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Improving Behavior through Differential Reinforcement: A Praise Note System for Elementary School Students

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Abstract

Schools are often in need of low-cost, high-impact strategies to improve student behavior in school common areas. While many behavior management programs exist, there are few resources available to guide the implementation of these programs and ensure they are grounded in evidence-based strategies. Therefore, the current study had two primary purposes: first, to demonstrate the effectiveness of a simple behavior management system, and second, to begin the process of providing some guidance for the application of similar systems. The study used a differential reinforcement of incompatible behavior (DRI) procedure in a multiple-baseline design across three target behaviors to decrease inappropriate and increase appropriate behaviors in an elementary school lunchroom. The intervention consisted of 1) teaching specific appropriate behaviors 2) providing opportunities for students to practice skills, and 3) implementing a Praise Note system to reward students for behaving appropriately. Students were taught appropriate behaviors, and the school staff was trained to recognize and reward students who kept the lunchroom clean, sat appropriately in their seats, and walked in the lunchroom. Data show significant decreases for each of three target behaviors. The average amount of litter left in the lunchroom decreased by 96%, the average number of instances of sitting inappropriately decreased by 64%, and the average number of instances of running in the lunchroom decreased by 75%. Beyond contributing to the effective intervention strategies available to reduce problem behaviors in common areas, this research also provide much needed guidance for effectively implementing the necessary components of a Praise Note system, namely, program intensity, and delivery.

Behavior problems are a well-documented and an ever-increasing challenge facing educators (Mayer, 2001; Walker & Horner, 1996) and effective behavior management strategies that meet these challenges and promote safety for students and adults are of

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significant interest for educators nationally (Scott, 2001; Turnbull, Edmonson, Griggs, Wickham, Sailor, Freeman, Guess, Lassen, McCart, Park, Riffel, Turnbull, & Warren, 2002). To confront these problems, many administrators have already successfully adopted school-wide intervention strategies to address concerns throughout the school environment (Lewis & Sugai, 1999; Oswald, Safran, & Johanson, 2005).

Most traditional behavior management programs have focused on teaching and rewarding appropriate student behaviors that typically occur in the classroom setting. While these strategies may be effective within the classroom, they often fail to address concerns associated with misbehavior in school common areas. School "common areas," can be described as places where relatively few adults supervise large groups of students, and little or no formalized instruction occurs. School common areas may include hallways, lunchrooms, playgrounds, and buses or bus lines.

Previous research suggests that misbehavior in school common areas accounts for approximately one-half of all problem behaviors in many schools (Colvin, Sugai, Good, & Lee, 1997). In an assessment of office discipline referral (ODR) frequency by location, 47% of all office-managed discipline referrals collected throughout the school year resulted from problems arising in common areas (Todd, A., Haugen, L., Anderson, K., & Spriggs, M., 2002). The average elementary school student with a thirty-minute lunch break, two ten-minute recesses, and occasional trips to and from the library or other areas of the school, may spend up to one hour or more of a typical school day in common areas (this number is increased for students who ride the school bus or participate in resource or special education programs). Therefore, given the amount of time students spend in common areas and the number of overall problem behaviors that reportedly occur there, it is estimated that problem behavior is six times more likely to occur in common areas than in the classroom.

Various circumstances have been identified as possible contributors to the high number of problem behaviors evidenced in school lunchrooms and other common areas. Some of the most significant factors include large numbers of students, a large amount of physical space to monitor, and too few adults trained to effectively deal with problem behaviors (Todd et al., 2002). The transition from structured classroom environments to unstructured common areas and back again several times throughout the school day may also pose a difficult task for many students. High frequency transitions and shifting expectations across school common areas can lead to confusion that can inflate the number of problem behaviors.

Lunchrooms, one of the most significant school common areas in regard to capacity and time of use, may be particularly subject to student misbehavior. Therefore, lunchroom group management issues present a valid concern for many teachers, school administrators, and even students. Historically, inappropriate lunchroom behaviors have included talking while the aide is talking, being out-of-seat, and quarreling (MacPherson, Candee, & Hobman, 1974). Recent research confirms that concerns in today's lunchrooms are relatively similar to those in the past. In a survey conducted as part of a study by Samuels, Swerdlik, and Margolis (2001) common student complaints of the lunchroom consisted of excessive noise level, students running and shouting, and lunchroom supervisors yelling at students. Teacher concerns included confusion, messiness, and high noise level. While dealing with these behaviors in the lunchroom is of primary concern, evidence also suggests that efforts to improve lunchroom behavior may lead to improvement in other aspects of the learning environment. In the previously mentioned study conducted by Samuels et al. (2001), a decrease in the number of instances of inappropriate and disruptive behaviors in the lunchroom was accompanied by a decrease in the number of office discipline referrals in periods before and after lunch.

As a means of coping with the current circumstances, educators are in need of high-impact strategies for improving student behavior and contributing to school environments that are more conducive to learning. Programs using positive methods of supporting appropriate behavior are highly effective in helping schools accomplish this goal. A large body of research evidence has documented the effectiveness of these programs in a wide variety of school circumstances for both individual students (Carr, Horner, Turnbull, Marquis, Magito McLaughlin, McAtee, Smith, Anderson Ryan, Ruef, & Doolabh, 1999; Todd, Campbell, Meyer, & Horner, 2008) and groups of students (Lewis, Sugai & Colvin, 1998; Sugai & Horner, 1999) in common areas (Kartub, Taylor-Greene, March, & Horner, 2000; Lewis, Colvin & Sugai, 2000; Nelson, Colvin & Smith, 1996; Todd et al., 2002) as well as in the classroom (Skinner, Neddenriep, Robinson, Ervin, & Jones, 2002; Todd et al., 2008). These programs are consistent with research findings that suggest the most effective programs for promoting lasting change in student behavior focus on the development of interventions that will be implemented consistently across all school settings (Lewis & Sugai, 1999; Walker & Horner, 1996; West, 1993; West, Young, Mitchem, & Caldarella, 1998). One framework that is currently gaining momentum with schools all over the country is Positive Behavior Support (PBS) as outlined by Carr, Dunlap, Horner, Koegel,

Turnbull, Sailor, Anderson, Albin, Koegel, & Fox (2002). PBS provides schools with a philosophical approach for developing and implementing programs that use positive methods to improve student behavior. Because PBS is an approach rather than a set of specific programs and practices, there is considerable variability in the types of programs implemented at the school level. Therefore, programs implemented at many schools may fit the PBS theme but may not necessarily be evidence-based. To improve the quality and effectiveness of these programs, researchers should strive to provide teachers and administrators with evidence-based guidelines for implementing PBS programs. For example, program intensity and coverage standards are needed, training procedures should be well documented, and data collection strategies should have planned interobserver reliability checks.

There are several evidence-based strategies currently available to educators that fit the PBS model. Some methods relevant to the current study will be discussed in more detail. They are: providing clear expectations and using common language, consistently delivering praise (written and verbal), encouraging active supervision, implementing token economies, and utilizing DRI—the differential reinforcement of incompatible behaviors (West & Sloane, 1986).

Providing clear expectations for students is an essential part of a behavior support program. Providing clear expectations may consist of defining rules and ensuring that students and teachers use common language to describe behaviors and consequences. In one study targeting common areas, Kartub et al. (2000) outlined an intervention to reduce hallway noise during transition times in a rural middle school by clarifying student expectations. This intervention was developed to help students discriminate a difference in hallway expectations before and after school (when students were allowed to be noisy) and during transition times (when students were expected to maintain quieter noise levels). As part of the intervention, the hallways were made to look different during transition times with the addition of small blinking lights. Noise levels in the hallway were measured during three phases: baseline, a noise reduction phase, and a follow-up phase. During baseline the average decibel levels were 74.8, 76.5, and 76.8 for the sixth, seventh, and eighth graders, respectively. During the noise reduction phase the average decibel levels fell to 67.4, 68.6, and 68.9. The overall noise level decreased and stayed within an acceptable range after the intervention was employed.

In another example, a school-wide intervention effectively decreased problem behaviors in the hallway including running, walking out of line, invading another's space, walking on the wrong side of the hallways, and yelling (Leedy, Bates, & Safran, 2004). In this study,

teachers and university faculty members developed clear behavioral expectations and promoted these expectations throughout the school. With the combined support of schoolteachers and administrators, the intervention led to a combined increase of 134.9% in appropriate student behavior.

The delivery of contingent and specific praise is another evidenced-based strategy for improving student behavior. In a study conducted by Madsen, Becker, and Thomas (1968) teacher behavior was modified to show the individual effects of classroom rules, ignoring, and praise on student problem behavior. In the first two phases of the study teachers were taught to remind students of rules and to ignore problem behavior. In the third phase teachers were taught to deliver general and specific praise to students for rule following and other prosocial behaviors. Results from this research clearly showed that introduction of rules alone had little effect on problem behavior, ignoring inappropriate behavior produced inconsistent results, and ignoring accompanied by praise was very effective. The authors concluded that praise was the "key teacher behavior in achieving effective classroom management."

Active supervision has been used effectively to reduce problem behaviors in hallways, lunchrooms, and on school playgrounds at both primary and secondary schools (Colvin et al., 1997; Johnson, Lyons, & Griffin, 2008; Lewis, Colvin, & Sugai, 2000). Colvin, Sugai, Good and Lee (1997) define active supervision as "specific and overt behaviors (scanning, escorting, interacting) displayed by supervisors designed to prevent problem behavior and promote rule following behavior." Some elements of active supervision may include: reinforcing rule compliance, error correction for rule violation, and physical movement around and scanning of the area being supervised (Lewis, Colvin & Sugai, 2000). Colvin, Sugai, Good, and Lee (1997) used active supervision and precorrection to improve student behavior in common areas in a rural elementary school containing 475 students. In this demonstration, supervisory staff members were trained to increase active supervision strategies. Staff training included explanation, demonstration, and role-playing of active supervision and precorrection strategies. In addition, staff members received twice-monthly reminders concerning use of active supervision procedures throughout the course of the study. The study used a multiple baseline design across three transition areas to measure the effects of the intervention on the instances of problem behavior. The data demonstrate a decrease in the number of problem behaviors exhibited by students across all transition areas. In addition, a significant correlation (-.83) was found between the number of student-teacher interactions and frequency of

problem behavior. In other words, the greater the number of interactions that staff had with students, the fewer problem behaviors were exhibited.

The use of token reinforcers is another effective strategy for managing student behavior. Token reinforcers are "symbolic representations exchangeable for some reinforcer of value to students" (Alberto & Troutman, 2003). Tokens function in a manner very similar to the way that money functions in general society; they have little or no inherent value and are usually delivered immediately following the occurrence of behavior. At a convenient time tokens are exchanged for desired reinforcers. In this way they serve as a transition between the behavior and reinforcement. Token systems in many forms are pervasive in the educational system today, and are used in many resource and self-contained classrooms, as well as in many general education classrooms (Alberto & Troutman, 2003). In one example of a token reinforcement program O'Leary, Becker, Evans and Saudargas (1969) looked at the various effects of several different intervention strategies on problem behavior. During the token reinforcement phase of the study students were allowed to earn points or tokens at designated times during the school day based on their behavior during a given time period. The total number of points each student earned ranged from one to ten and was based on the extent to which he or she followed the rules that were written on the blackboard. The points were later exchanged for backup reinforcers such as candy, comics, and small toys. Results of this research showed no consistent effects on behavior in any phase other than the token economy. A statistical analysis of the group data showed that the token reinforcement was associated with a significant reduction in the number of problem behaviors during that phase.

Another very effective strategy is the differential reinforcement of incompatible behavior (DRI). In this procedure a target behavior that the teacher wants to reduce is defined. Then a behavior is chosen for increase that is mutually exclusive with the target behavior to be decreased. For example, if out-of-seat behavior is the behavior to be decreased, the behavior to be increased and reinforced is in-seat behavior. As the student is consistently reinforced for appropriate behavior, it increases and, as a result, the problem behavior decreases (Alberto & Troutman, 2003). The DRI procedure, in conjunction with increased response cost, was used to increase the attentive behavior of 30 third-grade and fourth-grade students at an elementary school (Zaghalwan, Ostrosky & Al-Khateeb, 2007). The sample used in the previously cited study, included 60 students from eight different elementary schools who scored highest on an ADHD checklist completed by

their resource room teachers. The researchers randomly assigned the students to either a treatment or control group. Students in the treatment group earned smiley faces for displaying attentive behaviors during instructional sessions. If students displayed inattentive behaviors smiley faces were removed and reinforcers were harder to earn. Analysis of Variance (ANOVA) results revealed an effect {$F(1,57) = 165.20$, $p < .0001$} in favor of the experimental group, indicating that the intervention was successful in decreasing inattentive behaviors.

The previous examples of behavior management techniques represent a small sample of the evidence-based strategies that are available to educators in general and special education classrooms. While there is an abundance of literature outlining specific programs and case studies utilizing these various strategies, there is often little or no guidance available regarding best practice in their application.

One example of this problem is illustrated in the widely-used system of a "good ticket" program currently used in many schools. The concept of ticket systems is not new, and many schools employ similar programs with varying levels of success. For example, these systems are described in terms of their application as "Gotcha" coupons, "Chance" tickets, "High Fives," or "Pride tickets" (Oswald et al, 2005). In most instances these "notes" or "tickets" function as token reinforcers that are often entered into a lottery or exchanged for desired rewards. While research utilizing similar approaches does exist, there is a strong need for studies that outline minimum basic standards for program duration, intensity, tracking, and reinforcer delivery.

The current research presents a Praise Note system similar to the ticket systems discussed previously, with a few variations. The goal of this study is to demonstrate the effectiveness of a simple behavior management system based on the strategies outlined earlier in this article and to provide practitioners with guidance for the implementation and evaluation of similar systems.

Method

Participants and Setting

Participants in this study were approximately 200 first through fifth grade students in a rural northern Utah elementary school. The students were predominantly white (80%), and from middle to lower-middle socioeconomic backgrounds.

The targeted setting for this study was the school lunchroom, and all data collection took place during the regularly scheduled lunch period. All first through fifth grade students ate lunch at approximately the same time each day. Three grades were typically in the lunchroom at the same time (approximately 20 minutes for each

grade), with younger grades rotating out of the lunchroom as the older grades came in. Thus, the first grade exited the lunchroom as the fourth grade entered and the second grade exited as the fifth grade entered.

The lunchroom was roughly divided into two sides. One side consisted of five rows of tables (with benches on each side) where students sat to eat their lunches (see Figure 1). The other side of the room contained the lunch serving area, trashcans, and tray disposal counter. Students entered the lunchroom, in lines, through one of two entrances located on the east wall, and proceeded to the serving area where they picked up a tray and received their lunch. Students continued in their lines to a designated table where they sat and ate. As the students finished they took their lunch trays to the disposal counter and exited through a door in the north wall.

Design

This study employed a multiple baseline design (Cooper, Heron, & Heward, 2006) across three targeted behaviors deemed inappropriate for the lunchroom by the school principal and faculty: littering, inappropriate sitting, and running. For the purpose of this study the definitions of these behaviors were as follows. *Littering* consisted of leaving on the floor (all litter left on the tables was swept onto the floor by lunchroom staff) any object that was larger (length or width) than a 3X5 inch index card. *Inappropriate sitting* included standing while eating or sitting with "back pockets off of the seat." *Running* was defined as having both feet leave the floor at the same time. These definitions and their rationale are further clarified in the measurement section of this article.

Procedure

The Praise Note system chosen for this intervention was part of a school-wide effort to decrease problem behaviors and increase incompatible appropriate behaviors in the lunchroom. The principal, teachers, and lunchroom staff identified three target behaviors critical to student safety and promoting a positive lunchroom environment. The current intervention consisted of two components: 1) providing students and faculty with clear expectations for lunchroom behavior, and 2) implementing a Praise Note system to reward student behaviors meeting the expectations.

Baseline. During the baseline condition no programs were in place at the school to improve student behavior in the lunchroom. Lunchroom staff members circulated through the lunchroom correcting students at their own discretion. As no training had been provided to

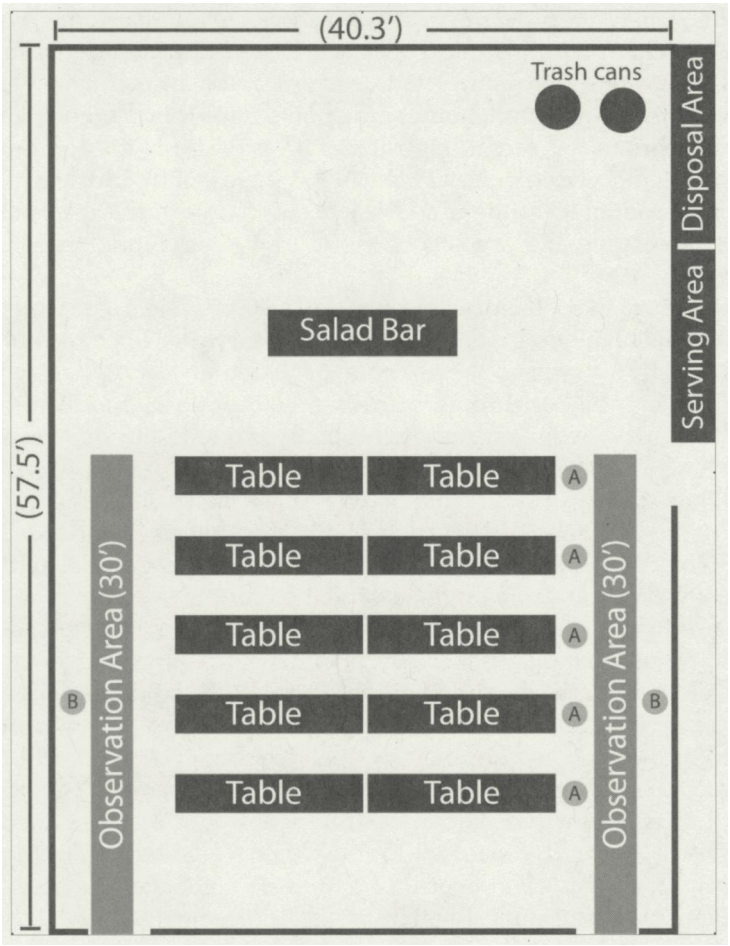

Figure 1. Diagram of the school lunchroom. The labels "A" and "B" represent the positioning of observers.

staff members concerning the delivery of praise statements, the rate of praise statements delivered to students during baseline was very low. In fact, the observers did not record any instances of praise statements happening during the baseline condition.

The Praise Note system. Students, teachers, custodians, lunchroom staff, and school administrators all participated in training sessions. After the sessions were completed, teachers and staff members were instructed to reward students who displayed appropriate behaviors in the lunchroom by presenting them with a Praise Note, accompanied by specific, verbal praise. Praise Notes were small yellow slips of paper that contained student and teacher signature lines, the school mascot (an eagle), and the school motto ("safe, kind, and responsible").

To ensure that Praise Notes were always available, faculty members received blank Praise Notes in their boxes, Praise Notes were also available in the office, and the principal or custodian always had some Praise Notes in the lunchroom. Faculty members and administrators in the lunchroom were encouraged to deliver one Praise Note every two to three minutes (VI 2.5 min).

When giving a Praise Note delivery the teacher filled in the student's name and signed the Praise Note. The student then took the Praise Note to the office during the course of that school day. Office staff members provided a large decorated jar for the students to place the Praise Notes in, and they congratulated each student who put a note in the jar. At the end of each school day the principal drew five Praise Notes from the jar and read the names of the students over the intercom system. Students, whose praise notes were selected, would then go to the office where they were allowed to choose a small reward (e.g., pencil, eraser, folder, sticker, etc.) from a box in the principal's office. To increase faculty participation, the teachers whose names were on the five selected Praise Notes were also entered into a weekly drawing for a gift certificate or service voucher donated by businesses in the community (e.g. one loaf of homemade bread, one free haircut, etc.).

After the drawing, all of the Praise Notes that were turned in were stapled to a large board in the main hallway near the school entrance. By filling the board students worked collectively to earn a larger group reward (e.g., extra recess time, a party, or early lunch). After the board was filled and the students received their reward, the Praise Notes were taken down and the students worked toward filling the board again. The posting and group reward allowed students to receive recognition even if their Praise Notes were not selected in the drawing.

Training

Teachers and other selected staff members (lunchroom personnel, school custodians, and lunchroom monitors) were given an overview of the Praise Note program before the intervention began. Teachers and lunchroom staff members were taught when, how, and for which behaviors a Praise Note should be delivered. Staff members were instructed to deliver Praise Notes during the lunch period to students who were meeting the expectations for the target behavior. When delivering a Praise Note staff members were taught to state the student's name (or give some other initial positive interaction), carefully describe the behaviors for which the Praise Note was given, write the student's name on the note, and present it to the student. Staff members were instructed to look for appropriate behaviors and deliver Praise Notes on a constant basis while in the lunchroom. They were also encouraged to target students who were in need of extra help.

Three training sessions were held (excluding the staff overview of the Praise Note system), with one session focusing on each of the three target behaviors: littering, inappropriate sitting, and running. Each training session was conducted for all students and participating faculty members the day prior to the beginning of each phase of the intervention. Students and their teachers participated in training sessions with the other classes in their grade level. Classes were brought into the lunchroom where they participated in a four-part training session lasting approximately 20 minutes, which consisted of an introduction and three learning stations (approximately 5 minutes each).

Introduction. To begin each training session the new lunchroom expectations were introduced to the group. In each of the training sessions participants were given explicit definitions of what behaviors were and were not appropriate in the lunchroom, including examples and non-examples. They were also introduced to the Praise Note system and told how they could earn Praise Notes. Students were informed that when they were behaving according to the expectations they would be eligible to receive a Praise Note from one of the school faculty or lunchroom staff members. Students were also told that they would not receive a Praise Note every time they were acting appropriately, but that if they were consistently meeting expectations their chances to earn a Praise Note would increase. Students were also informed that they should deliver the Praise Notes to the office to be entered into a daily drawing for reward. After the drawing, all of the Praise Notes would be posted on a board in the main hallway, and when the board was filled they would receive a group reward such as an ice cream party or extra recess.

After the introduction, the group was divided into three equal subgroups and sent to one of three different learning stations. The stations were designed to provide modeling, role-play and practice opportunities, a check for understanding, and opportunities for reinforcement. Groups cycled through the stations in approximately 5-minute intervals.

Station One. At station one, a trainer reviewed the information presented in the introduction meeting and clarified expectations by allowing students to ask questions. The trainer also used a game to ensure students understood the expectations. During the game the trainer tossed a beanbag to students in the group, and the student who caught the beanbag was given a hypothetical situation and asked to determine if the student in the situation was eligible to receive a Praise Note.

Station Two. At station two, students participated in an activity that allowed them to demonstrate the target behaviors in a fun and positive way. The content and format for this station differed with each training, depending on the target behavior.

To discourage running and to help students understand the difference between walking and other inappropriate behaviors, students participated in a walking relay. Students in the group were divided into two equal lines, and asked to walk a course from one end of the lunchroom to the other. One student from the front of each line began the relay. Observers watched students' feet during the relay, and if both feet left the ground at any time the student was asked to go back to the beginning and try again. When the students walked the designated course without running, they tagged the hand of the next student, and he or she would then walk the course. This process was repeated until each student had the chance to practice walking by participating in the relay.

To discourage littering and encourage throwing trash in the trash receptacles, students participated in another relay. In this relay the students were divided into two groups. The relay course was then modeled for the students by the trainer. The course consisted of picking up a lunch tray with a napkin and a few strips of paper on it, walking to the trash can without spilling the papers, circling the trash cans, dumping the contents of the trays in the trash, stacking the trays neatly on the disposal counter, and walking back to tag the hand of the next student in line. This process was repeated until each student had the chance to practice disposing of trash properly.

A game was also used to discourage inappropriate sitting and encourage sitting appropriately at the lunch tables. This game reinforced the expectation that once students placed their tray on the table

they were to remain seated with "pockets on the seat" until they were finished with their lunch and ready to exit the lunchroom. In this game students were asked to form a line similar to the one they would form upon entering the lunchroom on any given day. The trainer modeled the correct procedure while explaining the game to the students. Students were instructed to walk past the serving area, move to the tables, and sit down single file. When one side of the table was filled students were instructed to fill the benches on the other side of the table, just as would be expected during a regular lunch period. Students were then instructed to sit with their "pockets on the seat" until all students were seated. After all students were seated, they practiced exiting the area correctly. The student at the head of the line was instructed to stand, exit the table, and form a line. As soon as the first student stood, the second followed and so on until all students had completed the process. The trainer watched the clock and timed each round of the game while correcting any inappropriate sitting. The students played the game three times, attempting to beat their previous time.

Station Three. At station three students were provided with a chance to practice the appropriate behaviors and answer questions about when a Praise Note would be given. As each student successfully demonstrated the appropriate behavior, he or she received a Praise Note. Each student received at least one Praise Note during this exercise. Students were reminded that they would not receive a Praise Note every time they displayed appropriate behavior, but that consistent appropriate behavior would increase the likelihood that they would receive a Praise Note.

Measurement

All observations were conducted during the regularly scheduled lunch period. The lunch period began at 11:55 a.m., when the first grade entered the lunchroom, and ended at 12:45 p.m. The daily observation period lasted from 11:55 a.m. to 12:32 p.m. After this time students had left the lunchroom to go out to the playground. Because the lunch schedule rotated and the number of students in the room varied (i.e. there were fewer students in the lunchroom at the beginning and end of the lunch period than in the middle as the grades rotated out), the number of behaviors occurring throughout the observation period fluctuated. Therefore, frequency of behavior over the entire lunch period was used as the dependent measure.

Littering. Littering consisted of leaving on the floor any object that was larger (length or width) than a 3X5 inch index card. This measurement allowed for the inclusion of napkins, straw wrappers, milk jugs, etc. while excluding crumbs and wrappers torn into many small

pieces. To preserve the integrity of the sample, it was determined that one student shredding a napkin into many small pieces should not be counted as several instances of littering. Before the lunch period began observers confirmed there was no litter on the lunchroom floor. After the lunch period ended, the observers walked around the lunchroom and counted and recorded the number of pieces of litter left on the floor.

Inappropriate Sitting. Inappropriate sitting included standing while eating or sitting with "back pockets off of the seat." This definition of inappropriate sitting accounted for students who stood up or walked around, turned around in seats, and hung off benches. To account for students entering and leaving the table area students were not included in the observation until after they had received their tray, placed it on the table, and sat down. Likewise, any student leaving the area was not included in the sample after his or her tray had been removed from the table. Observers counted the number of instances of inappropriate sitting by standing at the head of each table (see "A" on Figure 2) and moving between them (switching tables every 30 seconds), quickly scanning the table and counting the number of students sitting inappropriately at their table, and clicking the button on a manual hand-held counter. This procedure allowed observers to count each table once every 2.5 minutes.

Running. Running was defined as having both feet leave the floor at the same time within the observation area. This definition of running included other inappropriate behaviors such as hopping, skipping, and jumping, which would have increased the chances of students spilling food or falling and hurting themselves. Boundaries were set near both cafeteria entrances and extended for 30 feet (approximately the point where students picked up their trays) into the cafeteria. Two independent observers, one placed near each line (see "B" on Figure 2) recorded instances of running for both lines (teachers took turns bringing their classes into the lunch room, switching off between sides). Observers used a two column data collection sheet with time (in two minute increments) listed down the side. As the students entered the cafeteria observers watched them and counted instances of running that occurred. At the end of each two-minute interval, observers recorded the total number of instances of running for each side in the appropriate column. At the end of each observation session the total number of instances of running were added together to yield daily total. The orderly entry of the students into the lunchroom allowed observers to collect data from two separate vantage points.

Results

Daily totals of inappropriate behavior for each condition were plotted and visually analyzed for within and between phase differences. Figure 2 shows the differences in the data over the course of the intervention. Litter in the lunchroom decreased from an average of 34.3 pieces during baseline to an average of 1.3 pieces during the intervention phase, representing a total decrease of 96%. Inappropriate sitting in the lunchroom decreased from an average of 65.5 during baseline to 23.3 during the intervention phase, representing a total decrease of 65%. Lastly, running in the lunchroom decreased from an average of 34 instances during baseline to 8.5 instances during the intervention phase, representing a total decrease of 75%.

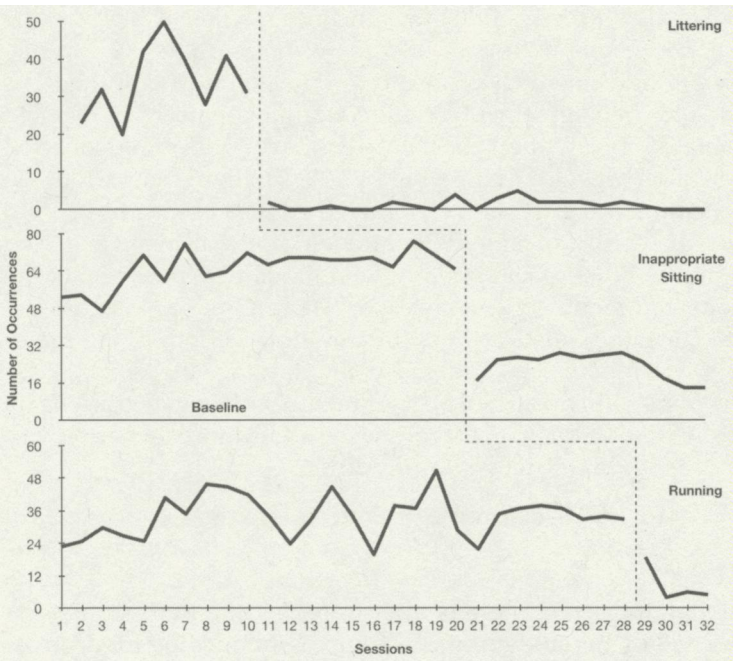

Figure 2. Multiple-baseline design across three target behaviors (littering, inappropriate sitting, and running).

Note: Vertical lines distinguish between baseline conditions and experimental conditions.

Interobserver agreement

In all conditions a second observer, who followed the same protocol as the primary observer, conducted interobserver agreement checks. During interobserver agreement checks, two independent observers recorded each target behavior. In the littering condition, each observer made sure there was no litter before the lunch period began. After the lunch period ended, each observer independently counted and recorded the number of pieces of litter left on the floor. Interobserver agreement checks were taken across 43% of the total number of data collection sessions and averaged 98% agreement. In the inappropriate sitting condition the two observers stood at opposite ends of each table and used the standard data collection procedure as previously outlined. Interobserver agreement checks were taken across 28% of the data collection sessions and averaged 90% agreement. In the running condition the additional observer was stationed on top of the bleachers on the south end of the lunchroom where it was possible to get a good view of both lines of students entering the lunchroom. Interobserver agreement checks were conducted on 28% of the trials and averaged 87% agreement. In all conditions, percent agreement was calculated by dividing the two frequency totals, one collected from each observer, and multiplying by 100 (smaller/larger x 100).

Procedural integrity data were taken on 61% of the observation days over the course of the intervention. These data were collected by the primary lunchroom observer, who randomly chose two of the lunchroom staff members and checked that 1) a Praise Note was delivered at least one time during a three-minute period, 2) the praise procedure was followed as outlined in the training, and 3) the Praise Note was filled out correctly. The staff members met expectations on 100% of the observations, and there were no instances where it was necessary to retrain the delivery procedures.

Discussion and Conclusions

Study Conclusions

The data presented here demonstrate that the Praise Note system presented in this study provides a successful method for decreasing inappropriate behaviors in an elementary school lunchroom. The authors believe the program's success can be attributed to the incorporation of several evidence-based strategies into the development and implementation of the Praise Note system. These strategies include establishing a common language to communicate behavioral expectations through direct teaching and posted signs in the lunchroom. Second, the basis for the program included the delivery of praise, specific

verbal commendations, as a social reinforcer. Third, participating school personnel were required to use active supervision by consistently moving around the lunchroom and interacting with students. Fourth, the Praise Notes delivered in this system represented token reinforcers that could be delivered immediately and then exchanged for other reinforcers later. Fifth, the Praise Note system utilized the principles of DRI by selectively reinforcing positive behaviors that were incompatible with the negative target behaviors. This collection of evidence-based strategies, implemented as a complete program, was critical to achieving the outcomes documented previously.

Limitations

In utilizing these results to improve current educational practice it is important to consider the limitations in the study's design and data collection. One limitation of this research is the inability to isolate the impact of each component of the Praise Note system on the target behaviors. This limitation precludes any recommendation regarding which strategies could be separated and used as a stand-alone intervention, although many of the cited studies demonstrate the effectiveness of these strategies when implemented in other settings and with unique dependent variables. Since it was a goal of the research to develop a simple and sustainable behavior support program, future research studies could look at this limitation as an opportunity to further refine and simplify common area behavior support interventions through a systematic investigation of which components of a Praise Note system yield the greatest impact on target behaviors.

It is also important to note that this study does not provide evidence of the intervention's impact on appropriate student behaviors. It can be inferred that appropriate student behaviors (i.e. sitting quietly, walking in the lunchroom, and not littering) increased as a result of the intervention but data were not collected to directly substantiate this claim. Although evaluating these results of the Praise Note system was not in the scope of this research project it should be investigated in future research studies. Anecdotal evidence, in the form of a short survey, collected from teachers and lunchroom staff suggests that improved student-adult relationships were a positive side effect.

The authors of this research suspect that the unique delivery method of the Praise Notes may have contributed to these positive outcomes. When delivering a Praise Note, school faculty and staff members provided students with individualized, specific praise in addition to the tangible Praise Notes. This delivery method ensured that each student who received a Praise Note, even those whose names were not selected in the drawing, received some kind of recognition

for their appropriate behavior and had a positive interaction with school personnel. Although those specific results were not documented in this study, the principal, lunchroom monitors, custodian, and regular lunchroom staff regularly made positive comments about specific students whose lunchroom behavior had improved. They also made general statements about the improved overall attitude in the lunchroom and students' willingness to encourage peers to engage in appropriate behaviors. The impact of increased opportunities to engage in positive interactions with peers and adults is a critical area outcome that warrants future investigation.

Implications for Practitioners

The current research provides an examination of the substantial impact a Praise Note system, designed and implemented as outlined here, can have on student behavior in school common areas. In addition, the authors' believe that practitioners can glean important themes from this research regarding the intensity of praise note systems, the types of reinforcers that can be used, and the impact a Praise Note system can have on teacher-student relationships.

Praise Note, or other ticket-based, systems are used by many schools as part of an effort to improve student behavior, but the available literature contains limited guidance on the intensity necessary for these systems to produce noticeable change. Because the number of Praise Notes delivered in this study was not systematically varied, we cannot say what the optimal intensity for effective systems should be. We do know, however, that over the course of the study and throughout the rest of the school year the number of Praise Notes delivered in the lunchroom averaged 110 per week, meaning that approximately 55% of students received a Praise Note each week. Lunchroom staff members reported that this number did not seem unreasonable, especially since they were eager to have a method for rewarding students for appropriate behaviors. It is also likely that the teacher reinforcement component was a factor in maintaining a high, steady rate of Praise Note delivery. The intensity of Praise Note delivery was sufficient to show definite change in all three of the target behaviors. It is possible that less intense interventions may show similar results, but further research on the topic is necessary before any recommendations to reduce intensity can be made.

Evidence from this study suggests that programs may enjoy increased success if multiple types of reinforcers are used. The reinforcers used in this study included social reinforcers (teachers praise and office staff recognition), token reinforcers (tickets), public posting (posting of Praise Notes on the board in the main hallway), group

rewards (parties and extra recess), and tangibles (erasers, pencils, folders, etc.). This program presents a method for schools to provide a variety of reinforcers in a practical manner.

References

Alberto, P. A., & Troutman, A. C. (2003). *Applied behavior analysis for teachers* (6th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Carr, E. G., Horner, R. H., Turnbull, A. P., Marquis, J. G., Magito McLaughlin, D., McAtee, M. I., Smith, C.E., Anderson Ryan, K. Ruef, M.B., & Doolabh, A. (1999). *Positive behavior support for people with developmental disabilities: A research synthesis* (American Association on Mental Retardation Monograph Series). Washington, DC: American Association on Mental Retardation.

Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., Anderson, J. L., Albin, R. W., Koegel, L. K., Fox, L. (2002). Positive behavior support: evolution of an applied science. *Journal of Positive Behavior Interventions, 4*(1), 1-4.

Colvin, G., Sugai, G., Good, R. H., & Lee, Y. (1997). Using active supervision and precorrection to improve transition behaviors in an elementary school. *School Psychology Quarterly 12*, 344-363.

Cooper, J. O., Heron, T. E., & Heward, W.L. (2006). *Applied behavior analysis* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Johnson, K. N., Lyons, E. A., & Griffin, J. R. (2008). Active supervision: An intervention to reduce high school tardiness. *Education and Treatment of Children 31(1)*, 39-53.

Kartub, D. T., Taylor-Greene, S., March, R. E., & Horner, R. H. (2000). Reducing hallway noise: A systems approach. *Journal of Positive Behavior Interventions* 2(3), 179-182.

Leedy, A., Bates, P., & Safran, S. P. (2004). Bridging the research-to-practice gap: Improving hallway behavior using positive behavior supports. *Behavioral Disorders 29*(2), 130-139.

Lewis, T. J., Colvin, G., & Sugai, G., (2000). The effects of precorrection and active supervision on the recess behavior of elementary school students. *Education and Treatment of Children* 23(2), 109-121.

Lewis, T., & Sugai, G. (1999). Effective behavior support: A systems approach to proactive school-wide management. *Focus on Exceptional Children. 31*(6), 1-24.

Lewis, T., Sugai, G., & Colvin, G. (1998). Reducing problem behavior through a schoolwide system of effective behavioral support: Investigation of a schoolwide social skills program and contextual interventions. *School Psychology Review 27*, 446-459.

MacPherson, E. M., Candee, B. I., & Hobman, R. A. (1974). A comparison of three methods of eliminating disruptive lunchroom behavior. *Applied Behavior Analysis 7*, 287-297.

Mayer, G. R. (2001). Antisocial behavior: Its causes and prevention within our schools. *Education and Treatment of Children, 24*(4), 414-429.

Nelson, J. R., Colvin, G., & Smith, D. J. (1996). The effects of setting clear standards on students' social behavior in common areas of the school. *The Journal of At-Risk Issues, 3*(1), 10-19.

Oswald, K., Safran, S., & Johanson, G. (2005). Preventing trouble: making schools safer places using positive behavior supports. *Education and Treatment of Children, 28*, 265-278.

Samuels, D. D., Swerdlik, M., & Margolis, H. (2001). The development and analysis of an elementary comprehensive lunchroom management program. *Education, 101*(2), 123-126.

Scott, T. M. (2001). A schoolwide example of positive behavioral support. *Journal of Positive Behavioral Interventions, 3*(2), 88-94.

Skinner, C. H., Neddenriep, C. E., Robinson, S. L., Ervin, R., & Jones, K. (2002). Altering educational environments through positive peer reporting: Prevention and remediation of social problems associated with behavior disorders. *Psychology in the Schools. 39*(2), 191-201.

Sugai, G., & Horner, R.H. (1999). Discipline and behavior support: Practices, pitfalls, and promises. *Effective School Practices, 17*(4), 10-12.

Todd, A., Campbell, A., Meyer, G., & Horner, R. H. (2008). *Journal of Positive Behavior Interventions, 10*(1), 46-55.

Todd, A., Haugen, L., Anderson, K., & Spriggs, M. (2002). Teaching recess: Low-cost efforts producing effective results. *Journal of positive Behavior Interventions, 4*(1), 46-52.

Turnbull, A., Edmonson, H., Griggs, P., Wickham, D., Sailor, W., Freeman, R., Guess, D., Lassen, S., McCart, A., Park, J., Riffel, L., Turnbull, R., & Warren, J. (2002). A blueprint for schoolwide positive behavior support: Implementation of three components. *Exceptional Children 68*(3), 377-402.

Walker, H. M., & Horner, R. H., (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders, 4*(4), 194-209.

West, R. P. (1993). Cross-environmental strategies for preventing serious youth problems: School, home and community. In B. Smith (Ed.), *Focus '93: Their Turn: Your Turn*. Victoria, BC: B. Smith Associates.

West, R. P. & Sloane, H. N. (1986). The effects of teacher presentation rate and point delivery rate on classroom disruption, performance accuracy, and response rate. *Behavior Modification,* 10, 267-286.

West, R. P., Young, K. R., Mitchem, K. J., & Caldarella, P. (1998). What's happening in Utah to help students at risk for antisocial behavior? *CPD News, 21*(2), 1-12.

Zaghlawan, H. Y., Ostrosky, M. M., & Al-Khateeb, J. M. (2007). Decreasing the inattentive behavior of jordinian children: A group experiment. *Education and Treatment of Children 30*(3), 49-64.