

The School Bus: A Neglected Children's Environment

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ABSTRACT

Many children and youth in rural communities spend significant portions of their lives on school buses. This paper reviews the limited empirical research on the school bus experience, presents some new exploratory data, and offers some suggestions for future research on the impact of riding the school bus on children and youth.

INTRODUCTION

Rozin (2006) has argued that psychology has paid little attention to the everyday behavior of people, to the "normal flow of life" (p. 365). That is certainly true of one very common behavior of millions of school children, especially children who attend rural schools: riding the school bus. Over half the children in the United States regularly ride a school bus (Howley & Smith, 2000). In some primarily rural states the percentage of bus riders is much higher. For example, in West Virginia almost 80% of children are transported to school on buses (School Bus Information Council, 2000). Children in rural areas are much more likely than those in suburbs to have long bus rides (Howley, Howley, & Shamblen, 2001). A great deal is known about how many miles school buses travel each year, how much is spent on bus transportation, and how safe it is to ride school buses. Yet there may be no environment where children spend as significant an amount of time that has received so little attention from those who study child development. Bus riding is a behavior obscured by the "patina of the mundane" (Jewett, 2005).

From a theoretical perspective, school buses provide a distinctive behavior setting that evokes some kinds of child and adolescent behaviors while constraining others. Ecological psychologists (e.g., Gump, 1980; Wicker, 1979) have argued that the nature of a physical setting has important implications for both the behavior that is likely to be observed in any particular situation and for long-term patterns of behavior. In some ways the school bus provides a unique environment for children and youth. There is a distinctive combination of physical constraint and limited social opportunities. Unlike homes, playgrounds, and schools, buses have very few objects for play or exploration. On many bus rides there is an age mix of children that is unusual in modern American society.

The purpose of this paper is to raise some issues related to school bus riding and how the

environment of the school bus may influence children. I will review the available studies on children and buses, describe some preliminary data my students and I have collected from the perspectives of riders, parents and bus drivers and then suggest some routes for future research. Because so little has been documented about the psychology of the school bus experience (Howley, 1999), we have taken a broad exploratory approach to identifying areas that might be investigated in more depth to reveal the behavioral implications of riding a school bus.

The Perspective of Bus riders

Memories of riding the bus and socialization

To begin to map the nature of the school bus experience we conducted three surveys of college students' retrospective memories of riding the bus (Williams & Henderson, 2005). The initial survey of 22 former bus riders consisted of a number of open-ended questions, including ones asking them to describe the bus riding experience in one or two words, what they did on the way, what they learned on the bus, and three or four positive and three or four negative memories about their trips to school. Seven of the 22 characterized their experiences as positive ("fun," "interesting"), nine as negative ("horrible," "extremely bad," "boring"), and seven as neutral ("okay," "sleepy"). In response to the question about what they did on their rides to school, almost all (21 of 23) said something about socializing with friends ("talking about boys," "gossip," "who is going with who"). The other common topic of discussion reported was school ("school stuff," "teachers"). Bus riders said that what they learned on trips mostly had to do with socialization (e.g., "some people are nice in the world and others are nasty," "popularity comes with beauty," "how to make fun of people," "how to communicate with the opposite sex at that age," "how to laugh," "how to accept being made fun of," "everybody else's business," "all the gossip going on," "I learned to keep to myself and to defend myself verbally"). The most common responses by bus riders about what they had learned on school trips related to socialization issues: "to socialize with other students," "how some friendships are built...and how easily some people flew off the handle," "to stand up for myself," "how to get along with others...not to be afraid to talk to others," "how to socialize with peers," and "the way kids act without adult supervision."

The responses to the request for positive and negative experiences paralleled those to questions about activities and what was learned. The positive comments had to do with socializing (17 indicated positive interactions with friends and one said she had met her future husband on the bus). The negative comments for the bus riders reflected on being picked on or witnessing others being picked on or fighting (13 bus riders reported one or both).

The other two surveys used a more structured set of questions based on the results of the first survey with 150 college students who had ridden a bus some time during their school careers. Former bus riders reported remembering that off-color language and jokes were very common on the bus. Between a third and a half of the students reported drug or

alcohol use, the presence of weapons on the bus, and overt sexual activity. Almost two-thirds of the students remembered being teased and teasing and being bullied and bullying, although almost all respondents indicated that they witnessed teasing and bullying much more often than they initiated it. Most bus riders recalled seeing fighting, but that it was uncommon. About a quarter of the students viewed their bus experience as negative, another quarter as positive with the majority rating it neutral. The results of the retrospective surveys point to peer relations as the core of the bus riders' experiences. Riders had to learn to deal with negative behaviors (teasing and bullying) but also used the constrained environment to develop friendships.

Bus riding and child behavior off the bus

Does riding a school bus have consequences for children once they are off the bus? Reviews of the limited information on the effects of the school bus experience (Howley & Howley, 2001; Spence, 2000) suggest that for many children, particularly those in rural areas, the school bus experience may influence children's behavior at school and at home. The anecdotal reports from Zars (1998), based on interviews with rural school parents, principals, transportation directors, and school superintendents, suggest that many of the influences from riding the bus are negative. The families Fox (1996) interviewed reported concerns about the length of rides and the loss of sleep due to early pick-ups. Parents were most concerned about young children's contact with older children and the potential for children to be exposed to drugs and violence, causing them to "mature too quickly." The parents of children and adolescents from 6th through 12th grades from one particularly long ride in the Midwest showed similar concerns (Ramage & Howley, 2005). They worried about the use of profanity and language with sexual content that younger children were exposed to when rode with older students.

There is scant evidence about the impact of bus rides on school achievement, but many years ago, Lu and Tweeten (1973) reported a small, but statistically significant, negative relationship between distance traveled on buses and school achievement. There are a few studies that show that specific negative behaviors of individual children on school buses can be changed by manipulating reinforcement contingencies (e.g., Campbell, Adams, & Ryabik, 1974; Greene, Bailey & Barber, 1981; Ritschl, Mongrella, & Presbie, 1972). However, we know little about what most children actually do on school buses (Howley & Howley, 2001; Ramage & Howley, 2005). In our work we have explored teacher perceptions of disciplinary problems among bus riding children, the relation of bus riding to achievement, and the relation of long bus rides to athletic performance.

Mode of transportation and teacher perceptions of behavior

One possible outcome of riding the school bus is that children observe negative behaviors being modeled and imitate them. The surveys above suggest that behaviors such as teasing and, to a lesser extent bullying, do occur on buses with some frequency. Howley and Howley (2000) and Spence (2000) argue that behavior on the bus and behavior in school may be related. We asked teachers at a small rural elementary school about the behavior of their students in their classrooms and those reports were related to the child's

typical mode of transportation to school. The school is a preschool through sixth grade school in which 58% of the children are eligible for free or reduced lunch.

The 20 teachers at the school listed the first initial of each of their students and reported: (a) whether they rode to and from school in a car or bus most frequently; (b) whether the student was considered by the teacher to be a “discipline problem” (as defined by having indicated any discipline problems in each student’s previous team progress report under “citizenship”); and (c) whether the student had been reported to the principal’s office for discipline problems in the previous six months (since the start of the school year). A total of 415 students were listed but 25 were eliminated from the study because they rode the bus and a car about equal amounts of time.

Of the 205 children who regularly rode the bus, 47 (23%) had been cited for disciplinary problems under the citizenship category whereas 29 (19%) of the car riders had been cited. There was no association between mode of transportation and discipline citations, $X^2(1) = 3.15$, ns. Using the indicator of more serious discipline problems represented by being sent to the principal’s office, the findings were different. Across classrooms there was an association between being disciplined by being sent to the principal and mode of transportation, $X^2(1) = 7.57$, $p < .01$. The supplemental analysis using classrooms also showed a difference in the mean proportion of bus riders ($M = .09$) and car rides ($M = .03$) who had been sent to the office, $t(19) = 2.17$, $p < .05$, ($r = .00$).

These results suggest that riding the bus may be a contributing factor in serious discipline problems at school, but there are several reasons to be cautious about such a conclusion. First, these results are correlational. Second, the differences are small and only a small minority of bus riders got into serious trouble. Third, riding the bus versus a car may be related to other important factors, especially socioeconomic status. Perhaps most important, if students copy misbehaviors on the bus and take them to the classroom, it would seem the most likely behaviors to be imitated are mildly problematic ones (the most frequent). Here a difference between car and bus riders was found only for more serious transgressions. More information about the specific behaviors seen on the bus and reproduced in the classroom would have to be obtained to clarify these results.

Bus riding and achievement

Of the variety of possible domains of behavior that might be affected by riding the school bus, achievement is of natural concern. Negative school bus influences on achievement could include fatigue or simple competition for time. Our retrospective surveys suggest that college students do not recall doing homework or reading as typical bus behaviors. We conducted an exploratory archival study of school bus-achievement relations with the records of students from two different schools. One set of 47 students was in the fourth grade in a magnet school in a small city in western North Carolina. The other set included the 207 ninth graders who were attending a consolidated high school in a rural county in western North Carolina. Four pieces of information were taken from student records: (a) the nature of the student’s usual transportation to school (bus or car); (b) home address; (c) percentile scores on standardized tests of reading and mathematics.

For students who rode the bus, time spent on the bus was calculated from school bus schedules.

We addressed two major questions. First, for bus riders, is there a correlation between the amount of time spent on the bus each day and school achievement? Second, is there a difference in the achievement scores of students who ride the bus compared to those who ride to school in cars? The mean time on the bus (one-way) for bus riders was 20.9 mins ($SD = 12.5$) for fourth graders with a range of 4 to 52 mins. The mean time for ninth graders was 22.0 mins ($SD = 15.5$) with a range of 4 to 70 mins. For fourth graders time on the bus was positively correlated with both reading achievement scores, $r(47) = .33$, $p < .05$, and with mathematics scores, $r(47) = .43$, $p < .01$. Neither type of achievement was significantly correlated with time on the bus for ninth graders ($r_s = .14$ and $.05$ for reading and mathematics, respectively).

Achievement differences between bus and car riders were examined in separate 2 (transportation mode) X 2 (gender) MANOVAs of achievement scores for each grade/school. Gender was included as a factor because of the well-established gender differences in achievement and the possibility that gender would interact with transportation experience. The descriptive statistics for the two grades/schools by transportation mode are presented in Table 1. For fourth graders in the city school the only multivariate effect was for mode of transportation, $F(2, 70) = 7.81$, $p < .01$. Univariate analyses indicated higher scores for car riders for reading, $F(1, 71) = 15.76$, $p < .01$, eta squared = .18, and for mathematics, $F(1, 71) = 11.01$, $p < .01$, eta squared = .13. The MANOVA for the ninth graders in the rural school yielded a main effect for transportation mode, $F(2, 202) = 4.91$, $p < .01$, and for gender, $F(2, 202) = 6.56$, $p < .01$. The gender differences were due to higher achievement by girls but gender did not interact with transportation mode. Univariate analyses indicated higher achievement for car riders in reading, $F(1, 203) = 9.37$, $p < .01$, eta squared = .04, and for mathematics, $F(1, 203) = 7.59$, $p < .01$, eta squared = .03.

Table 1. Achievement Test scores by Grade and Transportation Mode

Grade	Transportation Mode (n)	Reading Percentile		Math Percentile	
		M	SD	M	SD
4	Bus (47)	38.7	30.3	42.8	32.2
	Car (28)	68.3	30.6	66.3	26.2
9	Bus (66)	42.4	25.3	46.6	27.0
	Car (141)	54.3	27.5	57.8	28.3

The comparisons between bus and car riders in achievement suggest that something systematic is going on. However, an obvious confound is that car riders may come from higher socioeconomic backgrounds. The relatively high means for car riders, particularly

for fourth graders, suggest the likelihood of an SES-related explanation. The positive correlation between length of trip and achievement for the fourth graders supports an SES-explanation. The magnet school is in the center of the city and closest to the poorest neighborhood in the city (the school is within sight of one of the city's largest housing projects). Higher-income families live farther from the school. These results show that bus experience-achievement connections are going to be influenced by ecological variables at several levels (Bronfenbrenner, 1979).

Long bus rides and athletic performance

Another behavior likely to be influenced by time spent on a school bus is athletic performance. We hypothesized that long trips to "away" high school athletic events could increase the likelihood of losses. A major difficulty in addressing this question is identifying sets of athletic scores that are not statistically dependent within leagues or regions. In order to keep scores independent we identified five newspapers with websites that included sports from cities under 25,000 population (to increase the likelihood of longer traveling distances) in each of 40 states. From one day's sports pages (or a week's if a weekly), all articles about high school sports were scanned. The sport, outcome, and teams involved were recorded. A total of 995 games from 198 newspapers were recorded (for two states we could identify only four newspapers that met the criteria of being from towns with populations below 25,000 and also provided free access to their sports page).

Playing away from home was disadvantageous. The traveling team won only 41% of the games. However, distance traveled to games was not related to performance. Distance traveled ranged from 3 to 610 miles. The point-biserial correlation between win or loss and distance was $-.01$. Using a cutoff of at least 50 miles, the phi correlation between traveling less or more than 50 miles and win-lose performance was $.00$.

Parents, Bus Drivers and Safety

The major concern parents have about their children riding the school bus is safety. Their concerns about safety include concerns about the safety of the vehicle and about how their children will be treated by other children on the bus.

Safety data

There are many web sites dedicated to school bus safety and school bus statistics (e.g., <http://www.nhtsa.dot.gov> for the National Highway Traffic Safety Administration, TRB.org for the Transportation Research Board, or www.schoolbusfleet.com for the chief school bus manufacturers' trade organization). In the most general terms of physical well being, we know that the school bus is a safe environment. Riding a school bus to school is much safer than is riding in a personal car (whether driven by a parent or a student), bicycling, or walking to school. A report by the Transportation Research Board of the National Research Council (Transportation Research Board, 2002) showed that students were 3 to 5 times as likely to be killed or injured when taken to school by an adult driver than when riding a school bus (and more than 20 times more likely when

driven by a teen driver). Walking to school was more dangerous still. Despite some highly publicized incidents (e.g., Terr, 1994) and more locally publicized incidents (even minor school bus accidents tend to draw significant media attention, especially in rural areas), there are few children's environments as safe as school buses when it comes to physical well being.

Parent perspectives

Although the objective data indicate the safeness of riding the school bus, not everyone is convinced. At a small rural elementary school, we interviewed 10 mothers of kindergarten and first grade students whose children rode the bus and 13 mothers who drove their children to school about: (a) whether they thought cars or buses were safer for children to ride in; (b) the main reason they chose the type of transportation they used; (c) whether they had ridden the bus when they were children and, if so, what their experience had been; and (d) what kind of impact the bus or car ride had on their children. In addition, mothers of car riders were asked about how they spent the ride time and their perception of its quality. Mothers of bus riders were asked if they thought they were missing quality time with their children.

Despite clear evidence that school buses are much safer than passenger cars, 9 of the 13 mothers of car riders and 7 of the 10 mothers of bus riders thought cars were safer (only one mother, of a bus rider, thought buses were safer). Parents seemed to interpret "safety" broadly as to include being involved in fights or being picked on (5 of the 10 mothers of bus riders reported related problems their children had had). The main reason given by mothers of bus riders for choosing the bus was convenience (8 of 10). Two others mentioned that their children wanted to ride the bus. Reasons given by those who chose to drive their children were equally distributed among convenience, safety, shortening the school day, and wanting to spend time with their children.

Parent choice of transportation was not closely tied to their own experiences. Among the mothers of the bus riders, 7 of the 10 had ridden a school bus with 4 of the 7 reporting generally positive experiences and 3 reporting negative experiences. Similarly 10 of the 13 mothers of car riders had ridden the bus with 6 reporting positive experiences and 3 negative experiences. In contrast, there was a relationship between the mothers' perceived impact of the ride to school with choice of mode of transportation, Three mothers of the bus riders thought the impact of the ride to school was positive whereas 11 of the 13 car riders thought so, $X^2(1) = 6.67, p < .01$. Finally, 13 of the 13 mothers of car riders considered the ride time to be "quality time." They reported the time was spent talking and planning about school and after-school matters. Only 4 of the 10 mothers of bus riders felt their children were missing out on quality time by riding the bus.

Bus drivers' perspectives

The individuals with the most direct access to children's behaviors related to safety on the school bus are the bus drivers. We sought to discover what rural bus drivers thought about their jobs and what they would say about the typical behavior of the children who

ride their buses (Allen, Hardin & Henderson, 2006). A group of 75 school bus drivers from four small rural county school systems completed surveys that asked them to rank the three most important things a driver must keep in mind from a list of possibilities. All the drivers ranked safety in their top three, 77% included maintaining discipline, 69% listed being on time, 59% included building relationships, and 40% minimizing distractions. Drivers also ranked the best and worst three things about driving a school bus. The most highly ranked best things included: interacting with children (76% included it in their top three), providing a service to the community (65%) and earning money (59%). Less commonly ranked were doing an interesting job (39%) and having fun driving (32%). The worst things about driving the bus included: misbehaving children (ranked in the top three by 80% of the drivers), driving with distractions (72%), smart-mouthed children (57%), and noisy children (44%). Less commonly ranked in the top three were parent complaints (25%), bus breakdowns (19%), and fatigue (12%).

Bus drivers also used a 7-point Likert scale (1, never to 4, sometimes, to 7, often) to indicate how often they observed 19 categories of behavior. The most frequently observed behaviors (with mean ratings in parentheses) were sleeping (4.5), boys showing off (4.3), use of bad language (4.3), getting out-of-seat while the bus is moving (4.2), eating and drinking (4.2), and arguing (4.2). Least common were vandalism (2.6), disrespectful gestures out the window (2.5), fighting (2.2), using tobacco products (1.6), overt sexual activity (1.4), and opening the emergency door (1.3). Like our college student respondents, drivers also indicated the bus's role in cross-age socialization with both positive and negative influences. Drivers reported that while strictly prohibited behaviors are rare, peer relations such as teasing and arguing are common. Drivers reported that showing off was common among boys and girls, perhaps suggesting that the bus environment also provides a forum for tentative early relationships between the sexes. Safety is clearly the highest priority for bus drivers. However, a particularly interesting result of our survey is the high priority drivers put on building relationships with the children and youth who ride their buses. Some drivers reported that they greeted every child by name when getting on or off the bus.

CONCLUSIONS

Based on the retrospective reports of college students and some of the concerns parents have about their children riding the bus, the school bus experience appears to be a significant, underappreciated context for peer socialization. As a behavior setting, the school bus affords only limited forms of behavior. In some ways bus riders are a captive audience for each other. Active movement is limited and the physical arrangement of bus seats does not facilitate solitary activities such as sleeping or reading. However, the close proximity of others, for long periods of time for many riders in rural areas, does facilitate social interaction (propinquity has long been known to be a major factor in peer interactions and the development of friendships, see Hartup, 1970). Teasing and even bullying appear to be common on school buses. While recognizing the unpleasant quality of some interactions on the bus, a number of our respondents indicated that they used instances of being teased as opportunities to learn self-defense. Our respondents were equally likely however to point out that the school bus experience provided a forum for

friendly interactions, the sharing of experiences and ideas, and, generally, an opportunity to interact that was different from the typical peer interactions in schools. Data from bus drivers reinforced many of these patterns.

School buses are relatively safe environments, at least in terms of physical safety. Many parents have a misperception about the physical safety of the mode of their children's transportation to school. Parents may have an unwarranted sense of control over their children's safety when they drive them to school. The responses from drivers indicated just how important safety is to them. It is possible that what parents really mean by "safety" is that riding in a car protects their children from the negative bus atmosphere emphasized by Ramage and Howley (2005) in which children are exposed to bad language, harassment, and conflicts with other riders and reported in our retrospective surveys of college students.

The data here suggest little relationship between length of bus ride and achievement. Unlike the study reported by Lu and Tweeten (1973) we did not have measures of socioeconomic status or other possible correlates of length of bus rides that could be partialled out. The data for older children do not support Lu and Tweeten's finding of a relationship between length of school bus ride and achievement. Our data were limited by including only a small number of students who have really long bus rides. There may be something qualitatively different about rides that last longer than an hour. However, the failure to find any correlation between length of bus ride and athletic performance is consistent with the data showing bus ride-achievement independence. Perhaps by high school bus riders have found ways to adapt to bus rides and are less vulnerable to their efforts than are younger students.

Riding a school bus is a normative experience for millions of children. We need to know more about that experience and its effects. The exploratory studies reported here point to several ways of doing so. From a child development perspective we need large scale studies with representative samples that can provide statistical controls for socioeconomic and other demographic variables. Especially useful would be observational studies that could provide detailed descriptions of child behavior and studies of interventions designed by schools and community agencies that could begin to show how the school bus experience could be more positive and productive for more children. It is important to find out about the especially long bus ride experiences of many children in rural communities and their effects. Regardless of other measurable effects, the loss of time for other activities must carry some negative implications. In states such as West Virginia where more and more children have long bus rides because of school consolidation (Eyre & Finn, 2002), the practical implications of riding the bus are very real.

Research on the school bus experience is at an early stage in which rigorous methodological controls are difficult and perhaps not appropriate. However, taken together, the results of these exploratory studies along with the largely anecdotal information from earlier studies provide an impressionistic picture about children's experiences on the school bus. First, it is clear that school bus experiences create memories that are positive for some and negative for others. Sometimes the affects

associated with remembered experiences are quite strong. It is impossible to know to what extent time has weakened or polarized these memories, but the nature of some of the college students' memories imply the potential for long-term influences. The positive quality of many recollections belies the idea, assumed by some who have written about the bus experience, that bus trips are either uniformly negative in affective tone or long-term influence.

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