Developing Appropriate Behavior on School Buses

RONNIE N. ALEXANDER
KEN G. JENS
DAVID B. CENTER
ELIZABETH WILLIAMS CREAGH
SARA REALE

Ronnie N. Alexander is Associate Professor of Special Education, College of Multidisciplinary Studies, University of Texas, San Antonio. Ken G. Jens is Associate Professor of Special Education, University of North Carolina, Chapel Hill. David B. Center is a Doctoral Student at Georgia State University and was formerly a Teacher at the Cobb County Psychoeducational Center. Elizabeth Williams Creagh is a Learning Disabilities Teacher at Marietta Junior High School, Marietta, Georgia. Sara Reale is the Director of the Cobb County Psychoeducational Center.

☐ The utility of behavioral intervention techniques in education is no longer of question. They have been used to manage both social and academic behavior problems with virtually every category of exceptional individuals. Recently the tenets of applied behavior analysis have also been used to change behavior in public settings such as theaters (Burgess, Clark, & Hendee, 1971) and a public campground (Clark, Burgess, & Hendee, 1972).

While educators have bemoaned the difficulties of transporting children to and from school since the inception of the public transportation movement, few attempts have been made to solve behavior problems arising on school buses by means other than disallowing given students to ride the buses. Everett, Haywood, and Meyers (1974) demonstrated the effectiveness of a token economy for increasing the number of riders on a quasi public bus, and Rtisch, Mongrella, and Presbie (1972) showed that "quiet" behavior of a group could be increased on a school bus by reinforcing its occurrence with music. Campbell, Adams, and Ryabik (1974) used a time out procedure (stopping the bus) contingent on any instance of standing, incorrect in seat posture, or fighting by any of the 21 students riding the bus. Frequency and duration of the target behaviors declined to zero or near zero during the treatment conditions. While it might not be possible to use stopping the bus in high traffic environments, it would seem that this general approach should be applicable to that very common concern of educators and parents alike — engendering and maintaining appropriate behavior of students while they ride buses to and from school. In addition to bringing about an increase in safety because the bus driver is allowed to give fuller attention to the act of driving, other benefits might accrue; the development of successful systems for the operant management of behavior which extends beyond the proximity of the teacher in the school would be very desirable. Positive experiences and interactions would increase for students as their inappropriate behavior decreased, and those persons having responsibility for the youngsters — parents, teachers, and bus drivers — undoubtedly would react to them in a more favorable manner.

The following are three examples of simple, successful programs for eliminating inappropriate behavior on school buses.

PROGRAM I

This program was developed in an effort to eliminate (a) out of seat, (b) throwing, and (c) hitting behaviors of youngsters while they rode a school bus to and from school daily. Modification procedures were utilized only in the afternoon during the children's ride home from school on a 40 passenger school bus.

Students

The subjects for this study were 16 special education students ranging in age from 7 to 13 years. They were enrolled in four different classes in two schools in DeKalb County, Atlanta, Georgia. The majority attended self contained classes for youngsters with learning disabilities; the remainder attended classes for the mildly to moderately retarded.

Procedure

Behaviors of concern while the children rode the school bus were defined as follows:

1. Throwing: occurred each time a youngster threw, blew, or projected an object into the air in any way. Event recording was used to determine the operant level of this behavior.
2. Hitting: was defined as raising one's hand in a threatening manner toward another or actually hitting another person. Event recording was used to determine the frequency of this behavior.
3. Out of seat: all behavior other than sitting on the seat with the trunk of the body facing the front of the bus. The "placheck" (Hall, 1971) method of recording was used to measure this behavior, enabling the observer to record the percent of out of seat behavior for the group each day.

After baseline measures were obtained for each of the behaviors, letters explaining the program were sent home to the parents of the children riding the school bus. Both the student and his parents were asked to sign the letter if they wanted to participate; parent participation was in the form of providing backup reinforcement according to their values and commensurate with the behavior change exhibited by their child. Tokens were a smiling face stamped on the back of the child's hand as he exited from the bus if his behavior met criterion at the end of the ride. Criterion, in keeping with the multiple baseline design used, was first no throwing, then no throwing or hitting, and finally no throwing, hitting, or getting out of seat.

Results

During baseline conditions an average of r throwing events and about 14 hitting nts occurred each day and, using a placheck recording technique, a mean of 49% out of seat behavior was recorded. On the sixth day of the program, when letters were sent to the parents and the children were informed of the initial contingency, no throwing, immediate changes were observed in the behavior being consequated. Reductions in hitting and out of seat behaviors also occurred as soon as the contingency was applied.

Discussion

Sequential reduction of inappropriate behavior was achieved by making the receipt of the happy face stamp contingent on first no throwing, then no throwing and no hitting, then no throwing, no hitting, and no out of seat behavior. Whether similar results would have been obtained by an alteration of the sequence or by requiring simultaneous reductions in all three behaviors is speculative and awaits further research.

PROGRAM II

This program was initiated for the purpose of decreasing the following behaviors exhibited by youngsters while riding school buses to and from school:

1. Failure to buckle seatbelts.
2. Unbuckling seatbelts while riding.
3. Screaming, cursing, name calling.
4. Touching, hitting, or taking things from others.

Students

Subjects for this study were 25 students ranging in age from 5 to 12 years who were attending classes for children with behavioral disorders. They were transported to and from school on minibuses, with eight or nine students riding on each bus. Actual riding time on the buses ranged from about one-half hour to an hour and a half for individual students.

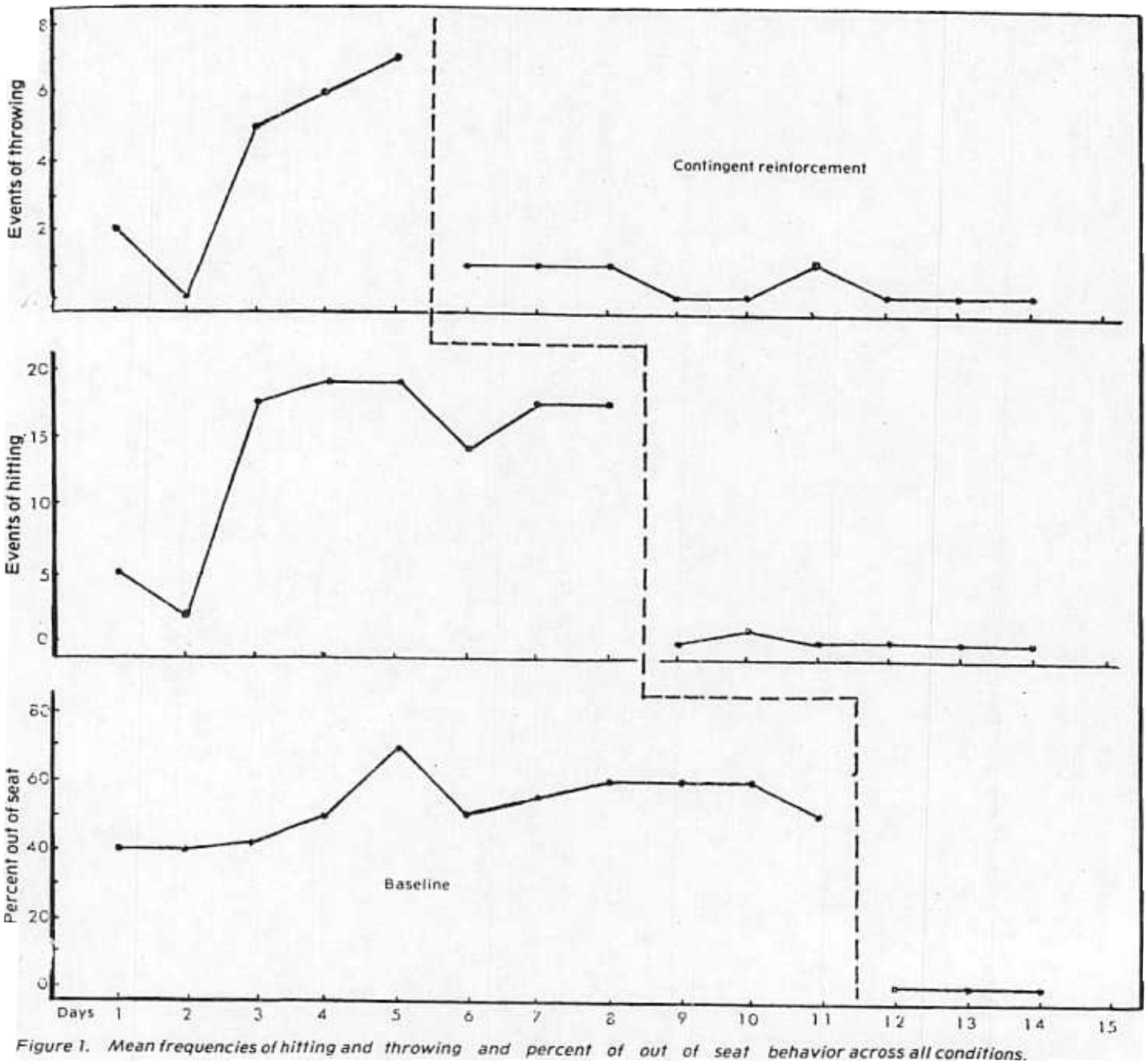

Figure 1. Mean frequencies of hitting and throwing and percent of out of seat behavior across all conditions.

Procedure

Recordings of the number of behaviors for each pupil were collected.

Data were converted to mean number of inappropriate behaviors per day per child while riding the bus, as the investigators were interested in developing a group contingency where a changing criterion could be used to decrease the average number of disruptive behaviors on the buses.

Following the baseline data collection, a response cost program was established. At the end of each school day, all bus riders were issued a card with two rows of 10 checks depicted on it. These cards were carried on the bus during the ride home and the ride back to school the following morning. During each ride, bus drivers had a clipboard holding tally sheets beside them on which all students' names had been written in bold colored letters to make them easy to identify at a glance. Whenever a student engaged in inappropriate behavior, a tally mark was placed next to his name and the bus driver said, "_____, your seatbelt is unbuckled. I'm putting a mark next to your name." At the end of each ride, the bus driver crossed out one check on the card for each behavior that had been noted for each child as he exited from the bus. As the children entered their classrooms each morning, the teacher recorded the points left on the card from the ride home the day before and the ride to school that morning. Reinforcement was available to the students every Friday on the following basis:

50 checks:	see an entertaining film
60 checks:	film and popcorn
70 checks:	film, popcorn, and soft drink
80 checks:	film, popcorn, soft drink, and ice cream

At the end of each week of consequation "prices" were increased by 10 checks, that is, the criterion for reinforcement was raised.

Results

During baseline, the students averaged 6.7 inappropriate behaviors per day, with a range from 5 to 8.3. The first week of consequation, the mean number of disruptive bus behaviors decreased to 3.6 per child per day, with a range from 2.3 to 4.6. During the second and third weeks of consequation, the mean number of disruptive behaviors per child per day decreased to 2.4 and 1.8 respectively, with some variability noted in the third week.

Discussion

Initially high rates of inappropriate bus behavior were reduced appreciably through this procedure. Sequentially reducing allowable levels of inappropriate behavior to receive reinforcement was associated with reductions in the behavior.

PROGRAM III

This program was a sequel to Program II and was carried out the following year. The previous program was cumbersome in its administration due to the attempt to provide data on each student's behavior. The new program utilized a data collection procedure which provided a measure for each bus as a whole. Reinforcement was delivered on a group contingent basis rather than on an individual basis.

The behaviors which the program was designed to decrease on the school buses were:

1. Shouting, name calling, cursing, etc.
2. Putting feet in seats, in aisle, out windows, etc.
3. Hitting, kicking, and pinching others, etc.
4. Throwing objects, shooting rubber bands, etc.
5. Littering the bus or streets or defacing the bus.

Students

The subjects for this study were 39 students ranging in age from 5 to 12 years. The children were attending a

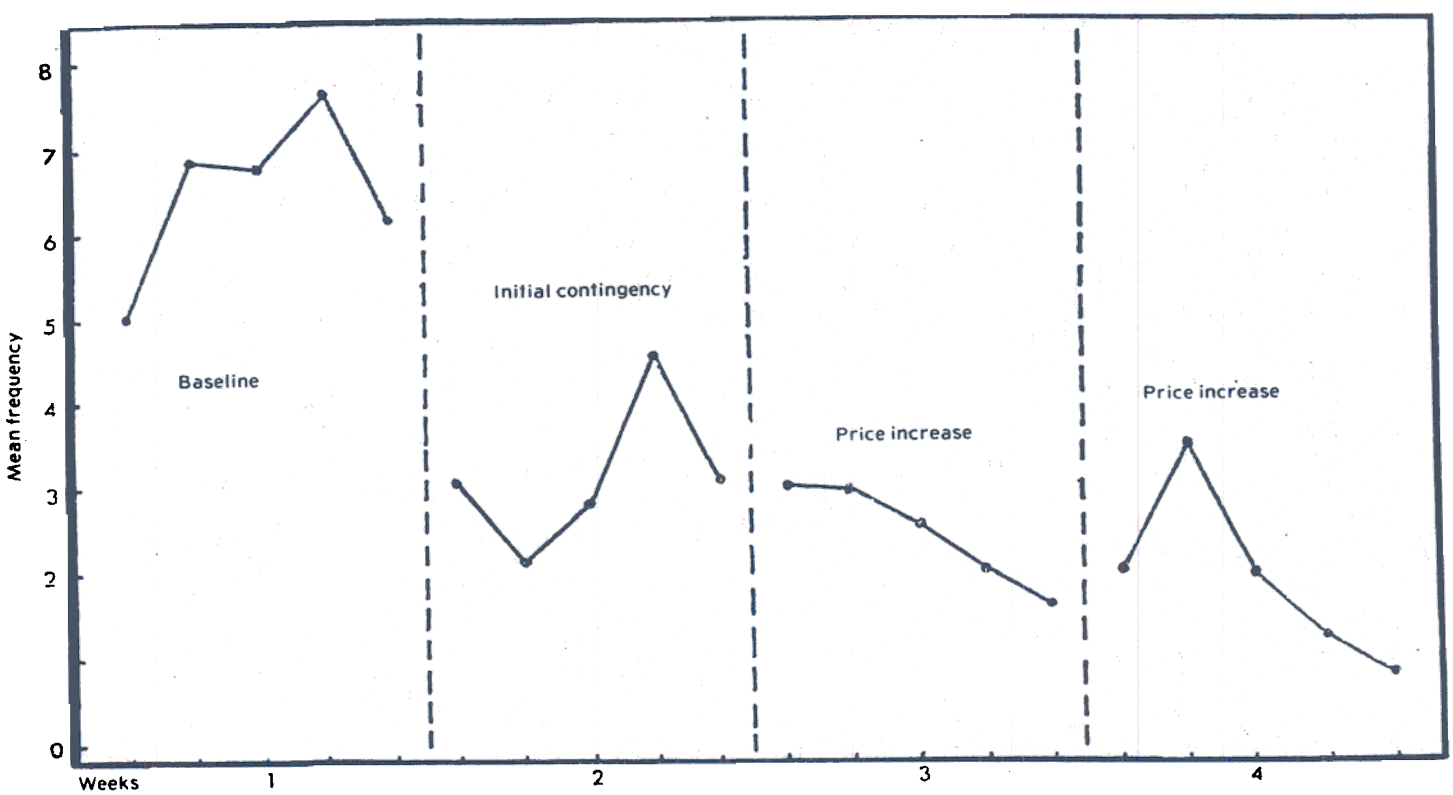

Figure 2. Daily mean number of inappropriate behaviors per pupil across all conditions.

Displaying appropriate behavior on the bus results in positive reinforcement after the e.

psychoeducational treatment center for students with behavior problems. Transportation was provided by minibuses. At the beginning of the program there were three buses with 12 to 14 children per bus. Toward the end of the program there were four buses with 9 to 10 children per bus.

Procedure

Measurement of the frequency of target behaviors was done by event recording using a hand held mechanical counter. Each instance of a target behavior resulted in a tally on the counter. There was no differentiation among behavior categories in the recording procedure.

A baseline was taken for one week on each of the three original buses. After the baselines were established, a response-cost program was begun. Each bus was initially required to reduce the level of inappropriate bus behavior by 20% in order to receive reinforcement.

Reinforcement was delivered on Friday of each week or the last school day of the ·eek if that was not Friday. The reinforce- nt consisted of 30 minutes free time in ne gym or outside and refreshments. The refreshments consisted of a 5 ounce paper cup filled with a soft drink and a small bag of popcorn. In addition, the bus showing the most improvement over the previous week received a bonus which was usually a bite sized candy bar.

Daily feedback was provided for the students by way of a chart posted in the hallway. This chart had horizontal tracks divided into 20 equal intervals. Each track was assigned to a specific bus and was labeled with that bus number. The chart had a movable finish or criterion line and movable figures, cut from poster paper, to represent the buses. The bus with the most reduction in inappropriate behavior had a jet plane placed in its track and positioned so as to reflect its standing relative to the other buses and the criterion line. The bus with the least reduction was represented by a turtle. The chart was adjusted on a daily basis.

The initial requirement of a 20% reduction in inappropriate bus behavior had to be met for two consecutive weeks and then the criterion was raised by another 20%. This procedure was followed until the terminal criterion of 80% reduction was reached.

Beginning with the sixteenth week of the program, a new bus was put into operation and the students were redistributed over the four buses. It would have been difficult to obtain new baselines and begin over at that point, so each bus was arbitrarily assigned a daily baseline of 20 incidents for purposes of computing reduction of inappropriate behavior. Twenty seemed a reasonable figure in that it was only a little less than the original baselines, and fewer instances of misbehavior were expected since the buses would be less crowded and the ride somewhat shorter for each bus. All four buses were put on the 80% criterion.

Results

During the baseline phase the three buses measured 105, 115, and 130 incidents of inappropriate behavior. These baseline totals have been plotted as single data points which represent the mean number of incidents per day for the baseline week.

Bus 218 (see Figure 3a) reached the criterion of a 20% reduction in misbehavior for two consecutive weeks in the second week of the program. The 40% criterion was reached in the fourth week, the 60% criterion in the seventh week, and the 80% criterion in the thirteenth week. For the entire program, Bus 218 had a daily mean of 4.81 incidents, which represents a mean overall reduction in inappropriate behavior of 81%.

Bus 219 (see Figure 3b) reached the criterion of a 20% reduction in inappropriate bus behavior for two consecutive weeks in the fifth week of the program. The 40% criterion was reached in the twelfth week. This bus was working on the 60% criterion level when the new bus was introduced and the students redistributed. At that time all buses were placed on the 80% criterion. Bus 219 had a daily mean of 12.09 incidents for the full program, which represents a mean reduction in misbehavior of 47% overall.

Bus 229 (see Figure 3c) reached the criterion of a 20% reduction in bus misbehavior for two consecutive weeks in the second week of the study, the 40% criterion in the eighth week, and the 80% criterion in the tenth week. Over the course of the whole program, Bus 229 had a daily mean of 4.86 incidents, which represents a mean overall reduction in inappropriate bus behavior of 77%.

Bus 225 (see Figure 3d) began on the sixteenth week at the 80% criterion level and failed to earn reinforcement only once during the seven weeks that it was part of the program. The mean number of daily incidents of misbehavior for Bus 225 was 1.86.

Discussion

The sequential reduction of the target behaviors in relation to increasingly stringent criterions for reinforcement

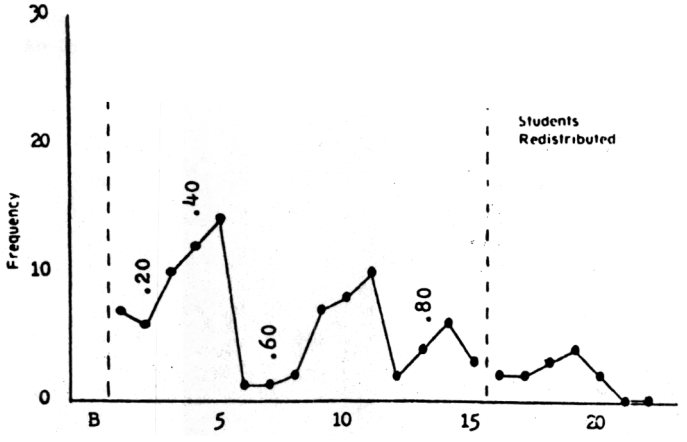

Figure 3a. The mean daily frequency of inappropriate behavior on Bus 218 for 23 weeks, including the baseline week.

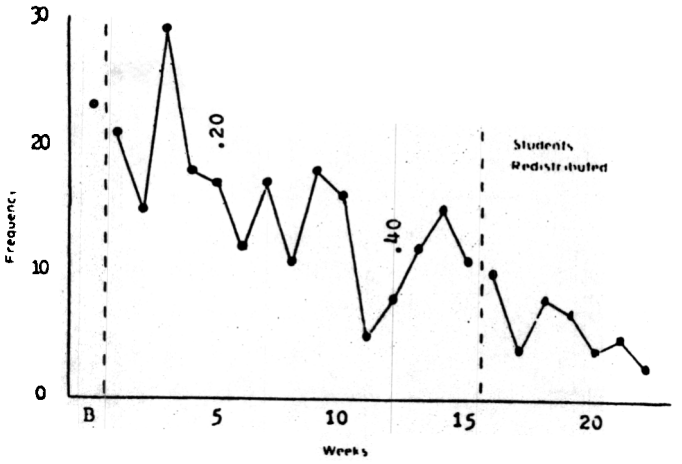

Figure 3b. The mean daily frequency of inappropriate behavior on Bus 219 for 23 weeks, including the baseline week.

suggests a causal relationship between the procedure and the frequency of misbehavior on the school buses. The relationship is most clearly expressed in the data for Buses 218 and 229. Both of these buses adjusted their misbehavior levels in response to the criterion imposed at any given time. Initially, Bus 218 reduced its behavior level more than was necessary to meet the 20% criterion and adjusted it up for the 40% criterion and then back down for the 60% level. Both of these buses probably could have been started on a more stringent criterion than a 20% reduction in misbehavior.

GENERAL DISCUSSION

The three programs were implemented for the purpose of reducing disruptive or inappropriate behaviors of special education students while they were riding school buses. The efficacy of rather simple reinforcement and response cost programs was demonstrated through the use of a multiple baseline design in the first project, and a changing criterion design in the second and third projects.

The programs were inexpensive and easy to implement, although one should be aware of difficulties which may arise when others are relied on to manage behavioral change programs. In one instance it was noted that the bus driver had difficulty refraining from the use of verbal reprimands and threats which could not be carried out. Occasionally, there were circumstances which prevented consequation of behavior, including parents who forgot, lost point cards, special events or activities at school, and illnesses. Despite these possible shortcomings, the behavioral change programs were very effective. Parents, school personnel, and the children were enthusiastic about the bus programs.

REFERENCES

Burgess, R. L., Clark, R. N., & Hendee, J. C. An experimental analysis of anti-litter procedures. *Journal of Applied Behavior Analysis*, 1971, 4, 71-75.

Campbell, D. P., Adams, R. M., & Ryabik, J. E. Group-contingent time-out and behavior on a school bus. *Psychological Reports*, 1974, *34*, 883-885.

Clark, R. N., Burgess, R. L., & Hendee, J. C. The development of anti-litter behavior in a forest campground. *Journal of Applied Behavior Analysis*, 1972, *5*, 1-5.

Everett, P. B., Haywood, S. C., & Meyers, A. W. The effects of a token reinforcement procedure on bus ridership. *Journal of Applied Behavior Analysis*, 1974, *7*, 1-9.

Hall, R. V. *Managing behavior. Behavior modification: The measurement of behavior.* (Vol. 1). Lawrence KS: H & H Enterprises, Inc., 1971.

Rtisch, C., Mongrella, J., & Presbie, R. J. Group time out from rock and roll music and out of seat behavior of handicapped children while riding on the school bus. *Psychological Reports*, 1972, *31*, 967-973.

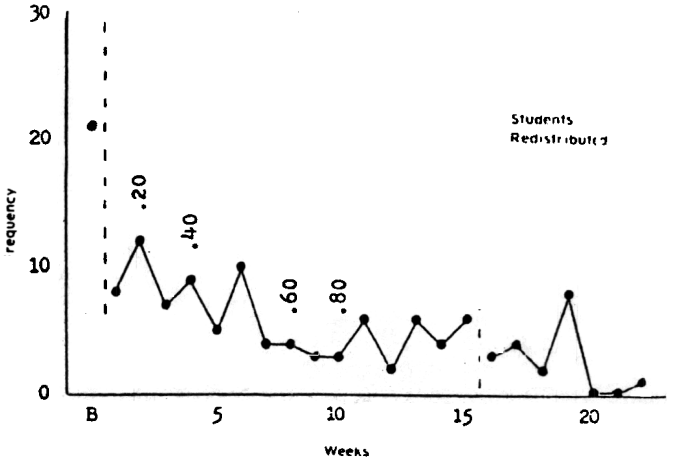

Figure 3c. The mean daily frequency of inappropriate behavior on Bus 229 for 23 weeks, including the baseline week.

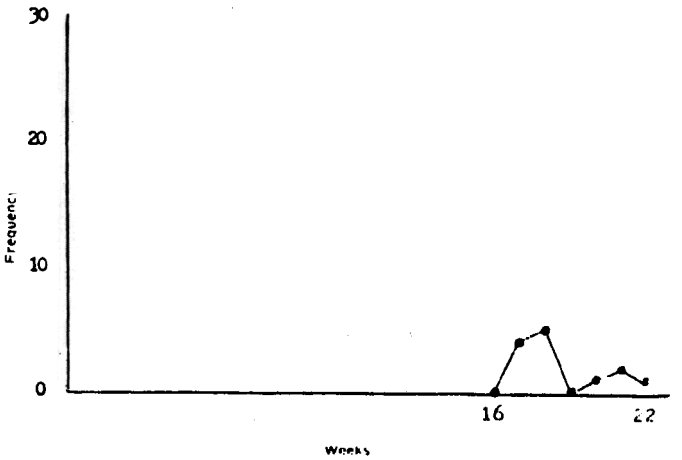

Figure 3d. The mean daily frequency of inappropriate behavior on Bus 225 for 7 weeks. The students on this bus were drawn from the other three buses.