REDUCING DISRUPTIVE BEHAVIOR DURING LUNCHTIME IN URBAN ELEMENTARY STUDENTS: A COMPARISON OF TWO SCHOOL-BASED LUNCHTIME INTERVENTIONS

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Abstract

Although there has been research on ways to reduce disruptive behavior in elementary school students during class time, a need for interventions that target disruptive behavior in elementary students during unstructured school times, such as lunch and recess, remains. In addition, there has been little research on school-based interventions that address the unique needs of students from diverse racial and ethnic backgrounds who live in urban areas. The purpose of this study was to compare the effects of two cafeteria-based behavioral interventions on students’ disruptive and prosocial behaviors. The study was conducted with 250 kindergarten and first grade students in an urban elementary school during lunchtime, as well as 4 lunch aides who implemented the interventions. A within participants multiple treatment reversal design was used. Study hypotheses were not supported. Results showed that students’ disruptive behaviors did not decrease when receiving either intervention. Similarly, students’ prosocial behaviors did not increase when receiving either intervention. Low implementation integrity may have contributed to the lack of intervention effects.
Chapter 1

Statement of the Problem

Unstructured time is defined as time during the school day when children are not engaged in direct academic instruction (i.e., content area classes such as English/Language Arts). Unstructured time contributes greatly to increased cognitive abilities in children (Pellegrini, 1995; Pellegrini and Blatchford, 2002; Pellegrini and Smith, 1993). During unstructured times, children have multiple opportunities for social skills development (Pellegrini & Bjorklund, 1997; Pellegrini & Davis, 1993) and experience cognitive and social benefits. At the elementary level, unstructured school time includes lunchtime, recess, and time in the hallways during transitions from one location to another. Unstructured time in elementary schools during lunchtime is the focus of this study.

The organization of lunchtime and recess often involves a large number of children being supervised by a very small number of adults. In some cases, the ratio of children to adults is as high as 200:1 or 200:2 (LaRowe, Tucker & McGuire, 1980). As such, successful behavior management in these environments is critical to promote prosocial behavior and to prevent disruption. In the absence of adequate behavior management, children may exhibit high levels of disruptive behaviors due to lack of limit setting. Inappropriate behaviors in the cafeteria and on the playground include, but are not limited to: getting out of one’s seat without permission; yelling; throwing food; and acts of physical and relational aggression.

Whereas in the past teachers supervised lunchtime and recess, currently lunch aides supervise these unstructured times in many schools (LaRowe et al., 1980; Nelson, Smith & Colvin, 1995). Lunch aides are often women, sometimes mothers and/or other
relatives of children in the school who supervise both lunchtime and recess, and often have little to no training in behavior management (Blom-Hoffman, Kelleher, Power & Leff, 2004; Briggs, MacKay & Miller, 1995; Dowrick et al., 2001; Imich & Jeffries, 1989; Lewis, Colvin & Sugai, 2000; Pellegrini, 1995; Pellegrini & Blatchford, 2002; Pellegrini & Smith, 1993; Roderick, Pitchford & Miller, 1997). While those who hold the position are called lunch aides, the name does not accurately portray the extent of their duties that mainly include behavior management and washing cafeteria tables. Children surveyed during the pre-intervention phase of a school-based lunchtime and recess intervention reported that they perceived the lunch aides as individuals with little to no authority and often-ineffective disciplinary methods (Imich & Jeffries, 1989).

Because lunch aides typically lack behavior management training, lunchtime and recess are often the periods of the school day when the highest levels of aggression occur (Craig & Peplar, 1997). Briggs et al. (1995) reported that 82% of the fourth and fifth grade participants in their playground intervention reported having been bullied on the playground. Recess and lunchtime are prime places to develop and evaluate interventions that increase social behavior and decrease disruption (McCurdy, Lannie & Barnabas, 2009; Roderick et al., 1997).

Children in urban schools

With many United States public schools focusing on their accountability for their students’ academic performance as measured by mandated standardized testing, an increase in the amount of instructional time is common. As a result, the amount of unstructured time in schools is viewed as being of lesser importance to the school routine (Pellegrini & Blatchford, 2002). This new focus appears to be a reaction inspired by the No Child Left Behind Act (NCLB), which is intended to help close the achievement gap
between economically disadvantaged and non-disadvantaged children. Additionally, NCLB is intended to close the gap between non-minority and minority children in the United States (U.S. Dept of Education, 2001). This legislation is important to consider because, due to the disproportionate representation of African American and other ethnic minority students in urban areas and therefore urban schools (Wandersman & Nation, 2005), minority children in urban schools may be the largest group affected by NCLB.

Children attending schools in large urban areas are often expected to cope with a number of chronic stressors such as exposure to violence, crime, and poverty (Wandersman & Nation, 1998). Research links disadvantaged community factors and low income to behavioral and mental health outcomes in children such as delinquency, aggression, psychological disturbances, and lower educational expectations (Black & Krishnakumar, 1998; Wickrama, Noh & Bryant, 2005). Using data from the Infant Health & Development Program, Duncan, Brooks-Gunn, and Klebanov (1994) reported that neighborhoods with higher levels of ethnic diversity and a larger proportion of people of a low socio-economic status may produce children who exhibit more behavioral and cognitive problems, as well as higher levels of distress. Adolescents who live in these types of communities may also experience the disorder and decay of these communities through crime, noise, poor housing, and other undesirable circumstances (LaGrange, Ferraro & Supanic, 1992). In addition, the lack of resources in these communities hinders the residents’ ability to obtain counseling, adequate healthcare, higher quality education, and social/recreational services.

There continues to be a need for interventions that are culturally sensitive to the population of children from ethnic backgrounds living in urban areas (Leff, Power, Manz, Costigan & Nabors, 2001). The school-based playground and lunchroom intervention
research has begun to meet this need by implementing interventions in urban schools with high populations of minority children (Leff, Costigan & Power, 2004; McCurdy, Lannie & Barnabas, 2009; Roderick et al., 1997).

Statement of the Problem

Disruptive behavior in early childhood can be a precursor to future problems, including criminal behavior (Ensminger, Kellman & Rubin, 1983; Huesmann, Eron, Lefkowitz, Walder, 1984; Stattin & Magnusson, 1989). According to Dinkes, Kemp, and Baum (2009) in the Indicators of School Crime and Safety Report: 2008, the largest factor limiting schools’ efforts to reduce negative school situations was the lack of programs and/or placements for disruptive students. Dinkes et. al also noted that the highest percentage of daily acts of disruptive behavior occurred in city schools.

Most disruptive and aggressive behavior, including bullying, occurs during unstructured times (Anderson-Butcher, Newsome & Nay, 2003; Blatchford, Creeser & Mooney, 1990; Briggs et al., 1995; Craig & Pepler, 1997; Hall, Anderson & Copeland, 1997; Olweus, 1993). Although there has been research on reducing disruptive behavior in elementary school students during class time (e.g., structured school time), a need for interventions that target disruptive behavior in elementary school students during unstructured school times (e.g., lunchtime and recess) remains. Oftentimes, schools expend large amounts of time and money to reduce disruptive behavior in individual students. Unfortunately, when large amounts of students are clustered in unstructured areas (e.g., cafeterias and playgrounds) disruptive behavior is disregarded (Oswald, Safran & Johanson, 2005; Safran & Oswald, 2003). In addition, unstructured times regularly are supervised by lunch aides who have little to no formal behavior management training (Blom-Hoffman, Kelleher, Power & Leff, 2004; Briggs, MacKay &
In elementary school studies, it was reported that 82% of fourth and fifth graders reported being bullied despite the presence of lunch aides (Briggs et al., 1995).

Interventions implemented with students from diverse ethnic backgrounds, who live in disadvantaged, urban communities are particularly important. Children attending schools in urban areas are often expected to cope with chronic stressors such as exposure to violence, crime, and poverty (Wandersman & Nation, 1998). Research links disadvantaged community factors to behavioral outcomes in children such as delinquency, aggression, psychological disturbances, and lower educational expectations (Black & Krishnakumar, 1998; Duncan, Brooks-Gunn & Klebanov, 1994; Wickrama, Noh & Bryant, 2005). Despite these factors, there has been little research on school-based interventions that address the unique needs of students from diverse ethnic backgrounds who live in urban areas (Leff, Costigan & Power, 2004; McCurdy, Lannie & Barnabas, 2009; Roderick et al., 1997).

Playground and Lunchtime Interventions

In the last decade, a growing body of research has been developed with the goal of reducing aggressive behavior in unstructured school environments (Briggs et al., 1995; Colvin, Sugai, Good & Lee, 1997; Craig & Peplar, 1997; Imich & Jeffries, 1989; LaRowe et al., 1980; Leff et al., 2004; Leff, Power, Costigan & Manz, 2003; Lewis et al., 2000; McCurdy, Lannie & Barnabas, 2009; Roderick et al., 1997). Among school-based playground and lunchtime interventions designed to reduce disruptive behavior, there are a number of commonalities. Clear and consistent rules, active adult supervision, and
reinforcement of pro-social behaviors have been shown to be key components in the reduction of aggressive and disruptive behaviors in these studies (Colvin et al., 1997; Imich & Jeffries, 1989; Leff et al., 2003; Lewis et al., 2000; MacPherson, Candee & Hohman, 1974; Roderick et al., 1997) and are key principles of positive behavior supports (PBS; Sugai & Horner 2000). This includes: (a) presenting clear expectations for positive social behavior; (b) offering active instruction to operationally define appropriate behavior; (c) delivering consistent acknowledgement for appropriate behavior; and (d) include systematic intervention to prevent problem behaviors from compromising the effectiveness of ongoing delivery of instruction.

*Clear and Consistent Rules.* Lewis et al. (2000), Leff et al. (2003) and Imich and Jeffries (1989) incorporated clear and consistent rules into their programs. Lewis and colleagues (2000) instructed teachers to use “precorrection” to review the school rules and appropriate playground behaviors with all students. With input from school personnel, Leff et al. (2003) designed new playground rules for their intervention. The new rules were presented and reviewed at a school-wide assembly. School staff (i.e., principal and physical education teacher) led the assembly. The assembly was used to launch the playground program and to review the new rules with the students. Through the assembly, all students and staff were informed of the new playground rules at the same time with consistent information. In their school-based lunchtime intervention, Imich and Jeffries (1989) also designed new lunchtime rules that were presented at a school-wide assembly. After the lunch aides had been trained, clear and consistent lunchtime rules that complemented their behavior management training were presented at that school-wide assembly. After the first week of implementation, the head teacher addressed the school-wide assembly again with praise and reminders.
Active Adult Supervision and Reinforcement. Lewis and colleagues (2000) demonstrated active supervision by instructing playground monitors to increase their: (a) rate of reinforcing rule compliance, (b) error correction for rule violation, and (c) physical movement and visual scanning of the playground. Leff, Costigan, and Power (2003) had adults interact with a number of children within a section of the playground and structure and support an ongoing activity within a section of the playground. Examples of active adult supervision and reinforcement in this study included an adult giving praise to a child, and an adult actively playing or participating in a game with children.

Using a school-wide raffle as a lunchtime intervention to reduce disruptive behaviors, Roderick et al. (1997) demonstrated the use of reinforcement by training lunch aides to give raffle tickets to children who were “caught being good” (CBG). In other words, when the lunch aides observed children exhibiting prosocial behavior, such as sitting in their seats, they were given a raffle ticket. Children received reinforcement not only from the tickets and the prospect of a prize, but also from the teachers’ verbal praise when they collected the raffle tickets in the classroom. Additionally, giving out stickers increased the amount of monitoring the lunch aides afforded students (Colvin, Sugai, Good and Lee, 1997: Lewis, Colvin & Sugai, 2000).

Theoretical Orientations of School-based Interventions

Other commonalities of the school-based intervention literature are the theoretical orientations used in designing the interventions. School-based interventions are often grounded in and influenced by multiple theoretical orientations, including Bronfenbrenner’s (1979) developmental ecological theory, Bandura’s (1977) social cognitive theory, and Skinner’s (1974) operant conditioning.
Developmental Ecological Theory. Central to Bronfenbrenner’s (1979) developmental ecological theory is the assertion that an individual’s development is the result of interactions with the environment. The environment is composed of multiple systems, and the relationship between an individual and the environment is reciprocal. In other words, individuals exert influence on their environment, just as multiple systems of the environment exert influence on the individual. An application of Bronfenbrenner’s developmental ecological theory by Leff et al. (2003) was demonstrated through the formal introduction of their playground intervention by way of an all-school assembly. Through this method of introduction all students, teachers, and school personnel were included in the description of the new playground rules, as well as demonstrations of the new playground games. By presenting the intervention at an all-school assembly, led by the principal and the physical education teacher, the school environment was changed, as the expectations of students’ behavior during the unstructured times were changed. With the school (environment) introducing new games and new rules, the students (individual) were expected to react differently by engaging in more prosocial behavior.

Social Cognitive Theory. Bandura (1986) maintained that individuals learn new behaviors by observing others’ conduct. According to this theory, the learner observes models engaging in behaviors and also observes the consequences that the model receives as a result of engaging in the behavior. Inhibitory effects occur when the observer decreases a previously modeled behavior because the model was punished for engaging in that behavior. For example, during lunchtime a child (i.e., the learner) observes another child (i.e., the model) yell in the cafeteria. When the model is punished by having to stay inside during recess then the learner will be less likely to yell during lunchtime in the future. Disinhibitory effects occur when the observer increases a behavior that has
previously been categorized as prohibited because the model did not receive negative consequences after engaging in the prohibited behavior. For example, the lack of behavior management training of lunch aides, combined with the ratio of large numbers of children to small numbers of lunch aides during unstructured school times allows for acts of aggression to go unnoticed and/or ignored, thus leading to the reinforcement of the aggressive behavior (Leff et al., 2003). The playground and lunchroom intervention studies have applied social cognitive theory by increasing the amount of active adult supervision and reinforcement during lunchtime and at the playground. Due to this increase, there was a significant decrease in the acts of aggression as well as an increase in the positive interactions between students and lunch aides (Leff et al., 2003; Lewis et al., 2000; Roderick et al., 1997).

**Operant Conditioning.** Operant conditioning uses consequences of behavior to change behavior. Skinner (1974) described operant conditioning as the process by which behaviors become strengthened or reduced due to the consequences that follow them. This type of conditioning is called “operant” because the individual operates on his/her environment and the response the individual receives affects his/her future behavior. Reinforcement and punishment are at the core of operant conditioning. Reinforcement is a consequence that causes a behavior to occur more frequently, while punishment is a consequence that causes a behavior to occur less frequently. If reinforcement and punishment involve the presentation of something following a response, they are referred to as “positive;” if reinforcement and punishment involve the removal of something following a response, they are referred to as “negative.” According to the tenets of operant conditioning, the physical environment must be structured to allow for certain responses to occur. For example, in their recess intervention study, Franzen and Kamps
(2008) utilized positive reinforcement to encourage student behavior change on the playground. The authors instructed teachers to give students bracelets during recess when they were observed engaging in prosocial behaviors. The more bracelets students collected, the closer they were to earning a class party. Franzen and Kamps also used punishment to modify student behavior on the playground. When students engaged in disruptive behaviors, teachers guided the students to the “retraining zone” where teachers reviewed the following: (a) the rule that was broken; (b) the inappropriate behavior the student engaged in; and (c) the appropriate behavior. The “retraining” method was instituted to ensure that the students were not only aware of the inappropriate behavior they engaged in, but to teach them the appropriate behavior and discourage the repeated occurrence of inappropriate behavior.

*Participatory Action Research (PAR)*

PAR (Israel, Eng, Shulz & Parker, 2005; Nastasi et. al, 2000) highlights and supports the importance of including key stakeholders in interventions. Action research includes community partners in the research process so that the research will truly benefit the participating communities (Israel et al., 2005). Working with school administrators, teachers, playground assistants, and community partners, Leff et al. (2003) designed and implemented their playground intervention. If key stakeholders (e.g., community, teachers, lunch aides) considered an intervention acceptable, the intervention is more likely to be implemented and sustained (Black & Krishnakumar, 1998; Leff et al., 2003; Nastasi et al., 2000).

*Positive Behavior Support (PBS)*

The Positive Behavior Support (PBS) literature is beginning to address the need for interventions that target disruptive behavior in unstructured school times. Sugai
(2007) claims that there are three primary reasons schools utilize PBS interventions. The first reason is the increase in positive outcomes when using an empirically validated intervention, and maintains that schools can create interventions tailored to their needs as well as accurately identifying the problem. Secondly, schools are embracing data collection and management practices that ease the ability to use the data. Lastly, schools that use data to inform their interventions have found the interventions to be more relevant and successful. Sugai and Horner (2000) assert that PBS highlights the importance of culturally appropriate interventions by carefully considering the population of those utilizing the interventions. The use of data to create effective interventions as well as the individualized planning processes that occur in PBS make it a systems approach that can be effective in many types of environments (Sugai & Horner, 2000).

The lunchtime and recess school-based interventions that were previously discussed had the stated purpose of decreasing disruptive behavior, while simultaneously increasing prosocial behavior. There is another body of literature that focuses on the school cafeteria to address student eating behaviors. Like Leff et al. (2003), Lewis et al. (2000), and Roderick et al. (1997), who all used lunch aides as naturally existing behavior change agents. Blom-Hoffman et al. (2004) described a Caught Eating Fruit and Vegetable (CEFV) intervention that also used lunch aides as agents of student behavior change and was grounded in social learning and ecological theories. In this study, lunch aides verbally praised students for eating their fruits and vegetables and gave them a fruit and vegetable cartoon sticker contingent upon consumption. An initial outcome evaluation demonstrated the CEFV intervention was effective in improving student eating behaviors during lunchtime.
Blom-Hoffman (2008) continued to refine the lunch aide-implemented CEFV intervention in two Boston Public Schools as part of the Athletes in Service 5-A-Day program. The multi-year, multi-component program, designed to increase students’ consumption of fruit and vegetables, was based on social learning and ecological theories and incorporated principles of PAR. The program was designed for children in kindergarten through third grades. Each day during lunchtime, lunch aides verbally praised the students for eating their fruits and vegetables, and gave them fruit and vegetable stickers when they saw the students eating these foods. During the course of the program, the lunch aides anecdotally reported that they believed the program not only improved students’ eating behaviors, but also improved their prosocial behaviors. One reason for this could be that the CEFV intervention increased levels of adult monitoring/supervision, and positive interactions between the students and the lunch aides. In lunchtime interventions where prosocial behavior is directly targeted, increased adult supervision and positive interactions between students and lunch aides have been shown to increase prosocial behaviors (Leff et al., 2003; Lewis et al., 2000; Roderick et al., 1997).

Purpose of Current Study

This study had a twofold purpose. One purpose was to explore if a lunchtime intervention that targets eating behaviors would have unintended yet important positive effects on students’ appropriate and disruptive social behaviors during lunch time. From a theoretical perspective, it is reasonable to assume that reinforcing eating fruits and vegetables (i.e., appropriate behaviors) might be incompatible with some disruptive behaviors, therefore leading to a decrease in these types of behaviors. Similarly, if students are reinforced for sitting in their seat, that behavior is incompatible with running
around the lunchroom. This strategy is called differential reinforcement of incompatible behavior (DRI; Cooper, Heron, & Howard, 2007).

Another purpose of this study focuses on the practicality of the school-based interventions, particularly in unstructured settings. Schools are unlikely to implement complex and time-consuming interventions. Therefore, if parsimonious interventions can be developed and implemented that successfully address both healthy eating habits and appropriate social behaviors, then that they might be more likely to be incorporated into the routines of the schools.

Blom-Hoffman (2008) reported anecdotal accounts from lunch aides that students’ prosocial behaviors were improving when the CEFV intervention was implemented. While the CEFV intervention (Blom-Hoffman, Kelleher, Power, & Leff, 2004; Blom-Hoffman, 2008) is a nutrition study, the components of the study mirror the main components of lunchtime studies. Clear and consistent rules, active adult supervision, and reinforcement are three main commonalities of studies in the lunchtime intervention literature, and are found in the CEFV intervention. The CEFV intervention and lunchtime studies both use social learning theory (Bandura, 1977) as a grounding theory as well. The purpose of this study was to explore if a lunchtime intervention that targets eating behaviors can have unintended yet important effects on students’ appropriate and disruptive social behaviors during lunch time. Additionally, this study included formal measurement of treatment integrity and student and lunch aide acceptability, areas that have been lacking in the lunchtime literature, as well as a using a participatory action research approach (Israel, Eng, Shulz & Parker, 2005; Nastasi et. al, 2000), which is considered a best practice when implementing an intervention in an urban population.
The sample was from a large public school district in an urban area where the majority of the student population included students from varied ethnic backgrounds. Using a within participants multiple treatment reversal design (i.e., kindergarten = ABACAC; first grade = ACABAC), the goals of both interventions was to increase prosocial behaviors and decrease disruptive behaviors. Building on the previous literature, this study used a single case design which allowed for measurement of the effects of the interventions, directly measuring student behavior using systematic direct behavior observations, and assessing treatment integrity and acceptability. The lead researcher measured treatment integrity throughout each intervention, and acceptability of both lunch aides and students was measured at the end of each intervention.

The Behavioral Assessment of Students in Lunchrooms (BASiL; Volpe, Hoffman & Parish, 2009) was used to measure the frequency of students’ prosocial and disruptive behavior during lunchtime. Appropriate social behavior (ASB) is defined as positive social interactions (verbal and nonverbal communication) with peers or adults such as participating in cooperative play, conversing, or helping another child. Disruptive behavior is defined as any instance where a child breaks a cafeteria rule (Appendix B). In addition to the BASiL, direct behavior ratings (DBR) were used to measure the frequency of lunch aides giving effective commands and/or verbal praise and giving out stickers. The acceptability of the lunch aides and students in regard to each intervention was measured using a modified Intervention Rating Profile (IRP; Witt & Martens, 1983) and a modified Children’s Intervention Rating Profile (CIRP; Witt & Martens, 1983).

In comparing the aforementioned interventions, the following research questions and hypotheses were examined:
Research Questions and Hypotheses

1. Do school-based lunchtime interventions that target student social behaviors directly and indirectly increase students’ pro-social behaviors and decrease students’ disruptive behavior during lunch?
   a. It was hypothesized that relative to baseline both the CEFV and the CBG school-based lunchtime interventions would increase students’ pro-social behaviors and decrease students’ disruptive behaviors because of direct instruction and clear expectations, active adult monitoring and supervision, and reinforcement through social praise and tangible reinforcers (e.g., stickers).
   b. Further, it was hypothesized that the CBG intervention would increase students’ prosocial behaviors and decrease students’ disruptive behaviors more than the CEFV intervention because the CBG intervention was directly targeting prosocial behaviors.

2. Will the lunch aides find the CEFV and the CBG interventions acceptable?
   a. Consistent with prior research (Blom-Hoffman, 2008) it was hypothesized that the lunch aides would find the CEFV intervention acceptable.
   b. Likewise, it was hypothesized that the lunch aides would find the CBG intervention acceptable.

3. Will the students find the CEFV and the CBG interventions acceptable?
   a. Consistent with prior research (Blom-Hoffman et al., 2004; Blom-Hoffman et al., 2008) it was hypothesized that students would find the CEFV intervention acceptable.
b. It was hypothesized that the students would find the CBG intervention acceptable.

4. Can the lunch aides implement the interventions as they were designed consistently?
   a. It was hypothesized that the lunch aides would implement the CBG intervention more consistently than the CEFV intervention because the lunch aides were instructed to focus on students’ behavior during lunch as part of their typical job responsibilities.

Chapter 2

Literature Review

Unstructured school time, defined as time during the school day when children are not engaged in direct academic instruction, creates opportunities for behavioral challenges to arise. In the cases of lunchtime and recess, some of the reasons for these challenges include the following: (a) large numbers of students with few adults (LaRowe, Tucker & McGuire, 1980), and (b) supervision by adults with little to no formal behavioral management or group management training (Blom-Hoffman, Kelleher, Power & Leff, 2004; Briggs, MacKay & Miller, 1995; Dowrick et al, 2001; Imich & Jeffries, 1989; Pellegrini, 1995; Pellegrini & Blatchford, 2002; Pellegrini & Smith, 1993; Roderick, Pitchford & Miller, 1997). The current study consisted of a comparison of two school-based lunchtime interventions to examine their effect on students’ prosocial and disruptive behavior. The purpose of this chapter is to review the literature that has described efforts to improve student behavior during lunchtime and recess. The current study was implemented in a school in a large, urban district. Therefore, literature that addresses stressors impacting urban schools will be discussed.
Unstructured School Time

In schools, unstructured school time consists of lunchtime, recess, transitions in hallways, and other occasions where students are not actively engaged in structured academic work. Benefits of these unstructured school times include psychological advantages, such as increased cognitive abilities and social skills development (Pellegrini & Bjorklund, 1996; Pellegrini & Davis, 1993). Although research exists that demonstrates these benefits of unstructured school time (Pellegrini, 1995; Pellegrini & Bjorklund, 1996; Pellegrini & Davis, 1993), the continued importance of such time in schools has been debated over the past two decades (Pellegrini, 1995; Pellegrini & Smith, 1993). In response to the movement in the U.S. education system toward keeping children academically competitive with children from other countries, unstructured school activities such as recess have been reduced or removed from some schools (Pellegrini, 1995).

Recess

Recess, which typically occurs outside, is described as a period when children play. Although recess is a typical activity for elementary children in the United States, adolescents and teenagers in middle school and high school are not usually afforded the same opportunities. The number of recess periods also varies from country to country. For example in England, an elementary child may have as many as three periods of recess throughout the day, whereas in the United States, elementary children may have one recess period, with varying lengths of time depending on the school (Pellegrini & Smith, 1993).

Cognitive and social benefits correlated with play at recess and other unstructured school activities have been studied. In a study by Pellegrini (1992), the recess play of
kindergarteners was observed. It was concluded that kindergarteners’ interactions with each other during recess were predictors of their either positive or negative achievement in the first grade. Therefore, when the kindergartners’ achievement was controlled for, the variance in the achievement of the first grade could be accounted for by using the playground behavior the children had engaged in as kindergarteners. It was concluded that recess behavior predicts later academic outcomes, and that the recess period provides respite from class work which in turn can improve a child’s attention span during academic school time (Pellegrini & Blatchford, 2002). In other recess studies conducted by Pellegrini (1992) and Pellegrini and Blatchford (2002), children’s ability to play games during the first half of the year was shown to be predictive of their social competence at the end of the school year. These studies also demonstrated a correlation between recess behavior and teacher perceptions of children (Pellegrini, 1992; Pellegrini & Blatchford, 2002).

School-based Lunchtime Interventions

The school-based lunchtime and playground intervention literature has addressed the need to protect unstructured school time because of its cognitive and social benefits by implementing interventions that help maximize children’s access to these benefits. By implementing interventions that reduce disruptive behavior and are grounded in theories that address the needs of urban and ethnically diverse populations, school-based lunchtime and playground interventions can meet multiple needs.

The following literature review focuses on school-based lunchtime and playground interventions in elementary schools. Theoretical orientations common to these studies include tenets of Bronfenbrenner’s developmental ecological theory (1979), Bandura’s social learning theory (1986), and participatory action research (Israel et al.,
Articles were gathered from sources such as Psych Info and Medline by using keywords such as “lunchtime,” “recess,” “behavior problems,” “nutrition,” “playground,” and “interventions.” An ancestral search was also conducted. Articles reviewed in this chapter included studies of interventions designed to change behavior during lunchtime or recess and involved elementary school students (kindergarten through fifth grade). Two bodies of literature were reviewed: (a) studies that focused on promoting students’ social behaviors during lunchtime and recess, and (2) studies that focused on improving students eating behaviors using behavioral interventions in school cafeterias.

**Lunchtime and Playground Interventions**

*School-Wide Raffle.* To reduce the amount of aggressive behavior exhibited by students in a Canadian elementary school, Roderick et al. (1997) implemented a school-based lunchtime and playground intervention. The sample included 80 students, aged five to seven years, and eight lunch aides. Lunch aides were instructed to hand out raffle tickets to the students during lunchtime and recess when they were not exhibiting the target behaviors of hitting and kicking. Children used the tickets for a raffle that featured a large prize, which was given out at the end of the marking period.

The raffle intervention, using a one group, pre-/post-test design, reduced the amount of hitting and kicking that the students engaged in. The authors noted that there was a 75% reduction in the amount of hitting, and a 47% reduction in the amount of kicking from pre-intervention to post-intervention. It was noted that while observing the implementation of the intervention, the lunch aides began to use the raffle tickets as rewards for other appropriate behavior, such as lining up quietly and using the bathroom quickly and quietly.
One limitation of the intervention in this study included a scenario where a child who was perceived as aggressive by other children could win the grand prize. If other children perceive that situation as unfair because it may appear that the child is being reinforced for the perceived negative behavior, other students may feel discouraged about the intervention. This scenario is possible due to the researchers’ use of independent group contingency method, which is less effective, but in school settings is often used due to its efficiency and ease (Skinner, Williams & Neddenriep, 2004). In addition, the question of whether the intervention would continue to be effective in the future in the absence of reinforcement also needs to be investigated. The research design is also a limitation of this study because it did not account for the previously discussed limitations.

*Lunchroom Behavior Game.* With the goal of reducing disruptive behavior of elementary school students during lunchtime and using a multiple baseline design, McCurdy, Lannie & Barnabas (2009) implemented a cafeteria-based intervention. 10 lunch aides and National School and Community Corps (NSCC) staff along with 615 students in grades kindergarten through sixth participated in this study. The 10 lunch aides and NSCC staff were all African-American women. Of the 615 students that participated, 79% were African-American, 19% were Hispanic, .8% Caucasian, .4% Native American, and .3% Asian. The authors reported that 86.9% of the student participants received free or reduced price lunch.

There were three lunch periods when approximately 200 students attended each period. Of the ten lunch staff, six of them were lunch aides who were primarily responsible for the lunch periods. Each lunch aide was responsible for 30 to 35 students per lunch period. The duties of the lunch aides included the following: (a) to monitor student behavior, (b) to aide with securing and opening student lunches, and (c) cleaning
lunch tables. The remaining four staff members were NSCC staff and supported the lunch aides in their duties.

The dependent variable in this study was disruptive behavior. McCurdy and colleagues defined disruptive behavior as one of the following: (a) out of seat, (b) play fighting, (c) physical contact with force, (d) throwing objects, and (e) screaming. Out of seat was defined as occurring when a student’s buttocks were not touching the seat after food have been placed on the table (and the student was not given permission to leave the table). Out of seat also included when a student was straddling the bench and when his/her legs were facing outward. Play fighting was defined as moving any body part in another student’s direction to simulate fighting without making physical contact. Physical contact with force was defined as physical contact between two or more students with the use force including pushing, hitting, kicking and punching. Throwing objects was defined as propelling an object through the air such as pencils, food, and balls. Screaming was defined as hearing a student’s voice above all others in the lunchroom.

Two observers recorded the frequency of the above behaviors. Observations ranged in length from 10 to 15 minutes and each observation was broken down into 15 second intervals. Groups of students sitting at rectangular tables were observed. Each rectangular table is made up of four smaller segments that are connected. One segment was observed during each observation interval. Behavior frequency was counted across each interval. Total frequency of behavioral occurrences was divided by the length of observation in minutes in order to determine the rate per minute of disruptive behavior. Observational data were collected for 20 sessions, with baseline data collected for 4 to 5 days per week for 4 weeks.
All lunch staff was trained in two phases. The first phase was used to establish rules, and the second phase was used to train in the implementation of the Lunchroom Behavior Game (LBG). In the first phase, all lunch staff was asked to list the least desirable behaviors that occur in the lunchroom as well as the most desirable behaviors that should occur in the lunchroom. This exercise resulted in a final list of seven lunchroom rules. The rules were: (a) sit four students to a bench, (b) use a “indoor” voice, (c) ask permission to leave your seat, (d) keep your hands, body, and objects to yourself, (e) follow staff directions the first time they are given, (f) keep your area clean, and (g) walk at all times. The list of rules was posted in several places around the lunchroom.

In the second phase of training, the lunch staff was trained in the procedures of the LBG. The training meeting was 90 minutes in length and included topics such as: (a) moving and scanning to monitor student behavior, (b) identifying undesirable behaviors and recording point losses, (c) totaling points for each class, (d) recording point scores and providing feedback to all students, and (e) selecting winning teams. The lunch staff participated in a role play session during the training meeting, and was coached during two lunch periods in regard to implementation procedures.

Students were introduced to the LBG by their teachers who were instructed to review the new rules in the classroom and in the lunchroom. Teachers introduced the LBG one week prior to implementation and were prompted to include role playing in helping the students understand the LBG. The LBG occurred during every lunch period, and began once 75% of the students had received their lunch and were seated at their table. Each observed occurrence of disruptive behavior resulted in the following procedures: (a) a lunch staff member blew the whistle to get the team’s attention, (b) identified the rule infraction and appropriate alternative behavior, and (c) made a tic mark
on the corresponding team’s point sheet. 5 minutes before the end of the lunch period, a
designated lunch staff member collected the recording sheets, tallied all tick marks, and
announced to the entire lunchroom each classroom’s points. At the end of the week, the
daily total and weekly total was announced. On the following Monday morning, the Dean
of Students announced the winning classroom from each lunch period. Winning
classrooms were those who did not exceed the criterion. Rewards included edible items,
small tangible items, and certificates for movies and classroom parties.

The LBG was found to immediately reduce disruptive behavior during each lunch
period. The authors also noted that the rate of disruptive behavior with the
implementation of the LBG remained below baseline levels. The first lunch period mean
of disruptive behavior per minute was 4.73 at baseline and 2.02 during the intervention.
The second lunch period mean of disruptive behavior per minute was 6.66 at baseline and
2.75 during the intervention. The third lunch period mean of disruptive behavior per
minute was 7.10 at baseline and 2.46 during the intervention. The authors also
administered the Children’s Intervention Rating Profile (CIRP) to the student participants
and the Intervention Rating Profile (IRP) to the lunch staff members in order to ascertain
the acceptability of the LBG. Kindergartners through second graders found the LBG to be
moderately acceptable and third through sixth graders found the LBG to be highly
acceptable. The lunch staff members also found the intervention to be highly acceptable.

A strength of this study includes working with lunch staff to target problem
behaviors and replacement prosocial behaviors. Both PAR (Nastasi et al., 2000) and PBS
(Sugai, 2000) support collaboration between researchers and key stakeholders. It is
important to address disruptive behavior and to introduce (or remind) the alternative
prosocial behavior to students.
Limitations of the study included the lack of elaboration upon how the criterion each week was chosen. The Dean of Students chose a criterion each week which determined the weekly classroom winners. The authors wrote that the Dean of Students chose classrooms with the lowest point levels. However, there are neither examples of the lowest point levels nor examples of a typical weekly range. Lastly, the authors noted that two of the teachers liked the LBG and added contingencies to the LBG in the classroom. Two teachers were offering extra incentives if their classrooms came back from lunch with no tick marks. While the authors did not believe that these contingencies affected the outcome, it is unknown how they may have affected the decreased rate of disruptive behavior.

Positive Behavior Support. Using School-wide Positive Behavior Support (SwPBS) principles, Franzen and Kamps (2008) implemented a playground intervention in an urban midwestern city. Participants included 180 elementary students (second to fourth graders) and 10 teachers. Ninety five percent of the students identified as minority students, and 96% of the students received free and/or reduced price lunch.

Employing a 30-minute training session, the authors introduced the entire school faculty to the playground intervention. This was followed by a training session for the 10 teacher participants with the following four goals: (a) creating recess-related lesson plans with outdoor recess workshops for students; (b) interacting with students 18-30 times in a given 15-minute period during recess; (c) rewarding students with bracelets when they engaged in appropriate behaviors; and (d) addressing inappropriate behaviors by reviewing rules and demonstrating appropriate replacement behaviors. Also, five school-wide rules were developed: (a) be kind; (b) be peaceful; (c) be respectful; (d) be responsible; and (e) be safe. In addition, teachers were requested to wear neck tag
reminders. Each reminder listed the school-wide rules as well as the key components to active supervision: (a) move; (b) look; and (c) interact.

Franzen and Kamps (2008) used a multiple baseline design and measured the following student behaviors: (a) general disruption, (b) inappropriate use of equipment, (c) physical aggression, (d) inappropriate physical contact, and (e) inappropriate verbal behaviors. Active adult supervision and teacher reprimands were measured as using a frequency measurement system. Initially, the intervention was implemented during the second grade recess period. After two months, the intervention was implemented during the third grade recess. The fourth grade recess was the last to receive the intervention.

Data were collected by observing a student for 5 minutes and recording whether or not the student engaged in the targeted behaviors. Overall, there was a decrease in target behaviors after the intervention was implemented. The second grade students averaged 15.59 target behaviors during the baseline phase (range = 2-19) and 5.95 target behaviors during the intervention phase (range = 4-9). The third grade students averaged 12.92 target behaviors during the baseline phase (range = 6-21) and 6.91 during the intervention phase (range = 2-12). The fourth grade students averaged 12.06 target behaviors (range = 6-21) during the baseline phase and 6.73 (range = 2-13) during the intervention phase. Additionally, the authors also noted that active adult supervision increased across all recess periods as a result of the intervention. The average frequency of the second grade teachers active adult supervision was 2.87 (range = 0 - 7) during the baseline phase and 5.20 active adult supervision (range = 1 - 8) during the intervention phase. The average frequency of the third grade teachers active adult supervision was 2.10 (range = 0 to 5) during the baseline phase and 6.00 active adult supervision (range = 2 to 14) during the intervention phase. The average frequency of the fourth grade
teachers’ active adult supervision was 1.89 (range = 0-5) during the baseline phase and 6.13 (range = 4-9) during the intervention phase.

Franzen and Kamps (2008) hypothesized that the increase in active adult supervision may have been due to the presence of the experimenters during data collection. In addition, the authors maintained that supervision may have occurred only by way of moving and looking (two out of the three definitions of active adult supervision) and both could have had a positive effect upon student behavior. While there was an increase in active adult supervision, the authors noted a decrease in interactions (one of the definitions of active adult supervision) between adults and students. This was explained by the authors as a flaw of the coding system. The coding system allowed for coding of “interactions” only and not for “moving” and “looking.” Therefore, there may have been more active adult supervision occurring than the data represent.

Strengths of this intervention study included having the teachers address students disruptive behaviors by confronting them (e.g., teacher informed student of rule that was broken and the inappropriate behavior he/she engaged in), teaching students appropriate replacement behaviors, and explicitly focusing on defining, increasing, and meaning active adult supervision. Unfortunately, the definitions of active adult supervision did not allow for reasonable conclusions to be made about its true effectiveness in this intervention. Limitations of this study included the lack of measurement of treatment integrity, and not collecting data on each recess supervisor.

Active Supervision. With the purpose of examining the effectiveness of three school wide strategies on problem solving during recess, Lewis, Colvin, and Sugai (2000) implemented a multiple baseline design study using active supervision and precorrection techniques. Participants included students and staff at an elementary school in a
suburban/rural neighborhood. The elementary school serviced 475 students, with the majority identifying as White, non-Hispanic. The largest minority group consisted of students who identified as Hispanic and made up less than 5% of the student population. Forty-four percent of the students qualified for free and/or reduced price lunch. There were 42 staff members consisting of 24 certified teachers, 18 classified staff, and the principal.

Lewis and colleagues (2000) reported that the school was involved, initially, in an ongoing project to improve student behavior in classrooms. Through the ongoing project, both the authors and adult participants found that recess was a time where student behavior could be improved. In this study, the authors implemented the intervention in three phases. In the first phase, teachers reviewed the school rules and the corresponding social skills necessary for the playground with the students. These rules and social skills were reviewed for one week prior to implementation of the precorrections and active supervision at recess. In the second phase, playground monitors reviewed the school rules and the expectations for active supervision with one member of the discipline team. Playground monitors were instructed to adhere to the following guidelines: (a) increase rates of reinforcing rule compliance, (b) increase error corrections for rule violation, and (c) increase physical movement and visual scanning of the playground.

The precorrection component of the intervention consisted of two steps. The first step was to identify the problem behaviors, and the second step consisted of identifying the replacement behaviors for the problem behaviors. Recess rules and expectations were printed. Some of the rules and expectations included the following: (a) keep hands and fee to yourself, (b) use equipment appropriately, and (c) use appropriate language. The active supervision component consisted of a fifteen minute meeting where the following
behaviors were highlighted: (a) avoid standing in one place, (b) scan all areas, and (c) interact with all students by greeting them and/or talking with them about topics of interest to them. Playground monitors were also asked to avoid unnecessary conversations with adults.

There were three recess periods with one playground monitor present at each period. Following seven days of baseline data, the intervention was implemented during the first recess period. After ten days of baseline data, the intervention was implemented in the second recess. Lastly, after sixteen days of baseline data, the intervention was implemented in the third recess period. Students were pre-corrected regarding rules and expectations before being released for recess by their teachers.

Data were collected by recording the frequency of the target behaviors each recess period. Data were converted into rates of behavior per minute. Lewis and colleagues reported that during unstructured activities, there was a decrease in problem behavior overall. Recess periods two and three showed a decreasing trend, while it was reported that recess period two had a change in trend. In regard to playground monitor behavior, the authors reported no effects on behavior as a result of the intervention.

One of the strengths of this study includes the conclusion that a decrease in disruptive behavior resulted after implementing a time and cost effective intervention. The authors were able to teach the teachers and lunch aides specific behavior management strategies (e.g., precorrection and active supervision) to support their desire to decrease disruptive behavior at recess.

There were several limitations of this study. Treatment integrity was not reported in this study. This is important because the authors reported that there were no effects on behavior as a result of the active supervision. However, it is unclear whether the lack of
effect is due to lack of active supervision or other reasons. In addition, there was no data collected regarding the error correction statements and positive feedback from the playground monitors. The authors hypothesized that there was a decrease in behavior therefore minimal error correction statements were needed and positive statements were increased. Unfortunately, there is no data to support that hypothesis. Lastly, the authors noted that reliable data collection was difficult due to large number of students at the recess periods. They cautioned that the results should be reviewed carefully in regard to inter-observer agreement, despite the fact that the agreement percentage was above minimal limits.

**MDA Project.** A lunchtime intervention designed to reduce disruptive behavior and ineffective behavior management skills in a Canadian primary school was implemented by Imich and Jeffries (1989). After the researchers surveyed the head teacher, the target of the intervention was to identify lunchtime practices that required changing, and to foster the behavior management skills of the midday assistants (MDAs), who are the Canadian counterparts to lunch aides.

The Canadian primary school where the intervention was implemented was also chosen as one of the schools in the district to receive additional support with behavior management by a behavioral support teacher. The researchers utilized the behavioral support teacher to observe the lunch period over a period of three weeks. The behavioral support teacher collected data by means of the following: (a) shadowing the MDAs; (b) shadowing a randomly selected student or group of students; and (c) interviewing the head teacher, MDAs, and students. From the observations by the behavioral support teacher, several factors were found to be hindering the effective behavior management by the MDAs of students during lunchtime: (a) students were able to leave and join other
lunch tables which often led to disagreements; (b) rules regarding leaving the lunch room were unclear, often ignored by students, and not often reinforced by the MDAs; (c) during inclement weather, MDAs were left few supplies to occupy the students’ time which often led to the students engaging in disruptive behavior; (d) MDAs responded to primarily disruptive behavior and rarely praised prosocial behavior; (e) when responding to disruptive behavior, MDAs engaged in arguments with the students; (f) MDAs reported that swearing and acts of disrespect were harder to manage than disruptive behavior and therefore went without consequences; and (g) children perceived MDAs as adults with little authority and implementing ineffective sanctions.

During a series of meetings, MDAs were trained in behavior management techniques and a cohesive behavior management system was put into place throughout the lunch periods. MDAs were trained to reward prosocial behavior (e.g., talking quietly, following the rules) with points to the entire class. The MDAs also reported the team points to the classroom teachers in order that they might also reinforce the students with verbal praise. MDAs were trained and encouraged to address disruptive behaviors (e.g., getting out of one’s seat without permission) by taking the child aside, speaking with him or her about the disruptive behavior, and discussing the opposite prosocial behavior. MDAs were also instructed to wear name badges so that the students would refer to them by their proper names and to re-establish respect for the MDAs.

A system with additional structure for addressing more serious disruptive incidents was designed in addition to the team points system. To deal with disruptive behavior (e.g., pushing in line, shouting, and talking back) a “time out” area was portioned off on the playground and supervised by an MDA. During “time out” students were expected to sit on a chair facing a blank wall and to do nothing for five minutes. If
students continued to engage in disruptive behavior such as swearing, bullying, or fighting, the MDAs gave students a yellow card. The names of the students with the yellow card were reported to the MDA supervisor, and the students needed to have the yellow card signed by the same MDA who had given it for five consecutive days, stating that the student was now engaging in prosocial behavior. If, after the five days, the student had received the MDA’s signature, the head-teacher signed off and the card was thrown away. If a student received three yellow cards, the student was given a red card and received a suspension from lunchtime for one week. A letter to the student’s parents was sent home, explaining the disruptive behavior and the consequences. The head teacher was available to meet with parents at their request.

Prior to implementation, the head teacher introduced the intervention in a school-wide assembly. The head teacher explained the rules and expectations to students and teachers and answered questions. This introduction was followed with a booster session one week later. The head teacher also met with the MDAs daily during the first 2 weeks of implementation, and then two times each marking term when the system became more familiar.

The implementation of this intervention was found to reduce the number of children being sent to the office for engaging in disruptive behavior in the lunchroom from 4-5 children per day to 3-5 children per week. The MDAs reported that they felt more respected by the school personnel, as well as by the children. MDAs maintained that they felt more confident in their position and their ability to deal with the children during lunchtime. It was reported by the authors that the children perceived the MDAs as adults in a position of authority and respect.
One of the strengths of this study, reported anecdotally, was the MDAs statement that they felt more respected by the students and more confident in their position. Previous research (Imich & Jeffries, 1989) supports the MDAs pre-intervention claim that they were not considered as authority figures by the students. Unfortunately, there were no formal acceptability measures to support the anecdotal claim.

Limitations of the study include the lack of elaboration upon the sample and other methodological details. For example, the authors did not report the demographics of the population (e.g., how many students were in the school). The measures that were used during the observation period and the way that the observer was trained to observe were not included in the study. Also, whether the students were able to trade in the points for other incentives was not reported in the study. Ultimately, it appears that the study design was the biggest limitation of the study. The researchers appeared to use a pretest-posttest design with self report methods (e.g., by the principal) to evaluate the effectiveness of the intervention instead of objective data with a control condition.

*Noise Reduction.* Using group contingency procedures, automatic sound monitoring equipment, and a traffic light, LaRowe et al. (1980) designed and implemented a lunchtime intervention with the purpose of reducing the level of noise made by elementary students during lunchtime. The sample included 487 children in kindergarten through fifth grades and four lunch monitors. When the lunch monitors were surveyed prior to baseline data collection, they reported that while students engaged in disruptive behaviors such as running, hitting, and kicking, the most difficult behavior to control was the excessive noise level. It was hypothesized that by implementing group reinforcement procedures the noise level would decrease. Also, it was hypothesized by
the authors that as a result of targeting noise reduction, reduction of other disruptive behaviors (e.g., running, hitting, pushing, and kicking) during lunchtime would occur.

The lunch period consisted of three lunches lasting 30 minutes each. In between each lunch was a 3-minute interval for transitions. The number of students per lunch period ranged from 20 to 200. Each lunch was monitored by two lunch monitors and one teacher. Lunch monitors duties included: (a) maintaining general order, (b) punishing those who exhibited inappropriate behavior, (c) and keeping the noise at an acceptable level.

Baseline data were collected by measuring the sound level with a sound level pressure meter in 30-second intervals. During this phase, the lunch monitors used a prearranged signal to indicate to the researchers when they thought the noise had reached an unacceptable level. The lunch monitors then agreed upon three sound levels which would activate the traffic light: (a) the green light would be on at all times when the sound was below 73 decibels, (b) the yellow light would go on when the sound reached 73 decibels, and (c) the red light and a bell would go on when the sound reached 76 decibels. The bell was a tape recording of a bell tone.

A multiple baseline design was used by LaRowe et al. (1980). The independent variables included the following: (a) feedback only, which involved the traffic light being on with no reinforcement; (b) feedback plus reinforcement, which involved the traffic light plus reinforcement given to classes that met the criterion; and (c) return to baseline (i.e., no traffic light or reinforcement). Reinforcement criterion was set, arbitrarily, at 13 or fewer instance of red light being on during lunchtime. The researchers reported that conditions were alternated using a pre-selected random order using 20 cards with
different conditions. The teachers would pick a different card every day, and a student from the classroom would give the card to one of the observers in the lunchroom.

One researcher recorded incidences when the red light and bell came on. Two other trained researchers counted the frequency of disruptive behaviors, which were described as running, hitting, pushing, and kicking. Each disruptive behavior had been operationally defined before data collection. Group contingency reinforcement procedures were implemented by classroom teachers. The classroom teachers read a prepared statement to each class regarding the lunchtime intervention, and then asked the class to choose reinforcements from the activities that were already in the classroom. The lunch monitors also reminded students of the new procedures during lunch. To earn the reinforcement, there had to be 13 or fewer incidences of the traffic light showing red during lunchtime. Neither the teachers nor the students were aware that pre-selected disruptive behaviors were also being measured.

Data were collected for 20 days. On each data collection day, the teachers received a card that informed them of the experimental condition for the day. A student from each class gave the researcher the card when he or she entered the lunchroom. The experimenter recorded on the same card whether or not the class had earned a reward and returned it to a student in the class, who gave it to the teacher. If the class had earned a reward, the teacher would reward them on that day.

It was concluded that the noise level in the lunchroom was substantially reduced by the group contingency techniques. The researchers calculated the number of red light instances per day. The overall mean of the daily red light instances were as follows: (a) baseline phase mean was 306.80, (b) feedback only phase mean was 103.87, (c) feedback
and reinforcement phase mean was 66.50, and (d) the return to baseline phase mean was 274.16.

The study design was one of the strengths of this intervention. Utilizing feedback from the lunch aides in regard to the acceptable noise levels as well as the randomization of the conditions appeared to

Unfortunately, there was no mention of the effect of the intervention on the disruptive behaviors that were discussed in one of the study hypotheses. Also, the activities used as reinforcements by the classroom teachers were not discussed. This would have been especially helpful because the feedback and reinforcement phase of the intervention was found to be the most effective.

*Edinbarnet Playground.* To reduce aggressive playground behavior in Scottish elementary students by increasing self esteem and self awareness, Briggs et al. (1995) designed and implemented a playground intervention. The sample included 12 elementary school children in fourth and fifth grades, 11 boys and 1 girl, who had been referred by their teachers due to high rates of aggressive behavior on the playground. Briggs and colleagues noted that the school was committed to school-wide approaches to increase positive behavior; however, the school reported that the students in the sample had not responded to the previous school-wide efforts.

The researchers were invited to design and implement this intervention after a meeting with school administrators where the increased rates of aggressive behaviors among students in this sample were discussed. Prior to the intervention described in this study, these students were confined to a smaller section of the playground area, as a punishment for aggression. This section of the playground was called the “OK Corral,” and the janitor was the supervisor.
The school staff nominated students to participate in the program, and the janitor, due to his supervision of the students in the “OK Corral,” chose from the nominated students. Consent was obtained from the parents of the 12 sample students, and an initial parent meeting was held.

The 12 students were split into two groups of six, and attended weekly sessions held in school for ten weeks. The sessions were led by a class teacher and a local social worker, and both were supervised by a psychologist. The sessions were divided into two sections: (a) discussion and feedback, and (b) games. During the first section, the students were led in discussions regarding recent playground behavior in addition to psycho-education around topics of self and feelings. The students received feedback about their behavior during these sessions, and weekly goals were set for each student. During the second section, students were lead in non-competitive games for the promotion of cooperative play skills and competitive games with a focus of teamwork. The researchers instituted the practice of games with the hypothesis that the students would learn skills and generalize those skills to the playground games.

Classroom teachers rated students’ classroom behavior before, during, and two months after the intervention in order to see if there were indirect effects. The sample students were rated daily and using a 5-point scale, ranging from very good to very bad. Due to inconsistencies in students’ attendance and other factors not described, the teacher ratings included only 7 of the 12 students. The lead teacher recorded the frequency of all playground incidents that had been reported to her one month prior to the intervention, and again one year post intervention. The playground incidents were recorded on a scale of niggle, serious, and very serious (niggle, a Scottish term, was not described by the
The sample students were interviewed by the researchers in order to ascertain their perceptions of the intervention.

The teachers of the sample students reported that the children had reduced their aggressive behavior on the playground, as well as in the classroom. It was also noted that the teachers perceived the children more positively after being part of the sample group, and that the teachers reported that the sample students perceived themselves more positively.

Strengths of this study included the two components of the group (i.e., the discussion and the games). Both components appeared to be well thought out as evidenced by their direct instruction and careful lesson planning. A teacher, social worker, and psychologist were involved, actively, in the group.

There are major limitations associated with this study that do not permit reasonable conclusions to be drawn. First, the lack of identified study design (e.g., AB) did not allow for data to be interpreted in a meaningful way. Second, the sample size was very small. With 12 children in the sample group, there is a question of whether this intervention has the ability to be replicated on a larger scale. Third, self-report data presents issues of potential bias. For example, the teachers that self reported were aware of the students’ participation in an intervention, and therefore might have perceived decreased disruptive behavior in those students (e.g. placebo effect). Fourth, the absence of information regarding intervention procedures and measurement tools is a large limitation. For example, weekly goals were made for the sample students, but who made them, what the goals were based upon, and what types of goals (e.g., behavioral, self-esteem exercises) were not reported. In addition, questions regarding whether the sample students had an opportunity to give feedback upon the goals that were set for them was
not reported. Also, the operational definitions of non-competitive and competitive games were not included. Examples of those games, how they were chosen, and who led them would have been helpful. In regard to the measures, the classroom teachers’ definition of what types of behavior corresponded to each of the ratings (very good to very bad) on the 5-point scale was not reported. The lead teacher’s ratings of playground incidents also did not give examples of the difference of a playground incident rated under niggle and a playground incident rated under very serious. Also, it was unclear why the intervention was designed for reducing aggressive behaviors in 12 students, but the lead teacher was recording the frequency of playground incidents for the whole school.

**P.L.A.Y.S.** - Using a participatory action research methodology, Leff et al. (2003) implemented a playground intervention to reduce aggressive behavior. The sample included an elementary school consisting of 750 students in kindergarten through fourth grades. Of the 750 students, 70% were African American, 20% were Asian American, and 10% were Caucasian. Nearly 90% of the students qualified for free or reduced-price lunch.

The researchers met with school personnel (i.e., the school counselor, physical education teacher, and supervisor of the playground assistants) to survey them regarding problems during recess. Together, the researchers and school personnel agreed that the researchers would observe the lunch and recess period, conduct meetings with school personnel, and survey fourth and fifth grade students regarding their experience of the lunch and recess period. The researchers observed, conducted meetings, and surveyed fourth and fifth graders for three months. A questionnaire was also administered to the school personnel and the playground assistants regarding the strengths and drawbacks of the current recess program.
After the researchers presented their findings, the school personnel, playground assistants, and researchers came together to design and implement a playground intervention that would address high levels of aggression, low levels of cooperative play, and low levels of play between students of different racial backgrounds. The playground at the elementary school was split into five subsections where five different games were played. Criteria for games chosen to be played on the playground include the following: (a) age-appropriate, (b) gender-appropriate, (c) easy to set up, and (d) required few financial resources. Some of the games chosen were hopscotch, hot potato, and jump rope. The researchers and school personnel agreed that the students would be able to move freely between the sections of the playground. The playground assistants were able to choose which games they wished to supervise, with the aim of matching the playground assistants with games that they were familiar with.

The new playground intervention was introduced to students and teachers by way of a school-wide assembly. The principal and physical education teacher led the assembly by explaining the new playground set-up, and by adding an interactive portion of the assembly where the students could practice the games with adult supervision.

When developing an observation coding scheme, the researchers identified definitions of playground behaviors from previous research and shared them with the school personnel. The researchers, school personnel, and playground assistants reviewed the behaviors and decided on operational definitions. In addition, the researchers, school personnel, and playground assistants discussed the operational definitions on the playground during recess to ensure that everyone was aware of what the behavior looked like in accordance with the definitions. A codebook was developed which included four general classes of behaviors: (a) play behaviors (e.g., cooperative play and rough and
tumble play), (b) aggressive behaviors (e.g., physical, relational, and verbal), (c) intercultural interactions, and (d) contextual factors (e.g., presence of an organized game and active adult supervision).

Five observers from a local university were trained in the observation coding scheme. Observations were conducted at two recess periods on 14 separate days over a six-week period. Students were observed at 2-minute observation intervals with a 10-second recording interval where the presence or absence of a behavior had to be noted. Observers randomly selected students to observe using a systematic procedure. The integrity of the implementation of the intervention and the relationship between the intervention and student behavior was examined. A continuous baseline probe design was used to examine the relationship between organized games, active adult supervision, and student behavior.

The recess intervention was associated with a reduction in children’s aggressive behaviors. The intervention was also associated with children interacting more with each another, and increased active adult supervision. Also an increase in intercultural interactions was observed. While a significant relationship was reported between the level of aggression and active adult supervision, the level of significance was reported as low.

There were several strengths in this intervention including the following: (a) study design; (b) the continuous meetings with staff regarding target behaviors; (c) feedback regarding operational definitions; and (d) the baseline data collection period (i.e., three months). While one of the strengths, a limitation of this study was the length of time that baseline data was collected. The ability of this study to be replicated appears less than
other similar studies due to the amount of time invested by both researchers and school staff.

School-Based Lunchtime Summary. When considered together, the lunchtime/playground literature demonstrated that student prosocial behavior can be increased by adequate and direct behavior training for lunch aides and clear and consistent presentation of the rules. The combination of lunch aide training and clear and consistent presentation of rules, in turn, appeared to increase the frequency of active adult supervision (Franzen & Kamps, 2008; Imich & Jeffries, 1989; Leff et al., 2003; Lewis, Colvin & Sugai, 2000; McCurdy, Lannie & Barnabas, 2009; Roderick et al., 1997) and precorrection (Franzen & Kamps, 2008; Lewis, Colvin & Sugai, 2000; McCurdy, Lannie & Barnabas, 2009). Also, most of the literature noted anecdotally that the lunch aides reported acceptability of the interventions. Only one study assessed student acceptability of the intervention (McCurdy, Lannie & Barnabas, 2009). Future research in this area should address more formal measures of lunch aide and student acceptability. Lastly, treatment integrity was measured in only three studies (Franzen & Kamps, 2008; Leff et al., 2003; McCurdy, Lannie & Barnabas, 2009). This is also an area where the current intervention research is lacking.

The purpose of the current study was to compare the effects of two interventions on students’ lunchtime behaviors. Both interventions utilized lunch aides as behavior change agents. The goal of both interventions was to increase students’ pro-social behaviors and to decrease their disruptive behaviors by directly and indirectly targeting student lunchtime behavior using active adult supervision and reinforcement. Building on the previous literature, this study used a single case design, quantified student behavior
using systematic direct behavior observations, and assessed treatment integrity and acceptability.

Nutrition Programs

While not directly addressing the reduction of disruptive behavior, school-based interventions promoting healthy eating during lunchtime are also attempting to change behavior (e.g., eating) by using behavior change agents (e.g., lunch aides) and grounding interventions in similar theories and models of research (social learning theory and participatory action research). The following studies include nutrition programs that meet the above criteria.

Caught Eating Fruit and Vegetable Intervention (CEFV). Using a lunchtime nutrition intervention, which was a component of a larger study that also included nutrition education, Blom-Hoffman et al. (2004) included 91 children in six kindergarten and first grade classrooms in an urban elementary school in the Northeastern United States. All of the participants identified as African American, and 55% were girls.

During the baseline phase, the lead researchers and the lunch aides met to discuss the importance encouraging the students to eat more fruits and vegetables and how this could be accomplished through a lunchtime intervention. The meetings were also a time when the lunch aides could express their opinions regarding the feasibility of the intervention and provide input into the design of the intervention. After the meetings, lunch aides were given the intervention steps in writing. The following day, the lead researchers modeled the intervention in the participants’ classrooms, with the permission of the classroom assistants. The lead researchers also returned the next week to observe the lunch aides implementing the intervention, and then provided feedback and more modeling.
During lunchtime, all participants ate lunch in their respective classrooms, and were supervised by lunch aides. Lunch aides were asked to do the following: (a) ask the students to identify the fruits and vegetables in their lunch, and (b) provide those students with verbal praise and fruit and vegetable stickers after the students had eaten their fruits and vegetables. Fruit and vegetable stickers were constructed from fruit and vegetable clip art and were printed onto mailing labels.

Using a pretest post-test design, Blom-Hoffman et al. (2004) randomly assigned the six classrooms in the study to either the experimental group (EXP) or a waitlist control group (WLC). The authors noted that the groups were similar in participant demographics such as socioeconomic status, ethnic background, and grade. There were three phases in the study which included the following: (a) phase 1 (pretest for both EXP and WLC), (b) phase 2 (post-test for EXP and pretest for WLC), and (c) phase 3 (follow-up for EXP and post-test for WLC).

Fruit and vegetable consumption was assessed using visual estimates of student plate waste. There were no significant differences between the EXP and WLC participants’ consumption of fruits and vegetables at pretest or at post test. When the intervention was replicated at time 3 with the WLC group, the authors noted that these students consumed more vegetables after the intervention than before the intervention. This result may have occurred due to the observed increased intervention integrity (e.g., increased usage of stickers as reinforcers) in the WLC group in comparison to the EXP group. Lunch aides were also administered an acceptability questionnaire, and they rated the intervention as highly acceptable.

This study was limited in that all of the classrooms were from one school. Also, implementation data indicated the lunchtime intervention was implemented with variable
integrity. Study strengths included information pertaining to participant demographics, a
detailed description of the lunch aide training, and inclusion of implementation integrity
data which were subsequently linked to child outcomes.

_Peer Modeling and Rewards Project._ Using peer modeling and rewards in order
to increase consumption of fruits and vegetables, Horne et al. (2004) implemented a
lunchtime intervention in two urban London primary schools. 749 children, ages 5
through 11 years, participated in an intervention that included watching video adventures
of characters that enjoyed eating fruits and vegetables. In addition, the participants
received rewards for consuming fruits and vegetables during school lunch.

Two London primary schools were chosen by the authors based upon their similar
characteristics in terms of location, proportion of students receiving free and/or reduced
price lunch, and percentage of students identifying as ethnic minorities. One school
served as an experimental school and one served as a control.

The materials used in this study included six 6-minute videotapes of characters
called the “Food Dudes.” Students were rewarded for the hand stamps they received
during lunchtime due to their fruit and/or vegetable consumption. Rewards included
“Food Dudes” items such as pens, pencils, pencil cases, rulers, certificates, and stickers.
In addition to the videotapes, two “homepacks” consisting of information for parents and
charts for participants to record their fruit and vegetable intake were sent home. In the
experimental school, the intervention began with a 12 day baseline phase. During the
baseline phase, all participants in the intervention entered the dining hall and received
badges with their name and participant number. Participants were given a colored sticker
if they choose cooked vegetables. The presence of a core or peel was used to determine
that they had chosen a fruit. Participants aged 5 to 7 years old also were given a midmorning snack of whole fruit.

During the 16 day intervention phase (experimental school), the classroom teacher read a “Food Dudes” letter aloud, and on at least two out of three days showed a “Food Dudes” videotape. During lunchtime, for the first four days of the intervention phase, participants received a red hand stamp for eating half or more of their fruit and/or a green hand stamp for eating half or more of their vegetable. Teachers denoted the participants with the hand stamps and give out rewards. The following three days, red and green hand stamps were given only if all the fruits and/or vegetables had been eaten. The lunchtime aides reported that eating all vegetable and fruit servings appeared difficult for the participants, therefore, the authors lowered the criterion to eating half or more of the fruits and vegetables during days 8 through 16 of the intervention. The determination of rewards was based on a schedule listing each day and whether or not it had been determined a “fruit day” or a “vegetable day.” Rewards were determined based upon a schedule listing on each day of the intervention. Through the schedule listing, the authors had previously chosen whether participants would receive rewards for fruit and or vegetable consumption. For example, on fruit days, participants received a prize if they had a fruit hand stamp and/or collectable stickers if, in addition, they received a vegetable hand stamp. If it was a vegetable day, participants received a prize and/or collectable stickers if, in addition, they received a fruit hand stamp.

During the maintenance phase (4 months), no “Food Dudes” videos were shown, but the letters continued to be read at the start of every week. The last homepack was delivered to the participants and their families. Also, a wall chart was installed in the classrooms. During lunchtime, participants who were caught eating fruits and vegetables
would be given a square to put on the wall chart. Once the classroom wall chart was full, every participant in the class received a Food Dudes prize.

In the control school, the participants’ consumption of vegetables appeared lower at baseline 2 than at baseline 1. In regard to vegetable consumption, the authors noted a significant decline from baseline 1 to follow-up and baseline 2 and follow-up. In the experimental school, the participants’ who ate the lowest percentage during baseline (e.g., 0-19%) demonstrated the largest increase in consumption during the intervention and at the follow up phase. The fruit consumption of the participants ranged from 4% at baseline to 68% during the intervention, and 48% at follow up phase.

There were significant declines in consumption reported. However, participants who had the lowest consumption levels at baseline increased their consumption of fruits and vegetables. The authors also maintained that the successful implementation of this intervention in an urban school environment with participants who are subject to urban stressors such as high levels of poverty and lowered quality of life in comparison to their suburban peers, is another positive outcome. Some limitations of the study included the lack of demographics describing the participants, and the lack of description of the training procedures of the lunch aides.

**Peer Modeling and Rewards Project 2.** This study was a replication study of the original study by Horne et al. (2004). In this study, Lowe, Horne, Tapper, Bowdery, and Egerton (2004) implemented the intervention in three schools in England. These schools were selected by either their health promotion or education authority based upon their either higher or lower than average free and/or reduced price lunch entitlement. The authors reported that the participants’ predominately identified as of Caucasian decent.
The schools in the study began the intervention with an 8 to 12 day baseline phase, which was followed with a 16 day intervention phase. There were three components of the intervention, snacktime, lunchtime, and home component. The materials used in this study continued to include six 6-minute videotapes of characters called the “Food Dudes.” Rewards for the participants were the same as those used in the previous study. This review will focus solely on the lunchtime component because of its particular relevance to this proposed dissertation.

During lunchtime, participants who received school lunch received either a whole fruit or cooked vegetable. Visual estimates of the quantity of fruits and vegetables that the participants consumed were rated on a five-point scale by trained raters. Inter-rater measures were taken at 40% of the lunches and ranged in agreement from .86 to .98 using Cohen’s kappa. The authors reported that during the baseline and post intervention phases in regard to fruit consumption, schools 1 and 2 averaged 51% and 85% respectively. School 3 averaged 69% in the baseline phase, and 73% respectively. During the baseline and post intervention phases for vegetable consumption, schools 1 and 2 averaged 67% consumption and 68% consumption respectively. In comparison, school 3 averaged 48% consumption and 44% consumption in the baseline and post-intervention phases, respectively. The authors concluded that the intervention was associated with a substantial increase in consumption of both fruits and vegetables in a short amount of time.

Limitations of the study include the number of participants in the study as well as the number of participants who identified as Caucasian in comparison to the number of minority participants. In addition, the identity and training of the independent raters were not described in the study.
Kids Choice. Using first, second, and fourth grade students in an elementary school, Hendy, Williams & Camise (2005) developed an intervention to increase fruit and vegetable consumption as well as developing fruit and vegetable preference ratings. The authors reported that they were also targeting high levels of acceptability in the school staff and parents. Unlike the multi-component program described above, acceptability and consumption were targeted by focusing solely upon changes in the procedures during school lunchtime. The intervention included a brief parent questionnaire regarding demographics and parents ratings of the students’ fruit and vegetable preferences. The second part of the intervention included lunch observations measuring fruit and vegetable consumption. Lastly, the students were interviewed regarding their fruit and vegetable preferences.

In a rural Pennsylvania elementary school, all the students in the first, second, and fourth grades (n=346) participated in the intervention. More than 95% of the participants identified as Caucasian, and the mean age of the participants was 8 years old. The authors reported that they chose the first, second, and fourth grades based upon their seating arrangement during lunchtime. Those grades sat together at long tables placed close together, making observations and interviews (e.g., intervention implementation) least disruptive.

The parent questionnaire consisted of demographic questions and fruit and vegetable preferences of the participants. The mother of the participants was asked to fill out the questionnaire, unless the father was the primary caretaker. The authors reported that this was requested due to previous research concluding that the mother is the adult most concerned with the nutrition of the family as well as the mother is the most accurate adult in the family regarding children’s behavior patterns. The questionnaire listed 16
commonly available fruits and vegetables including eight fruits and eight vegetables. The foods were selected from those that were served for school lunch over the previous three months as well as an additional six fresh foods that would be added during the implementation phase. The participant interviews were conducted during the baseline phase and the follow-up phase. Participants were interviewed by researchers other than those who were observing the lunches. Interviewers were not aware of the group that the participants were assigned to (e.g., token reinforcement for fruits or vegetables). Interviewers were given a script to read the participants, stating the interviewer’s name and telling the participant that he/she would be interviewed about the fruits and vegetables he/she liked. Interviewers showed the participants a scale of cartoon faces, a sad face, a neutral face, and a happy face, so that the participants could articulate their preferences. The interviewers practiced using the faces with the participants prior to the interviews.

The 10 observers were trained for two weeks so that they would be able to recognize if the participants’ fruits and/or vegetables had been consumed. The inter-rater reliability of the observers was calculated by simulating lunch periods using 12 adult volunteers. The volunteers were given fruits and vegetables on school lunch trays and observed regarding their amount of consumption. The inter-rater reliability score was .92 for fruit consumption and .94 for vegetable consumption.

Lunch observations were conducted three days a week by the observers. They observed six meals during the baseline phase and 18 meals during the token reinforcement phase. Each observer was randomly assigned to a table with 8 to 12 participants during the 30 minute lunch period that each grade had. Observers reported whether the participants consumed at least 1/8 of the fruit and/or vegetable in their lunch.
One fruit and one vegetable were added during the baseline and intervention phase in order to give the participants more choices. The observers were introduced to the participants by pre-selected boy and girl peers who were chosen because they were considered popular and outgoing. Parental consent for the peers to serve in those roles was obtained. Three trial observation lunches were conducted before the baseline phase in order to allow the participants to become accustomed with the observers presence.

After the baseline observations, the participants in half the classrooms in each grade were randomly assigned to obtain token reinforcements for either fruit or vegetable consumption. Four classrooms from each grade were chosen to be observed during lunchtime in order to ensure that the observers were not observing more than 12 participants at a time. In total, 188 participants were observed during lunchtime with criteria of having been observed for at least four meals during the baseline phase and at least 12 meals during the intervention phase (e.g., token reinforcement phase). During the baseline phase, the 10 observers began observations when the participant sat down at the table with his/her tray and ended observations when the participant got up from the table with his/her tray to clean up. To account for occasional absences, the first four observed meals during which a participant ate 1/8 of the fruit and/or were used in statistical analyses.

During the intervention phase, participants from half the classes in each grade were randomly assigned to receive token reinforcement conditions for 18 meals. The token reinforcement conditions were explained to the participants by the peers who introduced the Penn State observers. Participants were informed that each day they ate fruits or vegetables during lunchtime, the observers would punch a hole in their nametag.
Participants who had three holes punched in their nametag at the end of the week could trade them in for a prize of their choice on the weekly reward day.

On reward day, participants could trade in their hole punched nametag for items such as pencils, gel pens, notebooks, clay, playing cards, collectable cards, decals, toy gliders, and plastic banks. Two researchers observed the rewards table, where four or five rewards were offered weekly. After the participants chose their prize, the researchers would cancel out their punched holes.

229 participants’ families consented to the parent questionnaire. The two week follow-up questionnaire included 159 families whose students had been observed during eight meals during the intervention and who had been present for the baseline interviews. At the seven month follow-up, 98 participants’ families, originally from the 158 two week follow-up questionnaire pool, consented to their students participating in the last follow-up interview.

The results indicated that participants in higher grades consumed more fruits and vegetables. The researchers concluded that the multi-component intervention was effective in increasing fruit and vegetable consumption for participants.

The nutrition program literature focuses upon changing the eating behaviors of school-age children. Similar to the proposed study, the aforementioned interventions use tangible rewards and verbal praise to increase targeted behaviors. While one intervention (CEFV; Blom-Hoffman et al., 2004) measured lunch aide acceptability, none of the previously reviewed studies measured both lunch aide and student acceptability. The proposed study will formally measure the acceptability of both lunch aides and students.
Ecological Factors.

The previously reviewed articles described the range of lunchtime interventions that have been implemented. The behaviors targeted in those interventions ranged from reducing noise to increasing fruit and vegetable consumption. It is also important to address the ecological factors that may impact the implementations of the lunchtime interventions. In the proposed study, the interventions will be implemented in two schools in a large urban school district. Ecological factors that are unique to children and schools in urban areas are addressed below.

Children in urban schools

No Child Left Behind (NCLB; PL107-110), is legislation which attempts to ensure that all children receive a high quality education (U.S. Dept of Education, 2001) by means of three key provisions. The first provision includes meeting the needs of children in schools considered to be in high poverty, children with limited English proficiency, children with disabilities, and children deemed to be neglected or delinquent. The second provision is closing the achievement gap between minority and non-minority children, disadvantaged and non-disadvantaged children, and high and low performing children. The last provision maintains that NCLB will hold schools and states accountable for turning around low performing schools and providing students at low performing schools alternatives that will enable them to obtain high quality educations.

Urban areas offer many opportunities for cultural and educational. Unfortunately, urban areas can also be the location of families and children who are exposed to stressors such as poverty, deficient housing, limited resources, and higher than average crime rates. Due to such exposure to the aforementioned stressors for many urban children tend to meet the qualifications for programming and support services specific to NCLB legislation.
Many upper-class families who reside in urban areas do not experience the aforementioned stressors as much as many low-income families, thereby widening the gap between classes (Black & Krishnakumar, 1998).

A comparison of European American and African-American children, aged zero to three showed that approximately 25% of European American children have lived in poor families in contrast with 67% of African-American children. African American children are more likely to live in poor, and often urban, neighborhoods (Duncan, Brooks-Gunn & Klebanov, 1994). Higher affluent neighborhoods, higher-quality schools, and less fluctuation in community members have lower rates of adolescent aggressive behavior (Kowaleski-Jones, 2000). Therefore, urban children who live in poverty are more likely to be exposed to violence and aggressive behavior.

African American children in urban schools

African Americans disproportionately represent the majority of urban school children (Wandersman & Nation, 2005). Being an African American youth has been shown to be related to increased adolescent distress (Wickrama, Noh & Bryant, 2005). Increased adolescent distress was related to variables such as family and community characteristics (e.g., family poverty, family size, community poverty, and community ethnic composition). Adolescent distress was also affected by the interactions between family and community variables. Community poverty was associated with a significant increase in adolescent distress in African Americans. However, a higher composition (the percentage of minorities in the community) was found to have a beneficial influence on the mental health of African American adolescents.
Interventions for Children in Urban Schools

The engagement of local community members using perspectives such as the ecological model, where the views of people with different backgrounds are considered necessary in designing an effective intervention, is especially important in efforts to positively impact the lives of children in urban areas. School-based interventions may be one of the most effective methods with which to engage community members and impact children because of the access to large groups of children and families that the school environment provides (Black & Krishnakumar, 1998). Schools are venues with which to reach a captive child audience and engage families and community partners in meaningful relationships and interventions.

Researchers such as Dowrick and colleagues (2001) have commented the complicated logistics of conducting research and establishing interventions in urban communities. There has been a call for more participation during all phases of an intervention (e.g., design, implementation, and evaluation) from those who are to benefit from the intervention (Black & Krishnakumar, 1998). Dowrick and colleagues proposed the following six tenets to inform and guide interventions: (a) identifying the needs and strengths of the community with the community, (b) establishing a place in the system, (c) building a working relationship, (d) capacity building with community partners, (e) positive visioning, and (f) data-based evaluation.

By grounding interventions in theories (e.g., social cognitive; Bandura, 1977; operant conditioning; Skinner, 1974; and developmental ecological; Bronfenbrenner, ) that have been demonstrated to be the most effective in addressing the needs of urban and ethnically diverse populations (Black & Krishnakumar, 1998; Dowrick et al., 2000; Leff et al., 2003, Wickrama et al., 2005), the school-based lunchtime and playground
intervention literature has begun to meet the needs of this population (Leff et al., 2004; Roderick et al., 1997) through the implementation of interventions during unstructured school time.

There is a small body of literature that addresses the need for school-based interventions that take in account the unique needs of urban and ethnically diverse schools (Franzen & Kamps, 2008; Leff et al., 2004; McCurdy et al., 2009; Roderick et al., 1997). When adding to those interventions, factors such as formal measures for lunch aide and student acceptability as well as treatment integrity, the aforementioned body of literature grows smaller (Franzen & Kamps, 2008; Leff et al., 2003; McCurdy, Lannie & Barnabas, 2009). This study will attempt to address all those factors by comparing two interventions that also are time and cost effective.

The Current Study

In this study, a Caught Being Good intervention (CBG) by Roderick et al. (1997) and the Caught Eating Fruit and Vegetable intervention (CEFV) developed by Blom-Hoffman, Kelleher, Power, and Leff (2004) and Blom-Hoffman (2008) were compared to assess their effect on student prosocial and disruptive behavior. The first intervention (CBG) was designed to target students’ pro-social behaviors directly, and the second intervention (CEFV) was designed to target students’ pro-social behaviors indirectly. An intervention that indirectly targets pro-social behaviors was chosen in response to the anecdotal accounts of lunch aides reporting increased pro-social behaviors when implementing the CEFV intervention (Blom-Hoffman, 2008). Treatment integrity was measured throughout each intervention, and intervention acceptability from the perspective of both lunch aides and students was measured at the end of each intervention.
CHAPTER 3

Methods

Setting

This study was conducted in an elementary school (grades kindergarten through five) in a large, urban district. Approximately 700 students attended the school. The study took place during lunchtime in the cafeteria. Lunch periods were 45 minutes long, with students eating during the first 20 minutes. Paraprofessional lunch aides supervise the entire lunch period. Five to six lunch aides are assigned to 200 students during each lunch period (student: lunch aide ratio ~ 1:40).

Participants

Participants included children in kindergarten (N = 5) and first grade (N = 5) classrooms. According to published school data, 95% of the students were identified as minorities: 49% were African American and 46% were Hispanic. This school had a universal free breakfast and lunch program. Participants in the study also included the lunch aides, who were all women. Lunch aides were supervised by the school’s director of instruction and received on-the-job training regarding the lunchtime routine and disciplinary procedures at the school. They also received pre-service and in-service training related only to maintaining sanitary eating conditions in the cafeteria. Although they received no training in behavior management, one of the primary responsibilities of lunch aides was managing students’ behaviors at lunch and recess.

Study Design

Within each group of participants, multiple treatment reversal design (i.e., kindergarten = ABACAC; first grade = ACABAC) was implemented to examine the effects of two similar lunchtime interventions on students’ disruptive and appropriate
social behaviors. The two interventions were Caught Being Good (CBG) and Caught Eating Fruit and Vegetables (CEFV). The advantages of using a reversal design included the ability to demonstrate a relationship (or lack thereof) between independent and dependent variables as well as the ability to quantify behavior change due to treatment conditions over baseline levels (Kazdin, 1984). The multiple treatment reversal design was chosen because it allowed for a temporary withdrawal of treatment conditions, quick comparison of treatments, and minimal sequencing effects (Barlow & Hersen, 1984; Cooper, Heron, & Heward, 2007).

The reversal design consisted of six phases: three intervention phases and three baseline phases. Baseline was referred to as condition “A,” Caught Eating Fruit and Vegetables (CEFV) was referred to as condition “B,” and Caught Being Good (CBG) was referred to as condition “C.” A reversal to baseline was implemented between each intervention phase and the study concluded with an intervention phase that was chosen by the lunch monitors (CEFV or CBG). In kindergarten the study design was ABACAC and in first grade the design was ACABAC.

**Measures**

Two measures were used to assess the hypothesized outcomes: (1) an adapted version of the Behavioral Assessment of Students in Lunchrooms (BASiL; Volpe, Hoffman, & Parish, 2009) was used to assess students’ appropriate social behavior (ASB) and disruptive behavior (DB). The second measure was a Direct Behavior Rating (DBR) scale designed to assess lunch monitor behaviors across the study, including using effective commands and verbal praise and giving out stickers.

*Behavioral Assessment of Students in Lunchrooms (BASiL).* The Behavioral Assessment of Students in Lunchrooms (BASiL; Volpe et al., 2009; Appendix A) was
used to assess student behaviors during 15-second intervals across 20-minute observation sessions. Appropriate social behavior (ASB) is defined as positive social interactions (verbal and nonverbal communication) with peers or adults such as participating in cooperative play, conversing, or helping another child. Disruptive behavior is defined as any instance where a child breaks a cafeteria rule (Appendix B). Operational definitions for ASB and DB are included in Appendix B. One aspect of measuring disruptive behavior was determining if cafeteria rules were being broken. Cafeteria rules were clarified with the lunch monitors at the outset of the study and were incorporated into the operational definition of DB. Cafeteria rules included the following: (a) no hitting/fighting, (b) no running, and (c) ask permission to leave the cafeteria. Momentary time sampling was used to measure ASB because it is a high rate behavior; partial interval time sampling was used to assess DB.

Interobserver agreement checks were calculated across 20% of the student observations. Kappa (Cohen, 1960; Watkins & Pacheco, 2000) was calculated for appropriate social behavior (ASB) and disruptive behavior (DB) separately. Cohen (1960) described the levels of agreement as follows: (a) 0–0.2 is slight agreement, (b) 0.2–0.4 is fair agreement, (c) 0.4–0.6 is moderate agreement, (d) 0.6–0.8 is substantial agreement, and (e) 0.8 and greater is a very high level of agreement. Kappa for ASB was calculated as .87, a very high level of agreement. Kappa for DB was calculated as .81, also a very high level of agreement.

**Direct Behavior Ratings (DBR).** The DBR is a tool that blends a behavior rating scale with systematic direct observation by using a numeric rating scale and rating the behaviors in a specified and short amount of time (Chafouleas, Christ, Riley-Tillman, Briesch, & Chanese, 2007). DBR provide a more accurate calculation of the frequency
of the target behaviors in comparison to rating scales (Riley-Tillman, Chafouleas, & Briesch, 2007). DBR in this study were used throughout baseline and intervention conditions, at each lunch period, to assess the extent to which lunch aides gave effective commands and/or verbal praise and gave out stickers to students (Appendices C and D), and the extent to which students were out of their seats and walking around the lunchroom without permission (Appendix E). The latter behavior was measured using the DBR because the appropriate behavior of sitting in one’s seat was removed from the operational definition of ASB to avoid over-estimation problems. The DBR in this study used a 5-point Likert-type scale with descriptors to assess the frequency of the behavior. The 5-point Likert-type scale ranged from 0 to 4 with the following descriptors: (a) 0 = the target behavior was not observed; (b) 1 = lunch aide engaged in the target behavior seldom during the observation period (1-4 times); (c) 2 = lunch aide engaged in the target behavior some during the observation period (5-9 times); (d) 3 = lunch aide engaged in the target behavior often (10-14 times); (e) lunch aide engaged in the target behavior persistently during the observation period (15+ times). The lead researcher completed the DBR after the students had eaten their lunches and the lunch tables had been cleared of all food trays.

**Implementation Integrity.** The lead researcher assessed implementation integrity every day of data collection (e.g., 100%) using the DBR (Appendices C and D). The lead researcher observed the following: (a) lunch aides giving effective commands and/or verbal praise to students and giving out stickers when the elementary students had taken at least one bite of their fruits and vegetables during the CEFV intervention; and (b) the lunch aides giving effective commands and/or verbal praise to students and giving out stickers when the elementary students had engaged in the targeted prosocial behaviors.
during the CBG intervention. The lead researcher would make a tally mark each time the lunch aides were observed engaging in the aforementioned activities. At the end of the observation, the lead researcher would count the tally marks and circle the corresponding number (e.g., four stickers given out would be coded as “1” on the DBR).

**Lunch Aide Acceptability.** The acceptability of both interventions was measured using modified versions of the Intervention Rating Profile (IRP; Witt & Martens, 1983). The IRP was developed to assess the acceptability of an intervention using 20 questions and a 6-point Likert scale, ranging from “strongly disagree” to “strongly agree.” The reliability was reported to be high ($\alpha=0.91$; Witt & Martens, 1983). The modified version consisted of 10 questions using the same 6-point Likert scale (Appendices F and G).

**Student Acceptability.** Students’ perceived acceptability of both interventions was measured using a modified version of the Children’s Intervention Rating Profile (CIRP; Witt & Martens, 1983). The modified version consisted of three questions: (a) I like getting stickers for eating fruits and vegetables; (b) I think getting stickers for eating fruits and vegetables helps me eat fruits and vegetables; and (c) I think other students would like getting stickers for eating fruits and vegetables. The three questions used a 3-point Likert scale, “I agree,” “I don’t know,” and “I disagree” (Appendices H and I).

**Procedure**

**Participant Recruitment and Informed Consent.** All study procedures were approved by the Northeastern University Institutional Review Board and the Office of Research, Assessment, and Evaluation at the participating school district. The school district required signed parental consent for the administration of student acceptability questionnaires, so student participants were sent home with a consent form to be signed by a parent/guardian (Appendix J). While all students in kindergarten and first grade
classrooms received the intervention (N = 250), only students who returned signed consent forms participated in the acceptability questionnaires (N = 112). The lead researcher distributed the consent forms to all kindergarten and first grade teachers and also attended a school barbecue and a kindergarten parents’ orientation to introduce the study, answer questions, and distribute consent forms. Lunch aides were given consent forms that explained the intervention and indicated their voluntary participation in the intervention (Appendix K).

Research Assistant (RA) BASiL Training Phase. The lead researcher was trained by one of the BASiL developers through a video tutorial and an observation key. After the lead researcher successfully completed training by achieving at least 90% agreement on the scoring code for each behavior category, the lead researcher trained four research assistants (RAs) using the same video. During the training session, the lead researcher reviewed the study and the BASiL with the RAs. After reviewing the operational definitions of ASB and DB with the RAs, a sample vignette was shown. During the sample vignette, the lead researcher and the RAs were able to discuss the application of coding a behavior as ASB, DB, or neither. After the sample vignette, the RAs were instructed to code the next two to three vignettes on their own. Once the RAs had completed the individual coding, their responses were compared to the observation key. RAs needed to reach at least 80% occurrence and non-occurrence agreement in both behavioral categories before beginning baseline data collection.

Lunch Aide Effective Commands Training Phase. Lunch aides were trained to use effective commands and verbal praise during the CEFV and CBG intervention phases. Guided by previous work (Matheson & Shriver, 2005), researchers trained the lunch aides to use one-verb commands (e.g., “sit at the table”) and specific or non-specific
verbal praise with students. During the first baseline phase lunch aides were observed using these strategies. During training for each intervention phase (CEFV and CGB) they were given feedback regarding their use of effective and ineffective commands and verbal praise. Some examples of the ineffective commands used by the lunch aides in the initial baseline phase included “Stop it!” and “Enough!” Lunch aides were instructed to give 15-20 effective commands with verbal praise per lunch period. In addition, lunch aides were instructed to give out at least 15 stickers per lunch period (Appendices L & M).

Lunch Aide CEFV Training Phase. The lead researcher met with the lunch aides one day prior to the start of the CEFV intervention. The 15-minute meeting consisted of a description of the CEFV intervention and a discussion about effective commands, verbal praise, and sticker distribution. Immediately following the meeting, the lead researcher modeled giving effective commands and/or verbal praise and handing out stickers to the students when the students ate at least one bite of their fruit or vegetable. After modeling the desired behaviors in the lunchroom setting, the lead researcher observed the lunch aides implementing the intervention. After the observation, the lead researcher provided further feedback and answered any questions from the lunch aides.

Lunch Aide CBG Training Phase. The CBG training meeting followed the same format described above, with a focus on catching students behaving appropriately during lunch. Additionally, lunch aides selected three important student behaviors that the CBG intervention would target. The lunch aides selected the following target behaviors: (a) raising one’s hand when finished with lunch; (b) eating lunch; and (c) staying in one’s seat.
Baseline (Condition A). One or two RAs used the BASiL to record students’ behaviors each day during baseline. The lead researcher completed the three DBRs at the end of each lunch period, for the extent to which (a) lunch aides gave effective commands and/or verbal praise; (b) lunch aides gave out stickers to students; and (c) students were out of their seats and walking around the lunchroom without permission.

CEFV (Condition B). One day after baseline and prior to the start of the intervention, 15-minute classroom mini-lessons were conducted by the lead researcher to introduce students to the intervention. For the CEFV mini-lesson the lead researcher reviewed several types of common fruits and vegetables that students might come across in the school lunch. Students and teachers were told that students who took at least one bite of their fruit and vegetable during lunch would receive a sticker from the lunch aides. At the conclusion of the class meeting, each student received a sticker from the lead researcher.

On each day that the CEFV intervention was implemented lunch aides were expected to give students effective commands and/or verbal praise and a sticker after they observed students eating their fruit and vegetable. At the end of each lunch period, the classroom teachers were encouraged to offer specific verbal praise (e.g., “Good job for trying the vegetable today”) to students who had received stickers and to offer verbal encouragement (e.g., “Keep trying to eat your vegetables, maybe next time will be easier for you”) to students who had not received stickers.

CBG (Condition C). One day after baseline and prior to the start of the intervention, 15-minute classroom mini-lessons are conducted by the lead researcher to introduce students to the intervention. For the CBG mini-lesson the lead researcher reviewed the three pre-selected target behaviors that students could be “caught” doing.
Students and teachers were told that students would receive a sticker from the lunch aides for (a) raising one’s hand when finished with lunch; (b) eating lunch; and (c) staying in one’s seat. At the conclusion of the class meeting, each student received a sticker from the lead researcher.

During lunchtime, lunch aides were expected to do the following: (a) used effective commands; (b) provided verbal praise to the students who engaged in the targeted pre-selected behaviors; and (c) gave stickers to the students who were “caught” engaged in the targeted behaviors. At the end of each lunch period, the classroom teachers were encouraged to offer specific verbal praise (e.g., “Good job staying in your seat during lunch”) to students who had received stickers and specific verbal encouragement (e.g., “Keep trying to lower your voice in the lunchroom”) to students who had not received stickers.

**Data Collection and Intervention Implementation Schedule.** Target behaviors were measured across all study phases on consecutive school days. Appendix N describes the sequence of events related to RA, lunch aide, and student training, and intervention implementation.

At the end of the initial B (CEFV) and C (CBG) phases, the lead researcher and the RAs administered the modified IRP and CIRP. They administered the modified IRP to the lunch aides during meetings at which the lead researcher described the questionnaires and answered any questions. They administered the modified CIRP to students individually and orally due to the students’ young age and early reading skills.

**Data Analyses**

**Question 1.** Do school-based lunchtime interventions that target student prosocial behaviors directly and indirectly increase students’ prosocial behaviors and
decrease students’ disruptive behaviors during lunch? Data were graphed and visually analyzed. Means and effect sizes as well as trends for each phase were computed. Effect sizes were calculated using Busk & Serlin’s (1992) d, which accounts for the nuances of multiple baseline designs. Additionally, percentage of all non-overlapping data (PAND; Parker, Hagan-Burker, & Vannest, 2007) were computed.

**Question 2.** Will the lunch aides find the CEFV and the CBG interventions acceptable? Data were graphed and visually analyzed. Means and effect sizes for each phase were computed.

**Question 3.** Will the students find the CEFV and the CBG interventions acceptable? Data were graphed and visually analyzed. Means and effect sizes for each phase were computed.

**Question 4.** Will the lunch aides consistently implement the interventions as they were designed? Data were graphed and visually analyzed. Means and effect sizes for each phase were computed.

**Chapter 4**

**Results**

*Implementation Integrity*

It was hypothesized that the lunch aides would consistently implement both the Caught Eating Fruits and Vegetables (CEFV) and Caught Being Good (CBG) school-based lunchtime interventions as they were designed. Analysis of the data demonstrated that the hypothesis was not supported. The extent to which lunch aides used verbal praise and gave out stickers in each phase is illustrated in Table 1. At baseline and throughout each phase, all lunch aides seldom used effective commands and/or verbal praise with the
students they supervised (means ranging from 1.0 – 1.70). While stickers were never
given out during baseline phases, during both intervention conditions two of the lunch
aides consistently gave out an average of 10 or more stickers per lunch period and two
lunch aides rarely gave out stickers.
Table 1

Means and Standard Deviations of Lunch Aides’ Effective Commands/Verbal Praise and Stickers (N = 4)

<table>
<thead>
<tr>
<th>Lunch Aide</th>
<th>Commands/Praise</th>
<th>Stickers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (all)</td>
<td>CEFV</td>
</tr>
<tr>
<td>Kindergarten Lunch Aide 1</td>
<td>1.60 (.51)</td>
<td>1.20 (.63)</td>
</tr>
<tr>
<td>Kindergarten Lunch Aide 2</td>
<td>1.53 (1.06)</td>
<td>1.00 (.67)</td>
</tr>
<tr>
<td>First Grade Lunch Aide 1</td>
<td>1.67 (.90)</td>
<td>1.70 (.67)</td>
</tr>
<tr>
<td>First Grade Lunch Aide 2</td>
<td>.93 (.80)</td>
<td>1.30 (.48)</td>
</tr>
</tbody>
</table>

*Note.* 0 = behavior not observed. 1 = gave effective commands/verbal praise/stickers 1-4 times. 2 = gave effective commands/verbal praise/stickers 5-9 times. 3 = gave effective commands/verbal praise/stickers 10-14 times. 4 = gave effective commands/verbal praise/stickers 15+ times.
**Intervention Effects on Appropriate Social Behavior**

It was hypothesized that both the CEFV and CBG school-based lunchtime interventions would increase students’ prosocial behaviors. Analysis of the data demonstrated that this hypothesis was not supported. Data were graphed (Figures 1 and 2) and the means and standard deviations of each phase for each grade were calculated (Table 2), as were effect sizes (Table 3). At baseline, kindergarten and first grade students engaged in appropriate social behavior during 34.17% and 38.99% of intervals respectively. Appropriate social behavior during the CEFV interventions was slightly higher than during baseline for students in both grades, especially kindergarten students. Surprisingly, appropriate social behavior occurred slightly less often during the CBG intervention than during baseline for first grade students. The effect sizes (Cohen, 1988) for the intervention conditions were generally small and in one case negative, with the single exception of the large effect size for the CEFV intervention with kindergarten students.

**Table 2**

*Appropriate Social Behavior Means (Standard Deviations)*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Baseline</th>
<th>CEFV</th>
<th>CBG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>34.17 (5.83)</td>
<td>40.22 (6.07)</td>
<td>35.98 (5.79)</td>
</tr>
<tr>
<td>First Grade</td>
<td>38.93 (9.78)</td>
<td>40.06 (9.64)</td>
<td>35.14 (8.88)</td>
</tr>
</tbody>
</table>
Table 3

Effect Sizes of Appropriate Social Behavior

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Kindergarten</th>
<th>First Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEFV</td>
<td>1.04</td>
<td>.11</td>
</tr>
<tr>
<td>CBG</td>
<td>.31</td>
<td>-.38</td>
</tr>
</tbody>
</table>
Figure 1.

*Intervention Effects on Appropriate Behavior in Kindergarten Students*

![Figure 1](image1.png)

Figure 2.

*Intervention Effects on Appropriate Behavior in First Grade Students*

![Figure 2](image2.png)
**Intervention Effects on Disruptive Behavior**

It was hypothesized that both the CEFV and CBG school-based lunchtime interventions would decrease students’ disruptive behaviors. Analysis of the data demonstrated that this hypothesis was not supported. Data were graphed (Figures 3 and 4) and means and standard deviations of each phase for each grade were calculated (Table 4), as were effect sizes (Table 5). At baseline, kindergarten and first grade students engaged in disruptive behavior during 28.43% and 20.69% of intervals respectively. In both grades, disruptive behavior during the CEFV intervention did not increase. While disruptive behavior during the CBG intervention decreased relative to baseline among kindergarten students, it did not change for first grade students.

**Table 4**

**Disruptive Behavior Means and Standard Deviations**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Baseline (Mean, SD)</th>
<th>CEFV (Mean, SD)</th>
<th>CBG (Mean, SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>28.43 (8.45)</td>
<td>26.25 (8.51)</td>
<td>20.90 (9.48)</td>
</tr>
<tr>
<td>First Grade</td>
<td>20.69 (4.43)</td>
<td>19.15 (8.59)</td>
<td>23.93 (3.44)</td>
</tr>
</tbody>
</table>

Effect sizes for both grades for the CEFV intervention were small. For the CBG intervention, the effect size for kindergarten students was large and in the expected direction, while the effect size for first grade students was large and in the unexpected direction (Table 5).
Table 5

**Effect Sizes for Disruptive Behavior**

<table>
<thead>
<tr>
<th>Grade</th>
<th>CEFV</th>
<th>CBG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>-.26</td>
<td>-.89</td>
</tr>
<tr>
<td>First Grade</td>
<td>-.34</td>
<td>.73</td>
</tr>
</tbody>
</table>

Figure 3.

**Intervention Effects on Disruptive Behavior in Kindergarten Students**

Figure 4.

**Intervention Effects on Disruptive Behavior in First Grade Students**
Trend lines and Percentage of All Non-Overlapping Data (PAND)

To determine the effectiveness of the interventions, visual analysis methods such as graphing the data, comparison of phase means, examining trends, and visual analysis of variability of each phase were used. In addition, percentage of all non-overlapping data (PAND; Parker, Haggan-Burke, & Vannest, 2007) for ASB and DB was calculated.

An analysis of the pattern of trend lines during the baseline and intervention phases was inconsistent and did not support the hypotheses that the interventions would be related to increased appropriate social behavior and decreased disruptive behavior (see Tables 6-9 below).

Table 6

<table>
<thead>
<tr>
<th>Phase</th>
<th>Trend</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (1)</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>CBG</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (2)</td>
<td>Increasing</td>
<td>Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (3)</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Zero</td>
<td>Stable</td>
</tr>
</tbody>
</table>
Table 7

*First Grade Appropriate Social Behavior Trends and Variability by Phase*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Trend</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (1)</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>CBG</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (2)</td>
<td>Increasing</td>
<td>Highly Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (3)</td>
<td>Zero</td>
<td>Highly Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Increasing</td>
<td>Highly Variable</td>
</tr>
</tbody>
</table>

Table 8

*Kindergarten Disruptive Behavior Trends and Variability by Phase*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Trend</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (1)</td>
<td>Increasing</td>
<td>Highly Variable</td>
</tr>
<tr>
<td>CBG</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (2)</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Increasing</td>
<td>Highly Variable</td>
</tr>
<tr>
<td>Baseline (3)</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Zero</td>
<td>Highly Variable</td>
</tr>
</tbody>
</table>
### Table 9

**First Grade Disruptive Behavior Trends and Variability by Phase**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Trend</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (1)</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>CBG</td>
<td>Decreasing</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (2)</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Zero</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline (3)</td>
<td>Zero</td>
<td>Stable</td>
</tr>
<tr>
<td>CEFV</td>
<td>Decreasing</td>
<td>Highly Variable</td>
</tr>
</tbody>
</table>

#### Percent of All Non-Overlapping Data (PAND)

Percentage of all non-overlapping data (PAND; Parker et al., 2007) is non-parametric statistic used primarily for single case designs, especially multiple baseline designs. PAND indicates non-overlapping data between phases. PAND goes beyond the scope of percentage of non-overlapping data (PND; Scruggs & Mastropieri, 1994) by comparing all data between both phases, circumventing the criticism of PAND that relies on a single data point from the first phase to compare all the data with in the second phase. PAND was calculated by dividing the number of overlapping data points by the total number of data points. That calculation resulted in a percentage, which was then subtracted from 100. The guideline used to assess the level of effectiveness of PAND is the same that is used for the percentage of non-overlapping data (PND; Scruggs & Mastropieri, 1985-86; Scruggs & Mastropieri, 1994). No observed effectiveness is any percentage less than or equal to 50%. Questionable effectiveness is any percentage from 51% to 70%. An intervention is considered effective if it is calculated at any percentage 71% to 100%. The PAND for kindergarten ASB was calculated at 66.7%, which is considered questionable. However, in none of the intervention phases did the ASB increase. No observed
effectiveness was found regarding the first grade ASB (PAND = 23%), kindergarten DB (PAND = 20%), or first grade DB (PAND = 27%).

**Student Acceptability**

It was hypothesized that students would find both the CEFV and CBG school-based lunchtime interventions acceptable. Analysis of the data demonstrated that the hypothesis was supported. The means and standard deviations of each questionnaire item were calculated and reported in the tables below (Tables 10 and 11).

**Table 10**

*Student Acceptability for the Caught Eating Fruit and Vegetables Intervention*

<table>
<thead>
<tr>
<th>Questionnaire Item</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like getting stickers for eating fruits and vegetables.</td>
<td>1.07 (.35)</td>
</tr>
<tr>
<td>2. I think that getting stickers for eating fruits and vegetables helps me eat fruits and vegetables.</td>
<td>1.20 (.58)</td>
</tr>
<tr>
<td>3. I think other students would like getting stickers for eating fruits and vegetables.</td>
<td>1.14 (.49)</td>
</tr>
</tbody>
</table>

*Note.* 1 = I Agree. 2 = I Don’t Know. 3 = I Disagree

**Table 11**

*Student Acceptability for the Caught Being Good Intervention*

<table>
<thead>
<tr>
<th>Questions</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like getting stickers for following lunchroom rules.</td>
<td>1.09 (.40)</td>
</tr>
<tr>
<td>2. I think that getting stickers for following lunchroom rules helps me follow lunchroom rules.</td>
<td>1.15 (.49)</td>
</tr>
<tr>
<td>3. I think other students would like getting stickers for following lunchroom rules.</td>
<td>1.13 (.49)</td>
</tr>
</tbody>
</table>

*Note.* 1 = I Agree. 2 = I Don’t Know. 3 = I Disagree
Lunch Aide Acceptability

It was hypothesized that the lunch aides would find both the CEFV and CBG school-based lunchtime interventions acceptable. Analysis of the data demonstrated that the hypothesis was partially supported. The means and standard deviations of each questionnaire item were calculated and reported in the tables below (Tables 12 and 13).

The overall mean of the lunch aide CBG questionnaires was 4.13 (SD =1.47), indicating that the lunch aides found the CBG moderately acceptable. Lunch aides reported the strongest acceptability for the item pertaining to their ability to implement the intervention quickly (M = 4.83; SD =1.17). The lowest endorsed acceptability item related to the amount of risk to students (M = 3.50; SD =2.73).

In regard to lunch aide acceptability of the CEFV intervention, the overall mean was 4.28 (SD =1.5), indicating a moderate level of acceptability. As with the CBG questionnaire, lunch aides endorsed acceptability most strongly on the item pertaining to their ability to implement the intervention quickly (M = 4.83; SD =1.17). The lowest rated item reflected the lunch aides’ concern about the practicality of implementing the intervention during the lunch period (M=3.50; SD = 2.07).
Table 12

Lunch Aide Acceptability for the Caught Being Good Intervention

<table>
<thead>
<tr>
<th>Questionnaire Item</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most lunch aides would find the Caught Being Good intervention suitable.</td>
<td>4.00 (1.09)</td>
</tr>
<tr>
<td>2. Most lunch aides would find the Caught Being Good intervention appropriate for the lunchroom.</td>
<td>4.33 (.82)</td>
</tr>
<tr>
<td>3. The Caught Being Good intervention should prove effective in changing the students’ behaviors.</td>
<td>3.67 (1.50)</td>
</tr>
<tr>
<td>4. The Caught Being Good intervention would be an acceptable intervention for the students’ lunchroom behaviors.</td>
<td>4.33 (1.21)</td>
</tr>
<tr>
<td>5. I would be willing to use the Caught Being Good intervention in the lunchroom.</td>
<td>4.17 (1.83)</td>
</tr>
<tr>
<td>6. The Caught Being Good intervention would not result in negative side effects for the students.</td>
<td>4.17 (1.83)</td>
</tr>
<tr>
<td>7. The Caught Being Good intervention would not result in risk to the students.</td>
<td>3.50 (2.73)</td>
</tr>
<tr>
<td>8. The Caught Being Good intervention is practical to implement during lunchtime.</td>
<td>3.83 (1.17)</td>
</tr>
<tr>
<td>9. Lunch aides are likely to use the Caught Being Good intervention because it is easy to use.</td>
<td>4.50 (1.37)</td>
</tr>
<tr>
<td>10. Lunch aides are likely to use the Caught Being Good intervention because it can be done quickly.</td>
<td>4.83 (1.17)</td>
</tr>
</tbody>
</table>

Note. 1 = Strongly Disagree. 2 = Disagree. 3 = Slightly Disagree. 4 = Slightly Agree. 5 = Agree. 6 = Strongly Agree.
**Table 13**

*Lunch Aide Acceptability for the Caught Eating Fruits and Vegetables Intervention*

<table>
<thead>
<tr>
<th>Questionnaire Item</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most lunch aides would find the Caught Eating Fruit and Vegetables intervention suitable.</td>
<td>4.33 (1.03)</td>
</tr>
<tr>
<td>2. Most lunch aides would find the Caught Eating Fruit and Vegetables intervention appropriate for the lunchroom.</td>
<td>4.67 (1.21)</td>
</tr>
<tr>
<td>3. The Caught Eating Fruit and Vegetables intervention should prove effective in changing the students’ behaviors.</td>
<td>4.00 (1.67)</td>
</tr>
<tr>
<td>4. The Caught Eating Fruit and Vegetables intervention would be an acceptable intervention for the students’ lunchroom behaviors.</td>
<td>3.83 (1.60)</td>
</tr>
<tr>
<td>5. I would be willing to use the Caught Eating Fruit and Vegetables intervention in the lunchroom.</td>
<td>4.50 (1.77)</td>
</tr>
<tr>
<td>6. The Caught Eating Fruit and Vegetables intervention would not result in negative side effects for the students.</td>
<td>4.33 (1.37)</td>
</tr>
<tr>
<td>7. The Caught Eating Fruit and Vegetables intervention would not result in risk to the students.</td>
<td>4.33 (1.37)</td>
</tr>
<tr>
<td>8. The Caught Eating Fruit and Vegetables intervention is practical to implement during lunchtime.</td>
<td>3.50 (2.07)</td>
</tr>
<tr>
<td>9. Lunch aides are likely to use the Caught Eating Fruit and Vegetables intervention because it easy to use.</td>
<td>4.50 (1.77)</td>
</tr>
<tr>
<td>10. Lunch aides are likely to use the Caught Eating Fruit and Vegetables intervention because it can be done quickly.</td>
<td>4.83 (1.17)</td>
</tr>
</tbody>
</table>

*Note.* 1 = Strongly Disagree. 2 = Disagree. 3 = Slightly Disagree. 4 = Slightly Agree. 5 = Agree. 6 = Strongly Agree.
Chapter 5

Discussion

Summary of Findings

The purpose of this study was to examine the effects of two school-based lunchtime interventions—Caught Being Good (CBG) and Caught Eating Fruits and Vegetables (CEFV) on students’ disruptive and prosocial behaviors in the cafeteria. The hypothesis that both interventions would be associated with a decrease in students’ disruptive behaviors was not supported. Disruptive behavior decreased minimally during the CEFV intervention condition among both kindergarten and first grade students. Disruptive behavior decreased during the CBG intervention condition for kindergarten students. However, disruptive behavior increased during the CBG condition among first grade students. Secondly, it was hypothesized that the two interventions would increase students’ prosocial behaviors. That hypothesis was not supported. Thirdly, it was hypothesized that lunch aides would implement both interventions with good implementation integrity. Data indicated the interventions were implemented inconsistently. Finally, it was hypothesized that both interventions would be acceptable to students and lunch aides. While students found both interventions acceptable, intervention acceptability among lunch aides was lower than anticipated.

Anecdotal reports during the initial meetings with the lunch aides demonstrated a need for increased prosocial student behavior during lunchtime. Lunch aides discussed feeling overwhelmed and lacking support from other school staff members. One reason why intervention integrity was lower than anticipated may be that the lunch aides were often called to assist in other capacities during the lunch period. Their roles included managing students in the lunch line, cleaning up all lunch spills, escorting children to the bathroom, and entertaining the children who had finished eating lunch. Dealing with unpredictable, time consuming, and important competing priorities such as mopping up a spill made it difficult for lunch monitors to
implement the lunchtime interventions consistently, despite the low intensity of the two interventions employed in this study.

The lead researcher assessed implementation integrity every day of data collection using the DBR (Appendices C and D). The lead researcher observed the following: (a) lunch aides giving effective commands and/or verbal praise to students (e.g., giving commands and praise as prescribed by the intervention plan) and giving out stickers when the elementary students had taken at least one bite of their fruits and vegetables during the CEFV intervention; and (b) the lunch aides giving effective commands and/or verbal praise to students and giving out stickers when the elementary students had engaged in the targeted socially appropriate behaviors during the CBG intervention. The lead researcher made a tally mark each time the lunch aides were observed engaging in the aforementioned activities. At the end of the observation, the lead researcher counted the tally marks and circled the corresponding number.

In addition to the initial training day for a new intervention, the lead researcher met briefly (3-5 minutes) before each lunch period with the lunch aides. The lead researcher reviewed the goals for the day: (a) handing out at least 15 stickers, and (b) giving effective commands/verbal praise at least 15 times. The lead researcher suggested different strategies to the lunch aides to achieve these goals. For example, the lunch aides were encouraged to give verbal praise with the stickers. Additionally, the lunch aides were encouraged to give feedback about the previous day of the intervention. A common concern from the lunch aides was the feasibility of the intervention while dealing with a student who was exhibiting inappropriate behavior. Lunch aides who had to address the disruptive behaviors of at least one student often were taken away from their assigned lunch tables and duties for approximately 3-5 minutes during the observation period.
Data indicated the interventions were implemented inconsistently. The lunch aides averaged less than 5 effective commands/verbal praise during each intervention phase of the study despite the design of at least 15 effective commands/verbal praise during each intervention phase. Additionally, half of the lunch aides averaged at least 10 stickers handed out at each lunch period, and the other half of the lunch aides averaged less than 1 sticker handed out at each lunch period. One reason why implementation integrity was lower than anticipated (e.g., no lunch aides averaged both 15 effective commands/verbal praise and 15 stickers handed out as the study was designed) may be that the lunch aides were often called to assist in other capacities during the lunch period. Their roles included managing students in the lunch line, cleaning up all lunch spills, escorting children to the bathroom, and entertaining the children who had finished eating lunch. Dealing with unpredictable, time consuming, and important competing priorities such as mopping up a spill made it difficult for lunch monitors to implement the lunchtime interventions consistently, despite the low intensity of the two interventions employed in this study.

A second reason why lunch aides did not give at least 15 effective commands/verbal praise and at least 15 stickers was due to measurement procedures. Although they were supposed to give children stickers when they observed them engaging in the appropriate target behaviors, some of the lunch aides chose to give out stickers after the children had eaten and trays were cleared. Because all data collection concluded with the removal of lunch trays, the observed number of stickers handed out was an underestimate. That the lunch aides used the stickers as incentives for socially appropriate behavior does provide additional anecdotal information regarding their perceptions of the utility of the stickers; however, the manner in which they were used was inconsistent with the intended design of the interventions.

In response to low and variable implementation integrity observed during the study, there were several instances when the lead researcher encouraged the lunch aides during the lunch
period. Verbal encouragement included phrases such as “good job,” and “keep handing out those stickers.” On approximately three occasions, during an intervention phase, the lead researcher joined the lunch aide with the lowest treatment integrity during the lunch period. The lead researcher modeled giving out the stickers and effective commands/verbal praise at least 15 times, as the study protocol intended.

Similar interventions were implemented by Hoffman and colleagues in two separate sets of studies and integrity levels were measured in both. In one study, the research team reported variable levels of implementation integrity (Blom-Hoffman, Kelleher, Power, & Leff, 2004). In a second study (Blom-Hoffman, 2008; Hoffman, Franko, Thompson, Power, & Stallings, 2010), lunch monitor implementation integrity was high, ranging from 75% - 100%. These differences highlight a need for additional research that can identify factors that contribute to differential levels of implementation integrity in cafeteria-based studies.

Lunch aides reported that they found both interventions moderately acceptable. These findings contrast with the high lunch aide acceptability ratings in previous similar studies implementing the CEFV intervention (Blom-Hoffman, 2008; Hoffman, Franko, Thompson, Power, & Stallings, 2010). In the prior CEFV studies, lunch aides not only reported high acceptability for the CEFV intervention, but also stated that the stickers motivated children to eat their fruits and vegetables. Lunch monitors may have been more motivated to implement the intervention because they were able to see a correlation between eating fruits and vegetables and receiving the stickers. In the current study, one lunch aide commented anecdotally that handing out the stickers required more work for her, which may have been why the intervention was not perceived as positively. Additionally, it may have been harder for the lunch aides to see the hypothesized connection between receiving the stickers and increased prosocial behaviors.
Lunch monitors generally agreed that one strength of both interventions was their ability to be quickly implemented. This suggests that both interventions were perceived as time efficient. Surprisingly, with regard to the CBG intervention, the lowest rated item pertained to the amount of perceived risk to students. Unfortunately, the lead researcher was unable to follow up on these responses to inquire further as to specific concerns regarding the potential for risk to students. In regard to the CEFV intervention, the item that had the lowest acceptability ratings pertained to the practicality of implementing the intervention. As addressed earlier in this discussion, the lunch aides were asked to perform many other duties that may have hindered their ability to implement the intervention as designed.

As expected, students reported high acceptability of both interventions. These results are aligned with previous studies that examined student acceptability of the CEFV intervention (Blom-Hoffman, 2008; Hoffman et al., 2010). Students appeared eager throughout the interventions to receive stickers from the lunch aides and during the withdrawal phases students asked for stickers.

Limitations

The primary study limitation was the lack of acceptable implementation integrity and an inability to link implementation integrity to intervention effects. Intervention integrity data were collected on four lunch aides (two per lunch period) and implementation integrity was variable across them. While lunch aide data were collected at the individual level, student data were collected at the group level. As such, there may have been an effect of the intervention when it was implemented as designed. Unfortunately any potential effect may have been masked because students were observed under the supervision of all lunch aides and all student data were aggregated.
Treatment integrity dimensions can be described in three categories: (a) treatment delivery, (b) treatment receipt, and (c) treatment enactment (Schulte, Easton, & Parker, 2009). Treatment delivery refers to interventionists implementing procedures in four subcategories: (a) adherence; (b) exposure; (c) competence; and (d) program differentiation (Dane & Schneider, 1998; Gresham, Gansle, & Noell, 1993; Hagermoser-Sanetti, Gritter, & Dobey, 2011; Noell & Gansle, 2006; Schulte, Easton, & Parker, 2009). In this study, treatment integrity measured adherence (e.g., how often the lunch aides handed out stickers). Exposure was daily with each intervention phase lasting five school days. Competence refers to the level of skill of the lunch aides. While the lead researcher led training meetings, modeled the implementation of the interventions, and gave additional support throughout the intervention phases, lunch aides were not required to meet a criterion prior to implementing the interventions. Requiring the lunch aides to meet a criterion prior to the intervention phases may have increased the treatment integrity. Additionally, formally reviewing the treatment integrity data with the lunch aides and discussing how to address the low levels may have increased not only the treatment integrity levels but reaffirmed the collaborative spirit of the study (Noell et al. 2005; Power et al., 2005).

A second study limitation was the inability of the measurement procedures to quantify lunch aides’ time spent away from the students they were supervising. As previously mentioned, lunch aides were called away from the lunch tables to complete other duties. Data regarding what they were called to do and for how long would have been helpful in assessing why the intervention was not implemented as designed. Additionally, lunch aides may have felt that the interventions were more acceptable if they had been able to implement them without being asked to cover other duties in the lunchroom.

A third limitation was the inability to capture how often the lunch aides handed out stickers after the data collection period ended. Anecdotal reports suggested that some lunch
aides held onto the stickers until after the observation period ended in order to reward students at the end of the lunch period. Lunch aides reported having nothing for the students to do after they finished eating, particularly because they were instructed not to take students outside. In this situation, some lunch aides used the stickers as rewards for prosocial behavior, not during the time when students were eating and data were collected, but at the end of the lunch period after food was cleaned up and the data collection phase had concluded. As a result, the implementation integrity data represent only those stickers that were handed out during part of the lunch period (i.e., when students were eating their lunches).

A final limitation had to do with a lack of understanding regarding the reasons why lunch aides may have believed the CBG intervention was associated with potential student risks. Unfortunately, the lead researcher was unable to discuss this concern with the lunch aides (acceptability questionnaires were not analyzed until the completion of data collection). One potential reason may have been that the lunch aides were concerned that students who did not receive stickers felt sad.

Conclusions and Directions for Future Research

The current study compared the effects of two school-based lunchtime interventions on students’ disruptive and prosocial behaviors in an urban elementary school cafeteria. Taking into account best practices, this study was rooted in theories that are sensitive to the unique needs of children in urban schools. This study aligned with previous research regarding the most effective theories addressing ethnically diverse and urban populations (Black & Krishnakumar, 1998; Dowrick et al., 2001; Leff et al., 2003; Wickrama et al., 2005). Additionally, this study was influenced by principles of participatory action research (Israel et al., 2005), which emphasizes the importance of including key stakeholders in interventions, as well as Dowrick
Dowrick and colleagues (2001) suggested six tenets to help researchers and communities conduct socially responsible research, which the current study attempted to apply. First, it is important for researchers to identify the needs and strengths of the community in collaboration with the community. In this study, the lead researcher met with the lunch aides prior to the study and assessed the need for a behavioral intervention during lunchtime, discussing what the lunch aides felt was working and where they felt they needed more support. Second, it is important to establish a place in the system for the community. For example, the lunch aides not only helped shape the CBG intervention by selecting the target student behaviors, the lunch aides were also agents of change as they implemented the interventions. The third tenet refers to the importance of building a working relationship with the community. The lead researcher met with the lunch aides several times throughout the study in addition to being on hand every day during data collection to answer questions and to clarify implementation procedures. Also, the lead researcher administered acceptability questionnaires to the lunch aides and the students (who are also members of the community), enabling them to provide anonymous feedback about the interventions. Capacity building with community partners is the fourth tenet that Dowrick and colleagues (2001) suggest. The lead researcher instructed the lunch aides to give effective commands and verbal praise, two approaches known to increase prosocial behaviors (Matheson & Shriver, 2005). This training in behavior management should continue to benefit the lunch monitors even after this study has concluded. The fifth tenet refers to positive visioning. Throughout the meetings and daily interactions with the lead researcher, lunch aides presented their concerns about the current lunchroom behaviors. Anecdotally, the lunch aides reported feeling unsupported in their attempts to manage students’ behaviors at lunchtime. The lead
researcher listened to their feedback and concerns and reiterated that the interventions were
designed to increase prosocial behavior and decrease disruptive behavior. Furthermore, the
interventions were a way in which the lunch aides could feel more supported by being trained in
techniques that have been proven to be effective in other lunchrooms. The sixth tenet is the need
for previous tenets to be supported by data-based evaluation. In this study, a rigorous single case
design was used to evaluate the effects of the two interventions, and the study concluded with
lunch aides choosing the final intervention phase after being presented with graphed data from
the previous two intervention phases.

Lunchtime and recess are often the periods of the school day when the highest levels of
aggression occur (Craig & Peplar, 1997). As such, school cafeterias are prime venues to develop
and evaluate interventions that increase prosocial behavior and decrease disruption (McCurdy,
Lannie, & Barnabas, 2009; Roderick et al., 1997). There are higher levels of disruptive behavior
in underresourced schools in disadvantaged communities (Black & Krishnakumar, 1998;
Duncan, Brooks-Gunn, & Klebanov, 1994; Wickrama, Noh, & Bryant, 2005). Interventions
implemented with students from diverse ethnic backgrounds who live in disadvantaged urban
communities remain a priority area for research. The literature regarding school-based
lunchtime interventions that address the needs of children in urban areas remains small (Franzen
& Kamps, 2008; Leff et al., 2003; McCurdy, Lannie, & Barnabas, 2009). Having urban
community members participate in the design and evaluation of school-based interventions
remains an area of need (Black & Krishnakumar, 1998; Dowrick et al., 2001).

Future research should expand on the small body of cafeteria-based behavioral
intervention research. Few studies that focus on under-resourced urban schools include the
measurements of implementation integrity and participant acceptability (Franzen & Kamps,
2008; Leff et al., 2003; McCurdy, Lannie, & Barnabas, 2009). Future research should also
include a formal assessment of lunch aides’ perceptions regarding the climate of the lunchroom before and during intervention implementation. Climate assessment may have shed light upon the anecdotal reports from the lunch aides regarding their feelings of little support from the school administrators, and whether those feelings may or may not be connected to low treatment integrity and moderate acceptability ratings. Also, allowing for more discussion about the acceptability data of the lunch aides may have led to a discussion about the feasibility of the interventions and clarification about the moderate acceptability rating. Additionally, administering an acceptability questionnaire that was less global and more refined with questions directly addressing the specific components of the CEFV and CBG interventions would have provided more data regarding the moderate lunch aide acceptability. Empowering the lunch aides further by allowing them to modify the interventions for the last intervention phase would be a next step.
References


Appendix A
Observation Recording Sheet

Tables Observed:                                  Date:
Observer:                                          Lunch Period:
Time Begin:                                       Time End:

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<th>Observation</th>
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</table>

Total Intervals Observed ________

Student Data

# Intervals with ASB _____                  % ASB _____
# Intervals with DB _____                  % DB _____

(% 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 B

BASiL Operational Definitions

Appropriate Social Behavior (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, orienting head toward another, using utensils appropriately, 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. Rule following behavior including cleaning up, acting respectfully, following staff directions the first time they are given, or raising a hand is also considered appropriate social behavior.

Disruptive behavior refers to 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.
Appendix C

Daily Behavior Report Form

After the observation period, please circle the number that best describes the frequency the target behavior was observed

************************************************************************

Target Behavior: Lunch Aide 1 gave effective (one verb) command and/ or verbal praise

0 The target behavior was not observed
1 Lunch Aide 1 engaged in the target behavior seldom (1-4 times) during the observation period
2 Lunch Aide 1 engaged in the target behavior some (5-9 times) during the observation period
3 Lunch Aide 1 engaged in the target behavior often (10-14 times) during the observation period
4 Lunch Aide 1 engaged in the target behavior persistently (15+ times) during the observation period

Target Behavior: Lunch Aide 1 gave out stickers

0 The target behavior was not observed
1 Lunch Aide 1 engaged in the target behavior seldom (1-4 times) during the observation period
2 Lunch Aide 1 engaged in the target behavior some (5-9 times) during the observation period
3 Lunch Aide 1 engaged in the target behavior often (10-14 times) during the observation period
4 Lunch Aide 1 engaged in the target behavior consistently (15+ times) during the observation period
Appendix D

Daily Behavior Report Form

After the observation period, please circle the number that best describes the frequency the target behavior was observed

************************************************************************

Target Behavior: Lunch Aide 2 gave effective (one verb) command and/or verbal praise

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>The target behavior was not observed</td>
</tr>
<tr>
<td>1</td>
<td>Lunch Aide 2 engaged in the target behavior seldom (1-4 times) during the observation period</td>
</tr>
<tr>
<td>2</td>
<td>Lunch Aide 2 engaged in the target behavior some (5-9 times) during the observation period</td>
</tr>
<tr>
<td>3</td>
<td>Lunch Aide 2 engaged in the target behavior often (10-14 times) during the observation period</td>
</tr>
<tr>
<td>4</td>
<td>Lunch Aide 2 engaged in the target behavior persistently (15+ times) during the observation period</td>
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</tbody>
</table>

Target Behavior: Lunch Aide 2 gave out stickers

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>The target behavior was not observed</td>
</tr>
<tr>
<td>1</td>
<td>Lunch Aide 2 engaged in the target behavior seldom (1-4 times) during the observation period</td>
</tr>
<tr>
<td>2</td>
<td>Lunch Aide 2 engaged in the target behavior some (5-9 times) during the observation period</td>
</tr>
<tr>
<td>3</td>
<td>Lunch Aide 2 engaged in the target behavior often (10-14 times) during the observation period</td>
</tr>
<tr>
<td>4</td>
<td>Lunch Aide 2 engaged in the target behavior consistently (15+ times) during the observation period</td>
</tr>
</tbody>
</table>
Appendix E

Daily Behavior Report Form

After the observation period, please circle the number that best describes the frequency the target behavior was observed at the lunch table.

************************************************************************

Target Behavior: Students got up from the lunch table without permission and walked or ran around the lunchroom.

0  The target behavior was not observed

1  Students engaged in the target behavior seldom (1-2 times) during the observation period

2  Students engaged in the target behavior some (3-4 times) during the observation period

3  Students engaged in the target behavior often (5-6 times) during the observation period

4  Students engaged in the target behavior persistently (7-8 times) during the observation period

5  Students engaged in the target behavior consistently (9+ times) during the observation period
Appendix F

Lunch Monitor Acceptability Questionnaire: CBG

*Please answer the following questions by marking the box that best describes what you think about the Caught Being Good lunchtime intervention.*

<table>
<thead>
<tr>
<th></th>
<th><strong>Strongly Disagree</strong></th>
<th><strong>Disagree</strong></th>
<th><strong>Slightly Disagree</strong></th>
<th><strong>Slightly Agree</strong></th>
<th><strong>Agree</strong></th>
<th><strong>Strongly Agree</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most lunch aides would find the Caught Being Good intervention suitable.</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
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<tr>
<td>2. Most lunch aides would find the Caught Being Good intervention appropriate for the lunchroom.</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
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<td>☒ ☒ ☒ ☒</td>
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<tr>
<td>3. The Caught Being Good intervention should prove effective in changing the students’ behaviors.</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
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<td>☒ ☒ ☒ ☒</td>
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<tr>
<td>4. The Caught Being Good would be an acceptable intervention for the students’ lunchroom behaviors.</td>
<td>☒ ☒ ☒ ☒</td>
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<td>☒ ☒ ☒ ☒</td>
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<td>☒ ☒ ☒ ☒</td>
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<td>5. I would be willing to use the Caught Being Good intervention in the lunchroom.</td>
<td>☒ ☒ ☒ ☒</td>
<td>☒ ☒ ☒ ☒</td>
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<tr>
<td>6. The Caught Being Good intervention would not result in negative side effects for the students.</td>
<td>☒ ☒ ☒ ☒</td>
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<td>7. The Caught Being Good intervention would not result in risk to the students.</td>
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<td>8. The Caught Being Good intervention is practical to implement during lunchtime.</td>
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<tr>
<td>9. Lunch aides are likely to use the Caught Being Good intervention because it is easy to use.</td>
<td>☒ ☒ ☒ ☒</td>
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<tr>
<td>10. Lunch aides are likely to use the Caught Being Good intervention because it can be done quickly.</td>
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Appendix G

Lunch Monitor Acceptability Questionnaire: CEFV

Please answer the following questions by marking the box that best describes what you think about the Caught Eating Fruit and Vegetable lunchtime intervention.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
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<tr>
<td>☐ ☐ ☐ ☐ ☐</td>
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</tbody>
</table>

1. Most lunch aides would find the Caught Eating Fruit and Vegetable intervention suitable.

2. Most lunch aides would find the Caught Eating Fruit and Vegetable intervention appropriate for the lunchroom.

3. The Caught Eating Fruit and Vegetable intervention should prove effective in changing the students’ behaviors.

4. The Caught Eating Fruit and Vegetable would be an acceptable intervention for the students’ lunchroom behaviors.

5. I would be willing to use the Caught Eating Fruit and Vegetable intervention in the lunchroom.

6. The Caught Eating Fruit and Vegetable intervention would not result in negative side effects for the students.

7. The Caught Eating Fruit and Vegetable intervention would not result in risk to the students.

8. The Caught Eating Fruit and Vegetable intervention is practical to implement during lunchtime.

9. Lunch aides are likely to use the Caught Eating Fruit and Vegetable intervention because it easy to use.

10. Lunch aides are likely to use the Caught Eating Fruit and Vegetable intervention because it can be done quickly.
Appendix H

Student Acceptability Questionnaire: CBG

Please answer the questions by putting a check (☺☺) in the box that best describes what you think about the Caught Being Good intervention.

<table>
<thead>
<tr>
<th>I Agree</th>
<th>I Don’t Know</th>
<th>I Disagree</th>
</tr>
</thead>
</table>
| ☺☺ ☺☺☺☺ | ☺☺ ☺☺ | ☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺☺cesso
Appendix I

Student Acceptability Questionnaire: CEFV

*Please answer the questions by putting a check (☺☺) in the box that best describes what you think about the Caught Eating Fruit and Vegetable lunchtime intervention.*

<table>
<thead>
<tr>
<th>1. I like getting stickers eating fruits and vegetables</th>
<th>I Agree ☺☺</th>
<th>I Don’t Know ☺</th>
<th>I Disagree ☻☻</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. I think that getting stickers for eating fruits and vegetables helps me eat fruits and vegetables</td>
<td>☺☻</td>
<td>☺</td>
<td>☻☻</td>
</tr>
<tr>
<td>3. I think other students would like getting stickers for eating fruits and vegetables</td>
<td>☺☻</td>
<td>☺</td>
<td>☻☻</td>
</tr>
</tbody>
</table>
Dear Parents/Guardians:

This year a doctoral student from Northeastern University, Victoria Downes, is working with our lunch monitors to develop a program to improve student behavior in the cafeteria. Mrs. Downes will evaluate the program to see if it helps students. This will involve observing students in the cafeteria and asking them how much they liked the new program. Mrs. Downes is requesting your permission to ask your child questions about what he/she thought about the new cafeteria program. Your child’s name will not be written down on the questionnaire, so all children’s responses will be anonymous. Should you have any questions about this please do not hesitate to contact Mrs. Downes at 617-XXX-XXXX.

If you agree to allow your child to participate in the project you can withdraw his/her participation at any time. This project has been approved by the Institutional Review Board at Northeastern University. If you have any questions about your child’s 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 have your child answer the questionnaire about what he/she thought about the lunchtime program please fill in the information below and provide your signature.

I hereby consent to have __________________________ complete the questionnaire about the in the cafeteria project conducted by Victoria Downes from Northeastern University. I understand that all information will be kept strictly confidential, and that we may withdraw from the project 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 Parent or Guardian: _________________

Today’s Date: _________________

Printed Name of Person Above: ______________________
Appendix K

Lunch Aide Consent Form

Name of Investigator(s): Victoria J. Downes; Jessica Hoffman, Ph.D.
Title of Project: Reducing Disruptive Behavior during Lunchtime in Urban Elementary School Students: A Comparison of Two School-Based Lunchtime Interventions

Request to Participate in Research
We are asking you to participate because you are an elementary school Lunch Aide who has been trained to implement the Caught Eating Fruit and Vegetable (CEFV) intervention and the Caught Being Good (CBG) intervention.

The purpose of this research is to learn more about your opinions on the two interventions. You must be at least 18 years old to be in this research project.

If you decide to take part in this study, we will ask you to complete two brief questionnaires about the interventions and participate in a brief focus group with other lunch aides to discuss which intervention you liked most, which you liked least and why.

We will meet for a total three sessions on site at your school during work hours. Each session should last no more than 10 to fifteen minutes.

There are no foreseeable risks or discomforts to you for taking part in this study.

There are no direct benefits to you for participating in the study. However, your answers may help us to improve the CEFV and CBG interventions and perhaps lead to the development of new interventions to lower disruptive behavior and improve pro-social behavior among elementary school children.

Your part in this study will be handled in a confidential manner. Any reports or publications based on this research will use only group data and will not identify you or any individual as being of this project.

The decision to participate in this research project is up to you. You do not have to participate and you can refuse to answer any question. Even if you begin the study, you may withdraw at any time. Your decision to participate or not to participate will have no effect on your employment standing.

You will not be paid for your participation in this study.

If you have any questions about this study, please feel free to call Victoria J. Downes at 617-593-6157 or salesman.v@husky.neu.edu, the person mainly responsible for the research. You can also contact Jessica Hoffman, Ph.D. at 617-373-4094 or j.hoffman@neu.edu, the Principal Investigator. If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617.373.4588, Email: irb@neu.edu. You may call anonymously if you wish.
Appendix L

CBG Stickers
Appendix M

CEFV Stickers