EXAMINING CHANGES IN APPROPRIATE SOCIAL BEHAVIORS DURING SCHOOL LUNCH USING THE LUNCHTIME BEHAVIOR GAME

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Abstract
While school lunch has the potential to be a time for students to develop appropriate social skills, most cafeterias are rife with disruptive and aggressive behavior. Lunch monitors struggle to effectively manage the many students eating lunch and yet few evidence-based cafeteria interventions exist. The purpose of this study was to implement and evaluate the effects of a modified version of the evidence-based Good Behavior Game (GBG) on elementary students’ appropriate social and disruptive behaviors in the cafeteria. Based in social learning theory and influenced by the principles of School Wide Positive Behavior Support (SW-PBS), the modified Lunchroom Behavior Game (LBG) focused on rewarding students for rule-following behaviors rather than focusing on negative behaviors. The study utilized a multiple baseline across lunch periods design and was conducted with elementary students in grades one to five in a suburban elementary school. This investigation found that across all grades, the intervention was effective in reducing the percent of intervals where student disruptive behavior was observed in the cafeteria. Unfortunately, the intervention had no effect on students’ appropriate social behavior in the cafeteria. Treatment integrity for the intervention was good. This study was only the second replication of the GBG in the cafeteria and the first to modify the intervention to follow the SW-PBS framework. These findings demonstrate that reinforcing appropriate social behavior in the cafeteria had a similar effect on students’ disruptive behavior compared to focusing on negative student behavior, which has the potential for iatrogenic effects.
CHAPTER I

Introduction

Background

Physical aggression, verbal aggression, bullying, and other problem behaviors in youth have been an area of much concern and research attention (Surgeon General’s Report, 2001). Bullying in schools has been a focus of the media as well as a target area for intervention and prevention by school personnel (Sugai & Horner, 2002b). Bullying occurs across states, cultures, ethnicities, grade levels, and school systems, and affects both students and school staff (Sampson, 2009). 15% to 32% of school-aged students report being victims of bullying (Banks, 1997; Robers, Zhang, & Truman, 2010).

Bullying occurs both during school and outside of school, but appears to be experienced by students more commonly within the confines of the school day (Robers et al., 2010). Disruptive behavior, bullying, and aggressive acts are more likely to occur in school settings where there is less monitoring, supervision, and oversight by adults (Craig, Pepler, Atlas, 2000; Sampson, 2009). There is an inverse relationship between the frequency of bullying incidents and the number of supervising adults in the setting (Olweus, 1994). Playgrounds, bathrooms, hallways, stairwells, and cafeterias are areas within the school that have less supervision, a lack of established routines, and unclear behavioral expectations and are therefore more prone to acts of disruptive behavior (Oswald, Safran, & Johanson, 2005; Sampson, 2009). Approximately 50% of problem behaviors in schools occur in non-classroom settings and these areas are also the most prone to acts of violence and aggression (Astor & Meyer, 2001; Colvin, Sugai, Good, & Lee, 1997).
Disruptive Behaviors in the Cafeteria

With fewer adults to monitor large groups of students, school cafeterias have been identified as a venue for bullying and disruptive behaviors (Sugai & Horner, 2002b; Vaillancourt et al., 2010). In a study of Canadian students, 13.4% of elementary school students and 26.3% of secondary students who reported being the victims of bullying identified the lunchroom as a place where bullying occurred (Vaillancourt et al., 2010). The lunchroom can become loud, chaotic, and difficult for adults to manage (LaRowe, Tucker, & McGuire, 1980). In the cafeteria there are often multiple classes or grades grouped together at one time being supervised by very few staff (LaRowe et al., 1980). In many schools, the adults overseeing lunchtime and recess are non-teaching paraprofessionals with little, if any, training in behavior management strategies (Imich & Jefferies, 1989; Roderick, Pitchford, & Miller, 1997).

When lunch monitors have not been trained in effective behavior management techniques, they are more prone to give negative attention to children’s behavior problems and use punitive discipline (MacPherson, Candee, & Hohman, 1974). In an observational study, lunch monitors commonly responded to student misbehavior in the cafeteria, while ignoring pro-social and positive student behavior (Imich & Jefferies, 1989). Attending to disruptive behavior is ultimately ineffective and frustrating for staff. Although negative attention and punishment may decrease disruptive behavior in the short term, acknowledging and punishing unwanted behaviors are not long term solutions to improving the climate and promoting students’ appropriate social behaviors in schools (Sugai & Horner, 2002b).
Academic Implications of Disruptive Behaviors

Negative experiences such as aggression or bullying in school can significantly influence a student’s academic experience. When disruptive behaviors occur in non-classroom settings, they may not be addressed appropriately (MacPherson et al., 1974). Teachers then carry the burden of disciplining students, which has the potential to disrupt the transition to academic work. Furthermore, behavior problems in the cafeteria or at recess can carry over into the classroom and take away from important academic and instructional time (Lassen, Steele, & Sailor, 2006).

Students who are victims of bullying in the cafeteria or playground may be less able to access academic instruction upon returning to the classroom. For students who worry excessively about going into non-classroom settings because of bullying, it is hypothesized that they are at greater risk for school failure (Imich & Jeffries, 1989). Students who engage in disruptive behavior are also at risk for negative outcomes including lower academic achievement, suspension, or expulsion. A reciprocal relationship between disruptive behaviors and academic achievement has been established, where student behavior affects academic engagement and low achievement feeds delinquency (Scott, Nelson, & Liaupsin, 2001).

Addressing Disruptive Behaviors in Schools

Although schools have been in the media spotlight recently for being venues of bullying and student aggression, they also serve as a protective factor against the development of aggressive behavior (Surgeon General’s Report, 2001). Positive school environments that include students’ commitment to school, positive peer groups, and positive attention from teachers have been associated with decreased levels of anti-social
behaviors (Surgeon General’s Report, 2001). In addition, schools aim to provide students with opportunities for social and emotional development. Unstructured, non-classroom settings like the cafeteria and playground are prime settings for students to learn and practice pro-social skills like cooperation, perspective taking, empathy, and social problem solving (Miller, Pitchford, & Roderick, 1997).

Schools are dedicated to supporting children and have implemented various strategies in response to youth violence to increase safety for all students and teachers. According to the Surgeon General’s Report (2001), effective interventions for school violence are those that target the social climate of the school. School-based interventions that target the social context appear to be more effective than those that try to change individual attitudes, skills, or risk behaviors (Surgeon General’s Report, 2001). To prevent the development of disruptive behavior, the Surgeon’s General’s Report (2001) recommends school-wide programs that include behavioral techniques for classroom management. School-wide techniques include consistent rewards and monitoring of behavior; classroom recommendations include having clear rules, using praise, modeling appropriate behaviors, and using token economies (Surgeon General’s Report, 2001). In addition, the Individuals with Disabilities Education Act (IDEA, 2004) recommends that educators use positive behavioral interventions to address problem behaviors and student aggression in school.

These recommendations coincide with the School-Wide Positive Behavior Support framework (SW-PBS) that consists of systematic procedures designed to promote social behaviors and prevent disruptive behaviors in all students (Sugai & Horner, 2002a). SW-PBS is a prevention-focused framework designed to reduce problem
behaviors in all students by clearly communicating expectations and reinforcing appropriate social behaviors (Sugai & Horner, 2002a; Sugai & Horner, 2002b). Interventions using SW-PBS have been successful in both reducing discipline problems in public schools and increasing student achievement scores on tests of reading and math (Luiselli, Putman, Handler, & Feinberg, 2005). SW-PBS has been funded by the Office of Special Education Programs since 1999 and is considered best practice for preventing behavior problems in schools (US Department of Education, 2000).

**Rationale and Significance**

There is a large literature base supporting the use of SW-PBS in schools at both the school-wide and classroom level (Sugai & Horner, 2002b). Interventions using SW-PBS (e.g., defining, posting, teaching and reinforcing school-wide rules) have been shown to be effective in improving student behavior in the classroom (Sugai & Horner, 2002b; Paine, Radicchi, Rosellini, Deutchman, & Darch, 1983). Tailored interventions using similar methods in non-classroom settings (i.e., at recess, in the hallway, and in the cafeteria) have also demonstrated success in reducing problem behaviors (LaRowe et al., 1980; Lewis, Colvin, & Sugai, 2000; Lewis, Power, Kelk, & Newcomer, 2002; Scott, 2001; Roderick et al., 1997).

Although a SW-PBS approach reinforces students for rule-following and appropriate behavior, there are limited data to support that these desirable behaviors are modified in response to interventions (Sugai & Horner, 2008). Dependent measures for outcome studies of SW-PBS have focused on the reduction of rule violations or disruptive behavior in various settings; however, appropriate social behavior (ASB) has not been used as a measure of student behavior (e.g. Fabiano et al., 2008; Jeffrey, 2005;
Lewis, Sugai, & Colvin, 1998; McCurdy, Lannie & Barnabas, 2009). Strong data exist for the efficacy of SW-PBS interventions in decreasing disruptive behaviors; however, there is a paucity of data on positive and appropriate social behaviors that are intended to replace these disruptive behaviors (Sugai & Horner, 2002b).

A better understanding of appropriate social behaviors in school cafeterias is needed to develop more effective interventions. Baseline data for ASB in the cafeteria are virtually non-existent. Cafeteria-based research studies using interventions developed within a SW-PBS framework have demonstrated a change in disruptive behaviors, but it remains unknown if students replaced disruptive behaviors with more socially appropriate ones (Fabiano, et al., 2008; Jeffrey, 2005; Lewis et al., 1998; McCurdy et al., 2009).

The GBG (Barrish et al., 1969) and LBG have been shown to reduce disruptive behaviors in classroom and cafeteria settings using procedures that call attention to students for breaking established rules (McCurdy et al., 2009). These procedures do not align with the positive and preventative approach of SW-PBS (Sugai & Horner, 2002b). Although research demonstrates that giving attention to students for breaking the rules has been effective in reducing disruptive behavior, there remains the possibility of several iatrogenic effects on a students’ self-esteem and emotional well being (Cameron & Sheppard, 2006; Tingstrom, Sterling-Turner, & Wilczynski, 2002). Punitive discipline has the potential to negatively affect students’ self-image and increase feelings of stigmatization, alienation, and disempowerment. In addition, consistent exposure to negative discipline can model aggression and hostility for students. Finally, this type of
reactive discipline has the potential to increase disruptive behavior in students who may react to punishment with intense negative emotions (Cameron & Sheppard, 2006).

The procedures of the GBG and LBG were modified in this study and were influenced by the SW-PBS framework and principles of social learning theory. Giving students positive verbal attention and reinforcement for displaying appropriate social behaviors had multiple goals. First, adults modeled appropriate social behaviors for students. Second, students received immediate positive feedback for their positive behaviors. Third, when a student broke a rule s/he was reminded of the expected behavior instead of punished for his misbehavior. Finally, students were rewarded and given points based on appropriate social behavior. This study explored whether these modifications to the procedures would have the same effect on decreasing disruptive behavior in the cafeteria.

This study contributed to the SW-PBS literature in cafeteria settings in several important ways. First, this study aimed to establish a baseline level of appropriate social behaviors in an elementary school cafeteria. Second, the study modified an established intervention recognized by the Surgeon General as reducing problem behaviors, improving psychological well being, and targeting early aggression in elementary schools (Barrish, Saunders, & Wolf, 1969; Embry, 2002; Surgeon General’s Report, 2001) using the principles of SW-PBS and social learning theory in a school cafeteria to examine its effects on students’ appropriate and disruptive behaviors. This was only the second study to implement this well-known intervention in a cafeteria setting and the first to modify it to use a positive and preventative approach to discipline. It aimed to demonstrate that these modified procedures based in SW-PBS would have similar outcomes when
compared to the original studies. Third, the relationship between students’ appropriate social and disruptive behaviors at baseline and post intervention was investigated. Finally, the integrity of the intervention was monitored, which is a critical aspect of measuring outcomes when implementing high quality interventions (Surgeon General’s Report, 2001).
CHAPTER 2

Review of the Literature

Introduction

This chapter lays the foundation for the research study by outlining the theoretical and procedural models for school-based behavioral interventions. Social learning theory contributes a complex understanding of behavior and its connection to cognitions and the environment, while the methods of school-wide positive behavioral supports (SW-PBS) take those principles and apply them to program design and implementation. One specific intervention, the Good Behavior Game (Barrish, et al., 1969), is described in detail and its foundation in both social learning theory and SW-PBS are highlighted. The SW-PBS literature in classroom and non-classroom settings is explored with a thorough review of the literature on behavioral interventions in the cafeteria setting. The review focuses on common dependent variables, which are often disruptive student behavior rather than positive or pro-social student behavior. The chapter concludes with the research questions and hypotheses of this study.

Social Learning Theory and Cafeteria-based Interventions

School-based behavioral interventions often aim to reduce disruptive behaviors and replace them with positive, appropriate social behaviors. A comprehensive theory that takes into account the complexity of behaviors in school settings is necessary when designing and implementing these interventions. By using social learning theory, school psychologists are able to develop behavioral interventions that consider the triadic, bidirectional relationship of behavior, individuals, and the environment (Bandura, 1978). This approach utilizes a broader understanding of behavior, taking into account more of
the critical variables and interactions at play compared with strictly behavioral approaches.

Social learning theory espouses the three principles of reciprocal determinism, modeling, and reinforcement and can be drawn on to change behavior in school cafeterias (Bandura, 1978; Bandura, Grusec, & Menlove, 1967). Reciprocal determinism represents the interdependent interactions between an individual’s internal processes, his/her behavior, and the environment. This term implies that people do not simply react to an event or the environment in a unidirectional manner, but that there is an intermediate step that involves cognitive processes. Observational learning or modeling refers to humans’ abilities to learn new behaviors by observing others exhibiting the behavior of interest. Reinforcement, which can take many forms, is an event that follows a behavior and influences the likelihood that the behavior will reoccur in the future (Bandura, 1978). Social learning theory suggests that there is an interaction between an individual, the environment, cognitions, and behavior.

This theory can be applied to interventions designed to change behavior in school settings, including the cafeteria. First, social learning theory calls for understanding the physical environment of the cafeteria and how the layout may contribute to lunch monitor and student behaviors. Adults’ ability to monitor students’ behavior and the frequency with which students get up and leave the lunch table are both affected by the physical setup of the space. Additionally, the environment may include constant noise or bad acoustics, requiring students and adults to speak loudly or yell to be heard. This cycle serves to create more noise in an already chaotic environment.
Internal cognitions and individual factors are also important in understanding interactions in the school cafeterias. Students may not know the rules or perceive there are no consequences for misbehaviors. As such, students may not be motivated to behave appropriately with peers or respectfully toward adults. Lunchtime may be viewed as a more laidback part of the students’ schedule with less oversight of behavior. Lunch monitors may not be held in high regard and thus students may have little reason to behave well in their presence (Imich & Jeffries, 1989). Students may be influenced by socially desirable peer models, who may be gaining negative attention for disruptive behaviors (McCurdy et al., 2009). Lunch monitors may hold internal values and beliefs about punishing or reprimanding negative behaviors. Additionally, school staff may hold beliefs that students should behave appropriately without needing to receive positive reinforcement.

These beliefs set up negative interactions between lunch monitors and students and do not model the desired appropriate social behaviors that schools want students to demonstrate. Students need to learn the rules and behavioral expectations in the cafeteria setting and can then serve as models for each other. In addition, if lunch monitors are trained to respond to students’ appropriate social behaviors, they serve as adult models for appropriate behaviors. When students misbehave in the lunchroom, they are often yelled at or told to stop and when students are following the rules or doing what is expected, they receive no attention. Reversing this behavioral pattern serves to model positive behaviors and to reinforce students for exhibiting desirable behaviors. Additional reinforceers can also be used to elicit positive behaviors and strengthen the relationship between behaviors and cognitions.
To address these environmental, internal, and behavioral issues in the cafeteria setting, an intervention can be designed from a social learning perspective with the goals of decreasing students’ disruptive behavior, increasing students’ rule-following behavior, and increasing lunch monitors’ use of active monitoring and positive reinforcement. Specifically, the components of a cafeteria intervention developed from a social learning perspective target several things. First, it provides positive role models to students and opportunities for observational learning. Second, the environment is a target of the intervention and is restructured to elicit positive behaviors. Third, positive reinforcement is introduced to increase motivation to perform desired behaviors.

A cafeteria-based intervention developed from social learning theory recognizes the reciprocal relationship between behavior, cognition, and the environment. For example, a cafeteria intervention may include changing the environment to decrease students’ out of seat behaviors, teaching adults and peers the cafeteria rules for them to become models to students, and reinforcing students when they exhibit positive behaviors. Utilizing this type of multiple-component cafeteria intervention to address student behavior, adult behavior, and the environment demonstrates the principles of reciprocal determinism, modeling, and reinforcement and accounts for the interaction between an individual, the environment, cognitions, and behavior. This study will contribute to social learning theory by examining how the fundamental principles of modeling, positive reinforcement, and reciprocal determinism can be used to affect elementary student’s appropriate social and disruptive behaviors in the school cafeteria.
SW-PBS Overview

Given the rise in problem behaviors in schools, significant research has been conducted on intervention programs designed to prevent student disruptive behavior. The focus of these interventions has been on prevention-based approaches in contrast to reactive responses to problem behavior (Sugai et al., 2000). Negative outcomes such as increased antisocial behavior and decreased academic achievement have been associated with punitive responses to negative student behaviors (Lewis et al., 1998). Rather than giving students detentions or suspensions, which may serve to reinforce behavior by allowing escape of academic time, prevention-based approaches encourage, elicit, and reinforce positive and appropriate social behaviors in students (Sugai & Horner, 2008).

One such framework, school-wide positive behavior support (SW-PBS) focuses on preventing problem behaviors in schools and promoting social behaviors in all students (Sugai & Horner, 2002a; Sugai & Horner, 2002b). SW-PBS was developed from a behavioral science perspective and has undergone over 20 years of research (Sugai & Horner, 2001a). The core features of SW-PBS include clearly defining expected student behavior, directly teaching rules and expected behaviors, providing opportunities for students to practice expected behaviors, reinforcing positive behaviors, and consistency in implementation. SW-PBS has been researched widely and found to be effective at decreasing student disruptive behaviors (Sugai & Horner, 2008).

A fundamental concept underlying SW-PBS is the three-tiered approach to prevention and intervention. Ideally, most students are served through the basic school-wide approach to discipline and management of student behavior (Sugai et al., 2000). The remaining at-risk students are served with varying levels of intervention based on their
need. Based on the three-tiered model, it is predicted that 80-90% of students will respond to preventative and proactive school-wide programs designed to promote positive student behavior. An additional 5-15% of students will need additional support in the form of a more targeted intervention. The remaining 1-7% of students will require intensive and individualized interventions to manage behavior at school (Sugai & Horner, 2008). These three tiers are discussed in greater depth next.

**Tier 1 – universal prevention.** Universal prevention, or Tier 1, is implemented on a school-wide basis and is applicable to all students. Although not every student will respond to a universal program, it has been estimated that between 80-90% of student behavior will be managed by these prevention methods (Sugai et al., 2000). In urban schools serving a more diverse population, however, the percentage of students who respond to the Tier 1 intervention is often lower (Warren et al., 2003). Within a SW-PBS model, the Tier 1 intervention includes developing school-wide rules or expectations, directly teaching students the expectations, having students practice the expectations, and rewarding students for exhibiting the expected behaviors. School rules are often brief and direct (e.g., Be Respectful, Encourage Others, Be Safe, Show Responsibility) and can be operationalized for different settings. School-wide programs often include developing the expectations and teaching them at the beginning of the year in a school-wide assembly. Teachers and staff then reinforce students for following the rules, which is often accomplished by awarding students with points or coupons that can be exchanged for small prizes. Social reinforcement is often another component and students displaying consistent or improved behavior can be recognized on a bulletin board or in an assembly. The core features of Tier 1 supports are that prevention-based programs are applicable to
Data-based decision making is also used to evaluate the effectiveness of program and identify students who are not being served with this level of support (Lewis & Sugai, 1999; McKeivitt & Braaksma, 2008).

**Tier 2 – targeted supports.** For students who do not respond to the universal intervention, a more targeted approach is used. This intervention is directed toward a small group of students who need additional supports to follow the school-wide rules. Students are often identified by office discipline referrals (ODRs) or other data indicating that minor behavior problems persist despite the Tier 1 program. Interventions at this level are provided in addition to the primary prevention methods used for the entire school building. Examples of Tier 2 interventions include social skills training, self-management, problem-solving skills, or increased contact with adults for behavior check-ins. These interventions are intended to result in a rapid change in behavior over a short period of time for most students involved (McKeivitt & Braaksma, 2008).

**Tier 3 – individualized interventions.** If an individual student does not respond to a Tier 2 group intervention or if the student’s behaviors are severe enough to disrupt learning and are considered dangerous to the student or others, a more individualized intervention is prescribed. Usually only a small percentage of students require this more intensive level of assessment and intervention. Once it has been determined that a student is not responding to a Tier 2 intervention, the student’s behavior is observed, recorded, and analyzed within a functional behavior assessment. The data are then used to design a
specific and individualized intervention to modify and monitor the student’s behavior (McKevitt & Braaksma, 2008).

The Good Behavior Game

The Good Behavior Game (GBG) is a multi-component school-based intervention that utilizes many of the procedures common in SW-PBS (Barrish, et al., 1969). The general components of this intervention consistent with SW-PBS include direct instruction of setting-specific rules, consistent consequences for breaking the rules, and positive reinforcement for following the rules. The GBG diverges from SW-PBS in its use of an interdependent group contingency and rewards for a minimal number of rule infractions rather than directly reinforcing desirable behavior. A group contingency has been described as a behavioral modification strategy where an entire group receives the same consequence dependent upon the behavior of the individuals in the group (Barrish, et al., 1969; Fabiano et al., 2008). This intervention can be used at the Tier 1 level as either a school-wide preventative program or a targeted intervention for a specific class or setting.

In the initial study of the effectiveness of the GBG, the investigators used a multiple-baseline design to measure the intervention’s influence on student behavior change in a fourth grade classroom (Barrish et al., 1969). Before the intervention was implemented, the teacher explained the game procedures and defined 11 classroom rules. During the game, the class was divided into two teams. Points were awarded to a team if a student on that team was observed by the teacher to break a rule. At the end of the day, the team with the fewest points or the team/teams that earned fewer points than a preset criterion would earn a natural classroom reinforcer. These reinforcers included social
reinforcement (wearing tags, getting a star on a posted chart), lining up first, special projects, and extra recess time. Results indicated a decrease in out-of-seat behavior and talking-out behavior in the intervention phase compared to the baseline phase (Barrish et al., 1969).

Many studies have been conducted using the GBG, and the literature has demonstrated its success and designated it a best practice for behavior support (Embry, 2002). A recent review of the GBG documented variations on the intervention and the overwhelming efficacy across settings, ages, and participants (Tingstrom et al., 2002). Replication studies of the intervention in classrooms support the original findings that the GBG is effective in reducing student problem behavior (Hegerle, Kesecker, & Couch, 1979). Other replications have also demonstrated positive changes to academic behaviors, including increased on-task behavior (Lannie, & McCurdy, 2007). Additional studies have found the GBG effective across grade levels and academic subjects (e.g., math, English), as well as in urban settings (Harris & Sherman, 1973; Lannie, & McCurdy, 2007; Medland & Stacknick, 1972).

The GBG has specifically been effective with students with severe behavior problems. The GBG reduced disruptive behaviors when adapted to target individualized behaviors for students with emotional disturbance (Salend, Reynolds, & Coyle, 1989). The GBG is effective at a class-wide level to target behavior and as an individualized intervention for behavior and academic goals (Darveaux, 1984). When modified to include a merit component where teams could have a point taken away for exhibiting academic competence and participation, the GBG was found to decrease disruptive behavior and increase academic work completion for two students with severe behavior problems.
problems (Darveaux, 1984). A comparison of the group-based contingency in the GBG and an individual contingency with special education students found that both interventions resulted in a decrease in disruptive behaviors (Grandy, Madsen, & De Mersseman, 1973).

The GBG has also been shown to be an effective behavioral intervention in non-classroom settings (Tingstrom et al., 2002). An adapted version of the GBG was found to decrease off-task behavior, increase task-relevant behavior, and decrease disruptive behavior of one elementary class in the library (Fishbein & Wasik, 1981). This version of the GBG utilized a more positive approach, where points were earned when the entire team was following the rules rather than points being given for breaking the rules. In addition, the library rules were jointly created with the librarian and students (Fishbein & Wasik, 1981).

The GBG has also been successfully adapted to physical education and cafeteria settings (McCurdy et al., 2009; Patrick, Ward, & Crouch, 1998). In one study, elementary students who participated in the GBG during physical education class showed a decrease in inappropriate social behavior (e.g., pushing, discouraging statements, offensive gestures) and an increase in appropriate social behaviors (e.g., high fives, verbal encouragement, positive gestures) during the intervention compared to baseline (Patrick et al., 1998). In another study, the GBG was adapted to the cafeteria (i.e., the Lunchtime Behavior Game; LBG) and was used to target students’ disruptive behavior (e.g. screaming, throwing, out of seat, physical contact). The intervention resulted in significant reductions in disruptive behaviors across lunch periods with good acceptability and treatment fidelity (McCurdy et al., 2009).
The GBG has demonstrated repeatedly that it is associated with decreases in students’ disruptive behavior in a variety of school settings. These positive effects have earned the GBG the designation of best practice along with many recognitions including funding by the U.S. Centers for Disease Control for meeting the standards of a promising violence prevention practice. It has also been declared a universal strategy for the Colorado Violence Prevention Blueprints projects and considered a desirable practice by the Surgeon General’s Report on Youth Violence (Embry, 2002).

**Appropriate Social Behaviors (ASB)**

Very few studies have used students’ appropriate social behaviors as a dependent variable to measure the effectiveness of a behavioral intervention. However, measuring these behaviors is critical in understanding if students are following rules and replacing disruptive behaviors with more socially desirable ones. In general, appropriate social behaviors refer to any time when a student is interacting appropriately with another student or adult. Previous definitions have included talking with peers in a positive or neutral tone, positive touches or gestures, smiling, following rules, including others, orienting one’s head toward a peer, carrying on a conversation, using utensils correctly, and sitting at assigned table correctly. Table 1 includes a full list of previous definitions (Marchant et al., 2007; Michelson, Dilorenza, Calpin, & Williamson 1981; Nelson, Colvin, & Smith, 1996).

**SW-PBS in Non-Classroom Settings**

Although appropriate social behaviors are not commonly the dependent variable used in outcome studies of SW-PBS, these interventions have been shown to improve student behavior and decrease problem behaviors in classroom settings (Sugai & Horner,
<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Michelson, Dilorenza, Calpin, &amp;</td>
<td>1981</td>
<td>Appropriate lunchroom behavior was defined as orienting head toward another person sitting at the same table, carrying on a conversation with another individual sitting at the same table, using eating utensils correctly, sitting at assigned table with buttocks in contact with the seat of the chair and all four legs of chair in contact with the floor.</td>
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<tr>
<td>Williamson (1981)</td>
<td></td>
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<tr>
<td>Nelson, Colvin, &amp; Smith</td>
<td>1996</td>
<td>Positive social behavior with another child was defined as the student touching, gesturing, or talking with a peer or group of peers in a positive (pleasant) or neutral (matter of fact) tone. Additionally, smiling at or touching another student in a positive or neutral manner was considered positive social behavior with another child. Positive social behavior with an adult was defined as the student having a positive (pleasant) or neutral (matter of fact) interaction with an adult, smiling at an adult, or touching an adult in a positive or neutral manner.</td>
</tr>
<tr>
<td>Marchant et al.</td>
<td>2007</td>
<td>Appropriate peer-play was defined as the a student following the school’s five playground rules while engaging in an activity with a peer: (a) follow the rules of the game, (b) use equipment in a safe way, (c) let everyone play, (d) keep your hands and feet to yourself, and (e) use kind words. Examples of playing appropriately included running, jumping, playing on playground equipment, and playing with sports equipment with another students.</td>
</tr>
<tr>
<td>Hoffman, Parrish, &amp; Jones</td>
<td>2011</td>
<td>Appropriate social behavior was defined as all positive social interactions (verbal and nonverbal communication) with peers or adults such as participating in cooperative play, conversing, answering a question, or helping another child. The only nonverbal appropriate social interaction behaviors were (a) affectionate touches, and (b) cooperative play initiated by the observed child.</td>
</tr>
</tbody>
</table>

2002b; Paine, et al., 1983). Similarly, interventions using these preventative methods in unstructured settings (i.e., at recess, in the hallway, and in the cafeteria) lacked data about changes in appropriate social behaviors, but demonstrated success in reducing problem student behaviors (LaRowe et al., 1980; Scott, 2001; Roderick et al., 1997). Utilizing the SW-PBS prevention-based approach to interventions yielded similar changes in student
behavior in settings with fewer adults to supervise students and an inherent vulnerability for aggression and bullying (Craig et al., 2000; Sampson, 2009).

Many research projects have been conducted to determine the outcome of different interventions with and without SW-PBS elements on students’ behavior during recess. Utilizing a SW-PBS approach (teaching rules, increased supervision, individual reinforcement, and group contingency) on the playground yielded decreases in student disruptive behavior and ODRs (Frazen & Kamps, 2008; Lewis et al., 2002; Todd, Haugen, Anderson, & Spriggs, 2002). Similar playground procedures with pre-correction and no reinforcement component demonstrated a decrease in problem behavior during unstructured activities and no change in adult behavior (Lewis et al., 2000). A multiple baseline across participants study used social skills training and self-management to improve communication and cooperative play in elementary school students (Marchant et al., 2007). A study focusing on increasing adults’ capacity to manage behavior at recess with positive reinforcement demonstrated a decrease in the number of hits and kicks on the playground (Roderick, et al., 1997). Adding structure in the form of organized and supervised games at recess is a different type of playground intervention that has also been shown to be effective in decreasing problem student behavior (McCurdy, Mannella, & Eldridge, 2003; Murphy, Hutchinson, & Bailey, 1983).

Fewer studies exist that have focused on changing students’ behavior in other types of non-classroom school settings such as hallways, cafeterias, and bathrooms. A SW-PBS approach to reducing hallway noise by teaching expectations and making environmental changes (e.g., dimmed lighting) was found to reduce the overall level and variability of sound in the school hallways before lunch (Kartub, Taylor-Greene, March,
& Horner 2000). In an unstructured outdoor setting where students congregated before school, teaching expectations with examples and feedback resulted in desired changes in positive behaviors, negative behaviors, and ODRs. By simply setting clear expectations with practice and feedback, students demonstrated an increase in positive social behaviors and a decrease in negative social behaviors. These changes were seen in common areas of the school and were maintained throughout the intervention. This study was unique in its use of positive social behaviors as a dependent variable and the results are promising as the intervention yielded increases in the desired behaviors (Nelson et al., 1996).

It is apparent from this body of literature that SW-PBS is an effective set of procedures to decrease student disruptive behaviors in non-classroom settings. However, few studies measured appropriate or pro-social student behavior to determine if teaching expectations and reinforcing rule-following behavior influenced positive behaviors as well as disruptive behaviors. This same pattern can be seen in the literature on cafeteria-based interventions as well.

**Cafeteria-Based Interventions**

Researchers have been interested in decreasing disruptive behavior in the cafeteria for several decades; however, a review of the literature yielded only seven published studies, one dissertation, and one study submitted for review on cafeteria interventions. The studies utilized various intervention components and targeted different aspects of student behavior, see Table 2 for a review of studies. Studies before 1990 tended to focus on noise reduction or reductions in problem behavior. These studies utilized both
punishment and reinforcement to achieve the desired results (Imich and Jefferies, 1989; LaRowe et al., 1980; MacPherson et al., 1974; Michelson et al., 1981).

More recent studies have been influenced by the trend in utilizing positive behavioral supports and included social skills training (Jeffrey, 2005; Lewis et al., 1998) and group contingency systems (Fabiano et al., 2008; McCurdy et al., 2009) to decrease rule violations and disruptive behavior. The theory behind targeting and measuring disruptive behaviors is that when disruptive behaviors decrease, they are assumed to be replaced by appropriate social behaviors (Lewis et al., 1998). However, the research on cafeteria interventions has not sufficiently measured appropriate social behavior to determine if teaching social skills or implementing a reinforcement system truly serves to replace negative behaviors with positive ones. No baseline level of appropriate social behavior has been established and the literature would benefit from a deeper understanding of this behavior in the cafeteria and how interventions are able to increase levels of appropriate social behaviors.

A systematic review of the literature evaluating cafeteria and playground based interventions with elementary-aged children was conducted in January of 2011. All reviewed outcome evaluation studies were published or dissertations, implemented in school or hospital settings, included elementary-aged children, and targeted behavior modification components. Published articles were obtained through computer searches using Medline, PsycInfo, and Dissertation databases. Ancestral searches were conducted with articles found in the initial search. Key words included: cafeteria, lunchroom, noise, bullying, intervention, SW-PBS, and behavior. This review yielded nine evaluations on lunchroom interventions, which are reviewed below.
MacPherson, Candee, and Hohman (1974). In an intervention aimed to decrease problem behaviors in a Midwestern public elementary school cafeteria, behavioral procedures were compared with combined behavioral and essay strategies. The lunch aides, who were local housewives from the community with no previous training in behavior management, completed a survey to identify the most important behaviors to address (talking while the lunch aides are talking, out-of-seat, and quarreling). The study had three conditions and utilized a reversal design for the mediation essay condition.

The first condition was a basic behavior modification plan (BMP) and consisted of positive reinforcement, withdrawal of reinforcement (attention, praise, and privileges), reinforcement contingent on appropriate behavior, reinforcements withheld for the day if misbehavior continues, and a time out for excessive misbehavior. The second condition was the same behavior modification plan plus a mediation essay (BMP + ME). In this condition, a student received two warnings for misbehavior and then was asked to copy a mediation essay that was grade-level appropriate and targeted the specific misbehavior. The third condition was the behavior modification plan plus a punishment essay (BMP + PE). This method utilized the same procedures as the previous conditions, except the students were required to write punishment essays in place of mediation essays.

During baseline and experimental conditions, the lunch periods were observed and frequency counts of problem behavior were recorded in 5-minute intervals. Observations were conducted by 9-11-year-old students at the school who were trained and rewarded for accurate observations. Data were collected on the frequency of time out use and essay assignment. A total of 82 essays were assigned in the mediation condition.
and 132 essays were assigned in the punishment phase. When problem behaviors were aggregated across category, there was a total of 589 misbehaviors at baseline, 247 in the BMP condition, 51 in the BMP + ME condition, 462 in the BMP + PE condition, and 212 during reversal. There was a 22% decrease in problem behaviors with the BMP + PE intervention, a 58% reduction with just the BMP intervention, and over 90% reduction in the BMP + ME condition. Time outs were given most frequently during the BMP + PE condition.

The use of a reversal design demonstrates the effectiveness of the BMP + ME condition compared to the other methods. Other strengths of this study include training the lunch aides in behavior management strategies, soliciting lunch aide opinions about problem behaviors, and teaching the children the rules before the beginning of the intervention. This study was conducted at a small elementary school without a centralized cafeteria, making it difficult to generalize the results to other school settings. A major limitation of this study is the use of students at the school as data collectors. Although it reduces cost and personnel obligation, it is likely that young students are not accurate and consistent data collectors. This study lacked inter-observer agreement data and treatment integrity data, making it unclear if data collection was consistent and conditions were implemented as they were designed. Finally, this study only measured the frequency of rule infractions and did not attend to the change in students’ positive behaviors during lunchtime.

LaRowe, Tucker, and McGuire (1980). Feedback and reinforcement were examined in a study of noise level in an elementary school cafeteria in Florida. The study targeted students and lunch monitors; the latter were teachers employed by the school.
The study utilized a multi-element baseline design with random alternating conditions. The conditions included baseline, feedback, and feedback with reinforcement. During the baseline condition, the lunch monitors addressed behavior and noise as they had before and a recording of the decibel level in the cafeteria was taken at 30-second intervals.

When the feedback was added, students were able to see a traffic light apparatus that indicated the noise level in the room. The procedures and meaning of each light color were explained to students by their classroom teacher and the lunchroom monitor prior to the implementation of the intervention. If the light was green, it indicated an appropriate noise level below 73 decibels. When the apparatus measured a decibel level between 73 and 75, the light changed to yellow and indicated that it was getting too loud. At 76 decibels, the red light was activated and a loud bell rang to alert the students that the noise level was too loud and they needed to lower their volume. In the feedback plus reinforcement condition, classrooms were able to earn a group reward each day the lunchroom had 13 or fewer red light incidents while the class was in the lunchroom. The frequency of red light incidents while the class was in the cafeteria was recorded by the principal investigator and at the end of lunch the class was informed if they had earned a reward. Teachers helped students choose the reinforcement and were responsible for awarding it on the day it was earned.

During the study, decibel levels were recorded every 30 seconds and frequency counts of red light occurrences were recorded in the cafeteria. In addition, the frequency of running, hitting, pushing, and kicking were recorded by trained observers. Results demonstrated that the noise level in the cafeteria was significantly reduced in the feedback condition compared to baseline. In addition, there was a significantly greater
reduction in noise level with the feedback plus reinforcement intervention when compared to the feedback condition. The disruptive student behaviors observed were not found to change significantly or to be related to the intervention conditions.

This study utilized a visual indicator to show students their volume level so that they could self-monitor their behavior. The use of reinforcement demonstrated an additional change in behavior. This study is different from other cafeteria-based interventions because it did not involve collaboration with school staff, lunch aides were teachers at the school, and the intervention did not include SW-PBS components. This study focused on reducing noise level and measuring the frequency of aggressive acts in the cafeteria and did not examine positive or rule-following behaviors.

**Michelson, Dilorenza, Calpin, and Williamson (1981).** This study extended previous research on cafeteria volume and student behavior by examining the relationship between frequency of excessive noise, duration of excessive noise, and student behavior. Subjects were child and adolescent patients at an inpatient psychiatric clinic for students with emotional disturbances and learning disabilities. This study utilized an ABAB withdrawal design to evaluate the effects of the intervention. During baseline, a tape recorder and decibel counter were hung from the ceiling to measure the frequency and duration that the volume in the cafeteria exceeded 76 decibels. During the intervention stage, students were told when it got too loud in the cafeteria, the machine would click to remind them to be quiet. Students were told that if the machine did not click very often, they would earn ice cream for a snack. This intervention phase included auditory feedback and reinforcement. During the second baseline phase, the microphone continued
to measure the sound but no feedback or reinforcement was given. For the second intervention stage, the audio feedback and reinforcement were reintroduced.

During lunchtime, two observers coded student behavior as either appropriate or not appropriate. Appropriate behaviors included: orienting head to someone at the same table, having a conversation with someone at the same table, using utensils correctly, sitting at assigned table with buttocks in the chair and all four legs in contact with the ground. Results indicated that the intervention decreased the mean number of times the volume exceeded 76 decibels each minute. During baseline, there was mean of 164.9 volume violations per minute compared to 97.5 during the first intervention phase, a reduction of 41%. When the intervention was removed the number of violations per minute increased to 134; violations decreased again to 83.2 when the feedback and reinforcement were reintroduced. During baseline appropriate behavior was displayed during a mean of 51% of observed intervals, which increased to a mean of 64% during the intervention phase. During the reversal condition the mean percentage of intervals with appropriate behavior decreased to 49.7%; appropriate behavior increased to 64% of intervals during the second intervention phase.

This intervention used simple feedback and reinforcement that included teaching expectations and giving students reinforcement for meeting the goal. The study targeted the noise volume in the cafeteria, and demonstrated changes in students’ noise level with the intervention. Students’ appropriate behaviors were also shown to improve with the intervention even though they were not directly targeted by the intervention. This was the first study in the lunchroom setting to define and measure appropriate social behavior.
Imich and Jefferies (1989). The researchers worked with the staff at a large British school to implement changes in the cafeteria designed to improve student behavior. The lunchroom setting had no set rules or routines for where children should sit, how they requested permission to move or leave, expectations for cleaning up, or consequences for inappropriate behavior. Midday assistants did not respond to problem behavior and usually referred students to the Head Teacher for disciplinary matters. A collaborative approach with the research team and school staff yielded agreement upon several intervention components that targeted both the cafeteria environment and student discipline. An assembly was held for all students to introduce them to the new rules, expectations, and consequences that would be implemented in the cafeteria.

Intervention components to address the cafeteria environment included clear procedures for lining up to get meals, nametags for midday assistants, table assignments, and cleanliness expectations for dismissal from the cafeteria. The reinforcement component included midday assistants awarding team points when students exhibited good behavior during lunchtime. Midday assistants were also trained to praise good behavior, award points and notify the classroom teacher for good behavior, deal with problems independently, respond only to events they witnessed, and not get involved in tattling. In addition, a structured behavior intervention was implemented for all students using a time out and card system. Low-level behavior problems (e.g., shoving in line, talking back, shouting) resulted in a 5-minute time-out. For more serious offenses, (e.g., swearing, bullying, fighting, insolence, and vandalism) students were issued yellow cards, which recorded the date, offense, and midday assistants’ name. Any student who
was given three yellow cards in a set period of time received a red card, his or her parents were notified, and the student was suspended from school during lunchtime for one week.

Changes in behavior were ascertained through informal observation and reports from the head teacher and midday assistants. The head teacher reported a “highly significant decrease” in the number of students seen for disciplinary issues after the implementation compared to before the cafeteria intervention. The midday assistants reported shorter lines for children to get their food, cleaner tables in the lunchroom, effective results from using time-outs and increased respect from most children. At the start of the intervention, about twenty students were receiving a yellow card each week. As the program continued, only three to five students were getting yellow cards each week. The school reported that only three students had been given red cards in the past two terms and no students had been given more than one red card.

This study is important because it takes into account the cafeteria environment as an antecedent for problem behaviors and made changes to prevent those behaviors. It also used a collaborative partnership approach that included midday assistants in creating and changing the intervention. The new procedures were taught to students in an assembly and reinforced by the midday assistants during lunchtime. The consultation model created a partnership making training in basic behavior management principles acceptable to midday assistants. Although this intervention anecdotally showed improvements in the cafeteria, there are some significant limitations in this study. There was no direct measure of behavior problems before, during, or after the intervention implementation, which prevents making conclusions about behavior change. Although there was observation of
the students in the cafeteria, the observation was not systematic and did not result in a quantifiable measurement of behavior with which to assess change.

**Lewis, Sugai, and Colvin (1998).** In this study, non-classroom settings were targeted for behavioral intervention in a school with pre-existing SW-PBS. Targeted settings included the cafeteria, playground, and transition to the cafeteria. The support team assisted in designing the intervention and brainstormed problem behaviors and positive replacement behaviors that fell within the five school-wide rules: “Be kind, be safe, be cooperative, be respectful, be peaceful.” Social skill lessons were created by the team and teachers implemented these lessons daily in their classrooms. During these lessons cafeteria rules were reviewed, expected behaviors were taught, examples and demonstrations were used, clarifications were given, and students participated in role-plays. After the social skills phase, a group contingency was implemented in the cafeteria. A large poster board was hung on the wall and students’ behavior was assessed using a 2-minute, variable interval schedule. A point was given to the group if more than 80% of the students were following the school rules. Although the team worked to develop criteria, there was some subjectivity in awarding a point. Once 80% of possible points were earned, all students earned an ice cream party during afternoon recess.

In the cafeteria setting, behavior was recorded using a frequency count of problem behavior during a 10-minute interval. The first half of the observation focused on the lunch line and the second half of the observation focused on random students in the cafeteria. The study utilized a multiple baseline across settings design. Results showed an increasing trend of problem behavior during baseline and a consistent trend and level during the social skills instruction phase. During the direct intervention phase, a moderate
decrease in overall number of problem behaviors was observed. The intervention yielded a clear trend change from increasing levels of problem behaviors to decreasing levels. Follow-up data were collected at one-month intervals for three months and revealed maintenance effects in the cafeteria with 83% of non-overlapping data points.

This study built upon a pre-existing SW-PBS framework to target student behavior in the cafeteria by collaborating with a school problem-solving team, utilizing direct instruction and social skills training, implementing a group contingency for reinforcement, and directly observing problem behavior. Although the study had promising results, it is unclear if the decrease in problem behavior was a result of the social skills lesson or the behavioral intervention, as the study design does not lend itself to differentiating this. Furthermore, this intervention only measured negative or problem behavior, used only one type of reinforcement, did not give immediate praise for positive behavior, did not include a plan for addressing misbehavior, and did not collect treatment integrity data.

Jeffrey (2005). In this study the author designed, implemented, and evaluated an intervention aimed to decrease disruptive behavior, decrease the conditional probability of peer negative responses, and increase the conditional probability of positive peer responses in the cafeteria of a school with existing SW-PBS. The intervention consisted of a social skills curriculum taught by lunch monitors and the recognition of appropriate student behavior. Direct instruction was used to teach the cafeteria rules, lunch monitors were taught skills in active supervision, and students were reinforced with tickets from the school-wide behavior program for appropriate behavior. Lunch monitors received training in the intervention, lesson plans, and materials on active supervision and
teaching. The study utilized a multiple baseline design across subjects (i.e. lunch groups) to examine effects of the intervention.

Observers recorded student disruptive behaviors, immediate peer responses to those behaviors, and lunch monitors’ positive and corrective interactions with students. Across all lunch groups, the implementation of the intervention resulted in an immediate and significant reduction of disruptive behavior. Group 1 showed a 28% reduction in disruptive behavior, Group 2 a 34% reduction, and Group 3 a 35% reduction. The variability in disruptive behavior also decreased with the intervention. The probability of students giving positive responses to disruptive peer behavior decreased from 0.25 during baseline to 0.17 during intervention. There was no significant change in the probability of peers giving a negative response to disruptive behavior as a result of the intervention.

Social skills instruction was implemented with a high level of fidelity; however, aides did not fully reach the goal for positive interactions with students. The intervention was found to be acceptable with the lunchroom aides.

This intervention used the principles of SW-PBS to design an intervention implemented by the lunchroom aides. The social skills curriculum and reinforcement resulted in a decrease in disruptive behavior across all lunch groups. The intervention was both acceptable and implemented with good integrity. The dependent variable was disruptive behavior and did not include positive student behavior.

**Fabiano, Pelham, Karmazin, Kreher, Panahon, and Carlson (2008).** The authors implemented a group contingency intervention with a random reward to encourage rule following behavior in the cafeteria. The school had an existing school-wide discipline program with eight rules that were defined and operationalized for
various settings. A significant number of ODRs were from the cafeteria, which prompted the development of the intervention. The authors utilized an ABCD design with a baseline, group contingency, group contingency with social reinforcement, and group contingency with social reinforcement and public posting of rule violations.

During the group contingency phase of the intervention, undergraduate research assistants reminded classes of the rules at the beginning of lunch and distributed six lottery tickets to the class. The research assistants conducted three, 10-second random checks during the 30-minute lunch period. If no children in the class were violating rules, the class earned a bonus ticket. If there were rule violations during the observation, a ticket was taken away from the class. The next morning, a random lottery drawing was done from the remaining tickets from each class yielding two winning tickets. Winning classes received a special class-wide privilege (e.g. extra recess time) and congratulations from school staff (i.e. principal, teachers, lunchroom staff). The frequency of rule violations was averaged across all classes in the school each day and daily rates were averaged to give weekly averages of rule violations.

After the eighth week of intervention, another reinforcer was added to the program. The group contingency and random reward remained in place and in addition, the three classes with the fewest rule violations earned a social prize of a banner hung above their classroom door. After the winter vacation a rise in disruptive behavior was noted and the number of rule violations for each class was posted publicly outside the cafeteria. Teachers reviewed the tallies with their class as they entered the cafeteria and often fostered gentle competition with other classes in the same grade level.
Results indicated a decrease in the frequency of rule violations with the implementation of the intervention. The frequency of rule violations decreased from 302.80 each day during baseline to 124.39 with the group contingency and random reward. After the social reinforcement was added, rule violations decreased from 144.93 each day to 87.23. When rule violations were posted, the daily average decreased from 152.22 to 109.49. Out of seat behavior was also measured to determine if the effects of the intervention generalized to times when it was not being implemented. There was an average of 2.35 out of seat violations per minute during intervention and after the first withdrawal it increased to an average of 5.57 reported out of seat incidents. Before the second withdrawal there were 2.71 out of seat violations per minute compared to 5.57 when it was not implemented the second time. Effect sizes were 2.78 and 1.91 for first and second intervention phases.

This study, conducted in a school with SW-PBS and school-wide rules, utilized a group contingency with class-wide rewards for good behavior. Behavior change was measured using rule violations and out of seat behavior, but positive or rule-following behaviors were not measured. This dynamic intervention monitored student behavior and changed the intervention in response to observed behavior patterns.

**McCurdy, Lannie, and Barnamas (2009).** These researchers modified the Good Behavior Game to reduce disruptive behavior in the cafeteria using an interdependent group contingency. The school did not have school-wide SW-PBS in place and tended to use reactive discipline including suspension as a response to problem behavior. Using a collaborative approach with school staff, seven lunchtime rules were created: (1) sit four to a bench; (2) use an indoor voice; (3) ask permission to leave your seat; (4) keep your
hands, body, and objects to yourself; (5) follow staff directions the first time they are
given; (6) keep your area clean; and (7) walk at all times. Training sessions were held to
teach the Lunchtime Behavior Game procedures to lunch staff and allow them to practice
and role-play. Teachers were given lessons to use to teach students the seven new rules
and Lunchtime Behavior Game. Using direct instruction and role-play, students were
introduced to the new program in their classrooms.

Using a multiple baseline design across lunch periods, the researchers used direct
observation to determine the change in behavior from baseline to intervention phases.
During baseline, observations were conducted while lunchtime staff addressed behavior
as normal. When the intervention was introduced, each class worked as a team to follow
the lunchroom rules. If there was a rule infraction, a lunchtime monitor blew a whistle,
identified the broken rule, stated the alternative behavior, and made a tick mark on the
class’s recording sheet. At the end of lunch, totals for each class were announced and
recorded on a poster. Every Monday morning the Dean of Students announced the classes
that had fewer points than the criterion for the previous week. These classes were winners
and received small prizes (e.g., edibles, tangibles, a special activity). The students were
not told the criterion number of points until the winners were announced.

Data were collected using direct observation of the frequency of disruptive
behaviors. Acceptability by students and lunchtime staff was also assessed using rating
scales. Results showed immediate and sustained behavior change in the lunchroom across
all three lunches. The rate of disruptive behavior decreased from 4.73 incidents per
minute during baseline to 2.02 during intervention in the first lunch. In the second lunch,
disruptive behaviors decreased from a mean rate of 6.66 per minute to 2.75 with the
intervention in place. In the third lunch period, disruptive behavior decreased from an average 7.10 times per minute to a mean of 2.46 during intervention. The rating scales demonstrated the intervention had moderate acceptability among students and high acceptability with lunchtime staff. Treatment fidelity was also high (Mean = 89%) in this study, suggesting that the intervention was simple and easy to implement.

This study used the principles of SW-PBS to target disruptive behaviors in the cafeteria of a school without a school-wide behavior program. Adapting the Good Behavior Game for the cafeteria was shown to decrease the incidents of disruptive behavior; however, changes in positive behaviors were not measured. This study also benefited from using a collaborative approach and collecting acceptability and treatment integrity data.

Hoffman, Parrish, and Jones (2011). This cafeteria-based intervention was implemented in collaboration with a university partner who was teaching a behavior management course that included a service-learning component for school psychology students. In the associated course, students learned about interventions and then used their knowledge to participate in the development, implementation, and evaluation of a cafeteria-based intervention in an urban elementary school. The school had developed five school-wide expectations two years earlier. Participants included all students in the cafeteria and six paraprofessional lunch monitors. The researchers used a community-based participatory research approach to design the intervention with the input of school administrators and lunch monitors. In working with the school staff, target problem behaviors were identified and the school-wide rules were operationally defined for the
cafeteria. The result was a multi-component intervention targeting both lunch monitor and student behavior in the cafeteria.

The intervention consisted of operationalizing the five school-wide rules for the cafeteria, teaching the rules to students, training lunch monitors in the principles of behavior management, having lunch monitors use positive reinforcement for students following the cafeteria rules, and implementing a group-contingency. Posters of the cafeteria rules were hung around the cafeteria and students participated in a classroom mini-lesson to learn the cafeteria rules and procedures of the intervention. Lunch monitors participated in two, 30-minute trainings about monitoring, positive reinforcement, the objectives of the intervention, and the lunch monitor role in the intervention. Teachers received letters about their role in implementing the class-wide reinforcement for their students.

During the cafeteria intervention, lunch monitors carried brightly colored plastic bracelets. When the lunch monitors observed a student following the rules, they praised the student for following that specific rule and gave them a bracelet. Classes worked together to earn bracelets during lunch. When the class earned 100 bracelets, they earned a random small, low-cost reward.

Graduate student observers collected direct observation data on lunch monitors’ positive and negative interactions with students using partial interval time sampling. Students’ appropriate social and out of area behaviors were measured with momentary time sampling. The multiple baseline design across lunch periods demonstrated large effect sizes for the change in lunch monitors’ positive interactions with students. The percent of intervals where lunch monitors interacted positively with students increased
from 5-7% during baseline to 10-18% of intervals during the intervention. There was a moderate to large effect size (-.04 to -.09) for the reduction of negative interactions between lunch monitors and students in the intervention phase compared to baseline. There was no change in the student behavior variables of appropriate social behavior or out of area behavior. Treatment integrity data were collected and three of the four intervention components were implemented with good integrity. Lunch monitors were less consistent at giving student verbal praise for positive behaviors. This was one of the few cafeteria-based studies that measured appropriate social behavior in students and interactions between lunch monitors and students.

Summary

This literature review of cafeteria-based behavioral interventions leads to several conclusions. First, although not all studies utilized SW-PBS, many of the recent interventions were based in this framework. Second, those studies using SW-PBS had several common elements, including a clear definition of behavioral expectations, direct teaching of rules, and consistent reinforcement for appropriate behavior. As shown by the McPherson et al. (1974) article, the use of punitive measures to address problem behaviors was not found to be effective. In general, studies with positive reinforcement demonstrated changes in student behavior in the cafeteria.

Third, most studies used disruptive behavior as the primary, and sometimes the only, dependent variable assessed. This was seen in several forms, including noise level, ODRs, rule violations, and aggressive acts. Although interventions generally were associated with changes in disruptive behavior, it remains largely unknown if the same interventions served to increase appropriate social or rule-following behaviors. Only two
studies measured appropriate behavior in the cafeteria. Michelson et al. (1981) used ASB as a secondary variable to volume and appropriate behaviors were observed to increase with the intervention. The second study measured changes in ASB and disruptive behaviors in response to a multi-component SW-PBS intervention and found no changes in student behavior (Hoffman et al., 2011). Finally, few cafeteria studies have measured and reported treatment integrity, an essential element for understanding the efficacy of a behavioral intervention (Hoffman et al., 2011; Jeffrey, 2005; McCurdy et al., 2009).

An assumed underlying goal in behavioral interventions is to decrease disruptive behaviors and replace problem behaviors with positive, more socially appropriate behaviors. However, studies on cafeteria-based behavioral interventions have focused heavily on reducing disruptive behaviors. This study extended the existing literature by examining student’s appropriate social behaviors in the cafeteria and exploring the change in student’s appropriate and disruptive behaviors in response to implementing an intervention that has been shown to be effective in the cafeteria setting. This study added to the current knowledge about student behavior by focusing on appropriate social behavior, a variable that has been neglected in previous studies. The intervention and cafeteria rules were developed in collaboration with the school-based staff, a procedure that contributed to compliance and implementation integrity. Specifically, treatment integrity was measured and frequently communicated to the lunch monitors throughout the intervention to provide support and encourage high levels of fidelity in implementing the intervention.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Setting and Participants</th>
<th>Dependent Variable(s)</th>
<th>Independent Variable(s)</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>MacPherson, Candee, &amp; Hohman (1974)</td>
<td>221 children aged 6-13 attending an Elementary School in Cleveland, Ohio. The intervention occurred in six lunch sessions and included six lunch aides, who were local housewives/moms with no previous training in behavior management</td>
<td>9-11 year old students were trained to be observers and recorded frequency counts of target misbehavior using five minute-intervals. The frequency count of the use of timeout was also recorded.</td>
<td>Compared behavior management procedures to procedures paired with a requirement for students to write a mediation essay or punishment essay. Procedures included positive reinforcement contingent on behavior and withdrawal of reinforcement for misbehavior.</td>
<td>Mediation essay was found to have the most significant reduction in problem behavior. The frequency in misbehaviors compared to baseline decreased 22% with punishment essay, 58% with behavioral techniques, and over 90% with mediation essay.</td>
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<td>LaRowe, Tucker, &amp; McGuire (1980)</td>
<td>487 middle class students from grades K-5 in an elementary school in Titusville, FL participated. Lunch monitors were teachers at the school.</td>
<td>Decibel level recordings were taken at 30-second intervals and frequency counts of red light illumination were recorded. Running, hitting, pushing, and kicking were recorded by observers with an alternating 5-10 second interval.</td>
<td>The intervention used a device that measured the decibel level in the cafeteria and displayed a corresponding green, yellow, or red light. In the feedback condition the light illuminated and in the feedback and reinforcement condition a group contingency was added and could be earned daily.</td>
<td>Noise levels reduced significantly under feedback conditions with significantly greater reduction in the feedback plus reinforcement condition. Behaviors were not found to change significantly related to the intervention.</td>
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<td>14 children at a short-term, inpatient facility for ED and LD children participated in the cafeteria-based study. The children were 11 boys and three girls between the ages of 6-14 referred for aggression, stealing hyperactivity, LD, and poor peer relationships.</td>
<td>The intervention used a machine that recorded frequency counts for the number of times the decibel exceeded 76. Two raters coded one minute of each child’s behavior as inappropriate or appropriate using 10-second intervals. Appropriate behavior was defined as orienting head toward another, conversing, using utensils correctly, sitting correctly.</td>
<td>A baseline phase where sound level was monitored was followed by an intervention phase where children received feedback about the sound level and reinforcement. The machine was set to make a noise at a specific decibel and children were told that a reinforcement could be earned if the noise level remained low.</td>
<td>The mean number of times the decibel exceed 76 per minute decreased 41% from baseline to intervention phase. Appropriate behavior was observed to increase from 51% of intervals at baseline to 64% of intervals during intervention.</td>
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<tr>
<td>470 students at a large school and the lunch monitors participated in the cafeteria-based study.</td>
<td>This case study had no formal data collection, but reported anecdotal observations and reports from the head teacher and lunch monitors.</td>
<td>A multi-component intervention was implemented by lunch monitors that included teaching the rules and procedures, giving positive reinforcement for good behavior, awarding points to teams who followed the rules, and using consistent consequences for rule violations.</td>
<td>Case study, no controlled evaluation. Anecdotal observations include fewer children referred for disciplinary action from the cafeteria.</td>
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<tr>
<td>Study</td>
<td>Participants</td>
<td>Methods</td>
<td>Findings</td>
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<tr>
<td>Lewis, Sugai, &amp; Colvin (1998)</td>
<td>All students in grades 1-5 at a small suburban elementary school participated in the intervention. Additionally, five general education and two special education teachers were included. Students were from a primarily white lower-middle class background.</td>
<td>Frequency counts of problem behavior was collected during a 10-minute interval at lunch by graduate students. The first half of the observation focused on the lunch line and the second half of the observation was a randomly selected quadrant of the cafeteria.</td>
<td>Multi-component intervention in the cafeteria that included social skills training and a group contingency. Lunch monitors awarded points to all students at 2-minute intervals if lunch monitors perceived at least 80% of students following the school-wide rules. Once 80% of possible points were earned, all students attended an ice cream party during afternoon recess. Moderate reductions in students’ problem behaviors when lunch monitors implemented the group contingency. Follow-up data collected at one and three-month intervals demonstrated that behavior change was maintained.</td>
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<td>Jeffrey (2005)</td>
<td>100 students in an urban public elementary school participated in the study. Three lunch monitors also participated in implementing the intervention.</td>
<td>Disruptive behavior was measured using a 15-second partial interval recording during 15-minute sessions. Lunch monitor’s active supervision was measured on every third session using a 15-second partial interval recording system.</td>
<td>A multi-component intervention where lunch monitors were trained in active supervision and monitoring, implemented a social skills curriculum with groups of students in the cafeteria, and reinforced appropriate student behaviors. The intervention resulted in an increase in lunch monitors use of positive interactions with students and a decrease in student disruptive behavior in the cafeteria. Lunch monitors were able to implement the social skills program with high levels of integrity.</td>
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<td>Fabiano et al. (2008)</td>
<td>700 kindergarten to fifth grade students in a school</td>
<td>Rule violations were recorded for each class.</td>
<td>A group contingency where class tickets were used to reinforce appropriate student behaviors. The frequency of rule violations decreased</td>
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<tr>
<td>Year</td>
<td>Setting</td>
<td>Participants/Methods</td>
<td>Findings</td>
<td>Notes</td>
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<td>McCurdy et al. (2009)</td>
<td>Lunchroom of a public urban elementary school for grades K-6</td>
<td>About 615 students, 86.9% of whom received free or reduced lunch. 10 African American female school staff members.</td>
<td>Disruptive behaviors were recorded as a frequency count in 15-second intervals during 10-15 minute observation sessions. The rate per minute of disruptive behaviors was calculated. Intervention integrity check conducted and acceptability measured.</td>
<td>Rate of disruptive behavior decreased similarly across the three participating lunch groups. The intervention was found to be moderately to highly acceptable with high treatment fidelity.</td>
</tr>
<tr>
<td>Hoffman, Parrish, &amp; Jones (2011)</td>
<td>Cafeteria of an urban k-5 elementary school serving approximately 475 children, 81% of whom were eligible for free or reduced lunch. Six lunch monitors, who were paraprofessionals</td>
<td>Lunch monitor positive and negative interactions with students were observed using partial interval sampling. Student appropriate social behavior and out of area behavior was measured.</td>
<td>A prevention-focused intervention designed to reduce student disruptive behavior and increase lunch monitor monitoring and positive reinforcement. Used bracelets as individual reinforcers.</td>
<td>Large effect sizes were found for the increase in lunch monitor’s positive interactions with students and moderate to large effect sizes were observed in the decrease in lunch monitor’s use of negative interactions.</td>
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<td>employed part-time by the school, also participated</td>
<td>measured using momentary time sampling. A treatment integrity checklist was used.</td>
<td>reinforcement and an interdependent group contingency where classes could earn group prizes for collecting a set number of bracelets.</td>
<td>reprimands. No changes in student behavior were found. Treatment integrity was acceptable to good.</td>
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</table>
Research Questions and Hypotheses

This investigation sought to examine the effects of a modified version of the Good Behavior Game, a empirically supported, multi-component behavioral intervention consistent with the principles of SW-PBS (independent variable) on the level of students’ appropriate social and disruptive behaviors (dependent variables), as well as the relationship between these two behaviors before and after the lunchtime intervention. A second goal of this study was to extend the one prior study (McCurdy et al., 2009) that implemented this intervention during school lunch to determine whether results are robust across populations. A third goal of the study was to examine levels of appropriate social behavior (ASB) in a school cafeteria prior to intervention implementation. The following research questions and hypotheses were posed:

**Research Question #1:** What is the level of disruptive behavior compared to appropriate social behavior at baseline?

**Hypothesis #1:** It was estimated that there would be more intervals with appropriate social behavior than disruptive behavior in the cafeteria at baseline. Based on previous research studies in the cafeteria, the baseline percentage of intervals where appropriate social behavior is observed is greater than those where disruptive behavior is observed (Hoffman et al., 2011). For example, Hoffman et al. (2011) reported an average of 35% percentage of intervals with ASB at baseline and an average of 23% of intervals with out of area behavior at baseline. Michelson et al. (1981) observed a mean of 51% of intervals with ASB at baseline in the cafeteria and Nelson et al. (1996) reported an average of 30% of intervals with ASB in the school breakfast setting at baseline. Disruptive behaviors are
often measured as frequency counts of rule infractions or ODR’s making it difficult to
directly compare to ASB (Fabiano et al., 2008; Michelson, 1981)

Research Question #2: Does implementing a multi-component cafeteria-based
intervention using the components of SW-PBS affect students’ appropriate social
behavior during lunch?

Hypothesis #2: It was hypothesized that the implementation of the intervention would
result in an increase in appropriate social behaviors in the cafeteria. Based on prior
literature, it was estimated that the average level of appropriate social behavior in the
cafeteria prior to the intervention would be between 30-50% of intervals (Hoffman et al.
2010; Michelson et al., 1981; Nelson et al., 1996). Other interventions utilizing SW-PBS
procedures, both in the cafeteria and other settings, have demonstrated increases in this
behavior after the implementation of the intervention (Michelson et al. 1981; Nelson et
al., 1996).

Research Question #3: What is the change in disruptive behavior compared to the change
in appropriate social behavior after the intervention is implemented?

Hypothesis #3: It was hypothesized that the percent of intervals with disruptive behavior
would decrease and the percent of intervals with appropriate social behavior would
increase as result of the intervention. It was hypothesized that after intervention there
would continue to be a greater number of intervals with appropriate social behavior than
disruptive behavior. Previous research with similar procedures has demonstrated that
multi-component interventions based in the principles of SW-PBS result in a decrease in
disruptive behavior and an increase in appropriate social behavior (Michelson et al.,
1981; Nelson et al., 1996). Michelson et al. (1981) observed a decrease in volume and
rule violations and an increase in appropriate behavior after an intervention with student feedback and reinforcement was implemented. Nelson and colleagues (1996) found an intervention with clear rules and expectations was associated with a decrease in disruptive behavior and an increase in ASB in two non-classroom settings.
CHAPTER 3

Methodology

Setting and Participants

The study was conducted in a public elementary school cafeteria in a suburban community in the Northeastern part of the United States. Two adjoining classrooms connected by a door served as the school’s lunchrooms. Students ate by grade and the lunch periods were staggered with one lunchroom being occupied at a time. Students ate lunch at the school four days a week and had an early dismissal before lunch one day each week. Some grades had recess before lunch and others had recess directly following lunch. The school did not have a pre-existing SW-PBS framework in place for behavior support or a unified approach to behavior management in the cafeteria. Approximately 4% of students enrolled at the school were eligible for a free/reduced price lunch.

The participants included all 373 students attending the school in first through fifth grade. Demographic information about the student participants is presented in Table 3. Informational letters containing the intervention procedures were sent home to all families in February 2011 (see Appendix A). Two part-time lunch monitors and four grade-level teaching assistants also participated in the study. The role of the lunch monitors was to serve lunch and clean the cafeteria and the teaching assistants generally had the responsibility of managing student behavior. These full-time classroom-based employees served as the head lunch monitor and took responsibility for implementing the intervention in grades two, three, four, and five. The four first grade teachers had a rotating schedule and one teacher was in the cafeteria each day to monitor lunch. One of the part-time lunch monitors administered the intervention in the first grade lunch. The
lunch monitors were female; one was Latina and the other was Caucasian. The three female and one male teaching assistants were all Caucasian. Lunch monitors were community members with little to no training in behavior management and no requirement of a college degree. Teaching assistants held a minimum of a bachelor’s degree, had significant training in behavior management through in-services and employment requirements, and received weekly supervision and consultation from a Board Certified Behavior Analyst about students in their classrooms.

Table 3
Student Demographic Information

<table>
<thead>
<tr>
<th>Race/Ethnicity (%)</th>
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<tbody>
<tr>
<td>White</td>
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<tr>
<td>African American</td>
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<tr>
<td>Asian</td>
<td>9</td>
</tr>
<tr>
<td>Latino</td>
<td>6.5</td>
</tr>
<tr>
<td>Bi/Multi Racial/Other</td>
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</table>

<table>
<thead>
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<th>Gender (%)</th>
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<tbody>
<tr>
<td>Female</td>
<td>46.5</td>
</tr>
<tr>
<td>Male</td>
<td>53.5</td>
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</table>

<table>
<thead>
<tr>
<th>Grade (n)</th>
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<td>1</td>
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<tr>
<td>2</td>
<td>75</td>
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<tr>
<td>3</td>
<td>73</td>
</tr>
<tr>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>5</td>
<td>76</td>
</tr>
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</table>

Independent Variable: The Lunchroom Behavior Game

The intervention used in this study was adapted from the Lunchroom Behavior Game (LBG; McCurdy et al. 2009). The LBG is based on the Good Behavior Game, a behavioral intervention designed to decrease the frequency of rule infractions in classrooms (Barrish, et al., 1969). Because of the extensive research base supporting the GBG (Embry, 2002; Tingstrom et al, 2002), and the positive outcomes evidenced using
the LBG (McCurdy et al. 2009), an adapted version of the LBG intervention was used in this study to improve students’ appropriate social and decrease disruptive behaviors (see Appendix C). The LBG was changed slightly in the way students were awarded points. Rather than receiving a point for breaking a rule, the intervention aligned with the principles of SW-PBS and instead awarded classes points for following the cafeteria rules. Students in the lunchroom received attention and positive reinforcement for appropriate and rule-following behavior and received rewards contingent on rule-following behavior. The LBG included both lunchroom and classroom components and was implemented by lunch monitors, aides, and classroom teachers. Similar to the LBG, students earned rewards for surpassing a mystery criterion that was revealed at the end of each week in an effort to maintain student morale and interest (McCurdy et al., 2009; Skinner, Williams, & Neddenriep, 2004). Implementation specifics are described in the procedures section below.

Implementation Integrity. The extent to which the intervention was implemented as intended was measured using a checklist of intervention components. The intervention was composed of four steps that occurred daily: (1) lunch monitors/teaching assistants wore lanyards around their necks; (2) lunch monitors/teaching assistants gave positive comments to students for following the rules; (3) lunch monitors/teaching assistants provided a positive alternative behavior to rule infractions; (4) lunch monitors/teaching assistants gave the class points for following the rules at the end of the lunch period. The principal investigator completed a checklist with each of these components on 67% of intervention days (see Appendix G). The number of lunchroom staff wearing a lanyard was recorded and if one or more wore a lanyard
during the observation that criteria was considered to be met. For giving a positive comment to a student, the component was deemed completed if the lunch staff gave one positive comment during the observation. Similarly, one instance of giving an alternative behavior to a student was the criteria for completing this step of the intervention.

Weekly components of the intervention included lunch monitors announcing the weekly criterion and winning classes followed by classroom teachers giving the rewards. Announcement of the mystery criterion and winning classes occurred at the end of the week and was included in all Friday integrity checks. To determine if rewards were delivered to winning classes, the lead researcher kept a spreadsheet of classes that had earned rewards. Weekly check-ins with teachers and students were used to determine if the class received the reward within a week of earning it and a total percentage of classes receiving rewards in a timely fashion was calculated. Each week the lead researcher conducted performance feedback sessions with the lunch monitors and teaching assistants. During these meetings the staff was reminded of the intervention procedures and shown the integrity data for the past week. The lead researcher reinforced the staff for the successful implementation of components when integrity data was above the criterion of 80%. When below the criterion, the staff was reminded of the component and procedures, encouraged to improve their integrity data for the next week, and asked to participate in a role-play to model correct implementation of the component. The lead researcher was also available daily to provide support for lunch monitors when needed.

**Dependent Variables**

**Student behavior.** Students’ appropriate social behavior (ASB) and disruptive behavior (DB) in the cafeteria were assessed in this study. These behaviors were
measured using an adapted version of the Behavioral Assessment of Students in the Lunchroom (BASiL; Volpe, Hoffman, & Parrish 2009, see Appendix D). The BASiL was designed to use momentary time sampling to measure positive and negative student behavior and partial-interval time sampling to measure lunch monitor behavior in the cafeteria setting. The BASiL was modified for the purpose this study. A momentary time sampling procedure was used to measure ASB. DB is often a low frequency behavior in the cafeteria; to fully capture the occurrence of this variable, it was measured using a partial-interval time sampling (see Appendix E). Lunch monitor behaviors were not measured in this study.

Cafeteria tables to be observed were randomly selected at the beginning of each lunch period. Beginning with one table of students, each student’s behavior was individually observed at the beginning of a 15-second interval. Following the procedures for momentary time sampling, when the observer heard the auditory cue to signal the beginning of an observation interval, she looked up and observed the target student’s ASB in that moment. For the entirety of the interval, the observer watched the target student and recorded any occurrence of DB as indicated by partial-interval time sampling. The auditory cue was a recording downloaded on an iPod or similar device with headphones. Observations were recorded on a data collection sheet (see Appendix F). Once all students at a table were observed, the observer paused the recording and moved to another table in the cafeteria. This procedure continued for 12 minutes and allowed for approximately 48 students to be observed during one lunch period (range = 62%-67%).
Observers were trained in the observation code by learning behavioral definitions for ASB and DB. After learning the observation procedures, research assistants practiced coding and discussed behaviors while watching a video simulation. Before collecting data, each research assistant demonstrated at least 80% reliability for ASB and DB with a master coding of a novel video simulation. Inter-observer agreement was calculated across 23% of observations and ranged from 79.17% to 100% with a mean of 97.5% for DB and ranged 91.67% to 100% with a mean of 93.6% for ASB. Kappa coefficients were computed to assess inter-observer agreement for both ASB and DB. Kappa ranged from .86 to .87, reflecting “almost perfect” agreement (Landis & Koch, 1977).

**Appropriate social behaviors (ASB).** The proportion of intervals during which students engaged in ASB was the primary dependent variable in this study. A common definition of ASB has not been established in the literature. One previous study (Michelson et al., 1981) has measured this variable and utilized the definition of orienting one’s head to someone at the same table, having a conversation with someone at the same table, using utensils correctly, sitting at assigned table with buttocks in the chair and all four legs in contact with the ground. For the purpose of this study, which was conducted using the principles of SW-PBS, appropriate social behaviors were defined as: rule following behaviors and socially appropriate interactions including verbal and nonverbal behaviors. The specific behaviors were operationalized based on the rules in the cafeteria. The cafeteria rules were: (1) Respect others; (2) safe body; and (3) talk quietly. Examples of ASBs included conversing with peers at an appropriate volume, raising a hand to gain lunch monitor attention, actively listening to a peer or lunch monitor, and
affectionately touching a peer. A full list of possible ASBs can be found in the observation and coding manual in Appendix D.

**Disruptive behaviors (DB).** The percentage of intervals in which disruptive behavior was observed was the secondary dependent variable. Disruptive student behavior has been defined frequently in the literature as rule violations, out of seat behavior, play fighting, physical contact, talking over lunch monitors, throwing objects, cutting in line, making threats, inappropriate use of food, running, and using a loud voice (Fabiano et al., 2008; Lewis et al., 1998; MacPherson et al., 1974; McCurdy, et al., 2009). For the purpose of this study, DBs were defined as: engaging in any behavior that does not follow the cafeteria rules. Examples of DB included yelling, a child getting out of his or her seat without permission (excluding going to the garbage), acts of physical or verbal aggression, or running in the cafeteria. A list of DBs is included in the observation and coding manual in Appendix D.

**Materials**

Lesson plans with visual aides were developed to teach the students the intervention procedures. Posters of the cafeteria rules and examples of rule-following behaviors were hung on the cafeteria walls. Lunch monitors wore lanyards around their necks with a badge. Cafeteria rules (Respect Others, Safe Body, and Talk Quietly) were displayed on one side and the point criteria (2 points = all of the class followed this rule; 1 point = most of the class followed this rule; 0 points = only a few members of the class followed this rule) were on the other side of the badge. A large poster board was hung on the cafeteria wall to record daily points. Outdoor equipment including kickballs and soccer balls were used for class rewards.
Study Design

The study utilized a multiple baseline across lunch periods single-case design, where the independent variable was implemented across different points of time. In addition, because the cafeteria was two separate rooms, the intervention was implemented in each setting separately. The purpose of this multiple baseline across lunch period design was to examine the effects of the intervention on student ASB and DB and if the intervention effects were seen in both settings. Third, second, and forth grade students ate in Lunchroom A. Fifth and first grade students ate in Lunchroom B. The intervention was introduced one grade at a time in Lunchroom A and then with both Lunchroom B grades simultaneously because of time restraints.

During baseline lunch monitors utilized typical behavior management practices. This included reprimanding students for misbehavior, taking away recess time, sending students to the principal’s office, turning off the lights, yelling, lecturing, and reporting behaviors to classroom teachers. Baseline data were collected across all lunch periods for five days to establish a baseline level and trend of ASB and DB in the lunchrooms. Next, the intervention was introduced and implemented in the first lunch period in Lunchroom A, while all of the other lunch periods remained at baseline. The intervention was introduced into the next lunch period after a stable pattern of responding was observed in the first lunch period, with the other three lunch periods remaining in baseline. When a stable pattern of responding was established in the second lunch period the intervention was introduced in the third lunch period, with two remaining lunch periods staying in the baseline phase. During the final phase, the intervention was introduced and implemented with the two remaining lunch periods, both of which happened to be in Lunchroom B,
while all grades in Lunchroom A continued to receive the intervention. The study concluded with all lunch periods receiving the intervention for four days.

This study addressed many threats to internal validity often seen in single case design research and the procedures utilized were consistent with the recommendations in the field for single-case design data collection (Kratochwill et al., 2010). The study had four replications of the intervention, delivered the intervention to lunchrooms in a predetermined order, implemented the intervention to the whole school, and was time-limited with clear procedures for measuring the dependent variable. This study met the standards for single-case design as the primary investigator determined when and how the independent variable was manipulated, dependent variables were measured repeatedly by multiple research assistants, inter-observer agreement was collected in at least 20% of observations, and procedures included four baseline and intervention conditions. All phases had at least four data points (Kratochwill et al., 2010).

**Procedures**

**Intervention implementation.** Following the procedures of the GBG and the LBG, the intervention consisted of several key components including lunch monitor trainings, classroom lessons, and changes in the cafeteria. Trainings and classroom lessons were conducted by the lead researcher and the cafeteria-based components were implemented by lunch monitors and teaching assistants with the support of the lead researcher. Delivery of classroom rewards was overseen by classroom teachers. To minimize experimenter bias, the lead researcher was not involved in the data collection of student behaviors. Research assistants (RAs; \( n = 5 \)) who were blind to the study’s goals and hypotheses collected all student behavioral data. The lead researcher conducted all
classroom lessons, lunch monitor trainings, treatment integrity observations, and performance feedback sessions to keep the RAs blind to the study. The details of the intervention are described below.

**Lunch monitor component.** Lunch monitors and teaching assistants received a verbal and written explanation of the intervention and the goals of the project. They were given written consent forms and all lunch monitors and aides indicated that they would participate in the study (see Appendix B). Other school staff who were indirectly involved in the intervention included classroom teachers and paraprofessionals, who assisted in administering rewards to students. These school employees also received a verbal and written explanation of the project.

Lunch monitors and teaching assistants participated in a 30-minute training session to learn how to implement the LBG. First, effective practices of behavior management and active supervision were reviewed including scanning, monitoring, moving, interacting, and positive reinforcement (Colvin et al., 1997). These procedures are a part of the SW-PBS framework and have been found to support appropriate student behavior in conjunction with targeted interventions (Lewis et al., 2000). Next, the goal of the intervention was explained so that lunch monitors and teaching assistants understood that the program was aimed at decreasing disruptive behavior and increasing rule-following in the cafeteria.

The next part of the training included collaborating to create three short and simple cafeteria rules. Lunchroom staff indicated that the biggest problems in the cafeteria were noise, students getting out of their seats, a disrespectful attitude toward adults, and students verbally and physically bullying each other. The staff were asked to
create three rules that addressed these concerns and the lead researcher helped to make the rules short and positive (e.g. Talk Quietly from Don’t Yell and Scream). The rules included: Respect Others, Safe Body, and Talk Quietly. An operational definition of each rule, including examples and non-examples, was created in collaboration with the lunch monitors to use when teaching the rules to students (see Appendix H). These specific behaviors came from the problems identified by the lunch monitors and the behaviors they would expect to see from student in the cafeteria.

Fourth, the lunch monitors and teaching assistants learned the rules and procedures of the LBG. This part of the training included how to award points, address rule violations, use positive reinforcement, choose the weekly mystery criterion, and administer rewards. The fifth step of the training entailed clarifying responsibilities during the intervention. Lunch monitors and teaching assistants had a lanyard to wear around their necks that had a badge with the cafeteria rules on one side and guidelines for awarding points on the other. At the end of the lunch period, the teaching assistant for that lunch period (this was a lunch monitor in first grade) was responsible for awarding the class points based on their rule-following behavior. Teaching assistants were instructed to give the class positive feedback for rules that were followed. They also were responsible for identifying rules that were not followed and reminding the class of the rule and the alternate positive behavior. For each cafeteria rule, teaching assistants awarded the class zero, one, or two points. Points were awarded based on the following scale: 2 points = all of the class followed this rule; 1 point = most of the class followed this rule; 0 points = only a few members of the class followed this rule.
The teaching assistants verbally awarded the class points and transferred the class’ daily point total to a large poster board on the cafeteria wall. At the end of each week, the teaching assistant and lunch monitors revealed the weekly criterion number and the classes that met the requirement to earn a prize (Skinner et al., 2004). The classroom teachers and paraprofessionals were notified on Fridays and were responsible for administering the class reinforcement within the next week. The training concluded with a brief role-play for the lunch monitors and teaching assistants to practice the LBG procedures and receive feedback. Lunch monitors and teaching assistants were also informed of the performance feedback procedures during the training. They were told that the lead researcher would meet with lunch monitors to deliver data on treatment integrity until a level of 80% was reached and if treatment integrity fell below an 80% standard (Noell et al., 2005).

**Classroom-based component.** The lead researcher worked with classroom teachers to introduce the LBG to students during class time. In a 20-minute mini-lesson, the program was explained to students using direct instruction, visual aides, choral responding, and role-playing. The cafeteria rules were taught to students and they repeated the rules to aid in learning. The rules were operationally defined for the class so it was clear what each rule meant in the cafeteria. Examples and non-examples of following the rules were provided to students. The class participated in role-plays of what rule-following behavior and ASB looked like in the cafeteria.

Once the students learned and practiced the cafeteria rules, the LBG was taught. Students were informed that the program was designed to help them behave better in the cafeteria and to make it a safer and more fun place to eat lunch. They were told that their
class would be working together to follow the rules with the objective of earning as many points as they could during each lunch period. Students were enlisted to help create a menu of small, low-cost, easily implemented reinforcers that they would like to receive. Examples included five minutes of extra recess, recess on the school’s restricted playground, a special indoor recess activity, and special recess activities. At the end of the lesson, the cafeteria rules were repeated and the class was told when the LBG would start for their grade.

**Cafeteria component.** Posters stating the cafeteria rules and examples were hung on the cafeteria wall to remind students of the expected behaviors. A large poster board was placed on the cafeteria wall. This poster board had a row for each class participating in the intervention and columns for the days the class received the intervention. Each day, lunch monitors recorded each class’ daily points on the poster board. All posters in Lunchroom A were hung when the intervention began with the first lunch period. All posters in Lunchroom B were hung at the end of the study, when the intervention was implemented with the remaining two lunch periods.

**Pre-baseline.** All study procedures were approved by the Institutional Review Board at Northeastern University. Permission was also granted by the school district’s research office and the school principal. Next, school-based staff was introduced to the cafeteria-based intervention program. Lunch monitors and teaching assistants received a detailed verbal explanation of the program and informed consent forms were given (see Appendix B). Two weeks prior to the beginning of data collection, an informational letter explaining the details of the study was sent home to parents and guardians (see Appendix A).
**Baseline.** One or two RAs collected data each day the students ate lunch in the cafeteria. The lead researcher was in the cafeteria each day during baseline observations to answer any questions and to review the code with RAs before observations began. RAs observed and recorded student behavior in the lunchroom for five school days to determine a clear baseline.

**Training.** During the baseline phase, the lead researcher worked with teachers to schedule times to deliver the LBG classroom trainings to the classes that received the intervention first. Classroom lessons with other grades occurred either the morning or day before the intervention began. The lunch monitor and teaching assistant training occurred before the beginning of the intervention in the cafeteria. The lead researcher was available after this training to support the lunch monitors in the intervention and help with any problems that arose.

**Intervention.** As described above, the implementation of the LBG was staggered across the three grades in Lunchroom A and then begun simultaneously with the two grades in Lunchroom B. Data collection began when students returned from the 2012 February break and continued for seven weeks until the beginning of April vacation. The lead researcher monitored implementation of the program and conducted integrity checks in the cafeteria. The lead researcher was available to problem solve around the intervention and to assist in administering the classroom reward involving access to a restricted playground during recess. Performance feedback was given to lunch monitors during the first week of the intervention and when treatment integrity was below the acceptable level of 80%. A feedback session occurred after the second week of the intervention. Lunch monitors and teaching assistants were shown aggregated integrity
data, reminded of the procedures, and encouraged to increase their integrity over the next week. The lunchroom staff responded moderately to this feedback and an increase in the integrity for providing alternative behaviors and wearing lanyards was seen, however; there was no change in giving positive feedback to students.

**Data Analyses**

The percent of intervals where ASB and DB were observed was graphed and visually analyzed. The means and ranges of the percentage of intervals with each student behavior were calculated for the baseline and intervention phase for each lunch period. These data were compared in order to determine the baseline level of ASB in the cafeteria, changes in student behavior after the intervention was implemented, and relationship of change between ASB and DB. The intervention effect size for student behavior in each grade was calculated by subtracting the baseline mean from the intervention mean and dividing by the standard deviation of the baseline (Valentine & Cooper, 2003). The percentage of all non-overlapping data (PAND) were also calculated. This method utilizes all data points and represents the data points in baseline and intervention phases that do not overlap. PAND can be used to calculate Phi, which can then be used to calculate Cohen’s $d$ for an overall effect size (Schneider, Goldstein, & Parker, 2008; Parker, Hagan-Burke, & Vannest, 2007).

**Comparison of ASB and DB at baseline.** To test the hypothesis that the percentage of intervals observed with ASB would be greater than the percentage of intervals observed with DB at baseline, the mean percentage of intervals with each student behavior at baseline was calculated and compared. For the baseline phase of each lunch period, the mean percentage of intervals where ASB and DB were observed was
calculated and compared. Mean percentage of intervals for each behavior was also aggregated across lunch periods to compute and compare an overall baseline mean for ASB and DB.

Changes in ASB associated with the intervention. To test the hypothesis that the level of ASB in the cafeteria would increase after the intervention was implemented, the average percent of intervals where ASB was observed during the baseline and intervention phases was calculated. The mean and range for the percent of intervals where ASB was observed was calculated for each grade during the baseline phase. Additionally, all baseline data were aggregated to calculate an overall mean and range of ASB in the cafeteria. To explore the change in ASB after the intervention, the mean percentage of intervals where ASB was observed during baseline was compared to the mean during the intervention phases. The mean and range of percentage of intervals observed for ASB were calculated and compared for baseline and intervention conditions across all lunch periods. Effect sizes for the change in appropriate social behavior in response to the intervention were calculated. The data were also graphed for visual analysis and the percentage of all non-overlapping data were calculated.

Changes in ASB and DB associated with the intervention. To test the hypothesis that the percentage of intervals observed with ASB would be greater than DB during intervention, the mean percentage of intervals with each student behavior in the intervention phase was calculated and compared. For the intervention phase of each lunch period, the mean percentage of intervals where ASB and DB were observed was calculated and compared. Mean percentage of intervals for each behavior was also aggregated across lunch periods to compute and compare an overall intervention mean
for ASB and DB. Additionally, the effect sizes and percentage of all non-overlapping data for ASB and DB were calculated and compared. Effect sizes for the change in ASB and DB in response to the intervention were calculated. The data were graphed for visual analysis.

**Treatment integrity.** To test the extent to which the lunch monitors implemented the intervention with integrity the percentage of days where each intervention component was carried out as intended and the percentage of components of the intervention that were implemented daily was calculated. Treatment integrity data were used to determine the percentage of lunch monitors completing each intervention component daily. The extent to which the weekly components of criterion and winner announcements were executed with integrity was also calculated. Additionally, integrity data were used to determine the percentage of classes that received an earned prize within one week.
CHAPTER 4

Results

Treatment Integrity

The extent to which the intervention was implemented as intended was assessed across 67% of the intervention lunch periods. A treatment integrity checklist was completed for each lunch period implementing the intervention. Components of the intervention included lunch monitors and teaching assistants wearing lanyards, giving positive comments, correcting student behavior by providing an alternative behavior, and awarding class points each day. Component integrity and daily integrity for each component were calculated and are displayed in Table 4. Each lunch monitor and teaching assistants’ implementation of three of the intervention components is represented in Table 5.

The average daily component integrity ranged from 38%-86% with a mean of 67% of components being implemented daily. Lunchroom staff wore lanyards between 0%-79% of integrity checks with an average of 35%. Positive comments were observed during 0%-100% of observations with an average of 53%. Lunch monitors and teaching aides gave students corrective feedback during 50%-100% of treatment integrity checks with an average of 78%. Finally, points were given during 100% of observations and rewards were given for 75%-100% of observations. Wearing lanyards was the least consistent component (overall mean 35%) and the awarding of classroom points at the conclusion of lunch occurred with the highest level of integrity (overall mean 100%).
<table>
<thead>
<tr>
<th>Grade/ Lunchroom (A or B)</th>
<th>Lunch Period</th>
<th>Component</th>
<th>Average Percent of Component Integrity</th>
<th>Average Percent of Daily Integrity</th>
<th>Daily Range</th>
<th>Reward Given</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Lunchroom A</td>
<td>1</td>
<td>Lanyard Positive Corrective Points</td>
<td>79% 93% 71% 100%</td>
<td>86%</td>
<td>75%-100%</td>
<td>75%</td>
</tr>
<tr>
<td>2 Lunchroom A</td>
<td>2</td>
<td>Lanyard Positive Corrective Points</td>
<td>71% 71% 71% 100%</td>
<td>79%</td>
<td>50%-100%</td>
<td>100%</td>
</tr>
<tr>
<td>4 Lunchroom A</td>
<td>3</td>
<td>Lanyard Positive Corrective Points</td>
<td>25% 100% 100% 100%</td>
<td>81%</td>
<td>75%-100%</td>
<td>100%</td>
</tr>
<tr>
<td>5 Lunchroom B</td>
<td>4</td>
<td>Lanyard Positive Corrective Points</td>
<td>0% 0% 50% 100%</td>
<td>38%</td>
<td>25%-50%</td>
<td>100%</td>
</tr>
<tr>
<td>1 Lunchroom B</td>
<td>5</td>
<td>Lanyard Positive Corrective Points</td>
<td>0% 0% 100% 100%</td>
<td>50%</td>
<td>50%-50%</td>
<td>100%</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td>Lanyard Positive Corrective Points</td>
<td>35% 53% 78% 100%</td>
<td>67%</td>
<td>25%-100%</td>
<td>95%</td>
</tr>
</tbody>
</table>
In Lunchroom A, the teaching assistants gave positive feedback and corrected rule infractions during a minimum of 70% of observations. Lunch monitors in Lunchroom A were less consistent with giving positive feedback (range = 0%-7%) and correcting rule infractions (range = 0%-75%). Points were consistently given by the teaching assistants in Lunchroom A during 100% of observations. In Lunchroom B, lunch monitors and teaching assistants were not observed to give positive feedback in any of the lunch periods. The correction of rule infractions ranged from 0%-100% with the fifth grade teaching assistant one lunch monitor in first grade carrying out this component. Points were given out during 100% of observations by the teaching assistant or lunch monitor in charge (first grade).

**Student Behavior Change**

**Research Question #1.** What is the level of disruptive behavior (DB) compared to ASB at baseline? It was hypothesized that there would be more intervals with ASB than DB in the cafeteria at baseline. This hypothesis was supported across all five grades, as shown in Table 6 & 7. During baseline, the mean percent of intervals with ASB and DB was 36.9 and 14.6, respectively. The baseline range of ASB was 17.1 to 58.3 percent of intervals and for DB the range was 0 to 31.6 percent of intervals. In each grade, the baseline level of ASB was higher than DB. In all but one grade, the average baseline level of ASB was more than double the level of DB.

**Research Question #2.** Does implementing a multi-component cafeteria-based intervention using the components of SW-PBS affect students’ appropriate social behavior (ASB) during lunch? It was hypothesized that the implementation of the intervention
### Table 5

*Intervention Integrity by Staff Member*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Lunch Period</th>
<th>Staff Member</th>
<th>Gave Positive Feedback</th>
<th>Corrected Rule Infractions</th>
<th>Awarded Class Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>Lunch Monitor 1</td>
<td>7%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lunch Monitor 2</td>
<td>7%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 3 TA</td>
<td>93%</td>
<td>71%</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Lunch Monitor 1</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lunch Monitor 2</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 2 TA</td>
<td>71%</td>
<td>71%</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Lunch Monitor 1</td>
<td>0%</td>
<td>75%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lunch Monitor 2</td>
<td>0%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 4 TA</td>
<td>100%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>Lunch Monitor 1</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lunch Monitor 2</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 5 TA</td>
<td>0%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Lunch Monitor 1</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lunch Monitor 2</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
would result in an increase in ASB in the cafeteria. This hypothesis was not supported, as
ASB was not observed to change significantly as a result of the intervention.

Mean levels of observed ASB during baseline and intervention phases were graphed
by grade (see Figure 1). Means, ranges, standard deviations, and effective sizes were
calculated and are displayed in Table 6. In third grade, the mean percent of intervals where
ASB was observed was 44.0% (range = 35.4%-58.3%) during baseline and decreased to
33.1% (range = 20.9%-47.9%) during intervention. The effect size in this group was
negative (-1.2); however, trends decreased during baseline and increased slightly during
intervention. In the second grade, the mean percent of intervals where ASB was observed
was 30.7% (range = 20.8%-52.1%) during baseline and increased to 34.3% (range =
25.0%-44.8%) during intervention. Trends decreased slightly in both baseline and
intervention phases and the effect size was small (0.4). In the fourth grade, the average
percent of intervals with ASB increased from 35.4% (range = 27.1%-58.3%) during
baseline to 39.9% (range = 29.2%-50.0%) during intervention. Trends decreased slightly
for both baseline and intervention data and the effect size was moderate (0.6). In fifth
grade, students engaged in ASB during 39.4% (range = 17.1%-51.0%) of the intervals
observed during baseline and 40.4% (range = 38.6%-42.7%) of observed intervals during
intervention. In both baseline and intervention phases, trends increased slightly and the
effect was size small (0.1). In the first grade, 34.8% (range = 22.7%-51.0%) of baseline
intervals were observed to have ASB compared to 31.5% (range = 22.9%-39.6%) during
the intervention. The trend was stable at baseline and increased moderately during the
intervention. The effect size was negative (-0.5).
Across all five grades, ASB was observed during an average of 36.9% of intervals during baseline and an average of 35.8% of intervals during intervention. The overall effect size for the intervention is -0.1; indicating that the intervention had no effect on students’ ASB in the cafeteria. Effect sizes by grade ranged from -1.2 to 0.6. Fourth grade demonstrated the greatest effect size of 0.6.

PAND was 65% for ASB, indicating the intervention had questionable effectiveness on the ASB variable. The overall effect size, $d$, for ASB was .79, which is considered a “medium” effect size, but should be interpreted with caution given the descriptive data and the effect size calculations described above.

**Research Question #3.** What is the change in DB compared to the change in ASB after the intervention is implemented? It was hypothesized that the percent of intervals with DB would decrease and the percent of intervals with ASB would increase as result of the intervention. This hypothesis was partially supported. The mean percent of baseline intervals where DB was observed was 14.6 and, as predicted, this behavior decreased during the intervention to an average of 9.7 percent of intervals. The mean percent of intervals with ASB showed little change, from 36.9 at baseline to 35.8 during the intervention.

In four of the five lunch periods, the level of DB decreased after the intervention was implemented (see Figure 2). In third grade, the average percent of intervals where DB was observed was 16.5 (range = 9.4%-29.2%) and decreased to 9.2% (range = 2.1%-16.7%) during the intervention. The baseline trend increased and the intervention trend decreased. The effect size for this lunch period was large (-0.9). In second grade, DB was observed during an average of 18.2 percent of intervals (range = 4.2%-31.3%), this
Figure 1

*Appropriate Social Behavior*

Figure Note: Missing data is attributed to state testing (2 data points in 4th grade) and a class field trip (1 data point in 2nd grade).
Table 6

*Descriptive Data for ASB in the Cafeteria*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Lunch Period</th>
<th>Baseline Mean</th>
<th>Baseline Range</th>
<th>Baseline SD</th>
<th>Intervention Mean</th>
<th>Intervention Range</th>
<th>Intervention SD</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>44.0%</td>
<td>35.4 – 58.3%</td>
<td>9.3%</td>
<td>33.1%</td>
<td>20.9 – 47.9%</td>
<td>6.6%</td>
<td>-1.2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>30.7%</td>
<td>20.8 – 52.1%</td>
<td>9.3%</td>
<td>34.3%</td>
<td>25.0 – 44.8%</td>
<td>6.3%</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>35.4%</td>
<td>27.1 – 58.3%</td>
<td>7.4%</td>
<td>39.9%</td>
<td>29.2 – 50.0%</td>
<td>6.8%</td>
<td>0.6</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>39.4%</td>
<td>17.1 – 58.1%</td>
<td>11.2%</td>
<td>40.4%</td>
<td>38.6 – 42.7%</td>
<td>2.1%</td>
<td>0.1</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>34.8%</td>
<td>22.7 – 51.0%</td>
<td>7.1%</td>
<td>31.5%</td>
<td>22.9 – 39.6%</td>
<td>8.3%</td>
<td>-0.5</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>36.9%</td>
<td>17.1 – 58.3%</td>
<td>9.4%</td>
<td>35.8%</td>
<td>20.8 – 50.0%</td>
<td>6.9%</td>
<td>-0.1</td>
</tr>
</tbody>
</table>
decreased to 12.3\% (range = 6.3\%-20.8\%) during the intervention. Trends decreased slightly for both the baseline and intervention phases. The effect size for second grade was large (-0.8). The average percent of intervals with DB in fourth grade was 10.9 (range = 2.1\%-18.8\%) during baseline and 5.1 (range = 0\%-11.5\%) during the intervention. The baseline trend decreased slightly and the intervention trend increased slightly. The effect size was large (-1-1). In fifth grade DB was observed in an average of 13.2 percent of baseline intervals (range = 0\%-31.6\%) compared to 14.1 percent of intervals (range 2.6\%-20.5\%) during intervention. The effect size was small (0.1); however, the baseline trend was stable and the intervention trend decreased. In first grade, the mean percent of intervals with DB decreased from 16.4 at baseline (range = 2.8\%-31.3\%) to 9.1 (range = 4.2\%-12.5\%) during the intervention. The effect size was large (-1.0) but the trend was slightly decreasing at baseline and increasing during the intervention.

PAND for DB was 75\%, indicating that the intervention was effective in decreasing DB in the cafeteria. The overall effect size, \(d\), was 1.84 and suggests a large effect size. The intervention resulted in a greater change in student DB compared to ASB.
Figure 2

Disruptive Behavior

Figure Note: Missing data is attributed to state testing (2 data points in 4th grade) and a class field trip (1 data point in 2nd grade). Scale of y-axis has been adjusted to aide in visual discrimination of data points.
### Table 7

**Descriptive Data for DB in the Cafeteria**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Lunch Period</th>
<th><strong>Baseline</strong></th>
<th></th>
<th><strong>Baseline</strong></th>
<th></th>
<th><strong>Intervention</strong></th>
<th></th>
<th><strong>Intervention</strong></th>
<th></th>
<th><strong>Disruptive Behavior</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Range</td>
<td>SD</td>
<td>Mean</td>
<td>Range</td>
<td>SD</td>
<td>Effect Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>16.5%</td>
<td>9.4 – 29.2%</td>
<td>8.0%</td>
<td>9.2%</td>
<td>2.1 – 16.7%</td>
<td>3.5%</td>
<td>-0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>18.2%</td>
<td>4.2 – 31.3%</td>
<td>7.2%</td>
<td>12.3%</td>
<td>6.3 – 20.8%</td>
<td>4.6%</td>
<td>-0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>10.9%</td>
<td>2.1 – 18.8%</td>
<td>5.4%</td>
<td>5.1%</td>
<td>0 – 11.5%</td>
<td>4.3%</td>
<td>-1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>13.2%</td>
<td>0 – 31.6%</td>
<td>7.2%</td>
<td>14.1%</td>
<td>2.6 – 20.5%</td>
<td>8.1%</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>16.4%</td>
<td>2.8 – 31.3%</td>
<td>7.2%</td>
<td>9.1%</td>
<td>4.2 – 12.5%</td>
<td>3.5%</td>
<td>-1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>14.6%</td>
<td>0 – 31.6%</td>
<td>7.2%</td>
<td>9.7%</td>
<td>0 – 20.8%</td>
<td>5.0%</td>
<td>-0.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 5

Discussion

Summary of the Findings

The purpose of this study was to examine the effects of the modified LBG intervention on student ASB and DB in the cafeteria setting. The LBG is based on a well-established group contingency intervention (GBG, Barrish et al., 1969) and also incorporated elements of SW-PBS including positive reinforcement and classroom-based rewards contingent on rule-following behavior. A multiple baseline across lunch period design was utilized to evaluate the effectiveness of the intervention. Treatment integrity data were collected to assess the extent to which the components of the intervention were implemented as intended by the cafeteria staff.

Treatment Integrity. Overall, treatment integrity was good in Lunchroom A where the first three lunch periods received the intervention, and was lower for the final phase of the intervention when the LBG was only implemented over four days. Daily integrity was good in Lunchroom A and poor in Lunchroom B. One possible reason for lower overall treatment integrity in Lunchroom B was the time between the LBG training and the beginning of the intervention. The training occurred five weeks before the intervention began in Lunchroom B and although a review of intervention procedures was provided, there was a time lapse between the full training and implementation. Additionally, the intervention was only implemented for four days in Lunchroom B and the lead investigator did not have the opportunity to provide feedback to the cafeteria staff about the implementation. In Lunchroom A, the lunch monitors and teaching aides received feedback and support at least once a week from the lead investigator.
The component that was carried out with the least integrity was wearing lanyards (overall mean 35%) and the component with the highest level of integrity (overall mean 100%) was the awarding of classroom points at the conclusion of lunch. Lanyards were kept on a hook on the door between Lunchroom A and B and lunch monitors and teaching assistants may have forgotten about this component of the intervention. Lanyards included cards with guides for awarding points, which was helpful to staff when the intervention began and less necessary as they became familiar with the procedures. It is possible that for this reason, the lanyard component was followed with greater integrity at the beginning of the intervention and decreased over time in Lunchroom A. Awarding points was an essential part of the intervention and was observed in 100% of integrity checks. Teaching assistants were consistent in awarding points to classes and anecdotally, gave positive and corrective feedback to the group when awarding and recording points each day.

Overall, lunch monitors and teaching assistants used corrective feedback (78%) more than positive reinforcement (53%). While adults in the cafeteria acknowledged students for following the rules, this component occurred less than adults correcting rule infractions and reminding students of the appropriate behavior. The addition of recognizing and awarding student for positive and rule-following behaviors was a change in the LGB to make it more aligned with the principles of SW-PBS; but may not have been essential to the efficacy of the intervention (McCurdy et al., 2009).

The part-time lunch monitors did not implement many components of the intervention; however, the grade-based teaching assistants took the lead of the LBG in the cafeteria. The difference in implementation by teaching assistants and lunch monitors
could be attributed to several factors. First, teaching assistants were grade based and had stronger relationships with the students. Second, the teaching assistants knew the students in each class, making it easier to assign the classroom points. Third, the teaching assistants had more experience and training in behavior management and may have felt more comfortable taking on the role of implementing the intervention.

Of the nine cafeteria-based studies reviewed earlier, only three included treatment integrity (Hoffman et al., 2001; Jeffrey, 2005; McCurdy et al., 2009). These three studies had similar findings to the current study. In the original evaluation of the LBG, McCurdy et al. (2009) reported good treatment fidelity with an overall mean of 89% of the eight component steps followed (range = 75-100%). The steps that were followed with the least integrity included addressing behavioral infractions and recording team points on the poster (McCurdy et al., 2009). While the current study had good integrity for addressing behavioral infractions and recording points, the additional component of giving positive feedback to students was implemented with low integrity. Jeffrey (2005) reported good integrity on components including teaching the intervention and active supervision in the cafeteria. The study also targeted lunch monitors giving positive praise and behavioral corrections. Similarly to the current study, in the study by Jeffrey (2005) lunch monitors engaged in more corrective behaviors than positive comments at baseline. Integrity data reported an increase in positive interactions and a decrease in corrective comments with the ratio approximating 1:1 (Jeffrey, 2005). Finally, Hoffman et al. (2011) reported good integrity on three of the four components of the intervention with the lowest levels of integrity for the lunch monitors giving verbal praise to students for positive behavior.

Treatment integrity results across these studies indicate that cafeteria-based interventions
that include training and behavioral components can be carried out with good integrity; however, changing interaction styles to include higher levels of praise and positive comments for rule-following behavior is more difficult to implement with integrity.

**Overcoming Barriers to Treatment Integrity.** In community-based research projects where school staff delivers the intervention, there are multiple barriers to the intervention being implemented as intended (Sanetti & Kratochwill, 2009). To address school administration concerns about financial and resource limitations, the lead investigator met with the principal to discuss the LBG. The intervention was designed to be low cost and addressed an identified problem in the school. Additionally, the LBG did not require additional staff or monetary resources. The lead researcher donated the necessary supplies (poster boards and lanyards) and provided training to the cafeteria staff at no cost to the school. Based on permission from the principal and feedback from students, the reward for winning classes was extra recess or access to a field that is usually restricted during recess time. These rewards seemed to be motivating to most students and were easily administered with no extra staff or monetary resources.

Given that the school did not already have SW-PBS in place, there was some resistance from staff to a cafeteria intervention of this type. Other intervention programs had been attempted but were reportedly terminated because they were not successful. After consultation about the research supporting the LBG and SW-PBS procedures, the lunchroom staff was open to an intervention that used positive and reward-based procedures.

Other barriers to treatment integrity included the lunch monitors work schedule, job demands, and skill proficiency. Lunch monitors were supported throughout the
intervention in several ways. First, trainings were conducted during a mutually agreed upon time that was convenient for the lunch monitors. The intervention was adapted to be straightforward and simple to increase the ease of implementation. Second, lunch monitors received verbal feedback on the treatment integrity data throughout the first week of intervention. Feedback continued to be given on a weekly basis throughout the implementation of the LBG. Third, visual cues including the points poster, posters with the cafeteria rules, and lanyards with the criteria for awarding points were used to help the lunch monitors with the intervention.

To support teachers in delivering classroom rewards, reminders and check-ins occurred on a weekly basis. When the criterion was announced each Friday, teachers with winning classes were contacted to schedule a day to administer the award the following week. Follow-up with teachers and students by the primary investigator encouraged teachers to deliver rewards in a timely fashion. Across all grades, rewards were given to classes with 95% integrity.

**Student Behavior Change.** It was hypothesized that the intervention would result in an increase in the percent of intervals with ASB and a decrease in the percent of intervals with DB in the cafeteria. Student ASB remained fairly consistent and was observed during an average of 36.9% of intervals during baseline an average of 35.8% of intervals during intervention. The average effect size across grades was -0.1 indicating the intervention had no effect on student ASB. In addition, visual analysis and descriptive data did not support the hypothesis that the LBG increased the percent of intervals where ASB was observed. Further analysis of the data was conducted and the percentage of all non-overlapping data (PAND) was 65% for ASB, indicating the intervention had
questionable effectiveness on ASB. PAND was used to calculate an overall effect size, $d$, of 0.79, which is considered a “medium” effect size; however, literature cautions that effect sizes from PAND should not be interpreted in the same way as large-group design experiments (Cohen, 1992; Schneider et al., 2008). Research has shown that in single subject experimental designs, effect sizes are often larger than expected (Parker et al. 2005). Thus, the overall effect size of 0.79 should be interpreted with caution and the lower, grade-based effect sizes are likely a better representation of the effectiveness of the intervention on student ASB.

The mean percent of intervals where ASB was observed during baseline was 36.9% (range 17.1-58.3%). This level is consistent with previous studies, where ASB in the cafeteria has been reported between 30-50% of intervals (Hoffman et al. 2010; Michelson et al., 1981; Nelson et al., 1996). This intervention did not demonstrate a change in student ASB and few conclusions can be drawn because this variable is understudied in the literature. Of the two previous studies that assessed ASB in the cafeteria only one found an increase in ASB (Michelson et al., 1981).

Michelson and colleagues (1981) focused on noise reduction in a hospital-based ABAB design intervention. Using a device to measure noise and feedback to students, appropriate behavior increased from a mean of 51% to a mean of 64% with the intervention and after removal changed from 49.7% of intervals and 64% of intervals during repetition. The authors noted that student behavior became more appropriate as the frequency of excessive noise decreased. While this study reported a change in students’ appropriate behaviors, the intervention differed from the current study in many
ways. The setting and population of students was different as was the goal and procedures of the intervention.

Two other studies measured ASB in non-cafeteria settings and found that interventions resulted in an increase in student ASB (Marchant et al., 2007; Nelson et al., 1996). In a multiple baseline across participants study, social skills training and self-management was found to improve communication and appropriate peer interactions in three elementary school students with concerning social behavior at recess (Marchant et al., 2007). Nelson and colleagues (1996) taught students rules and behavioral expectations for waiting outside before school began. Positive behavior was found to increase, but had considerable variability. While these studies had discrepant results from the current study, it should be noted that the interventions differed in the goals, setting, type of intervention, and participants.

As hypothesized, the percent of intervals where DB was observed decreased from the baseline to intervention phase. Before the intervention, DB was observed in an average of 14.6 percent of intervals and only in an average of 9.7 percent of intervals during the intervention. Effect sizes for each grade ranged from 0.1 to -1.1 and the percentage of all non-overlapping data for DB was 75%, suggesting that the intervention was effective in decreasing DB across lunch periods. The overall effect size calculated from PAND was 1.84, which is strong. Again, the overall effect size for DB is very large, and should be interpreted with caution (Cohen, 1992; Schneider et al., 2008).

McCurdy and colleagues (2009) published the only other replication of the GBG in the cafeteria setting. The LBG had the same procedures as the GBG where classes were given points by lunch monitors when a student was observed to break a rule. A
group contingency awarded classes a prize at the end of the week for beating a mystery criterion. A multiple baseline across lunches design resulted in a decrease in the rate per minute of disruptive behaviors in all three lunch periods. The rate of disruptive behavior decreased from 4.73 incidents per minute during baseline to 2.02 during intervention in the first lunch, from 6.66 per minute to 2.75 in second lunch, and from an average of 7.1 times per minute to a mean of 2.46 during intervention in the third lunch (McCurdy et al., 2009). Trends were decreasing in the first two lunches and slightly increasing in the third lunch period. Effect sizes were not calculated by McCurdy et al. (2009) but were calculated by this author and determined to be -4.16 for the first lunch period, -4.03 for the second lunch period, and -2.77 for the third lunch period. The average effect size for the LBG was calculated to be -3.65. PAND was not calculated by the authors but they noted only one instance of overlapping data, indicating that the intervention had a strong effect on student disruptive behavior (McCurdy et al., 2009).

Both the LBG and the modified LBG resulted in a consistent decrease in students’ disruptive behavior across all lunch periods. Levels of DB at baseline and intervention were higher in the current study compared to the LBG. This could be attributed to a difference in the behavioral definition of DB or the difference in measuring the variable. McCurdy and colleagues (2009) used a frequency count over 15-second intervals to calculate the rate per minute of disruptive behavior. The current study’s use of partial interval recording could have resulted in an over-estimation of DB in the cafeteria. The original LBG also had more robust effect sizes that the current study. The difference in effect size could be attributed to a stronger response to the intervention, smaller standard deviations in the McCurdy et al. study (2009) and a difference in sampling DB.
This study demonstrated a decrease in student DB in the cafeteria as a result of the modified LBG. This intervention based in SW-PBS and social learning theory had several important components, including a group contingency, lunch monitor training, and opportunity to earn points and rewards for appropriate behavior. The procedures of this intervention were modified from the original GBG and LBG to include positive attention and reinforcement for appropriate social behavior instead of attention and punishment for rule violations. Similar to the GBG and LBG research base, this study yielded a decrease in student disruptive behavior (Barrish et al., 1969; McCurdy et al., 2009). The results of this study demonstrate that the intervention can be effective without focusing on negative behaviors. This greatly decreases the potential for iatrogenic effects on student’s self-esteem and behavior.

The decrease in student DB observed in this study was consistent with previous studies that utilized group contingencies (Fabiano et al., 2005; Lewis et al., 1998; McCurdy et al; 2009 Nelson et al., 1996), gave rewards for positive behavior (Jeffrey, 2005; Lewis et al., 1998; Michelson et al., 1981; Nelson et al., 1996), and provided lunch monitor trainings (Jeffrey, 2005; McCurdy et al., 2009) to modify student behavior. While student DB has not been measured consistently in the literature, many categories of behavior (volume, rule violations, disruptive behavior) have responded to similar multi-component interventions in cafeteria and non-cafeteria settings (Fabiano et al., 2005; Frazen & Kamps, 2008; Jeffrey, 2005; Lewis et al., 1998; Lewis et al., 2002; McCurdy et al. 2009; Michelson et al., 1981; Nelson et al., 1996; Todd et al., 2002).
Study Limitations and Strengths

This study had several limitations related to sample, implementation, and measurement. First, the study was conducted in one elementary school, which limits the ability to generalize the findings of this study. Additionally, the school had resources that enabled them to have a grade-based teaching assistant in four of the five lunch periods, which is uncommon in most elementary schools. These teaching assistants were responsible for much of the intervention implementation, which also may affect the generalizability of the outcome evaluation and treatment integrity.

Second, the implementation of the intervention had several limitations. Data were collected between students’ return from February break and the beginning of April vacation, limiting the number of days the intervention could be implemented. Class fieldtrips and state testing also altered the implementation schedule and resulted in only four data points in Lunchroom B. While this was enough data to meet the standards for a multiple baseline phase, it may not have fully demonstrated the effect of the intervention in this setting because students had not yet experienced the success of earning a reward (Kratochwill et al., 2010). The intervention required some additional staff time in communicating with teachers about rewards and ensuring rewards were given to classes. The rewards of additional recess and access to a restricted field were rewarding to most students but, anecdotally, a few students expressed a preference to play on the blacktop and play structure. Also, the presence of the principal investigator in the lunchroom during treatment integrity checks may have changed lunch monitor and teaching assistant behavior in the cafeteria (Mayo, 1933). However, treatment integrity data suggested that there were still components of the intervention that could be improved upon; indicating
that lunchroom staffs’ behavior likely did not change significantly when the principal investigator was present.

Third, the measurement of the ASB variable may not have fully captured student behavior in the cafeteria. The behavioral definition for ASB loosely captured the cafeteria rules, but the two were not completely aligned. Also, although there was excellent IOA in this study, the BASiL has not been validated. It is possible that this instrument is not as sensitive to the change in ASB as other observation methods. Other studies that measured ASB and found a significant increase as a result of the intervention used differing observation methods. Michelson et al. (1981) used categorical coding of appropriate or inappropriate behavior when a 10-second interval was considered appropriate if the child was appropriate for more than 9 seconds. Marchant et al. (2007) measured the percentage of intervals where the target student played appropriately during the whole 10-second interval. Nelson et al. (2006) used an instantaneous sampling procedure where a child was observed for one to two seconds and then recorded. Future research should target the best way to measure student ASB that is accurate and sensitive to change.

These limitations were offset by several strengths. This multi-component intervention was based on a highly effective behavioral intervention (GBG; Barrish, 1969) that had been modified and researched in the cafeteria setting (McCurdy et al., 2009). The current study changed the procedures that focused on negative attention by incorporating social learning theory and the principals of SW-PBS, including a group contingency for rewards based on rule-following behaviors (Bandura, 1978). This study is the first example of an implementation of the GBG in the cafeteria with the opportunity for students to earn points for following the rules rather than for rule infractions. This
provides an opportunity for students to receive direct praise for following the rules and experience adults modeling appropriate social behavior (Bandura, 1978). In addition, using positive and preventative techniques to manage student behavior decreases the potential for iatrogenic effects on student’s self-esteem (Cameron & Sheppard, 2006). Finally, the rewards of extra recess or access to a restricted field for recess were motivating for most students and further encouraged ASBs as well as physical activity (Miller, Pitchford, & Roderick, 1997).

The primary investigator took into consideration the needs and constraints of the school, ensuring that the intervention was low-cost, easy to implement, and appealing to students and staff. Elements of the intervention, including cafeteria rules and rewards, were developed in collaboration with the school staff; a method that has shown increased investment and implementation integrity (CBPR; Viswanathan et al. 2004). These factors probably contributed to good overall treatment integrity good anecdotal acceptability. After data collection was discontinued, several grades continued using the intervention through the end of the school year, which demonstrates the acceptability and ease of implementation.

This is one of the few cafeteria studies that measured both student DB and ASB. This study attempted to better understand the ASB variable and whether it increased as DB decreased when an intervention was implemented in the cafeteria. While no changes were seen in ASB, the intervention effects for DB were repeated across all three lunch periods in Lunchroom A and again for one grade in Lunchroom B. The effect of the intervention on student DB was replicated four times, which meets the standard for a multiple baseline design (Kratochwill et al., 2010).
Directions for Future Research

Given the dearth of cafeteria-based interventions in the literature, more research in this area is needed. This modified version of the LBG should be implemented in other cafeterias to see if effects can be replicated and generalized. Urban, suburban, and rural settings should be explored to determine if the modified LBG is effective in a variety of school districts. Treatment integrity should be monitored in future studies with a focus on increasing lunch monitors’ use of positive comments to students. This behavior is often resistant to change and the literature provides several strategies to promote the use of praise. Consultation, collaboration, and education about the rationale behind using positive praise instead of negative comments can support school staff’s use of praise (Myers, Simonsen, & Sugai, 2011). Specific strategies prior to implementing the intervention include direct modeling and corrective feedback, a script, education about the rationale for using praise, goal setting (e.g. 4:1 ratio) and comparing baseline levels to that goal, explanation of integrity checks and feedback sessions, and opportunities for questions. Throughout the intervention increasing the frequency of feedback about performance (e.g. daily), setting goals cooperatively each week, providing lunch monitors with motivating rewards for reaching those goals, modeling and examples of positive praise, visual feedback (e.g. graphs), encouraging self-prompts (e.g. sticky notes), self-monitoring, video self-modeling, or a friendly competition between lunch monitors can be used to increase lunch monitor’s use of specific praise with students (Hawkins & Heflin, 2011; Myers et al., 2011). Future research should also strive to understand the necessary components of the intervention and if giving positive comments is essential to a treatment effect.
ASB should be further investigated to determine the best way to measure this variable in the cafeteria. Different observation methods could be compared to determine which system best captures student ASB. Additionally, a common definition of ASB and DB should be created in order to have a consistent variable across future studies.

The findings of this study also suggest that there are differences in the implementation integrity of a cafeteria intervention depending on the participating staff. Further research could explore treatment integrity differences when lunch monitors or teaching assistants implement the intervention. Additional information comparing acceptability and self-efficacy in administering the intervention may serve to better understand differences in treatment integrity. This valuable information could lead to strategies to better equip lunch monitors with the skills, knowledge, and confidence to successfully implement cafeteria-based interventions.

Finally, lunchtime is not only problematic for elementary aged students, it is also an unstructured time vulnerable to bullying and disruptive behavior in middle and high school. Therefore, developmentally appropriate interventions that fit the context of middle and high school should be developed and evaluated.

Conclusions

Disruptive behavior is a significant problem in American elementary schools and is particularly challenging in non-classroom settings, including the cafeteria (Sugai & Horner, 2002b; Surgeon General’s Report, 2001; Vaillancourt et al., 2010). Although frameworks like SW-PBS have been shown effective in decreasing these behaviors in the cafeteria, it remains unknown if students replace inappropriate behaviors with more positive, appropriate social behaviors (Fabiano, et al., 2008; Jeffrey, 2005; Lewis et al.,...
This study aimed to better understand students’ appropriate social behavior in the cafeteria and the change in disruptive behavior and appropriate social behavior after a modified evidence-based intervention was implemented.

This study contributes to the existing literature by explaining the development, implementation, and evaluation of a modified version of the LBG, a lunchtime adaptation of the Good Behavior Game (McCurdy et al., 2009; Barrish et al., 1969). This study is only the second implementation of the research-based intervention in the cafeteria and the first to modify it to align with SW-PBS and social learning theory (Bandura, 1978; McCurdy et al; 2009). The intervention procedures were rooted in social learning theory and SW-PBS by acknowledging and rewarding positive student behavior rather than punishing rule infractions (Sugai & Horner, 2002a). These modifications were found to have similar changes in student disruptive behavior compared to the original GBG and LBG studies without focusing on negative behaviors (McCurdy et al., 2009; Barrish et al., 1969). Additionally, the current study explored baseline and intervention levels of ASB in the cafeteria in addition to the more commonly used dependent variable of DB. The development of intervention components was done in conjunction with school staff to increase the fit of the intervention to the school context and the buy-in of lunch monitors implementing the LBG (Viswanathan et al. 2004). Finally, treatment integrity was measured, which is a critical aspect of measuring intervention outcomes (Surgeon General’s Report, 2001).

While this study supports the modified version of the LBG as an effective intervention for decreasing student DB in the cafeteria, there is still a need for further explorations of student behavior in the cafeteria. Schools not only support the academic
development of students, but also provide unstructured times to develop social skills and peer relationships (Miller, Pitchford, & Roderick, 1997). School lunchrooms continue to be rife with aggressive and disruptive behavior necessitating the development of interventions designed to harness the potential for this productive and pro-social time. Future cafeteria-based interventions should continue using the principles of SW-PBS and evidence-based procedures, measure treatment integrity, and work within the context of the school to develop a program that meets school needs and is acceptable to staff and stakeholders.
References


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Dear Parents,

As you know, we are working hard to promote positive student behavior at our school and reduce instances of disruptive behavior and bullying. One place where these negative behaviors occur frequently is in our cafeteria. This year, a doctoral student from Northeastern University, Becca Parrish, will work with our lunch monitors to implement a program to increase positive student behavior during lunchtime in the cafeteria.

Ms. Parrish will be evaluating the program to see if it is effective. The evaluation will involve observing students’ behavior in the cafeteria. Students will be observed anonymously and their names will not be attached to observation data. In addition, all data will be kept confidential. The observations will only serve the purpose of determining if the cafeteria intervention is effective in its goal of reducing disruptive behavior and increasing positive social behaviors. There is no risk for your student to participate in this program evaluation.

If you have any questions, please contact us. We are looking forward to this exciting new program during lunchtime.

Principal

Assistant Principal
Appendix B

Informed Consent Form for Lunch Monitors

Dear Lunch Monitors:

This year, Becca Parrish, a doctoral student from Northeastern University, will work with you, your principal, and your school psychologist to implement a program to improve student behavior in the cafeteria. The intervention consists of a game where classes receive a points for following the cafeteria rules. Classes that earn points will then receive small prizes from their classroom teacher. Similar types of programs have been very successful at decreasing problem behavior in classrooms and cafeterias. Your help in this project would be greatly appreciated! If you choose to participate, you would be responsible for closely monitoring the students’ behaviors. When a rule is broken, the lunch monitors will remind him/her of the rule and appropriate behavior. At the end of lunch, classes will receive points based on their behavior (e.g. 2 = all of the class followed this rule; 1 = most of the class followed this rule; 0 = only a few members of the class followed this rule). You will be responsible for awarding and recording class points.

Part of the program will also include having graduate students from Northeastern University observe and record student behavior in the cafeteria and how the intervention is being implemented. The observations will help us determine if the program decreases problem behavior in the cafeteria and helps students follow the cafeteria rules. Should you have any questions about this please do not hesitate to contact Ms. Parrish at (617) 272-6484.

If you agree to participate in the project you can stop your participation at any time. This project has been approved by the research office (Institutional Review Board) at Northeastern University. If you have any questions about your rights as a participant, you may contact Human Subject Research Protection, Division of Research Integrity, 413 Lake Hall, Northeastern University Boston, MA 02115 tel. 617-373-7570. You may call anonymously if you wish.

If you agree to participate in the lunchtime program please fill in the information below and provide your signature.

I ____________________________ hereby consent to participate in the lunchtime program. I agree to help implement the intervention by monitoring student behavior and giving points for rule infractions. I understand that all information will be kept strictly confidential, and that I may stop my participation at any time. I acknowledge that I have received two copies of this form so that I may keep one copy for my records.

Signature of lunch monitor: __________________________
Printed Name of Person Above: __________________________
Today’s Date: __________________________
Appendix C

The Lunchroom Behavior Game (McCurdy et al., 2009)

Lunch Monitor Training:

1. Review of effective behavior management practices including monitoring, withitness, positive reinforcement, physical proximity to students, and consistency.

2. Co-create cafeteria rules with a goal of creating 3-5 simple and operationalized expectations with specific examples and non-examples.

3. Teaching of the rules and procedures of the modified LBG.
   a. Lunch monitors will have a lanyard with the school rules on a badge and a pen.
   b. Classes work as teams to follow the cafeteria rules.
   c. If a student breaks a rule, the lunch monitor should address the infraction and state the expected positive behavior.
   d. Students should be given verbal positive reinforcement for following the cafeteria rules.
   e. Points are given to each class at the end of each lunch period paired with verbal feedback.
   f. Points are awarded using the following scale: 2 points = all of the class followed this rule; 1 point = most of the class followed this rule; 0 points = only a few members of the class followed this rule.
g. At the end of the lunch period, points for each class are recorded on a large poster board in the cafeteria by the lunch monitors.

h. Each Friday, lunch monitors announce the criterion number of points and the classes that have met the requirement to earn a prize.

i. Lunch monitors notify teachers if their class won as they transition out of the cafeteria on Fridays.

4. Address any questions about the LBG.

5. Lunch monitors role play the procedures of the LBG and receive feedback.

6. Review the principles of behavior management and the LBG.

**Classroom Lesson**

1. Explain to students that there will be a new game in the cafeteria to help students follow the rules. They will have chances to earn a prize each week for working together to follow the rules as a class.

2. There are new rules for the cafeteria. Teach the students the rules by saying them out loud and presenting accompanying visuals of the rules. Use choral responding to have the class repeat the rules.

3. Cafeteria rules will be operationally defined for students. Each rule will be explained and examples and non-examples given.

4. Students will participate in role plays to demonstrate expected behavior and rule-following behavior in the cafeteria.

5. The rules and procedures of the LBG will be explained.
a. The class is working together to follow the rules in the cafeteria and not earn points from lunch monitors.

b. If a student breaks a rule, the lunch monitor will tell the student which rule has been broken, and remind the student of the expected behavior in the cafeteria.

c. At the end of the lunch period, lunch monitors will award points to the class using the following scale: 2 points = all of the class followed this rule; 1 point = most of the class followed this rule; 0 points = only a few members of the class followed this rule.

d. Points for the class will be recorded on a large poster board on the wall of the cafeteria.

e. Each week there will be a mystery criterion, or number of points the class needs to be below. If the class earns fewer points than the mystery criterion, they will earn a prize.

6. Students will be asked for ideas for low-cost prizes that do not interrupt instruction time (e.g. nature walk, pajama day, reading party).

7. Any questions about the LBG will be addressed.

8. The lesson leader will role play scenarios where students are breaking the rules and ask the class to identify a) what rule is being broken, b) what will happen if this happens in the cafeteria, and c) what the leader should be doing to follow the rules in the cafeteria.

9. The students will participate in a closing choral responding of the rules in the cafeteria.
Appendix D

Behavioral Assessment of Students in Lunchrooms (BASiL)
(Volpe, Hoffman, & Parrish, 2009)

The Behavioral Assessment of Students in Lunchrooms (BASiL; Volpe, Hoffman, & Parrish, 2009) is a systematic, direct observation code used to assess child and lunch monitor behavior in structured and semi-structured environments. Some of the categories and coding procedures of the BASiL have been adapted from the Attention Deficit Hyperactivity Disorder -School Observation Scale (ADHD-SOC; Gadow, Sprafkin, & Nolan, 1996). The BASiL utilizes momentary time sampling at the beginning of each 15-second interval to measure student’s appropriate and disruptive behaviors in the cafeteria.

**Basic Coding Procedure**

The behaviors of approximately 48 students are recorded in a prescribed pattern. Students are observed one at a time at the beginning of each 15-second interval.

*Where to start?* In cases wherein students are seated at a rectangular table, the observer starts at a predetermined end of the table, and records the behavior of each student serially (see Figure 1). The numbers below indicate the order in which students would be observed. Student 1 would be observed for the first interval, followed by student 2 and so on. After observing all students at one table, the observer suspends the observation until the observer is situated at the next table to be observed. The order at which tables are observed should be determined in advance.

Figure 1.

```
1  2  3  4
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Behavior Categories for Individual Students

**Appropriate Social Behavior (ASB):** (Adapted from Gadow, Sprafkin, and Nolan, 1996; Michelson et al., 1981, Nelson, et al., 1996)

ASB refers to all positive social interactions (verbal and nonverbal communication) with peers or adults such as participating in cooperative play, conversing, or helping another child. Nonverbal appropriate social interaction behaviors include (a) affectionate touches, (b) cooperative play initiated by the observed child, (c) smiling at or laughing with a peer, and (d) attending to or listening to a peer or adult. Appropriate social behavior is also coded when the observed child replies verbally to teacher or lunch monitor’s questions, even if several youngsters reply simultaneously to a question posed to the whole table. ASB is behavior that is appropriate for the setting and involves a verbal or nonverbal interaction with another student or an adult.

Examples: The observed child:
1. talks to another child;
2. affectionately touches another child;
3. asks the lunch monitor to help him or her;
4. nods, smiles, makes eye contact, or laughs in response to another child
5. shares food;
6. pats another child on the back in a congratulatory gesture.
7. the observed child complies nonverbally to a teacher request (e.g., “clean up”)
8. raises his/her hand to get the attention of a lunch monitor

Non-Examples: The observed child:
1. has spontaneous verbalizations that are not directed at anyone in particular (i.e., the child is talking to himself/herself)
2. is yelling at another student
3. is teasing or bullying another student
4. sits quietly and eats his/her lunch

**Disruptive Behavior (DB):** (Adapted from Gadow, Sprafkin, and Nolan, 1996; McCurdy et al., 2009; Nelson et al., 1996)

DB is intended to measure when a child is not following the cafeteria rules. This includes if the child is not where he/she is supposed to be in the lunchroom, when he/she is engaged in inappropriate motor behavior in his/her area, instances of disrespect, acts of physical aggression, verbal aggression (including curses), and physical threats without contact.

Examples: The observed child:
1. is turned around the wrong way (feet are not under table)
2. gets up to talk to someone at another table
3. grabs food from another tray or simply touches someone else’s food or belongings
4. hits, kicks, punches, bites, or trips another child
5. is play fighting
6. throws an object
7. contacts another student with force (with body or implement)
8. pretends to hit another child or prepares to throw an object

Non-Examples: The observed child:
1. asks permission to get up from table and does so
2. is sharing food with another student while sitting appropriately
3. taps another child to get his/her attention
4. is playing a game with another child
5. hurts another child accidentally

**Note:** These behaviors are coded regardless of the reaction of the child or adult who is aggressed upon and the supposed intention of the aggressor.

<table>
<thead>
<tr>
<th>Target Behavior</th>
<th>Operational Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appropriate Social Behavior (ASB)</strong></td>
<td>ASB refers to all positive social interactions (verbal and nonverbal communication) with peers or adults such as participating in cooperative play, conversing, or helping another child. Nonverbal appropriate social interaction behaviors include affectionate touches, cooperative play, smiling at or laughing with a peer, and attending to or listening to a peer or adult. Appropriate social behavior is also coded when the observed child replies verbally to teacher or lunch monitor’s questions.</td>
</tr>
<tr>
<td><strong>Disruptive Behavior (DB)</strong></td>
<td>Any instance where a child breaks a cafeteria rule. This includes if the child is not where he/she is supposed to be in the lunchroom, when he/she is engaged in inappropriate motor behavior in his/her area, instances of disrespect, acts of physical aggression, verbal aggression (including curses), and physical threats without contact.</td>
</tr>
</tbody>
</table>
Appendix E

Observation Manual

1. Before lunch begins, determine who will observe which tables and in what order.
2. Prepare for the observations by having out the observation recording sheet on a clipboard with a pen or pencil. Complete the top portion, be sure to include the date and which lunch period or grade you are about to observe.
3. Have your mp3 device cued to the observation audio recording and headphones in your ears.
4. Once four students are seated at the table, press play on your mp3 device and begin the observation session.
5. You will be prompted by the audio recording to begin observation one. For observation one, look up at the first student when you hear the audio cue. If the student is engaging in an appropriate social behavior at the moment you look at him/her, make a hash mark in the appropriate box for student one.
6. Watch the student for the entire interval and if the student engages in a disruptive behavior at any point during the observation interval, make a hash mark in the appropriate box for student one.
7. At the end of the 15-second interval, the audio recording will cue you to make your second observation. At this time, look up at student two, who should be seated next to student one. Record the student’s appropriate social behavior for the moment you look up at student two in the appropriate column.
8. Continue to observe student two and record any disruptive behavior during the interval in the appropriate box on the recording sheet.
9. Continue observing and recording behaviors for all students at the table. Once the whole table has been observed, pause the mp3 device and move toward the second table you are schedule to observe.
10. Once you are situated, choose a student at one end of the table, press play, and observe the target student at table two. Record the student’s behavior in the appropriate column.
11. Continue with these procedures until the 12-minute session is over or the lunch period ends, whichever comes first. If the observation session has ended and lunch has not ended, do not begin another observation session.
12. Prepare to observe the next lunch period by getting a blank observation recording sheet and restarting your audio recording. Complete the top of the sheet; be sure to include the date and the lunch period you will be observing.
13. After all the lunch sessions, complete the bottom of the recording sheets. Write in the total number of intervals, number of intervals with ASB, and number of intervals with DB.
14. Calculate the % of ASB and % of DB by dividing the number of intervals with the behavior by the total number of intervals observed and then multiplying by 100 (see formula on observation recording sheet).
15. Clip or staple all observation sheets together and place them in the folder in the office before leaving the building!
Appendix F

Observation Recording Sheet

<table>
<thead>
<tr>
<th>Observations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>13</th>
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<tbody>
<tr>
<td>ASB</td>
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Total Intervals Observed _________

Student Data

<table>
<thead>
<tr>
<th># Intervals with ASB</th>
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</thead>
<tbody>
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<td># Intervals with DB</td>
<td>_____</td>
</tr>
<tr>
<td>% ASB</td>
<td>_____</td>
</tr>
<tr>
<td>% DB</td>
<td>_____</td>
</tr>
</tbody>
</table>

(% ASB = # of intervals with ASB / Total Intervals Observed X 100)
(% DB = # of intervals with DB / Total Intervals Observed X 100)

* Adapted from the Behavioral Observation of Students in Schools (BOSS) by Edward S. Shapiro.
Appendix G

Treatment Integrity Checklist

Date: ______________________ Lunch Period: ______________________
Observer: ______________________ # Lunch Monitors Present: ______________________

1) How many lunch monitors in the cafeteria have lanyards around their necks?
   _______/_______ (specify how many lunch monitors out of total in cafeteria)

2) How many lunch monitors give positive comments to students for following rules?
   _______/_______

3) How many lunch monitors provide an alternative positive behavior to rule infractions?
   _______/_______

4) How many lunch monitors award class points for following rules at the end of lunch?
   _______/_______

1) How many teaching assistants in the cafeteria have lanyards around their necks?
   _______/_______ (specify how many lunch monitors out of total in cafeteria)

2) How many teaching assistants give positive comments to students for following rules?
   _______/_______

3) How many teaching assistants provide an alternative positive behavior to rule infractions?
   _______/_______

4) How many teaching assistants award class points for following rules at the end of lunch?
   _______/_______

5) Friday Only – Does a lunch monitor/teaching assistant announce the criterion and winning teams? Which (TA or LM) ______________________
## Appendix H

### Cafeteria Rules and Operational Definitions

<table>
<thead>
<tr>
<th>Rule</th>
<th>Examples</th>
<th>Non-Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respect Others</strong></td>
<td>Follow directions, throw away garbage, clean up your table area, listen to lunch monitors</td>
<td>Leaving garbage on the table, teasing, talking when an adult talks</td>
</tr>
<tr>
<td><strong>Be Safe</strong></td>
<td>Keep hands and feet to yourself, sit with your bottom on the bench and feet under the table, walk</td>
<td>Punching, kicking, hitting, throwing food, running, hitting a peer with a lunch box,</td>
</tr>
<tr>
<td><strong>Talk Quietly</strong></td>
<td>Use a quiet voice, talk to friends, talk to lunch monitors.</td>
<td>Yelling, getting up to talk to someone at another table.</td>
</tr>
</tbody>
</table>