

*IMPROVING STUDENT BUS-RIDING BEHAVIOR
THROUGH A WHOLE-SCHOOL INTERVENTION*

ROBERT F. PUTNAM, MARCIE W. HANDLER,
CHRISTINA M. RAMIREZ-PLATT, AND JAMES K. LUISELLI

THE MAY INSTITUTE INC. AND
THE MAY CENTER FOR APPLIED RESEARCH

We describe a multicomponent intervention to improve bus-riding behavior of students attending an urban public school. The intervention was developed with technical assistance consultation that emphasized collaboration among students, school personnel, and bus drivers. The primary intervention procedures were identifying appropriate behaviors during transportation (“bus rules”), training bus drivers to deliver positive reinforcement, and rewarding student performance through a weekly school-based lottery. Disruptive bus behaviors, as measured by discipline referrals and suspensions, decreased with intervention relative to baseline phases in an ABAB reversal design. These positive results were maintained over the long term, with school personnel assuming responsibility for intervention in the absence of ongoing consultation.

DESCRIPTORS: school bus transportation, student discipline, behavioral consultation, systems intervention

Improving student discipline in public schools remains a critical priority for educators and the general public (Rose & Gallup, 1998). Problems such as classroom disruption, peer victimization (e.g., bullying), insubordination, and vandalism interfere with instruction, pose a threat to others, and create an unsafe learning environment. Behavior analysts have made important contributions to school discipline practices (Luiselli & Diament, 2002), focusing primarily on strategic interventions with individual students and, at times, on entire classrooms. More recently, there has been an emphasis on systems-based or whole-school applications of behavior support. As described by Sugai and Horner (2002), a whole-school orientation (a) targets all students, (b) emphasizes measurable outcomes that are valued by stakeholders, (c) incorporates research-validated procedures, (d) uses data to guide policy decision making, (e) is domi-

nated by positive reinforcement and skill-building approaches, (f) stresses prevention, and (g) integrates all elements of the school culture (students, teachers, administrators, parents) in designing, implementing, and evaluating discipline practices.

Contemporary research demonstrates that whole-school discipline programs can be effective in reducing disruptive, destructive, and antisocial behaviors (Horner & Sugai, 2000; Nelson, 1996; Taylor-Greene et al., 1997; Walker et al., 1996). Beyond the classroom, there are other settings where discipline problems also may be encountered, for example, school corridors, restrooms, cafeterias, and playgrounds. Sugai and Horner (2002) noted that these contexts typically are characterized by large numbers of students, reduced adult supervision, limited interpersonal relationships between adults and students, and a “strong, social or student-to-student interaction emphasis” (p. 35). School bus transportation represents a circumstance that has these features and is commonly associated with challenging behaviors. Disruption by students on school

Requests for reprints should be sent to James K. Luiselli, The May Institute Inc., One Commerce Way, Norwood, Massachusetts 02062 (e-mail: jluiselli@mayinstitute.org).

buses can pose a threat to travel by distracting the driver or endangering passengers (Trotter, 1987). Many teachers are concerned that spillover effects from unresolved confrontations on buses cause interpersonal difficulties with students in the classroom (Casey, 1995). Finally, there is consensus among public school officials that effective behavior-management practices on buses are essential to ensure student safety (Association of School Bus Officials, 1987).

Despite the aforementioned concerns, research on the topic of school bus-riding behavior is lacking. In one study, Greene, Bailey, and Barber (1981) measured noise level and disruptive behaviors (roughhousing and getting out of seat) on buses transporting middle-school students. One intervention included a sound-recording device with accompanying light display that signaled when the noise level exceeded a preset decibel criterion. Staying below the criterion earned students the privilege of listening to music during travel and raffle tickets that could be exchanged for prizes. A second intervention used the same monitoring apparatus but excluded the presentation of raffle tickets. Both interventions decreased noise levels to acceptable limits and also had a reductive effect on roughhousing and out-of-seat behaviors.

A study by Richardson (1986) evaluated bus driver and classroom training on the number of bus-riding infractions issued to fourth-, fifth-, and sixth-grade students. Bus drivers were taught to be more aware of effective management methods and how to employ student bus patrols. They also participated in a monthly meeting with the school's assistant principal to discuss implementation problems and reinforce what had been learned during training. The program for students emphasized personal responsibility and safe bus behaviors, with direction provided by the assistant principal during brief meetings that occurred during the first

3 months of the school year. The findings by Richardson were that after the intervention, bus rule violations decreased by 50% to 61% from the previous year, bus drivers correctly identified effective management techniques, and 80% of students reported riding responsibilities appropriately.

The research by Greene *et al.* (1981) and Richardson (1986) suggests that discipline practices on school buses can be improved by (a) defining and teaching acceptable bus-riding behaviors, (b) training drivers to monitor student activity during transportation, (c) establishing incentive contingencies to motivate performance, and (d) enlisting the support and participation of administrative personnel. In the following study, we applied a whole-school bus-riding intervention that combined several procedures and was implemented through a behavioral consultation model in an urban public school. In addition to extending the extant literature concerned with intervention on school buses, this example of translational research makes three other contributions. First, we provided a longitudinal evaluation of behavior-management practices that spanned several school years. Second, the efficacy of intervention was reported during both the time consultation was provided and a postconsultation phase when school administrators maintained the intervention without ongoing technical assistance. Third, we conducted the evaluation using a reversal design to isolate more precisely the influence of intervention.

METHOD

Participants and Setting

The participants were the entire student population attending a public elementary school (Grades K through 5) located in a low-socioeconomic urban area. On average, there were 624 students enrolled at the school during the five phases of the study.

The student composition was 88% African-American, 5% Caucasian, 4% Hispanic, 2% Asian/Pacific, and 1% other. Approximately 90% of students qualified for free or reduced-price lunch.

Measurement

Dependent measures were the number of bus office referrals and bus suspensions. Bus drivers, administrative staff, or teachers recorded an office referral slip when a student (a) got out of seat without permission, (b) threw objects on the bus or out of a window, (c) consumed food on the bus, (d) "talked back" to the bus driver, (e) prevented other students from sitting in a seat, (f) destroyed property, (g) used obscene language or gestures, or (h) hit another student. Each completed office referral slip included the name of the student, the behavior exhibited, the date of occurrence, and the student's grade level. The office referral slip was routed to the school administrative office, and the assistant principal entered the information into a computer-generated stored database. When a student received a bus office referral, he or she was required to attend a disciplinary meeting with the assistant principal.

A bus suspension was recorded when the documented behavior endangered other students or staff, the behavior interfered with operation of the bus, or when a student accumulated a predetermined number of office referrals. Suspensions also were entered into the database. When a student received a suspension, he or she could not travel on the school bus for up to 3 days, as determined by school administrators.

The data entered by the assistant principal were summarized each month on a computer printout. To determine interscorer agreement, two individuals independently tallied the data during 24 of the 27 months (89%) of the study. Agreement was 100% each month.

Procedure

The study covered 2 full (August 1999 through June 2000 and August 2000 through June 2001) and approximately one half (August 2001 through January 2002) of 3 consecutive school years.

Baseline 1 (August 1999 through January 2000). Bus office referrals and suspensions were issued, but there was no systematic approach to behavior management. As noted previously, students who received a bus office referral met with the assistant principal, at which time their behavior on the bus and the resulting negative consequences were reviewed. Typically, students were informed that their parents would be notified, a record of their difficulties on the bus was being kept, and a bus suspension would be given if the problems continued. During travel, student activity was monitored by surveillance cameras that were installed on all buses. The recorded videotapes were screened by the transportation company to assist drivers in identifying the sources of disruption.

Intervention 1 (February 2000 through June 2000). An intervention plan was developed by the school's administrative staff and the bus drivers through consultation with a doctoral-level consultant from an out-of-state behavioral health-care organization. The consultant met with administrators during regularly scheduled visits to the school (2 days per month) and participated in off-site planning via telephone conference calls.

The elements of the intervention were as follows:

1. A list of safe bus-riding behaviors ("bus rules") was generated and explained to the students. They were quizzed on these behaviors and were requested to demonstrate them during role-play scenarios.

2. The bus drivers were taught how to monitor students more effectively during transportation and to provide positive reinforcement by giving them "caught being

good" (CBG) cards when they adhered to the safe behavior expectations. This training occurred during a 45- to 60-min session attended by all drivers.

3. The CBG card included the name of the student, his or her grade, identified positive behavior, date of receipt, and respective bus. Completed cards were collected each day and entered into a weekly school lottery. Lottery winners received small prizes and activity privileges. Local merchants donated the majority of tangible back-up reinforcers (prizes), and some were purchased by the school. The activity privileges were scheduled during the hours of a typical school day.

4. Each week, the school bus that had the fewest office referrals and suspensions received a "bus of the week" acknowledgment.

5. With guidance from the consultant, school administrators tracked data systematically to verify the outcome of the intervention. The assistant principal or a staff person assigned as "dismissal monitor" gave brief updates periodically to the bus drivers to inform them of progress.

During Intervention 1, the video surveillance cameras were removed permanently from the school buses. The policy of implementing bus office referrals, bus suspensions, and the discipline meeting with the assistant principal was identical to baseline.

Baseline 2 (August 2000 through December 2000). The 1st month of this phase coincided with the start of a new school year, at which time the intervention was not implemented.

Intervention 2 (January 2001 through March 2001). The intervention, as described earlier, was reintroduced. Consultation was provided during these 3 months but was then terminated. Administrative staff were able to contact the consultant via telephone or e-mail as warranted. However, on-site visits by the consultant were no longer scheduled.

Follow-up (September 2001 through Janu-

ary 2002). During the months of April through June 2001, the public school continued the intervention, but data were not reported to the consultant as done previously. The follow-up phase represented the 3rd school year of the study. During the 2nd month (September 2001), telephone consultation to the school was initiated to determine the status of programming and to review data-reporting procedures. After several telephone contacts, the consultation was stopped and the school administrators assumed full responsibility for the whole-school intervention.

RESULTS

Figure 1 depicts the average number of bus office referrals and bus suspensions recorded per day each month. During Baseline 1, a variable trend was documented for office referrals, with frequencies ranging from 1.0 to 6.3 daily. The 1st month of Intervention 1 was associated with an increase in referrals followed by a steady decrease for the remainder of the phase. During Baseline 2, referrals increased, and with Intervention 2, the frequency decreased again, although there was an accelerating trend during the 3 months in which data were available. At follow-up, referrals remained at the reduced frequency achieved during the previous intervention phases.

The average number of bus suspensions recorded per day increased gradually in Baseline 1, but with variability during successive months. Suspensions occurred less frequently during Intervention 2. The average number of suspensions during Baseline 2 remained low for 3 months but increased steadily during the final 2 months of the phase. The frequency of suspensions decreased during Intervention 2, but similar to office referrals, an accelerating trend was evident. At follow-up, bus suspensions had decreased further.

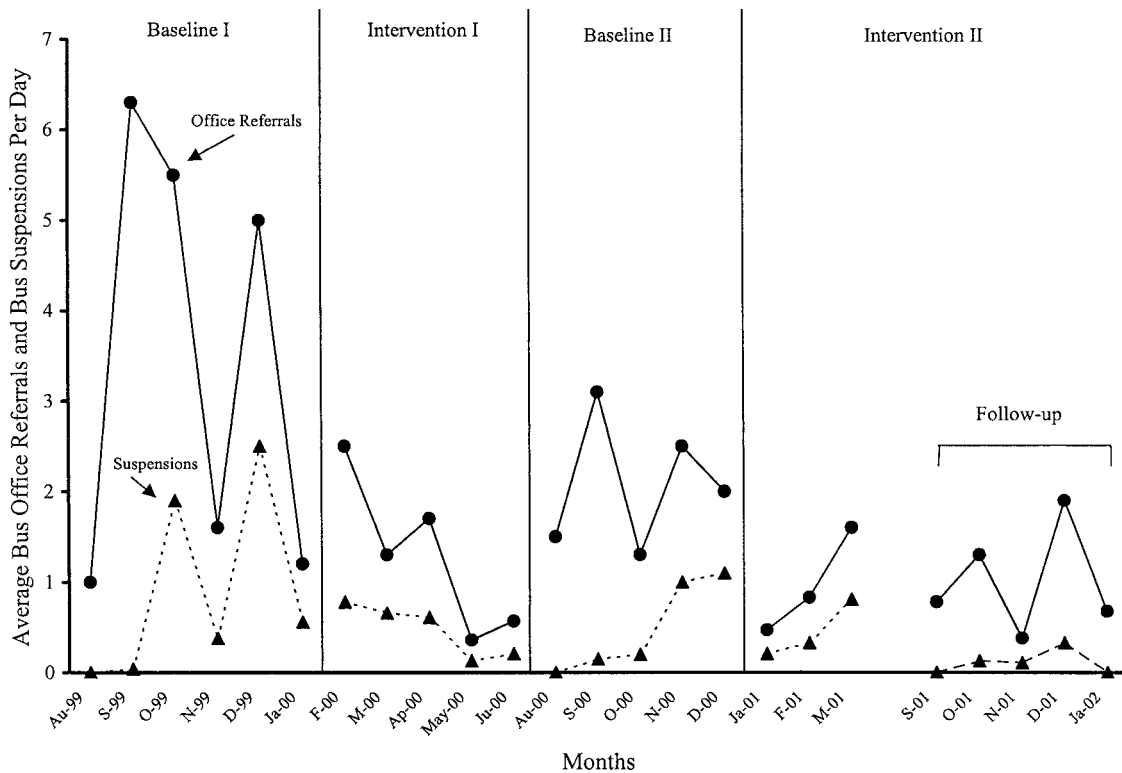


Figure 1. Average number of bus office referrals and bus suspensions recorded per day each month.

DISCUSSION

A whole-school intervention was effective in improving the bus-riding behavior of public-school students. As documented in a reversal design, the multicomponent intervention resulted in fewer discipline referrals issued for disruptive bus behaviors. Similarly, bus suspensions also decreased with the intervention. This evaluation was performed over 3 consecutive school years in an effort to study long-term outcome.

The bus-riding program was a collaborative effort among teachers, administrators, and bus drivers, included all students, and had a prevention focus. Because the procedures were implemented simultaneously, it is not possible to isolate their individual influence on outcomes. Although speculative, our impression is that the most potent elements of the bus-riding intervention were defining how students should behave appropriately,

using an incentive-based system to motivate performance, and having bus drivers use positive reinforcement systematically. This approach can be contrasted to baseline conditions in which bus management was addressed reactively (e.g., presence of surveillance cameras, disciplinary meetings) and without positive reinforcement. Unfortunately, data for the CBG cards were not available, so the relation between this component of intervention and the target behaviors could not be analyzed.

The intervention evaluated in this study was designed through consultation to the public school (Luiselli, 2002). During the formative stages of program development, the consultant made routine visits to the school, worked closely with participants, and had primary responsibility for monitoring progress. However, following the second intervention phase, contact with the consul-

tant was withdrawn to the point at which school personnel ultimately supervised intervention implementation. The follow-up data revealed that in the absence of ongoing consultation, the intervention continued to be maintained effectively. This finding is noteworthy because under some circumstances, successful behavioral programming in educational settings can diminish when previously involved consultants are no longer present (Northup *et al.*, 1994). In our study, the maintenance of intervention may have occurred because consultation was faded slowly and not terminated abruptly.

There are few examples of longitudinal outcomes from whole-school interventions (Luiselli, Putnam, & Sunderland, 2002; Taylor-Greene & Kartub, 2000), so it is significant that school personnel fully adopted the consultation-initiated intervention over the long term. On this note, Kennedy (2002) posited that intervention-produced behavior change that does not endure over time should not be considered effective. Furthermore, he suggested that effectiveness, from the perspective of consumer satisfaction and acceptability, can be judged by "the degree to which social contexts support interventions across time" (p. 603). That is, the maintenance of programs by stakeholders is a meaningful determinant of social validity. Cost data, although not available in this study, would be another evaluative measure of such a large-scale intervention (Putnam, Luiselli, Sennett, & Malonson, 2002).

The study had several limitations, imposed largely by the fact that procedures were implemented and evaluated by nonresearch participants in a "real world" setting. We point out, for example, that intervention was introduced despite a decrease in both bus office referrals and bus suspensions during the last month of the original baseline phase. Although it would have been preferable to withhold intervention until these measures were stable, the goal of school ad-

ministrators and the company that provided bus transportation was to intervene "sooner than later," given the longstanding difficulties with student discipline they had encountered. A second constraint was not having individuals who could travel on the buses to conduct interobserver agreement assessment. We were able to report interscorer agreement that was calculated from the bus office referral and bus suspension permanent-product data, but in lieu of direct observation, we cannot specify the consistency and accuracy with which bus drivers documented student behavior. One option for future research would be to have designated and available school staff serve as coobservers and schedule them to be present periodically during bus travel. Similarly, we could not assess procedural integrity among bus drivers. The training with drivers verified their understanding of the intervention plan, but verbal report may not correspond with actual implementation. Combining interobserver agreement assessment with checks of procedural integrity by in-vehicle staff would be one possibility. Alternatively, the video surveillance cameras used previously to record discipline problems could serve to document how properly bus drivers adhered to the defined protocol.

Our findings also must be interpreted cautiously due to potential threats to internal validity. Note that seasonal influences should be considered because during the first 2 school years, Baselines 1 and 2 always started in the fall semester and Interventions 1 and 2 always started in the spring semester. Additional threats would be changes in school personnel (including bus drivers) and student-body composition that occurred over the 3-year course of the study. Further qualifications concern the increasing trend for office referrals and bus suspensions during Intervention 2 and the absence of intervention effects seen for bus suspensions when comparing average frequency across

phases. In the first instance, both office referrals and bus suspensions subsequently decreased in the follow-up phase. As for the average frequency of bus suspensions, there was an increasing trend during the last 2 months of Baseline 2, suggesting a controlling effect of the intervention.

Positively directed whole-school intervention continues to evolve as an effective and preferred method of constructive student discipline (Lewis & Sugai, 1999; Mayer, 2002). The results of this study suggest that a common problem facing public schools—disruptive behavior on school buses—can be approached successfully through a consultation model and that ultimately, school personnel can acquire the skills to manage large-scale interventions independently. Furthermore, it appears that by building a sustainable discipline program with high practitioner acceptability, the improvements can endure across multiple school years.

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STUDY QUESTIONS

1. Based on previous research on problem behavior on school buses, what steps did the authors suggest to improve discipline practices on school buses?
2. What behaviors resulted in referrals and suspensions?
3. Describe the primary components of the intervention.
4. Briefly discuss the practicality of the procedures used in this study relative to those used by Greene et al. (1981) and Richardson (1986).
5. In addition to data on referrals and suspensions, what other measures may have been helpful in evaluating the effects of the intervention?
6. Briefly describe the results of the study with respect to referrals and suspensions.
7. What features of the data weaken the demonstration of experimental control?
8. The authors suggested that seasonal influences should be considered as a potential threat to internal validity. What seasonal influences may have influenced the results?

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