD = 0.44$) with the highest rating ($M = 5$) for the question, "I enjoyed implementing the intervention in my classroom," and the lowest rating ($M = 3.6$) for the question, "The addition of the intervention improved academics in my classroom."

Discussion

Improving classroom systems is one of the critical issues facing the field of education (Farmer et al., 2014). Research highlights the issue of translating evidence-based classroom

Table 3. Regression Model Results.

Outcome	*B*	*SE*	β	*p* value	Cohen's *d*
Teacher level					
Proactive per minute	0.03	0.11	0.06	.801	0.10
Praise per minute	0.64	0.20	0.52	.004	0.81
Corrections per minute	0.10	0.10	0.22	.322	0.29
Praise per correction	1.05	2.01	0.10	.607	0.31
Classroom level					
CARS total	0.23	0.07	0.54	.005	0.77

Note. The treatment condition was coded as 1 and the control condition as 0 for the analyses. CARS = Classroom Atmosphere Rating Scale.

management into real-world practice (Gilmour, Wehby, & McGuire, 2017; Poduska & Kurki, 2014; Reinke et al., 2014; Woodbridge et al., 2014). SWPBIS may be a vehicle by which support for classroom systems can be administered to improve classroom management. Although SWPBIS has been found to improve overall school contexts through evidence of reductions in office referrals and suspensions, previous research suggests the classroom context remains an area teachers typically report needing additional strategies (Ern, 2007; Pavri, 2004; Reinke et al., 2013). In other words, there is a discrepancy between what schools as a whole are doing and what is going on in the classroom. Researchers found that even teachers in schools implementing SWPBIS do not use classroom management strategies, such as praise, as recommended (Reinke et al., 2013). Classrooms are important systems within a SWPBIS framework as this is the location within the school that students spend the majority of their time. Additional training on a manualized classroom management system that embeds social skills instruction into daily practice may improve classroom systems. The purpose of this study was to examine the use of a manualized classroom management program to improve classroom atmosphere and teacher use of classroom management practices within schools already utilizing SWPBIS with fidelity. WMS was selected because of the similar philosophical foundation as SWPBIS, focusing on proactive teaching and reinforcing social skills. The findings from this initial pilot study show promise that classroom contexts can be improved above and beyond the use of SWPBIS. In particular, results demonstrate improvements in teacher use of praise and overall classroom atmosphere.

Current findings add additional support to previous research on WMS, indicating training and consultation on WMS strategies produces significant changes in teacher behavior, in particular, rates of praise. Although teachers at pretest were already using relatively high rates of praise (i.e., 0.81 and 0.97 praise statements per minute for the treatment and control classrooms, respectively), teachers in the WMS classrooms were using 1.38 praise statements per minute at posttest compared with the .90 praise statements per minute in the control classrooms. This means that teachers in the WMS classrooms were using between nine and 10 more praise statements in a 20-min observation compared with teachers in the control condition.

However, no significant findings were found for other strategies such as behavioral corrections per minute or proactive prompts per minute as was found previously (Oliver et al., 2013). The lack of significant findings for these teacher behaviors in the current study is primarily due to the lack of statistical power. However, other explanations could exist. For example, there may not have been enough time for these behaviors to change given the relatively short time frame of the study. It is also possible that teachers were already using these behaviors through the implementation of SWPBIS and that WMS did not increase the use of these strategies over and above SWPBIS implementation. Finally, despite the overall reliability and validity of the measures used, there is always a possibility that measurement error (i.e., obtained score vs. true score) could affect the findings.

The classroom atmosphere exerts a significant amount of influence on the emergence of behavior problems for students who are at risk as well as the persistence of behavior problems already identified. Research in classroom management indicates students at risk for behavior problems who participate in classroom environments that are chaotic and ill managed tend to worsen in behavior over time (Ialongo, Poduska, Werthamer, & Kellam, 2001; Kellam et al., 1998). Results from this pilot study indicate a significant improvement in the classroom atmosphere of WMS classrooms. In addition, the cumulative findings from prior research on teacher use of praise suggest that this may be the most important classroom management strategy teachers can use. Use of effective praise significantly reduces problems behaviors (Conroy et al., 2013; Fullerton et al., 2009; Hemmeter et al., 2011; Jenkins & Floress, 2015; Reinke et al., 2007; Smith et al., 2010) and increases student engagement (Moore et al., 2010; Sutherland et al., 2000). The significant increases in teacher use of praise in the current study suggest teachers in WMS classrooms could expect to experience these benefits as well. What makes these results even more impressive is that these are classrooms already purportedly implementing SWPBIS based on measures of

SWPBIS fidelity. Despite the pilot nature of this study, these results show promise for improving classroom systems within schools already implementing a schoolwide system of behavior support such as SWPBIS.

Strengths and Limitations

The results of this pilot study, although small, greatly improve upon prior research on WMS. For example, prior research on WMS did not include a control group and pre-intervention assessments. Moreover, the inclusion of stronger standardized measures in the pilot study provides higher quality data to interpret. The fact that schools in the study had schoolwide systems of behavior support in place lends additional support to indicate the potential strength of the WMS intervention. Future research with larger samples is needed to provide the data to validate these assumptions.

Several limitations warrant discussion. First, the nature of the pilot study and the small sample size (20 teachers) limits the ability to detect statistical significance and provide precise estimates of effect size. Readers should take this into account when interpreting the findings. Future studies will include a larger sample size to better evaluate the effects of WMS implementation on teacher and student outcomes. A second limitation is the experimental design with only two schools and two conditions. It is possible that school factors may account for treatment effects. Future research that includes multiple schools will alleviate this issue. Similarly, this study was conducted in one district. The inclusion of multiple districts would strengthen future research. Another limitation is the incongruence between randomization and the unit of analysis. Schools served as the unit of randomization; however, as there were only two schools (one in each group), the analysis had to be conducted at the classroom level, thus the standard errors used to compute test statistics were underestimated leading to an inflated Type I error rate. However, an inflated error rate could be considered acceptable given the exploratory nature of this pilot research. Finally, the lack of a consistent fidelity measure for SWPBIS across schools is a limitation. Schools were concerned with adding an additional fidelity measure and preferred the use of the one already being conducted as part of their schoolwide efforts. Future research using a consistent fidelity measure is warranted.

Implications

While the results of this pilot study must be taken within the context of the limitations described above, the addition of manualized classroom management to SWPBIS appears to produce substantive positive effects on teacher behavior and classroom atmosphere. The importance of effective behavioral support and classroom management cannot be underestimated and the challenges transferring research to practice are significant. Although SWPBIS can improve the overall environment of schools and increase the consistency of adult behavior and language, the classroom context may require additional attention to improve teacher skills and proficiency with highly effective classroom management strategies. A manualized classroom management approach such as WMS may provide teachers with the practices to effectively support student behavior in the classroom. Future research with a larger sample of schools and teachers will be necessary to examine how changes in teacher classroom management practices transfer to improvements in student outcomes such as task engagement and behavior.

Authors' Note

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