

Mystery Motivator: A Tier 1 Classroom Behavioral Intervention

Eva A. Kowalewicz and Gina Coffee
Loyola University Chicago

This study is an examination of the effectiveness of the Mystery Motivator—an interdependent group contingency, variable-ratio, classwide intervention—as a tool for reducing disruptive classroom behavior in eight diverse general-education elementary school classrooms across seven different schools. The study was conducted using an ABAB, changing criterion design, and the effectiveness of the intervention was assessed for an 8-week period. The frequency of disruptive behavior in all classrooms decreased. Teacher intervention acceptability data indicated seven of eight teachers found the intervention to be acceptable. Overall, data indicated the Mystery Motivator intervention was a powerful intervention for reducing disruptive behaviors in elementary classrooms.

Keywords: classroom behavior, Tier 1 intervention, mystery motivator, interdependent contingency, single-case research design

Supplemental materials: <http://dx.doi.org/10.1037/spq0000030.supp>

Disruptive behaviors in the classroom take a substantial amount of time away from academic instruction (Kauffman, Wong, Lloyd, Hung, & Pullen, 1991; Weinstein, 2007), lead to decreased academic performance, and have a negative impact on standardized test scores (Canter, Paige, Roth, Romero, & Carroll, 2004). Furthermore, student discipline problems are a significant source of stress for teachers (Supaporn, Dodds, & Griffin, 2003). For example, 76% of teachers reported they would be better able to teach if student behavior problems were not so prevalent, and another 33% reported considering quitting the profession because of difficulty with classroom discipline (Public Agenda, 2004). As such, assistance addressing disruptive classroom behaviors continues to be one of the greatest needs identified by teachers (Coalition

for Psychology in Schools & Education, 2006; Public Agenda, 2004).

In recent years, the literature on Positive Behavior Intervention Support (PBIS), a framework that facilitates data-based decision making and systemic behavior management in schools, has helped shift the focus of behavior management from a reactive and negative approach to a more proactive and positive approach (Bradshaw & Pas, 2011; Sugai & Horner, 2006). The research behind this philosophical shift has suggested that the implementation of a PBIS model can be more effective in achieving long-term behavioral change and in teaching appropriate behavioral skills than the traditional reactive and punishment oriented model (Bradshaw & Pas, 2011; Sugai & Horner, 2006). PBIS includes primary (Tier 1), secondary (Tier 2), and tertiary (Tier 3) prevention and intervention strategies. Primary prevention includes universal interventions focused on school-wide and class-wide systems. Secondary prevention includes specialized group interventions and focuses on students who are at risk of engaging in challenging behaviors. Tertiary prevention includes individualized interventions and focuses on students with chronic, intense problem behavior (Bradshaw & Pas, 2011; Sugai & Horner, 2006). Today, more than 16,000 schools nationwide have implemented PBIS (Sugai & Simonsen, 2012).

This article was published Online First July 29, 2013.

Eva A. Kowalewicz and Gina Coffee, School of Education, Loyola University Chicago.

Eva A. Kowalewicz is now at Shriners Hospitals for Children, Chicago.

We thank dissertation committee members Pamela Fenning and Rosario Pesce for their contributions to this project.

Correspondence concerning this article should be addressed to Eva A. Kowalewicz, 1686 Greenleaf Avenue, Des Plaines, IL 60018. E-mail: eva.kowalewicz@gmail.com

Classroom Behavioral Interventions

Despite the prevalence of PBIS in today's schools, the majority of PBIS research has focused on individual students and on schools as systems (Sugai & Simonsen, 2012), and insufficient attention has been given to classrooms in this multitiered service delivery model (Chafouleas, Volpe, Gresham, & Cook, 2010; Schandling & Sterling-Turner, 2010; Stichter, O'Connor, Herzog, Lierheimer, & McGhee, 2012). In fact, research has shown that high levels of PBIS school-wide do not necessarily translate to high levels of PBIS in the classroom (Reinke, Herman, & Stormont, 2013). This is unfortunate, because classroom-based behavior management strategies have the potential to reach a large number of students in an efficient manner, and many studies have demonstrated that classroom interventions are a useful tool for improving students' outcomes (Gable, Hester, Rock, & Hughes, 2009; Landry, Anthony, Swank, & Monseque-Bailey, 2009; Leflot, van Lier, Onghena, & Colpin, 2010). However, despite the availability of evidence-based interventions that can be implemented class-wide, a discrepancy exists between their abundance and use in the field of education (Walker, 2004).

Potential barriers to the implementation of classroom behavior management strategies include lack of skills, emotional exhaustion, lack of sense of self-efficacy among teachers (Maslach, Jackson, & Leiter, 1996), competing demands on teacher time, and lack of professional development opportunities (Embry, 2002). One solution to overcoming these barriers is designing classroom interventions that are not only effective but are also easy to learn and easy to implement (Embry, 2002), thus enhancing teachers' perceptions of feasibility. This may be accomplished by creating a context that will allow for greater adaptation of research-based interventions (Schoenwald & Hoagwood, 2001; Walker, 2004)—specifically ensuring that interventions are feasible (Evans & Owen, 2010) and socially valid (Embry, 2002; Wolf, 1978). Unfortunately, issues of feasibility and social validity are not always considered in the development of classroom interventions, because many involve extensive protocols, complicated data gathering tools for individual students, and rigid curricula, which can overwhelm teachers (Embry, 2002).

Mystery Motivator

The Mystery Motivator intervention is one example of a classroom behavior management intervention that can be easily implemented by teachers (Rhode, Jensen, & Reavis, 1992). Essentially, the Mystery Motivator is a contingency contract in that it is framed around a written description of dependent relationships involving student performance, teacher performance, and reinforcing consequences (Schloss & Smith, 1998). When implemented class-wide, the Mystery Motivator is an interdependent group contingency, because the entire class is rewarded upon meeting a specified criterion (Litoe & Pumroy, 1975; Rathvon, 2008). Implementation of interdependent group contingencies is particularly advantageous in classrooms because they may minimize the time teachers spend redirecting misbehavior and can increase student cooperation (Litoe & Pumroy, 1975; Maag, 1999). Furthermore, contingency contracts are consistent with the instruction and reinforcement of clear behavioral expectations/rules that is frequently included at Tier 1 within many schools.

When implemented in the classroom, teachers first develop a Mystery Motivator chart showing the days of the week or month. Then, using a variable ratio reinforcement schedule, they randomly select the days or class periods during which students may earn an unknown reward for exhibiting previously agreed-upon behaviors (e.g., randomly selected math lessons). On these days or class periods, the teacher either marks an "M" in invisible ink or covers each square on the chart with a slip of paper that can later be removed (e.g., a postit note) and marks an "M" in permanent ink. The chart is then placed in a visible location. At the end of each designated period (e.g., at the end of each day's math lesson) for which the students meet the behavioral goals, a student is asked to fill in that day's square (if invisible ink was used) or lift the slip of paper to reveal whether or not an "M" is present that day. If an "M" is present, the students are then awarded a reward selected by the teacher but unknown to the students. If an "M" is not present, the students are praised for meeting the behavioral goals and reminded they will have another opportunity to earn a reward the following school day.

The majority of studies conducted on the efficacy of the Mystery Motivator have employed an individual independent contingency or an independent group contingency to facilitate behavioral and academic change (DeMartini-Scully, Bray, & Kehle, 2000; Kehle, Madaus, Baratta, & Bray, 1998; LeBlanc, 1998; Madaus, Kehle, Madaus, & Bray, 2003; Matovic, 2010; Moore, Waguespack, Wickstrom, Witt, & Gaydos, 1994; Mottram, Bray, Kehle, Broudy, & Jenson, 2002; Musser, Bray, Kehle, & Jenson, 2001; Robinson & Sheridan, 2000). Because reinforcement is delivered individually in such contexts, these interventions can be time intensive, inefficient, and complicated to implement. Conversely, only a few studies have assessed the effects of the Mystery Motivator intervention in an interdependent group contingency context where the unit of analysis was the whole class (Bennett, 2010; Hoag, 2006; Kraemer, Davies, Arndt, & Sawyer, 2012; Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007; Schanding & Sterling-Turner, 2010). Of these studies, four assessed the effect of the Mystery Motivator intervention on disruptive student behavior (Hoag, 2006; Kraemer et al., 2012; Murphy et al., 2007; Schanding & Sterling-Turner, 2010). Descriptive detail for these four studies is presented in Table 1.

Across the studies presented in Table 1, researchers implemented a form of a reversal design during a specified period in which the Mystery Motivator intervention was the only behavior intervention in place (15–50 min, depending on age) and found the Mystery Motivator intervention to be effective in decreasing disruptive behaviors. The intervention was implemented approximately 2 to 4 weeks, behavioral observations were conducted by research team members, and teachers reported moderate to high acceptability.

In particular, two studies examined the effectiveness of the Mystery Motivator intervention in preschool classrooms. Hoag (2006) compared the effectiveness of the Mystery Motivator intervention with a known reinforcer in four preschool classrooms. Findings indicated the Mystery Motivator intervention produced a moderately greater and more consistent reduction in disruptive behavior than known reinforcers. Similarly, Murphy et al. (2007) assessed the effectiveness of a interdependent group contingency with mystery

motivators in decreasing disruptive behavior in a preschool classroom setting and found reductions in disruptive behavior across all nine participants.

In contrast, Schanding and Sterling-Turner (2010) conducted an examination of the effectiveness of a Mystery Motivator intervention in a general education high school classroom. Schanding and Sterling-Turner (2010) assessed the effects of Mystery Motivator on behaviors of three students identified as exhibiting disruptive behaviors, as well as nonidentified students in a ninth-grade high school biology class. Results showed a decrease in problem behaviors for the three identified students, as well as a general decrease in overall classroom problem behaviors.

Finally, Kraemer et al. (2012) compared the effectiveness of the Mystery Motivator intervention with the Get 'Em on Task intervention (a computer-signaling program that helps teachers reward individual students based on individualized auditory signals) in addressing off-task classroom behavior in two fifth-grade classrooms. Findings indicated both interventions were effective in reducing off-task behavior.

Importantly, findings from these studies provide support for the effectiveness of the Mystery Motivator intervention in addressing disruptive behaviors. The present study sought to expand and replicate the aforementioned studies in the following ways. First, given the paucity of data regarding the effectiveness of the Mystery Motivator across elementary grade levels, the Mystery Motivator intervention was implemented in eight diverse classrooms across seven elementary schools in multiple school districts. Second, the Mystery Motivator intervention was implemented for eight school weeks, and behavioral observations were conducted during a follow-up condition following termination of the study to assess maintenance of intervention effects. In addition, in alignment with current educational accountability expectations, teachers in this study directly measured students' behavioral outcomes by conducting class-wide behavioral observations daily. Finally, the present study utilized a combined ABAB/changing criterion design, rather than a reversal design alone, to minimize withdrawal phases, control for threats to internal validity, and further

Table 1
Classroom Interdependent Group Contingency Mystery Motivator Studies Addressing Disruptive Behaviors

	Hoag, 2006	Murphy et al., 2007	Schanding & Sterling-Turner, 2010	Kraemer et al., 2012
Purpose	Compare the effectiveness of a known reinforcer to a MM	Assess the effectiveness of the MM in a preschool classroom	Assess the effectiveness of the MM on 3 target students, while also assessing impact on whole class	Compare effectiveness of the MM with the Get 'Em on Task independent group contingency intervention
Population	Suburban preschool	Headstart preschool	Rural high school class	5th-grade suburban class
Research design	ABAC and ACAB, each in two classrooms	ABAB	ABABAB	ABCACBA
Students	44 total; 10 to 15 per classroom	8	3 targeted; 30 in classroom	50 total; 25 per classroom
Classrooms	4	1	1	2
Study duration	8 weeks total, 2 weeks per phase	16 days (8 baseline; 8 intervention)	2 months, observation data collected twice weekly	14 weeks total, MM data collected 4 weeks; observation data collected twice weekly
Target behavior or behavior goals	Inappropriate physical contact, off task, sit/stand inappropriately rug	Keep hands/feet to oneself, remain on-task, sit/stand properly on rug	Off-task, out-of-seat, and inappropriate vocalizations	Calling out, getting out of seat, disturbing other students
Reinforcement criteria	5 or fewer checks per student	5 or fewer checks per student	3 or fewer checkmarks for the class as deemed by teacher	MM: not specified in study; Get 'Em on Task: 10 points per day maximum
MM acceptability	Varied acceptability across four teachers	Teacher acceptability fell between "somewhat agree" and "strongly agree."	N/A	Teachers found MM acceptable. Students "somewhat liked" the MM.
Results	MM ES 0.84	ES per student: 7.71, 3.04, 2.36, 2.06, 1.58, 1.59, 0.99, and 2.64	Approximate 40% decrease in problem behavior for individual students and 50% reduction among random peers	MM ES -1.62 for Class I; -1.07 for Class II

Note. MM = Mystery Motivator; ES = effect size; Approach One = No Assumptions Method (Busk & Serlin, 1992).

demonstrate experimental control via changing criteria.

Purpose of the Study

The primary purpose of the present study was to evaluate the effectiveness of an interdependent group contingency Mystery Motivator in-

tervention as a classroom behavior management tool for general education elementary school classrooms, and it is the only published study to date to examine the effect of the Mystery Motivator intervention on disruptive behavior in elementary school classrooms in the absence of ongoing or comparison classroom behavioral interventions. The research questions were as

This document is copyrighted by the American Psychological Association or one of its allied publishers. This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

follows: (1) How will the interdependent group contingency Mystery Motivator intervention affect the frequency of disruptive behavioral events, as identified by each teacher, in general education elementary school classrooms? (2) How will teachers rate the acceptability of the Mystery Motivator intervention, as measured by the Intervention Rating Profile-20 (Witt & Martens, 1983)?

It was hypothesized the proposed study would replicate the results of prior studies, which documented the effectiveness of the Mystery Motivator intervention in eliciting behavioral change in both individual students and classrooms (Bennett, 2010; DeMartini-Scully, Bray, & Kehle, 2000; Hoag, 2006; Kehle et al., 1998; Kraemer et al., 2012; LeBlanc, 1998; Madaus et al., 2003; Matovic, 2010; Moore et al., 1994; Mottram et al., 2002; Murphy et al., 2007; Musser et al., 2001; Robinson & Sheridan, 2000; Schanding & Sterling-Turner, 2010). Thus, it was hypothesized that the Mystery Motivator intervention would lead to a decrease in disruptive classroom behavior. Given the results of previous studies that examined the acceptability of the Mystery Motivator intervention, it was also hypothesized teachers would rate the intervention acceptable.

Method

Participants and Setting

Geographic areas that contained culturally, racially, socioeconomically, and linguistically diverse student populations were targeted. Within these geographic areas, kindergarten to fifth grade general education classrooms in which teachers reported experiencing difficulties with disruptive student behavior were sought. School administrators, school psychologists, and principals in urban and suburban areas of a large Midwestern city were contacted, and a total of 11 classrooms responded with interest to participate in the study. Of these classrooms, one did not meet the inclusion criteria for disruptive classroom behavior, as no disruptive behaviors were observed during the baseline observations. Of the remaining 10 classrooms, the intervention was implemented in the first eight that responded (three kindergarten classrooms, two first-grade classrooms, one third-grade classroom, and two fourth-

grade classrooms), and consultative services and intervention materials were provided for the remaining two classrooms. Participant and classroom demographic data are presented in Table 2 (supplementary information is available online).

Letters of cooperation were obtained from the school principals, and informed consent was obtained from teachers. A university institutional review board granted a waiver of documented parental consent. Thus, parent signatures were not required for student participation, and parents provided passive consent. Students provided verbal assent.

Research Design

This study was conducted within an ABAB, changing-criterion design and was replicated across eight classrooms. In an ABAB design, the effects of the intervention are clear when performance improves during the first intervention phase, reverts to baseline levels when the intervention is withdrawn, and improves again when intervention is reinstated (Kazdin, 2011). Complete reversals to baseline were not expected. It was hypothesized students would learn replacement behaviors during the intervention phases, and they would not unlearn these behaviors during the reversal phases. However, it was expected that when potential reinforcement was removed, student motivation to engage in replacement behaviors would decrease, and as a result, increases in disruptive behavior would be observed.

In addition to an ABAB design, this study utilized changing criteria during intervention phases. Changing criterion designs are appropriate for interventions in which there are specific criteria for earning rewarding consequences (Kazdin, 2011; Lane, Capizzi, Fisher, & Ennis, 2012). If performance meets or surpasses the criterion, reinforcement/consequences are provided and a more stringent criterion is implemented. This process is then repeated across subphases until the desired level of performance is met. Before changes in subphases are made, behavior should stabilize (Kazdin, 2011). In changing criterion designs, behavior changes ideally occur in a stepwise fashion that directly correspond to changes in criteria. This pattern of behavior change may suggest experimental control and intervention effectiveness. In this

Table 2
Classroom Participant Demographic Information

Class	A	B	C	D	E	F	G	H
# Students	25	24	23	17	31	24	25	19
Grade	K	K	K	1	1	3	4	4
Male	13	14	14	9	16	12	15	18
Female	12	10	10	8	15	12	9	11
Racial/ethnic								
African American	1	1	1	1	9	0	1	4
Asian	1	1	2	0	0	0	4	0
Biracial	0	2	3	3	3	0	4	0
Caucasian	17	20	17	6	1	0		1
Latino/Hispanic	6	0	0	5	19	24	7	24
Pakistani	0	0	0	2	0	0		0
Support services								
Behavior Plan	0	0	0	2	5	3*	0	1
Case Study	0	0	0	0	1	0	1	1
English Language Learner	0	0	0	12	0	1	0	0
Individualized Education Program	0	0	0	1	4	4	2	4
Standards								
At and above	N/A	N/A	20	15	10	15	18	23
At-risk	N/A	N/A	3	0	8	4	4	N/A
Below	N/A	N/A	0	2	11	7	2	5
Free/reduced	0	0	0	12	28	24	7	23
# Staff	2	2	2	1	1	1	2	1
Current behavior systems	- PBS	- PBS	- PBS	- Olweus	- PBS	- PBS	- Colored cards	- PBS
	- Olweus	- Olweus	- Colored cards	- Colored cards	- Colored cards	- Colored cards		
	- Colored cards	- Colored cards	- Marble jar	- Class economy				

Note. N/A = not applicable. Behavior Plan indicates the number of students on individual behavior plans. Standards refers to educational tests used to assess student performance and categorize students at or above standards, at-risk or below standards. Free/reduced refers to the number of students receiving a free or reduced priced lunch. # Staff indicates the number of school personnel in each classroom. PBS stands for Positive Behavior Support. Olweus stands for the Olweus Bullying Prevention Program. Colored cards refers to a progressive behavioral system used in classrooms.

* In Classroom F, three students were on individual behavior plans at the start of the intervention and one at completion of the intervention. Also, standards data in Classroom F is from the beginning of the school year when 26, not 24 students were enrolled. Standards data in Classroom H is reported for language arts, data was only available for 28 students. When the intervention began there were 24 students in Classroom F, when it ended there were only 23.

study, students earned a reward after each class period in which the current criterion was met. After the class met the current criterion for 10 consecutive school days, the criterion for disruptive behavior was decreased by 50% (Sprick, 2009). These changes in criteria continued for the duration of the study. Use of the combined ABAB, changing criterion design (compared with either design alone) more effectively controlled for threats to internal validity such as history and maturation. Furthermore, behavioral change in accordance with the changing criteria and reversals enhanced internal validity (Kazdin, 2011).

Dependent Variables

Disruptive behavior. Disruptive behavior was the primary dependent variable. To best address the behavioral needs of each classroom/teacher and enhance intervention transportability, disruptive and replacement behaviors were defined and operationalized separately for each classroom (Table 3). Teachers were also asked to identify a time period for intervention implementation during which they believed students struggled most with behavior.

Teacher intervention acceptability. Teacher intervention acceptability, as measured by a

Table 3
Targeted Disruptive and Replacement Behavior Per Classroom

Classroom	Target behavior	Replacement behavior
A, B, and D	Calling out/talking	Raising hand/no talking/only answer in unison when cued
C	Sitting inappropriately	Sit cross-legged, hands to yourself
	Calling out	Raising hand
E	Off-task during calendar	Eyes on teacher/speaker during calendar
	Calling out/talking	Raising hand/no talking/only answer in unison when cued
F	Desk open during instruction	Desks closed during instruction
	Getting out of seat	Stay seated
	Materials unprepared	Materials ready
	Talking during instruction	When teacher speaks, stay quiet/talk only while proofreading
G	Off-task during writing	Writing, eyes on assignment or teacher
	Calling out/talking	Raising hand/no talking/only answer in unison when cued
	Getting out of seat	Stay seated
H	Off-task during reading/independent work	Eyes on book during reading, eyes on assignment during independent work
	Calling out/talking	Raising hand/no talking/only answer in unison when cued
	Getting out of seat	Stay seated

modified version of the Intervention Rating Profile-20 (IRP-20; Witt & Marten, 1983), was the second dependent variable.

Instrumentation

Problem Identification Interview. Disruptive classroom behavior was identified by the classroom teacher through a modified version of the Problem Identification Interview (PII), a semi-structured interview protocol that facilitates collaborative problem solving (Kratowill & Bergan, 1990).

Event recording. During the PII, the teacher and researcher collaboratively identified and operationalized disruptive behaviors that typically occurred in the classroom. The frequency of disruptive behavior was tallied and recorded in each classroom from baseline through follow-up. So as not to change the classroom environments by using a tally counter that would alert students to observation procedures, the researcher tallied and recorded disruptive behaviors on a laptop computer in each classroom during baseline and reversal phases. During intervention, each classroom teacher tallied and recorded disruptive behaviors with a tally counter. The teacher held the tally counter in the direction of the student engaging in disruptive behavior and added a tally on the coun-

ter. When the teacher added a tally, the counter made a clicking sound. If the student appeared to be unaware that he or she was engaging in the disruptive behavior, the teacher redirected the student to the identified replacement behavior. If the student continued to engage in the disruptive behavior, four seconds after being redirected, he or she received another tally. Teachers collected data every school day the intervention was in place during the intervention period. Furthermore, during 28% of the intervention sessions, the researcher also tallied and recorded disruptive behaviors on a laptop to establish interobserver reliability with each classroom teacher.

Intervention Rating Profile. A modified version of the Intervention Rating Profile-20 (IRP-20), substituting the "Mystery Motivator" for "intervention" and specifying "disruptive behavior" as the intervention target, assessed teachers' satisfaction with the intervention (Witt & Martens, 1983). The IRP-20 was designed to assess the teacher acceptability of school-based interventions (Finn & Sladeczek, 2001; Witt & Martens, 1983). Teachers individually completed the IRP-20 upon completion of the follow-up phase. The instrument included 20 items and a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores indicate greater acceptability, meaning the

teacher found the intervention to be effective in decreasing disruptive behavior, and he or she liked having the intervention in his or her classroom (Finn & Sladeczek, 2001). The internal consistency of this version of the IRP-20 was $\alpha = .94$.

Treatment Integrity

To facilitate the measurement of and promote treatment integrity, an intervention protocol was developed and distributed to each teacher (Sannetti & Kratochwill, 2009; Schulte, Easton, & Parker, 2009). The protocol outlined all intervention components including a sample lesson plan for teaching appropriate replacement behaviors, an announcement that the intervention was in place, a script describing the intervention, review of the behavioral goals, the procedure for recording tallies, the procedure for determining whether criterion for reinforcement was met, the procedure for choosing a reward from the Mystery Motivator envelope, and the procedure to announce the criterion was not met. The researcher also directly observed 28% of the intervention sessions to determine the extent to which each teacher adhered to the protocol and implemented the intervention with integrity, and to provide support if the intervention was not implemented with integrity. During these observations, teachers implemented the intervention with 100% integrity.

Procedures

Teacher interview. Data collection began with a PII and the collection of classroom demographic data. During the PII, disruptive behaviors and replacement behaviors were identified and operationalized, and the time period during which the intervention would be implemented was selected. Teachers identified a class/subject during which disruptive behavior was most problematic. Finally, the researcher and each teacher collaboratively identified mystery rewards, the timeframe for gathering baseline data, and the schedule of intervention-training meetings.

Baseline. Following the teacher interview, observations of the disruptive behaviors were conducted in each classroom. Data were collected until the baseline stabilized, which involved between three and seven observation sessions depending on the variability of the

behavior. Based upon the observed number of occurrences of the operationalized disruptive behavior, an initial criterion was set in collaboration with the teacher. The researcher advised the initial criterion be set at 50% of the mean number of disruptive behavioral events observed during baseline. With the exception of Classroom H, all teachers followed this recommendation. In Classroom H, slightly more stringent criteria were established for phases one and two of the intervention.

Teacher intervention training meeting. After baseline was established, the researcher met with each teacher for approximately 30 min to provide instruction and modeling regarding implementation of the intervention in accordance with the intervention protocol. Teachers were provided with copies of the intervention protocol, and the importance of fidelity to the intervention procedures was discussed in this meeting. Each teacher was also provided with the opportunity to ask questions and voice concerns prior to implementation. Finally, the researcher observed during the first intervention period and provided corrective feedback to the teachers as needed.

Teaching behavioral goals. Prior to intervention implementation, the researcher taught students behavioral goals. The behavioral goals were the replacement behaviors identified in the PII. The lesson lasted approximately 15 min, during which time the researcher and the class discussed each goal, the rationale for the goals, and the importance of a classroom environment that encourages learning. Students modeled and practiced the behavioral goals (providing positive and negative examples of the behaviors), and the researcher provided feedback.

Intervention announcement and explanation. On the first day of implementation, the researcher explained the intervention, as presented in the intervention protocol, to the students. The steps included an announcement that the intervention was in place, a description of the intervention, a review of the behavioral goals discussed, an explanation of the procedure for counting tallies on the tally counter and for making tally marks on the calendar, an explanation of the procedure for determining whether or not criterion for reinforcement was met, and an explanation of the procedure for drawing a reward from the Mystery Motivator envelope. Verbal student assent was obtained during this

time, and students were given the opportunity to seek clarification and ask questions.

Visual reminders of behavioral expectations. The behavioral goals were prominently displayed on the Mystery Motivator chart/calendar in each classroom to serve as a reminder for the students. Each student also received an individual handout of the behavioral goals prior to intervention implementation.

Intervention materials. Materials included (a) Mystery Motivator calendars; (b) Mystery Motivator envelopes containing note cards with descriptions of individual mystery rewards collaboratively identified with each classroom teacher; (c) visual displays of the expected behaviors stated in positive terms; (d) tangible rewards, such as candy, pencils, erasers, and so forth, that corresponded to the rewards listed on the note cards; and (e) tally counters to ensure accurate data collection by teachers. Examples of intangible rewards include 5 min of free time, hat day in the classroom, pajama day in the classroom, and extended recess (supplementary information is available online).

Implementation. The Mystery Motivator intervention was implemented in each classroom for approximately eight weeks (i.e., one marking period) in the absence of other behavior management interventions teachers reported implementing prior to this study (Table 2). The intervention took place every school day during the time-period/class-period identified as most problematic during the PII (approximately 40 min). When a student engaged in an operationalized disruptive behavior during this class period, the teacher administered a tally on the tally counter. Following the intervention period, the teacher marked the number of tallies the students received on the Mystery Motivator calendar.

The Mystery Motivator calendar was displayed for all students to see throughout the intervention period. On certain days, interspersed at irregular intervals, the letter “M” was written under a small square of paper on the calendar. An “M” signified reinforcement was available for the designated time period. A random number generator was used to determine the calendar days on which “Ms” were available. For each classroom, rewards were available for 60% of the school days during the first month of intervention and 50% of the school days during the second month (Sprick, 2009).

At the end of the period, the square covering that particular day on the calendar was removed, regardless of whether or not the students were able to achieve the set criterion for the day, so they could see whether or not an “M” was marked. If an “M” was marked, and the students met the established criterion, the reward was provided at the earliest convenience to create an environment of immediate reinforcement. The days on which rewards were available were a mystery, and the rewards were also a mystery to students. The available rewards were described on individual note cards placed in a manila envelope with a large question mark on it. The note cards were randomly drawn (and then returned to the envelope) on the days students earned reinforcement. Once students were able to meet the initial established criterion for a period of 10 total school days, a new criterion was established.

A 2-day reversal was introduced in each classroom to control for threats to internal validity (Kazdin, 2011). The reversal took place after the completion of at least the first intervention phase (criterion 1). At this time, the researcher announced the intervention would be removed for a 2-day period and would begin again in two days. During the reversal, the teacher no longer used the tally counter. In addition, the calendar and students’ individual handouts of behavior goals were removed. A reinstatement of the intervention followed the reversal period. After the reinstatement and after the intervention had been implemented for approximately a period of eight school weeks, it was removed again for follow-up data. At the conclusion of the study, teachers completed the IRP-20.

Interobserver Reliability

Interobserver reliability was calculated as a frequency ratio between the teacher and the researcher for a total of 28% of the intervention sessions (Kazdin, 2011). The researcher recorded incidents of operationalized disruptive behaviors on a laptop computer while the teacher recorded incidents of operationalized disruptive behaviors on the tally counter. The researcher then compared her recorded tallies to the teacher’s recorded tallies in each classroom. The percentage of agreement, calculated by dividing the lower number of tallied disruptive

Table 4
Summary of Disruptive Behavior Data

Class	A	B	C	D	E**	F	G**	H**,**
Baseline mean	119	133	126	92.5	227.2	39.66	246.33	463.43
Criterion 1	60	66	63	46	114	20	123	150
Phase 1 mean	41.4	45.3	61	10.26	63.54	7.3	109.15	82
Criterion 1 met %	100%	83%	67%	100%	91%	90%	77%	100%
Reversal mean	41.5	38.5	73	22.5	83	24.5	163	318.5
Criterion 2	30	33	32	23	57	10	62	60
Phase 2 mean	28.65	21.69	45.87	10.8	37.72	7.67	66.57	45
Criterion 2 met %	65%	92%	19%	100%	91%	83%	58%	79%
Criterion 3	15	17	N/A	12	29	5	N/A	30
Phase 3 mean	22.33	11.83	N/A	8.09	41.54	3.63	N/A	42.4
Criterion 3 met %	17%	100%	N/A	91%	31%	100%	N/A	40%
Follow-up mean	30	14	38.5	14	81.5	15.5	168	147

Note. N/A = nonapplicable. Please note the reversal phase occurred at various points in the above-mentioned classrooms. Classrooms C and G did not reach a third intervention phase.

* In Classroom H, the initial criterion was a 67.62% reduction from baseline and the second criterion was a 60% reduction from Phase 1; this was the only class in which the initial criterion was more than a 50% reduction from baseline. ** Average rates of behavior were calculated for Classrooms E, G, and H. See data analysis.

behavioral events by the higher number of tallied disruptive behavioral events and multiplying by 100, was used as an indicator of reliability. Average interobserver agreement for frequency of problem behavior across all classrooms was 92% (range of 70% to 100%).

Data Analysis

To ensure for comparability of data within classrooms, when intervention periods were of varied lengths (Classrooms E, G, and H), raw data of frequency tallies were converted to

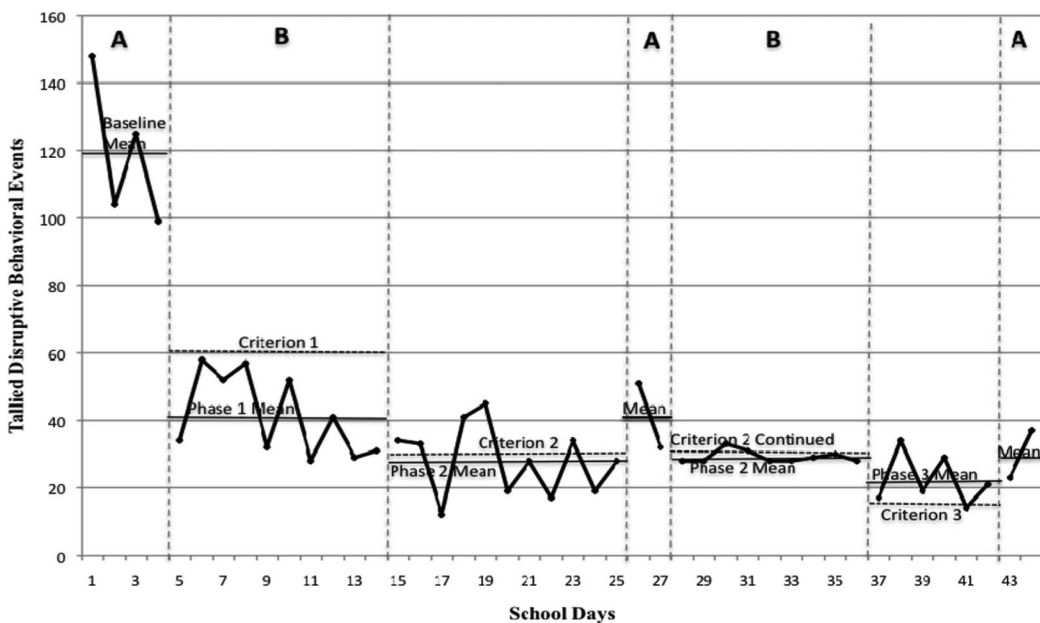


Figure 1. Disruptive Behavior Classroom A.

rates. Rates were calculated through the identification of the mode length of time for the classroom's intervention period (e.g., 60 min for Classroom G) and then the creation of proportions. For example, if most intervention periods in Classroom G lasted 60 min but some lasted 30, 45, or 50 min, the researcher determined the number of behaviors through this type of calculation: 10 behaviors/30 min = X behaviors/60 min. The primary method of data analysis in this study was visual inspection, including changes in level, trend, and variability (Kazdin, 2011). In addition, the overall pattern of the data within and between classrooms was examined, including the pattern of data during reversal and follow-up, so evaluate the degree to which behaviors changed in response to changing criteria.

Results

Disruptive Behavior

Following the introduction of the Mystery Motivator intervention, significant reductions in disruptive behavior were observed in all participating classrooms. A summary of these data

are presented in Table 4. The frequencies of disruptive behavior per classroom from baseline through follow-up are presented in Figures 1–8.

In all classrooms, immediate decreases in disruptive behavior were observed with no latency period from baseline to the first phase of intervention. Based on visual inspection of the data and comparisons of means across various intervention phases, data reflect significant decreases in the frequency of disruptive behaviors in each classroom during intervention implementation. As hypothesized, complete reversals to baseline were not observed during withdrawal phases. That is, the frequency of disruptive behaviors in almost all classrooms increased but did not reach baseline levels. In addition, as is characteristic of changing criterion designs, the decreases in the frequencies of disruptive behaviors were commensurate with the decrease in the criteria levels, because disruptive behaviors decreased when the criteria decreased. Finally, in all classrooms, the effects of the intervention were maintained through follow-up when compared with the mean number of disruptive behavior during baseline, even though slight increases in disruptive behavior were observed

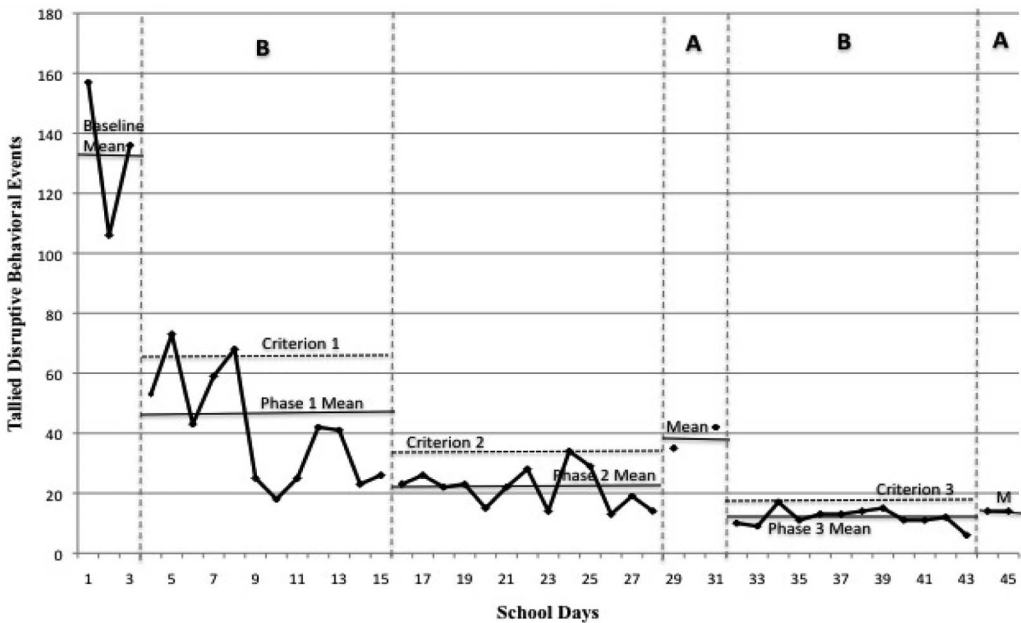


Figure 2. Disruptive Behavior Classroom B.

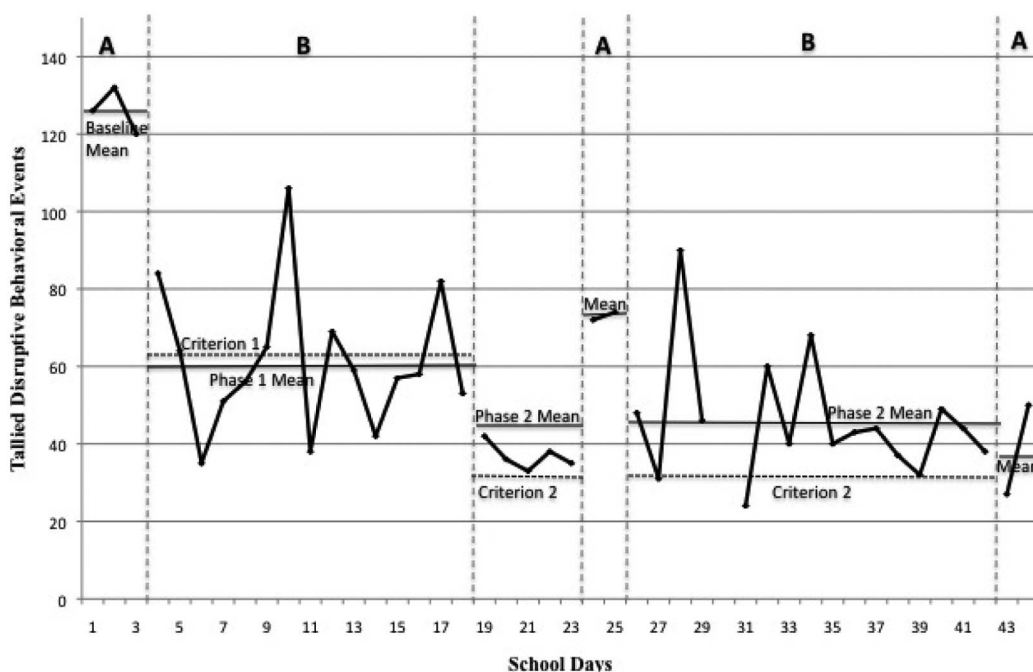


Figure 3. Disruptive Behavior Classroom C.

when the possibility for reinforcement was removed in most classrooms.

Intervention Acceptability

Teachers in seven of the eight classrooms indicated strong acceptability. Mean item acceptability scores per classroom were as follows: A = 5.95, B = 5.70, C = 5.75, D = 5.75, E = 5.85, F = 5.75, G = 4.55, and H = 5.20.

Discussion

This study was designed to extend the research on classroom behavioral interventions by examining the effectiveness of the Mystery Motivator intervention on disruptive classroom behavior in general education elementary school classrooms with diverse populations. The present study extends prior research in that its sample was heterogeneous in racial, ethnic, and socioeconomic background, as well as age and grade level (Hoag, 2006; Kraemer et al., 2012; Murphy et al., 2007; Schanding & Sterling-Turner, 2010). Furthermore, teachers' use of a tally counter to record behavioral observations

daily, as opposed to a time sampling methodology used twice per week in prior studies (Kraemer et al., 2012; Schanding & Sterling-Turner, 2010), permitted a larger and potentially more representative sample of classroom behavior. Finally, this study is the only study to examine the effect and maintenance of the Mystery Motivator intervention on disruptive behavior in elementary school classrooms in the absence of other classroom behavioral interventions. Results indicated all classrooms showed immediate and significant reductions in disruptive behavior that were maintained through follow-up, and may be partly attributed to the variable ratio reinforcement schedule and use of an interdependent group contingency contract common to Mystery Motivator classroom interventions (Hoag, 2006; Kraemer, 2012; Murphy et al., 2007; Schanding & Sterling-Turner, 2010).

In addition to the variable ratio reinforcement schedule and use of an interdependent group contingency contract, findings may also be attributed to other factors such as consistent behavioral feedback from teachers, clarification of behavioral expectations, and the potential for

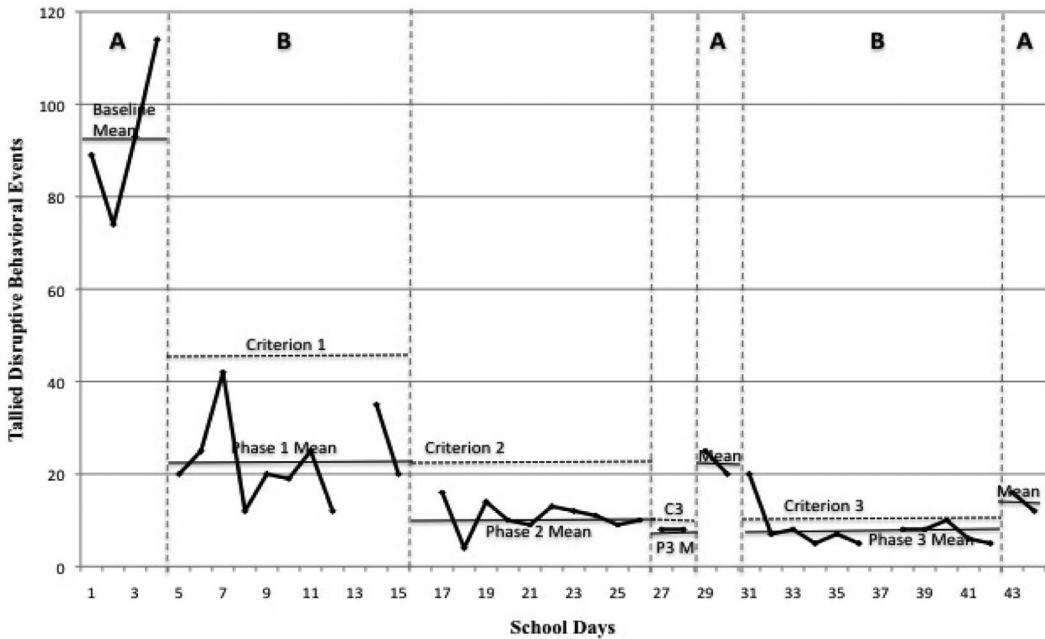


Figure 4. Disruptive Behavior Classroom D.

immediate reinforcement of positive behaviors. Prior to this study, teachers inconsistently addressed disruptive behaviors through the use of various behavioral interventions in their classrooms (Table 2). During the present study, teachers terminated implementation of these behavioral interventions and only implemented the Mystery Motivator intervention. The Mystery Motivator intervention created an environment that promoted consistent feedback and consequences. Furthermore, the use of tally counters helped ensure feedback was immediate, and consequences for disruptive behavior were provided in an efficient manner. Finally, because of the design of the Mystery Motivator intervention, students were reminded each day of the behavioral expectations for the intervention period, and these reminders likely strengthened their awareness of expected behavior. These findings are similar to Teta (2008), who noted that prior to the implementation of the Mystery Motivator intervention, teachers provided students with inconsistent feedback.

The intervention also created an environment in which potential reinforcement was immediately available for appropriate behavior following the intervention period, and research has

indicated that providing reinforcement immediately after a behavior occurs strengthens the behavior (Skinner, 1953). Although other positive behavior support strategies had been in place in most classrooms prior to the Mystery Motivator intervention, they provided reinforcement less frequently. For example, some of the classrooms utilized tokens for positive behavior that could be traded in for prizes or entered in a raffle at the end of the week. For some children, especially young children, it could be difficult to control immediate behavior with the promise of distal rewards (Schloss & Smith, 1998; Sprick, 2009).

Teacher Intervention Acceptability

Seven of the eight classroom teachers indicated strong acceptability. According to the IRP-20, teachers suggested they found the Mystery Motivator intervention to be practical in the amount of staff contact time required, they were likely to use it because it required little training, the intervention was practical in terms of data collection, and that they are likely to use it again in the future. Anecdotally, some of the teachers stated the Mystery Motivator intervention

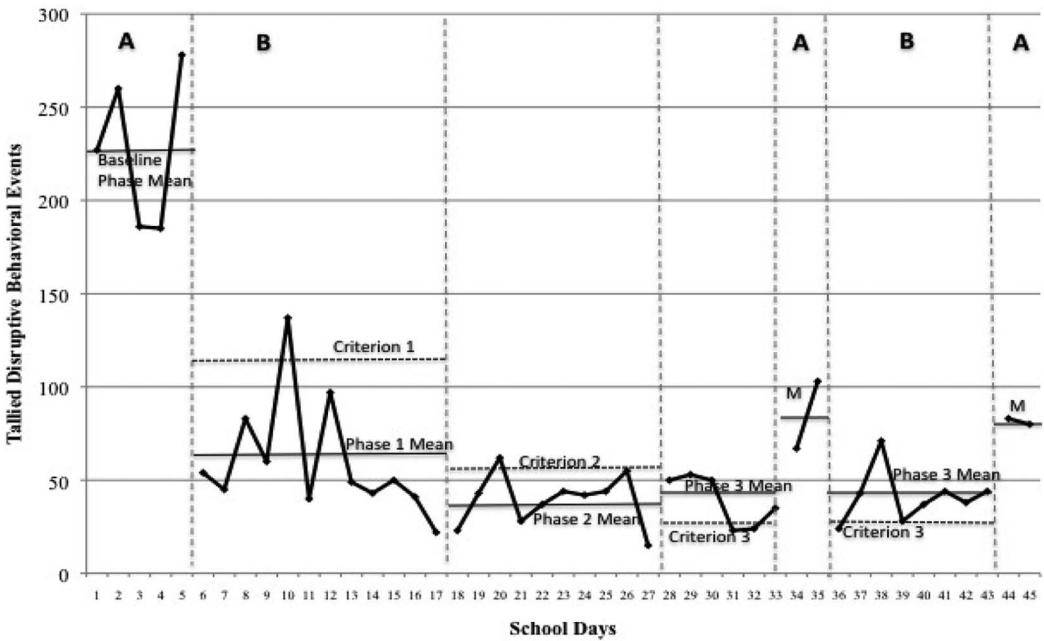


Figure 5. Disruptive Behavior Classroom E.

would be a good tool to teach behavioral expectations at the beginning of the year. Also, most teachers, in whose classrooms the intervention did not run until the end of the school year, chose to reinstate it on their own after the follow-up condition. This finding is quite significant in that the development of feasible and socially valid interventions is one way to increase the use of classroom behavioral interventions (Embry, 2002; Evans & Owen, 2010).

Though many factors contributed to teachers' acceptability of the Mystery Motivator intervention, the ease of data collection procedures (use of the tally counter) appeared to be one of the more salient features. Teachers simply held tally counters in the direction of the disruptive student, and the counter make a clicking noise to signify that an additional tally had been added. Admittedly, systematic direct observations of student behavior in the classroom typically requires resources such as time and personnel that make this form of data collection impractical for teachers to monitor behavior of individual students, much less the behavior of an entire class (Riley-Tillman, Kalberer, & Chafouleas, 2005). Not surprisingly, then, teacher participants of prior Mystery Motivator studies

identified data collection procedures that required them to stop teaching as burdensome and disruptive to the flow of classroom activities (Hoag, 2006; Matovic, 2010; Murphy et al., 2007). In the present study, the teachers not only praised the efficiency of data recording procedures, but each teacher requested to keep the tally counter because it had been so easy to use.

In addition to demands on teacher time, conducting systematic direct observations of student behavior in the classroom often requires additional personnel such as an external observer (Riley-Tillman et al., 2005). For example, in two of the prior studies that assessed the effects of the Mystery Motivator intervention on classroom behavior (Kraemer et al., 2012; Schanding & Sterling-Turner, 2010), an outside observer was necessary to gather data about intervention effectiveness. Although, these observations strengthened the design of the study from a research perspective, creating easy-to-use data recording procedures for teachers to monitor the effectiveness of interventions is imperative in applied settings in which a researcher or other school personnel may not be available to gather such data (Erchul, Raven, & Whichard, 2001). Findings from the present

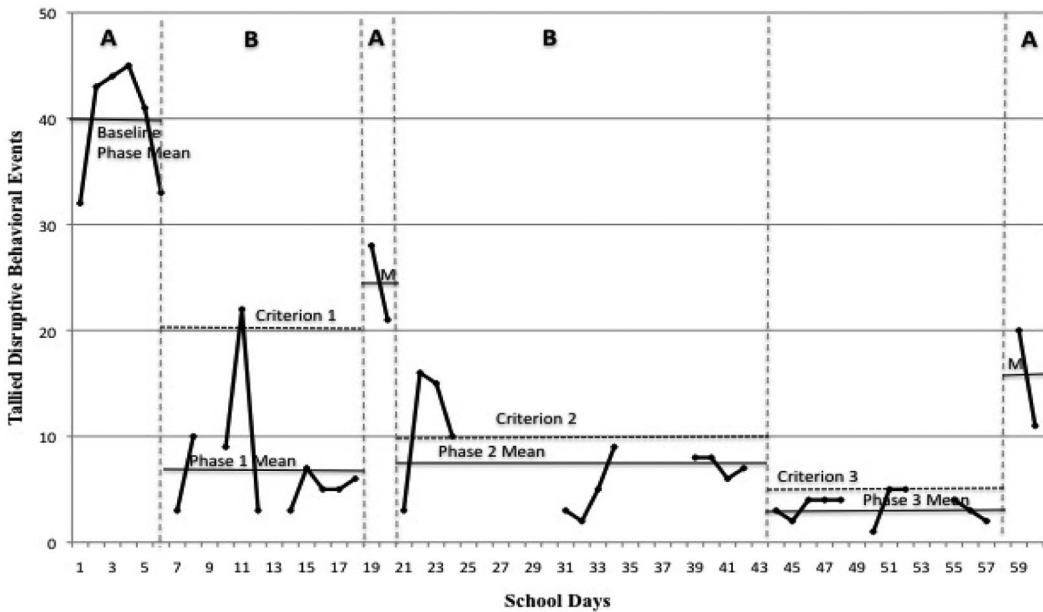


Figure 6. Disruptive Behavior Classroom F.

study suggest that use of a tally counter to monitor the frequency of behaviors in classroom can be used reliably by classroom teachers to monitor behaviors whose measurement is amenable to event recording.

Limitations

Threats to internal and external validity, many of which stem from the realities of conducting research in schools, may have impacted the results of this investigation. Below, the primary limitations are presented.

One methodological concern is the brief amount of time given to reversal and follow-up. These phases were implemented for two days to control for threats to validity. However, this 2-day time period may have been too brief. In many of the classrooms, especially Classroom G and Classroom H, significant variability was observed during the reversals. Specific school events could explain some of this variability. However, threats to validity could have been minimized further if stabilization of data had occurred. Notwithstanding the brief reversal and follow-up phases, however, the stepwise changes in behavior corresponding to changes in criteria do provide support for experimental control.

Another limitation of this study, from the perspective of the PBIS framework, is the intervention focused on disruptive behavior. This meant teachers might have paid more attention to negative behavior than positive behavior while the intervention was in place. One of the primary principles of PBIS is the recognition of appropriate or positive student behavior (Sprick, 2009). In fact, PBIS researchers often recommend a 3:1 ratio of recognition of positive behavior (Sprick, 2009) to correction of inappropriate behavior. However, in many of the classrooms in this study, the disruptive behavior was occurring with such frequency that it would have been difficult for teachers counterbalance their corrections with the appropriate amount of attention directed toward recognizing positive behavior. Conversely, the intervention aligns with other principles of PBIS such as clear expectations, consistent feedback, rewards for appropriate behavior, use of the problem-solving model, and objective data gathering to monitor the intervention (Bradshaw & Pas, 2011; Sprick, 2009; Sugai & Horner, 2006).

Additional limitations of the study design involve the use of the tally counter, nesting of observers within phases, and the absence of

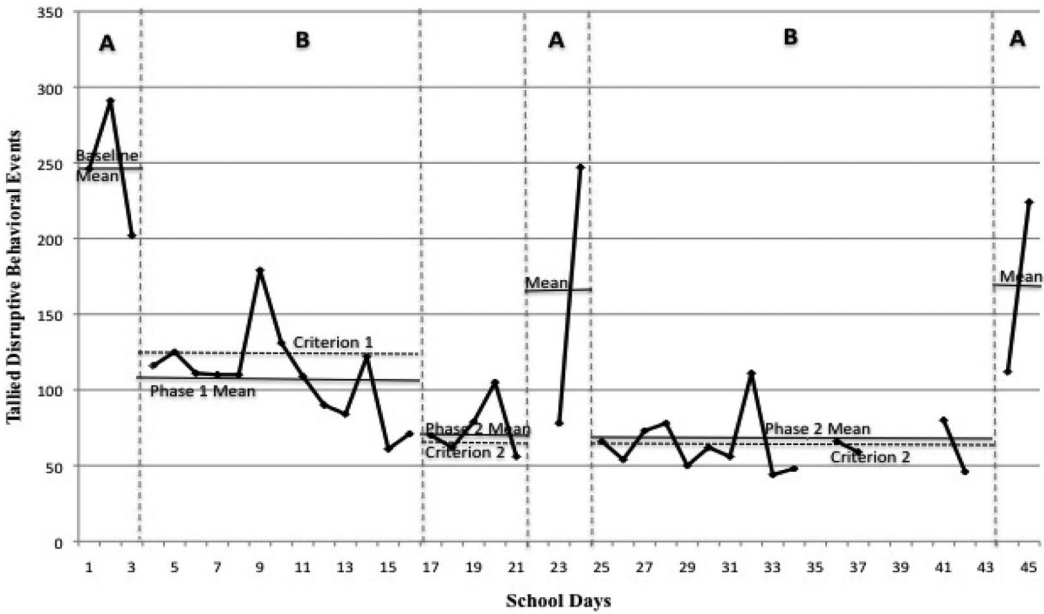


Figure 7. Disruptive Behavior Classroom G.

interobserver reliability data within baseline and reversal phases. For example, the tally counter made a clicking sound when the teacher recorded disruptive behavior. This sound likely alerted the researcher to the behavior noticed by the teacher, thus potentially inflating the rate of interobserver agreement. However, the benefits of using the tally counter to simplify data recording outweighed this limitation.

Finally, it is important to mention limitations applicable to individual classrooms. In Classroom G, the primary classroom teacher terminated employment 6 days after the intervention began. Also, in Classrooms C, G, and H, specific events occurred during reversal or follow-up (e.g., absences, change in classroom activity, classroom visitors) that may have impacted the variability observed in the data.

Directions for Future Research

One way to control for the various events that occurred across schools could be to conduct a future study in multiple classrooms in the same school. Future researchers may also consider utilizing the Mystery Motivator intervention with students of different age

groups and in different educational settings. Longer reversal and follow-up periods than those in the present study should also be considered in future studies. In addition, future studies might also examine whether or not positive behavior learned through the Mystery Motivator intervention generalizes throughout the school day and to academic work production and academic outcomes. Finally, it may be beneficial to examine the key components of the Mystery Motivator intervention in isolation to determine each component’s relative impact on intervention outcomes.

In closing, research has shown many interventions that demonstrate efficacy in controlled settings fail to transport to applied settings such as schools (Dobson & Hamilton, 2002; Schoenwald & Hoagwood, 2001). Although many educational interventions that have been deemed “evidence-based” exist, few are actually implemented in educational settings (Walker, 2004). It is possible that increased attention to issues of intervention feasibility and social validity, as presented in this study, may facilitate an increased use of classroom interventions designed to be imple-

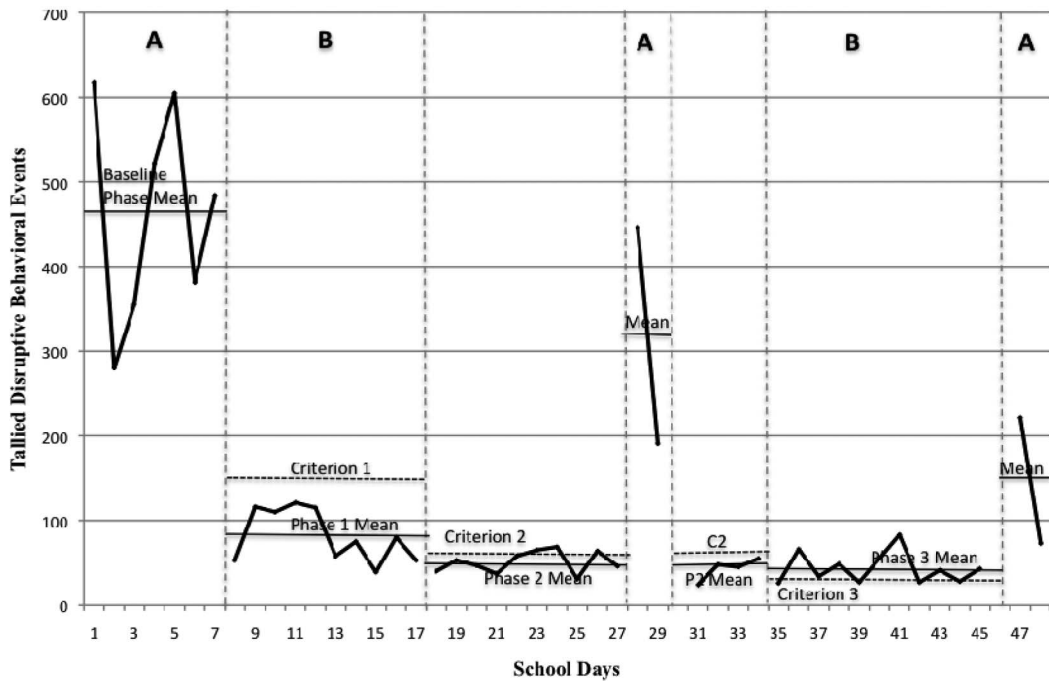


Figure 8. Disruptive Behavior Classroom H.

mented and monitored by the classroom teacher.

References

- Bennett, M. (2010). *An interdependent group contingency with mystery motivators to increase spelling performance* (Unpublished doctoral dissertation). Hofstra University, Hempstead, NY.
- Bradshaw, C. P., & Pas, E. T. (2011). A statewide scale up of positive behavioral interventions and supports: A description of the development of systems of support and analysis of adoption and implementation. *School Psychology Review, 40*, 530–548.
- Canter, A. S., Paige, L. Z., Roth, M. D., Romero, I., & Carroll, S. A. (2004). *Helping children at home and at school II: Handouts for families and educators*. Bethesda, MD: National Association of School Psychologists.
- Chafouleas, S. M., Volpe, R. J., Gresham, F. M., & Cook, C. R. (2010). School-based behavioral assessment within problem-solving models: Current status and future directions. *School Psychology Review, 39*, 343–349.
- Coalition for Psychology in Schools and Education. (2006). *Report on the teacher needs survey*. Washington, DC: American Psychological Association.
- DeMartini-Scully, D. D., Bray, M. A., & Kehle, T. J. (2000). A packaged intervention to reduce disruptive behaviors in general education students. *Psychology in the Schools, 37*, 149–156. doi:10.1002/(SICI)1520-6807(200003)37:2<149::AID-PITS6>3.0.CO;2-K
- Dobson, K. S., & Hamilton, K. E. (2002). The stage model for psychotherapy manual development: A valuable tool for promoting evidence-based practice. *Clinical Psychology: Science and Practice, 9*, 407–409. doi:10.1093/clipsy/9.4.407
- Embry, D. D. (2002). The good behavior game: A best practice candidate as a universal behavioral vaccine. *Clinical Child and Family Psychology Review, 5*, 273–297. doi:10.1023/A:1020977107086
- Erchul, W. P., Raven, B. H., & Whichard, S. M. (2001). School psychologist and teacher perceptions of social power in consultation. *Journal of School Psychology, 39*, 483–497. doi:10.1016/S0022-4405(01)00085-1
- Evans, S. W., & Owens, J. S. (2010). Behavioral assessment within problem-solving models: Finding relevance and expanding feasibility. *School Psychology Review, 39*, 427–430.
- Finn, C., & Sladeczek, I. (2001). Assessing the social validity of behavioral interventions: A review of treatment acceptability measures. *School Psychol-*

- ogy *Quarterly*, 16, 176–206. doi:10.1521/scpq.16.2.176.18703
- Gable, R. A., Hester, P. H., Rock, M. L., & Hughes, K. G. (2009). Back to basics: Rules, praise, ignoring, and reprimands revisited. *Intervention in School and Clinic*, 44, 195–205. doi:10.1177/1053451208328831
- Hoag, J. (2006). Effects of mystery motivators vs. expected reinforcers on disruptive behavior in preschoolers (Doctoral dissertation, Hofstra University, 2007). *Dissertation Abstracts International*, 67, 6041B.
- Kauffman, J. M., Wong, K. L., Lloyd, J. W., Hung, L., & Pullen, P. L. (1991). What puts pupils at risk? An analysis of teacher judgments of pupils' behavior. *Remedial and Special Education*, 12, 7–16. doi:10.1177/074193259101200503
- Kazdin, A. E. (2011). *Single subject research design, Methods for clinical and applied settings* (2nd ed.). New York, NY: Oxford University Press.
- Kehle, T. J., Madaus, M. R., Baratta, V. S., & Bray, M. A. (1998). Employing self-modeling with children with selective mutism. *Journal of School Psychology*, 36, 247–260. doi:10.1016/S0022-4405(98)00013-2
- Kraemer, E. E., Davies, S. C., Arndt, K. J., & Sawyer, H. (2012). A comparison of the mystery motivator and the Get 'Em On Task interventions for off-task behaviors. *Psychology in the Schools*, 49, 163–175. doi:10.1002/pits.20627
- Kratochwill, T. R., & Bergan, J. R. (1990). *Behavioral consultation in applied settings: An individual guide*. New York, NY: Plenum Press.
- Landry, S. H., Anthony, J. L., Swank, P. R., & Monseque-Bailey, P. (2009). Effectiveness of comprehensive professional development for teachers of at-risk preschoolers. *Journal of Educational Psychology*, 101, 448–465.
- Lane, K. L., Capizzi, A. M., Fisher, M. H., & Ennis, R. P. (2012). Secondary prevention efforts at the middle school level: An application of the behavior education program. *Education & Treatment of Children*, 35, 51–90. doi:10.1353/etc.2012.0002
- LeBlanc, D. M. (1998). Mystery motivator versus reinforcer menu: An investigation of the effects of home-based reinforcement delivery systems used with homeschool notes on disruptive/disengaged classroom behavior (Unpublished doctoral dissertation). University of Southern Mississippi, Hattiesburg, MS.
- Leflot, G., van Lier, P. A., Onghena, P., & Colpin, H. (2010). The role of teacher behavior management in the development of disruptive behaviors: An intervention study with the good behavior game. *Journal of Abnormal Child Psychology*, 38, 869–882. doi:10.1007/s10802-010-9411-4
- Litoe, L., & Pumroy, D. K. (1975). A brief review of classroom group-oriented contingencies. *Journal of Applied Behavioral Analysis*, 8, 341–347. doi:10.1901/jaba.1975.8-341
- Maag, J. W. (1999). *Behavior management: From theoretical implications to practical applications*. San Diego, CA: Singular Press.
- Madaus, M. M. R., Kehle, T. J., Madaus, J., & Bray, M. A. (2003). Mystery motivator as an intervention to promote homework completion and accuracy. *School Psychology International*, 24, 369–377. doi:10.1177/01430343030244001
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual* (3rd ed.). Yalo Alte, CA: Consulting Psychologists Press.
- Matovic, M. (2010). The efficacy of the mystery motivator among kindergarten and fourth graders (Unpublished doctoral dissertation). St. John's University, Queens, NY.
- Moore, L. A., Waguespack, A. M., Wickstrom, K. F., Witt, J. C., & Gaydos, G. R. (1994). Mystery motivator: An effective and time efficient intervention. *School Psychology Review*, 23, 106–118.
- Mottram, L. M., Bray, M. A., Kehle, T. J., Broudy, M., & Jenson, W. R. (2002). A classroom based intervention to reduce disruptive behaviors. *Journal of Applied School Psychology*, 19, 65–74.
- Murphy, K., Theodore, L., Aloiso, D., Alric-Edwards, J., & Hughes, T. (2007). Interdependent group contingency and mystery motivators to reduce preschool disruptive behavior. *Psychology in the Schools*, 44, 53–63. doi:10.1002/pits.20205
- Musser, E., Bray, M. A., Kehle, T. J., & Jenson, W. (2001). Reducing disruptive behaviors in students with serious emotional disturbance. *School Psychology Review*, 30, 294–304.
- Public Agenda. (2004). Teaching interrupted: Do discipline policies in today's public schools foster the common good? Retrieved from www.publicagenda.org/files/pdf/teaching_interrupted.pdf
- Rathvon, N. (2008). *Effective school interventions: Evidence based strategies for improving student outcomes* (2nd ed.). New York, NY: The Guilford Press.
- Reinke, W. M., Herman, K. C., & Stormont, M. (2013). Classroom-level positive behavior supports in schools implementing SW-PBIS: Identifying areas for enhancement. *Journal of Positive Behavior Interventions*, 15, 39–50. doi:10.1177/1098300712459079
- Rhode, G., Jensen, W., & Reavis, H. K. (1992). *The tough kid book: Practical classroom management strategies*. Longmont, CO: Sopris West.
- Riley-Tillman, T. C., Kalberer, S. M., & Chafouleas, S. M. (2005). Selecting the right tool for the job: A review of behavior monitoring tools used to assess student response-to-intervention. *California School Psychologist*, 10, 81–91.
- Robinson, K., & Sheridan, S. (2000). Using the Mystery Motivator to improve child bedtime compli-

- ance. *Child & Family Behavior Therapy*, 22, 29–49. doi:10.1300/J019v22n01_03
- Sanetti, L. M. H., & Kratochwill, T. R. (2009). Toward developing a science of treatment integrity: Introduction to the special series. *School Psychology Review*, 38, 445–459.
- Schanding, G., & Sterling-Turner, H. (2010). Use of the Mystery Motivator for a highschool class. *Journal of Applied School Psychology*, 26, 38–53. doi:10.1080/15377900903379448
- Schloss, P. J., & Smith, M. (1998). *Applied behavior analysis in the classroom* (2nd ed.). Needham Heights, MA: Allyn & Beacon.
- Schoenwald, S. K., & Hoagwood, K. (2001). Effectiveness, transportability, and dissemination of interventions: What matters when? *Psychiatric Services*, 52, 1190–1196. doi:10.1176/appi.ps.52.9.1190
- Schulte, A. C., Easton, J. E., & Parker, J. (2009). Advances in treatment integrity research: Multidisciplinary perspectives on the conceptualization, measurement, and enhancement of treatment integrity. *School Psychology Review*, 38, 460–475.
- Skinner, B. F. (1953). *Science and human behavior*. New York, NY: Macmillan.
- Sprick, R. (2009). *CHAMPS: A proactive and positive approach to classroom management* (2nd ed.). Eugene, OR: Pacific Northwest Publishing.
- Stichter, J. P., O'Connor, K. V., Herzog, M. J., Lierheimer, K., & McGhee, S. D. (2012). Social competence intervention for elementary students with Aspergers syndrome and high functioning autism. *Journal of Autism and Developmental Disorders*, 42, 354–366. doi:10.1007/s10803-011-1249-2
- Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review*, 35, 245–259.
- Sugai, G., & Simonsen, B. (2012). Positive behavior interventions and supports: History, defining features and misconceptions. Retrieved from: http://www.pbis.org/school/pbis_revisited.aspx
- Supaporn, S., Dodds, P., & Griffin, L. (2003). An ecological analysis of middle school misbehavior through student and teacher perspectives. *Journal of Teaching in Physical Education*, 22, 328–349.
- Teta, A. (2008). Increasing homework completion in children with ADHD using the Mystery Motivator Intervention (Unpublished doctoral dissertation). Hofstra University, Hempstead, NY.
- Walker, H. M. (2004). Commentary: Use of evidence-based interventions in schools: Where we've been, where we are, and where we need to go. *School Psychology Review*, 33, 398–407.
- Weinstein, C. S. (2007). *Middle and secondary classroom management: Lessons from research and practice* (3rd ed.). New York, NY: McGraw-Hill.
- Witt, J. C., & Martens, B. K. (1983). Assessing the acceptability of behavioral interventions used in the classrooms. *Psychology in the Schools*, 20, 510–517. doi:10.1002/1520-6807(198310)20:4<510::AID-PITS2310200420>3.0.CO;2-1
- Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis*, 11, 203–214. doi:10.1901/jaba.1978.11-203

Received October 14, 2012

Revision received April 17, 2013

Accepted April 28, 2013 ■