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A STUDY OF A VEHICLE RESTRAINT HEALTH EDUCATION PROGRAM FOR PRESCHOOL CHILDREN AND THEIR PARENTS USING THE PRECEDE MODEL

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A STUDY OF A VEHICLE RESTRAINT HEALTH EDUCATION PROGRAM
FOR PRESCHOOL CHILDREN AND THEIR PARENTS USING
THE PRECEDE MODEL

DISSERTATION

Presented in Partial Fulfillment of the Requirement for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By

Patrick John Harsch

The Ohio State University
1986

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To our son, Brett Lincoln Harsch, for his lifetime of patience and understanding while his father was a student.
ACKNOWLEDGMENTS

I would like to express appreciation to Dr. Robert Kaplan for his assistance and guidance throughout the research. I appreciate his willingness to work with a nontraditional older student. I also would like to thank the other members of my advisory committee, Dr. Moon Chen and Dr. Franklin Banks, for their helpful suggestions and comments. I also would like to thank Judy Fountain, Director of The Ohio State University Child Care Program; Lynn Gallagher, Program Coordinator; and preschool teachers Cathy Troyan, Kelly Cole, Lisa Eggart and Donna Swaneck for their assistance while I conducted my research at The Ohio State University Child Care Program. I am very grateful to the parents at the child care program who agreed to participate. I am grateful to Jill Berington and Nancy Burton of The Ohio Department of Highway Safety for their assistance in obtaining information necessary to conduct my research. I would like to thank Fred Ruland of The Ohio State University Instruction and Research Computer Center and Drs. Eric Fredin and Larry Hotchkiss for their assistance with statistics and computer programing. Finally, I would like to thank my wife, Wally, for her editing and journalistic assistance.
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CHAPTER I
BACKGROUND OF THE STUDY

Introduction

Deaths and injuries from vehicle crashes constitute a significant public health problem (Committee on Trauma Research, Commission of Life Sciences, National Research Council & Institute of Medicine, 1985). Much of the death and suffering related to vehicle crashes can be greatly reduced through the use of vehicle restraints. Despite the proven effectiveness of vehicle restraints, less than 50 percent of vehicle occupants use them while traveling on Ohio's and the nation's roads. How to develop methods that will increase the use of vehicle restraints constitutes a great challenge to health educators and other health professionals.

Previous studies (Fabry, 1973; Wilson, Lonero & Ish, 1973; Senk & Schwartz, 1972; McPherson, McKnight & Weldman, 1983; Saunders & Pine, 1986) have found that providing health education usually does increase vehicle restraint use. However, little research exists regarding the effect of providing health education to preschoolers on child safety seat (CSS) use. In addition, little is known about
the relationship between providing vehicle restraint education to preschoolers and the influence this may have on other occupants' use of vehicle restraints.

**Statement of the Problem**

The purpose of this study was to test three health education intervention methods designed to positively increase knowledge and foster positive attitudes and behaviors related to safety belts and CSSs among preschoolers and their parents at The Ohio State University Child Care Program.

Four classrooms of preschoolers, ages three to five years old, were used to test the educational methods. The three methods were as follows:

1. Children in the first classroom were taught vehicle restraint education by their classroom teacher.
2. Parents of children in the second classroom or those who transport them were taught vehicle restraint education.
3. Both children and their parents or the transporting adults in the third classroom were taught vehicle restraint education.
4. Neither the children in the fourth classroom nor their parents or transporting adult were exposed to vehicle restraint education and served as a non-equivalent control group.
The study was designed using the PRECEDE Model. PRECEDE is an acronym for PREDISPOSING, REINFORCING AND ENABLING Causes in Educational Diagnosis and Education. The model was first introduced by Green, Kreuter, Deeds and Partridge in their 1980 book, *Health Education Planning: A Diagnostic Approach*. Predisposing factors include knowledge, attitudes, beliefs, values, and selected demographic variables that may affect health behavior. Enabling factors represent accessibility to necessary resources and possession of necessary skills needed to conduct positive health behavior. Reinforcing factors describe the influence individuals, groups, cultural norms and laws may have on health behavior.

Figure 1 provides an overview of how the PRECEDE model was used to design and test educational interventions at the OSU Child Care Center Program. Shown are educational methods used to reach children and their transporter which address the predisposing, enabling and reinforcing factors of the PRECEDE model. This model is read from left to right beginning with the social problem of increased health care costs due to vehicle crashes. The model then analyzes the health problem of vehicle crash deaths and injuries associated with the social problem. From there the model analyses the behavior problems of non use or improper use of vehicle restraints which are prime causes of the health and social problem. Continuing from left to right the model
addresses the predisposing, enabling and reinforcing factors which can affect the use of vehicle restraints. Next educational strategies of direct and indirect communication to preschool children, transporting parents and teachers are listed which can positively affect the predisposing, enabling and reinforcing factors. Finally all of these components come together to create the vehicle restraint health education program for preschool children, their parents and teachers. Figure 2 shows in more detail the educational strategies used to address the predisposing, enabling and reinforcing factors of the PRECEDE model with preschool children and parents.

Research Hypotheses

This study, which was conducted in the four preschool classrooms at The Ohio State University Child Care Program, was structured using the PRECEDE model of health education.

The study tested the following hypotheses:

1. Positive changes in knowledge, attitudes, and behaviors related to CSS use and safety belts occur in those exposed to educational interventions.

2. The most positive changes in knowledge, attitudes, and behaviors occur in the group where both the parent or transporting adult and preschool child passenger are exposed to vehicle restraint safety educational intervention.
Educational Strategies

Direct Communication
- Child
  - Group teaching with story book pamphlets, handouts and other materials
  - Use of appropriate pamphlets, handouts and 1-to-1 discussion

Predisposing Factors
- Parents
  - Knowledge and attitudes about CSSs and safety belts
  - Knowledge and attitudes regarding vehicle crashes

The Vehicle Restraint Health Education Program For Preschool Children and Their Parents

Directed Activities
- Child
  - CSS and safety belt skill building

Enabling Factors
- Parent
  - CSS and safety belt skill building, CSS purchasing information

Behavioral Problem
- Availability of and ability to use safety belts and CSSs

Social Problem
- Improper or nonuse of CSSs and safety belts

Reinforcing Factors
- Death/injury from motor vehicle crashes, The leading cause of death for ages 1-38

Increased health care costs to society due to auto crashes

Encouragement for proper use of CSSs and safety belts

Child
- Child asks parent to properly restrain him/her.
- Child asks parent to use safety belt.

Teacher
- Trained to teach CSS of CSS law.
- Role models role model.

Parent
- Become aware of CSS law.
- Ask child to buckle up.


Figure 1—An Overview of How the PRECEDE Model was Used to Plan The Vehicle Restraint Health Education Program For Preschool Children and Their Parents.
1. **Predisposing Factors**

Knowledge, attitudes, beliefs regarding child safety seats and safety belts.

**Educational Methods**

<table>
<thead>
<tr>
<th>Child</th>
<th>Parent</th>
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2. **Enabling Factors**

Availability and ability to use restraints properly

**Educational Methods**

<table>
<thead>
<tr>
<th>Child</th>
<th>Parent</th>
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<tbody>
<tr>
<td>Group teaching with seat belt chair. Each child practices using safety belt and CSS in a safety belt equipped chair in the classroom.</td>
<td>Assist parents with the proper use of their CSSs and safety belts in their cars. Parent are given consumers guide to buying CSSs.</td>
</tr>
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</table>

3. **Reinforcing Factors**

Encouragement for proper use of vehicle restraints

**Educational Methods**

<table>
<thead>
<tr>
<th>Child</th>
<th>Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher encourages children to use safety belt and/or CSS. Children will be encouraged to ask parent to buckle up.</td>
<td>Parents are given a summary of Ohio’s Child Safety Law.</td>
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**figure 2—Educational Methods of An Application of the PRECEDE Model to a Health Education Intervention Program at The Ohio State University Child Care Program**
3. Positive changes in knowledge, attitudes, and behaviors occur to a lesser degree among the group in which only the parents or transporting adults are exposed to education intervention.

4. The least positive changes in knowledge, attitudes, and behaviors occur among the group in which only children are exposed to educational intervention.

The first hypothesis is based on the belief that when drivers or children are educated (especially if the educational intervention is designed to positively affect knowledge, attitudes, and skills) about the need for and benefits of auto restraints, they will use them to a greater degree. Previous studies have found that education can have an effect on restraint use (Fabry, 1973; Wilson, Lonero & Ish, 1973; Senk & Schwartz, 1972; McPherson, McKnight & Weldman, 1983; Saunders & Pine, 1986).

The second hypothesis is based on the belief that when both parents or other transporting adults and children are exposed to health education intervention designed to affect knowledge, attitudes and skills, the use of auto restraints will be greater than when either group alone is exposed to such education. Children have the ability to influence others behavior, and if they are aware of the need for CSSs and safety belts, may request their transporter to place them in one and request that others use safety belts. If the driver also is educated about restraints, he or she and
the child may reinforce each other to use restraints.

The third hypothesis is based on the reasoning that parents or other adults have more influence over restraint use than their preschool passengers. The fourth hypothesis is based on the belief that preschool children can influence parents or others to use both CSSs and seat belts, but less than if drivers do not also receive the educational intervention.

The dependent variables are:
1. Restraint use by drivers and preschool children after educational intervention; and,
2. Driver's knowledge and attitudes about restraints after educational intervention.

The independent variables are:
1. Exposure of children only to auto restraint education;
2. Exposure of drivers only to restraint education;
3. Exposure of both drivers and children to restraint education;
4. Drivers' age, sex, race, education, income, and University status (student, staff, faculty, not affiliated with the University); and,
5. Preschool child's sex.
Significance of the Study

Motor-vehicle crashes constitute a significant public health threat to all. They are responsible for more mortality and morbidity in children and adults between the age of one and 38 than any other single disease or type of injury. In addition, motor-vehicle crashes are the leading cause of injury-caused death for all age groups under the age of 75 (National Safety Council, 1982).

These grim statistics, of course, could change if preventive measures were used. According to Chambers (1981), the trauma resulting from motor-vehicle crashes has long been recognized by highway engineers, automobile vehicle manufacturers, legislators and law enforcement officials. Primary preventive measures to reduce motor vehicle trauma include improved highway design, enactment and enforcement of traffic laws (the 55 mph speed limit), stiffer drunk driving laws and increased mechanical reliability of the vehicle (Chambers, 1981).

Secondary preventive measures used to lessen the trauma experienced by a vehicle passenger once a crash has occurred include modified vehicle interiors to eliminate sharp objects, air bags, vehicle restraints and laws to encourage restraint use.

The importance of this study is to develop ways to increase the use of vehicle restraints among preschool children and their parents. More and more children are
attending preschool where health education can be introduced at an early age to build strong health habits which may persist into later childhood and perhaps into adulthood. The child care center also represents to many parents a place where both care and education can be provided to children and parents.

This study tests different health education methods designed to increase vehicle restraint use among preschool children and those who transport them from child care which can be used in a child care program setting. It determines how helpful the PRECEDE Model is to plan, implement and evaluate a vehicle restraint education project for preschool children and their transporters. Methods and materials developed from this study can be used in other child care programs to reach administrators, teachers, parents and children.

Assumptions

1. Parents or other transporting adults are primarily responsible for protecting child passengers in automobiles.
2. Parents or other transporting adults can influence the automobile safety of children they transport.
3. Children can influence the automobile safety behavior of their parents or other transporting adults.
4. Preschool children have the ability to learn about vehicle safety.

Limitations of the Study

Since it was the objective of this research to test methods that can be used in natural preschool settings with the least amount of inconvenience for the children, parents and preschool children were not assigned randomly to treatment or control groups. Four existing classrooms were used. The OSU Child Care Program assigns preschool children to one of five classrooms based on a random first-come, first-serve basis. There is no evidence that the program assigns children to any class based upon any other factor.

The results of the study may not be generalizable to the general population, because the Ohio State University Child Care Program operates mainly to serve the needs of faculty, students and staff of the University and not the general public. In addition, the students in the program and their parents do not represent a random sample of the university population. However, the OSU Child Care Program may be similar to other child care center operated by other large universities.

A final limitation was the age group three to five years was treated as a whole. Developmental differences between each age were not accounted for.
Definitions

Adult manual occupant restraint system: safety belts designed to hold a passenger in position inside a vehicle. Usually only the lap belt is found in the rear seat, while both lap and shoulder belts are found in the front seat. Vehicles built after 1964 and until 1973 usually have only lap belts in the front seat. Vehicles built after 1974 usually have both lap and shoulder belts in the front seat.

Child safety seat (CSS): a crashworthy device which meets the revised Federal Motor Vehicle Safety Standard #213 requirements. A child safety seat is used with an adult restraint system to hold the device and a child in position inside the vehicle. It is often referred to as a child restraint device (CRD).

Summary

Motor-vehicle crashes remain a significant threat to our safety. Something must be done to lower the toll of about 120 people who are killed in vehicle crashes a day in the United States. If measures are not taken, the death toll may go higher.

This study is designed through the use of the PRECEDE Model and compares three methods of health education to determine if knowledge, attitudes and other factors can be influenced to increase use of CSSs and safety belts.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

Chapter I established that vehicle crashes constitute a significant health threat to Americans, despite the fact that the United States has the lowest worldwide crash mortality rate (Highway Users Federation, 1984).

Research related to the prevention of this problem is vast and varied. Most of the research results are not reported in the medical literature; instead, they appear in the safety literature. For the purpose of this study, reviews include studies which relate to the PRECEDE Model; the claimed and observed frequency of restraint factors associated with use and nonuse of restraints, such as knowledge, attitudes, beliefs, skills, etc.; intervention studies; and laws introduced to encourage or mandate restraint use.

Because this intervention study attempts to influence the use of both CSSs and seat belts, pertinent literature related to both seat belt and CSS use is reviewed. In addition, literature related to restraint use for young children and adults will be reviewed.
This review will be conducted to determine how past studies are related to the objectives of this study. Strengths and weaknesses of previous research will be assessed, and it will be determined how their findings or concepts might be modified or developed more in the present study.

The PRECEDE Model

One way to explain CSS and seat belt usage is to use the Green, Kreuter, Deeds and Partridge (1980) PRECEDE model. PRECEDE is an acronym for PREDISPOSING, REINFORCING and ENABLING causes in Educational Diagnosis and Evaluation. In their book, Health Education Planning, A Diagnostic Approach, Green et al identify three classes of factors which they believe can affect and explain health habits.

Predisposing factors include knowledge, beliefs, values, attitudes and selected demographic variables. Green et al refer to these predisposing factors as individual preferences that can influence health behaviors. By analyzing predisposing and other factors, it may be possible to understand why seat belt and CSS use is not higher in the U.S.

The factor of knowledge is easily defined as facts related to a health problem and behaviors necessary to avoid or lessen the health problem. This researcher believes that the knowledge Americans possess concerning the danger of
driving and the safety benefits of restraints is inadequate. Knowledge concerning the dangers of vehicle crashes and the measures that can be taken, such as seat belt use, is not generally available through the news media. Prevention of injuries and death due to vehicle accidents has not been as newsworthy as the actual injuries or deaths themselves. The cause of vehicle death or injury is rarely explained in the media. From what is written or aired, it is implied that crashes occur because of chance or happenstance. It is not that prevention is not important news. Often the media remind us of the relationship between drinking, driving and crashes. A recent example of such a media campaign has been Mothers Against Drunk Driving (MADD).

The health care system generally provides little information about the importance of seat belt use for older children and adults. As with the news media, there is little medical and scientific awareness of injury control. The prevention of injuries has received little attention and fewer resources compared to the treatment of injuries. In general, it has been found that primary care physicians often fail to provide appropriate information to patients about the use of vehicle restraints. Perhaps one reason for this is that their own use of vehicle restraint use is not adequate, despite their awareness that restraints would significantly reduce injuries and death (Greenburg, Lorrie, Coleman, & Allan, 1981).
It is no wonder that Croke (1977) found that participants in a discussion group did not connect safe driving habits such as using safety belts as a "logical extension of their overall health care regimen."

Although knowledge is an easy factor to define, beliefs, values and attitudes are not. False beliefs could be defined as a lack of knowledge. Americans have many false beliefs or lack adequate knowledge about vehicle crashes and seat belt use. The most prevalent examples are outlined in a U.S. Department of Transportation pamphlet, "How Many of These Fairy Tales Have You Been Told?" (1977). They include:

* Vehicle restraints are not needed when traveling at low speeds or on short trips.
* Vehicle restraints are uncomfortable.
* Being thrown from a crash could save one from death or injury.
* Vehicle restraints may trap occupants in a burning or submerged vehicle.
* It is too time-consuming or too much trouble to use vehicle restraints.

The third predisposing factor according to Green et al is values. They define values as a preference as compared to a belief which they describe as a conviction that something is either true or false.
The third predisposing factor, attitudes, is described by Green et al as a constant feeling that represents a group of beliefs with an evaluative character to them. Despite Green et al’s explanation, it is very difficult to differentiate beliefs from values or attitudes. Therefore, it is easier to speak of predisposing factors as knowledge and attitudes rather than knowledge, beliefs, values and attitudes.

Americans have negative attitudes toward the use of safety belts. Croke (1977) gathered findings from a discussion group and found that most of the discussion participants felt that they had little personal control over a crash outcome and were not convinced that wearing a seat belt was safer than not wearing one. Some of the participants actually thought that wearing a safety belt was less safe than not wearing one. When asked what they could do to protect their health while driving, only one group member mentioned using seat belts. When asked to rate safety measures, safety belts were rated last over the 55 MPH speed limit and removing drunk drivers from the roads.

Many Americans believe that safety devices or laws which force people to wear seat belts are violations of their rights. They believe it is their right to decide whether to protect themselves. In Croke’s discussion group, all members of the group were strongly against mandatory seat belt laws. Such laws were viewed as being unfavorable.
They felt that safety belts only affected the safety of the individual; therefore, it should be the individual's decision (Croke, 1977).

The second group of factors called enabling factors represents the necessary resources and skills needed to conduct health behavior. With CSS use, this may be a significant factor, because vehicles are not equipped with CSSs. However, in the case of safety belts, this should not be a significant factor. Vehicles manufactured after 1966 are equipped with seat belts. The majority of vehicles on the road today were manufactured after that date; therefore, access to them should represent no problem, especially for passengers who ride in the front seat. Seat belts in the back seat may be available, but may not be accessible because they may be tucked under the seat.

Skills required to use seat belts are minimal in most cases. However, certain motor skills need to be developed to quickly and smoothly fasten a seat belt. This is especially clear when one is observing someone attempting to buckle up who has rarely done it before.

The final factor described by Green and his colleagues to determine health behaviors are reinforcing factors. These factors describe the behavior of influential individuals or groups who either approve or disapprove of health behaviors. The strength of the reinforcing influence upon an individual by another individual or group depends upon the respect it
holds in the eye of the influenced individual (Green et al., 1980).

The wearing of safety belts generally is not a reinforced activity in our society today. Seat belt use is generally not encouraged or praised by family members, peers, teachers, employers, health providers or the media. Certain laws reinforcing CSS use seem to have had a dramatic effect on behavior; however, in the nation as a whole there are few reinforcing safety belt laws to influence behavior.

Several researchers have applied the PRECEDE model to plan and develop health education intervention programs. Few apply directly to safety belt and CSS behavior. However, they represent an application of the model to health education programs.

Two studies which use the PRECEDE model to plan and develop an auto safety program will be discussed in the child restraint device factor studies section.

Two other studies which use the PRECEDE Model are presently being conducted. In one study, the PRECEDE model was used to develop a cancer health education intervention program for the elderly in Philadelphia. In addition to using the PRECEDE Model to assess the health education needs and plan the health education intervention, the Health Belief Model was used to design specific intervention messages. The intervention messages were designed primarily to change beliefs about cancer prevention, detection and
treatment. Beliefs were singled out as being more important, because the researcher believes the most persuasive messages are ones that are designed to change beliefs. The primary message the program attempted to communicate is that cancer is a serious health risk; however, individuals can take action to reduce the risk (Rimer, Jones, Wilson, 1983). Results of the study are presently being analyzed. Preliminary analysis shows significant increases in knowledge among the participants. It is too soon to determine whether there have been significant changes in behavior (B. Rimer, personal communication, February 12, 1985).

The second ongoing study, "A Replication and Evaluation of the Know Your Body Program," funded by the National Heart Lung and Blood Institute, was planned and developed using the PRECEDE model. This study will attempt to determine the effectiveness, transferability and cost efficacy of the "Know Your Body" school health education curriculum. This curriculum is designed to resist the negative health influence of peers, family and the mass media. It is especially developed to lower the incidence of heart disease.

**Frequency of Restraint Use**

Robertson's (1978a) study of safety belt use in 19 urban areas in five counties found use ranged from a high of
80% in Sydney, Australia, to less than 1% at expressway exists in Japan—both countries have safety belt laws, although Japan requires use on expressways only.

In countries with safety belt laws, Robertson found more than 75% of Australian and New Zealand drivers were using belts. Fifty percent of drivers in two Canadian provinces were observed using belts. In Canadian province with no laws and in the U.S., about 25% of the drivers were observed using safety belts.

The Highway Loss Reduction Status Report states that surveys overestimate safety belt wearing rates by checking only front seat occupants during day time hours. A survey of four Canadian cities with mandatory safety belt laws showed nighttime use was about 50%. And often, rear seat occupants are not buckled up (Insurance Institute for Highway Safety, 1979).

Studies have shown that parents' safety belt use is an important factor in the use of child restraints. A telephone survey conducted in Montreal and Calgary (Verreault, Stulginskas, Keyl, Read & Pless, 1982) found use of safety belts was the most important factor in determining their respondents' use of child restraints. Although the authors admit that self-report studies tend to overestimate actual use, they found their results of 39% for regular CSS use to be consistent with similar survey results of 34% to 52%.
Williams and Wells (1981) examined the effects of the Tennessee and Rhode Island laws on CSS use rates. In their 1981 Tennessee study, they found use increased from 8% prior to the law to 29% two and one-half years after the law went into effect. Four months after the Rhode Island law went into effect, they found that use had increased from 11% to 23%.

Earlier studies by Smith and Berkline (1980) in Hawaii found that 93% of children under 12 years old observed riding in automobiles in two large shopping centers were unrestrained. Drivers' use of safety belts was 7%. The relationship between drivers' use of safety belts and children's use of safety belts and CSS was found not to be statistically significant.

An earlier study by Williams (1976) which observed use of CSS in three states in 1974 found similar results of 93% unrestrained children under age 10. Seventy-eight percent of drivers and 89% of passengers 10 and older were not restrained.

In New Zealand, where drivers are required by law to wear safety belts, Geddis and Appleton (1982) found 65% of children between ages 5 months and 11 months were in seat restraints. Sixty-one percent of children age one were restrained, compared with 12% of children in the U.S. They hypothesized this dramatic difference could be due to differences in attitudes toward restraint systems, because
of New Zealand’s law. They did notice a decline, however, to a rate of 30% use for children ages three and four. They suggested that research efforts should be directed toward determining why restraints aren’t used for the ages for which they are appropriate.

A Massachusetts observation study (Child Passenger Safety Resource Center, 1982) found 30.3% of drivers were restrained; 80% of infants were in infant or child safety seats; 51.3% of children ages one to four were restrained in child safety seats or safety belts; and 23.1% of children five to nine were restrained.

Factors Related to Use of Adult Restraints

Knowledge of factors related to use and nonuse of vehicle restraint can be helpful in determining which variables have been examined and which variables are applicable to this study. Factor variables are also important in recognizing risk factors associated with nonuse of restraints and which are the most and least susceptible to intervention programs.

Factor studies related to safety belt use will be examined first, because they were completed before similar studies about CSSs.

Fhaner and Hane’s (1972) research provides an historical perspective of safety belt literature. This review analyzed methods, results and conclusions of studies
to discover factors relevant to safety belt use. From their review of the literature, they suggested further research was needed to increase safety belt use.

They reviewed literature written between 1960 and 1970. About one-third of the research was completed in Europe—much of it in Sweden. The literature was divided and reviewed in four groups—general use variables, situational factors, demographic variables and personality variables.

Those who were found to be higher users of safety belts were described as: highway and county road traveler, better educated, of higher socioeconomic class, white, married, urban resident, and owner of a newer vehicle. No relationship was found between safety belt use and age and sex of occupant, number of miles traveled annually and crash history.

Fhaner and Hane pointed out that it was difficult correlating belt use with factors in the studies reviewed, because the interrelationship between variables generally was not studied.

Especially pertinent to this study is Fhaner and Hane's review of literature that studied attitudinal and personality variables. Most of the articles reviewed found both belt users and nonusers to have generally favorable attitudes toward belt use and agreed that safety belts do reduce injuries.
Belt users were found to be well-adjusted, seekers of preventive health care, nonsmokers and nonrisk takers. Nonbelt users with a lower educational status favored mandatory seat belt laws, despite the fact that they are less likely to use them. Nonbelt users were described as assertive or nonassertive, impulsive, careless, rigid, smokers, risk takers, and nonseekers of preventive health care.

Nonusers also expressed fear of being trapped by the belt; they felt confined by belts, and they overestimated their ability to protect themselves in the event of a crash. Some believed that belts are not needed for their type of driving. They tended to associate the use of belts with accidents and found them to be an anxiety-producing symbol. They reduced their anxiety by not wearing safety belts.

For this reason, the authors point out, intervention programs which stress the risks associated with nonuse of restraint and accidents haven't worked in the past. They also pointed out that nationwide advertising campaigns don't work. They suggested that they are doomed to fail, because they don't last long enough. They also suggested that intervention projects should last longer and be aimed at smaller groups, such as work groups, clubs and associations or students. Mass media should be used only to provide support.
Fhaner and Hane concluded that their study of the literature did not prove that individual characteristics are the primary reason why safety belts go unused. They suggested that seat belt behavior is related to situations.

To test their theory, they questioned 75 randomly selected car owners in one suburban county. Their results did not support their hypothesis. Individual variables, such as attitudes, beliefs, personality and socioeconomic factors (education was the most important), were found to be more important than situational factors.

Fhaner and Hane (1974) felt it was important to identify variables related to behavior and discover ways to influence those variables. When they conducted a 1974 study, they discovered a relationship between belt use and attitudes.

Jonah and Dawson (1981) went one step further and studied the relationship to safety belt use of attitudes and "normative factors." The authors defined normative factors as beliefs as to what is expected of one by others, such as family, friends or society.

The normative factors which they studied could be described as reinforcing factors of the PRECEDE model. The results of this study show that both attitudes and normative factors are important in predicting safety belt use. In other words, they found that predisposing and enabling factors are important in predicting safety belt behavior.
The question remains—did the behavior come first and change predisposing and enabling conditions, or vice versa?

According to Knapper, Croply and Moore (1976), negative attitudes do not cause nonuse of safety belts. Their study found that the majority of their sample in both the U.S. and Canada had favorable attitudes toward safety belt use. Most people said they did not use safety belts, because they had not formed the habit. For this reason, Knapper et al claimed intervention programs that informed people of the effectiveness of safety belts were doomed to fail. The only appropriate group to receive safety belt effectiveness information was new drivers. To protect large numbers of vehicle passengers, Knapper et al advocated the installation of passive restraints and the passage of safety belt laws to get people in the habit of wearing them.

Fhaner and Hane's study suggests that education is an important variable in predicting belt use. Klein (1974) points out it is also an important predictor of who will be injured or killed in home, auto, industrial and recreational accidents. According to Klein, injury victims are primarily those with little education and low income, not because of different levels of risk taking between them and their better-educated counterparts, but because of the type of risks that are taken.

To illustrate his point, Klein said a middle class youth engages in low injury-producing risks, such as playing
a musical instrument, running for student government, or trying to get on the honor roll. Failure to reach any of their goals does not result in death or injury. Lower-class students want to gain status through playing body contact sports, hunting, motorcycling, snowmobiling, or speeding in automobiles. Mistakes in any of these activities could result in injury or death.

Sweetser's 1967 study also observed the correlation between class and safety belt use, with nonusers being in a lower average socioeconomic class. However, the importance of class may be questionable, because the study was conducted in 1967 when safety belts were not standard equipment. People in a lower socioeconomic class would more likely own older vehicles, which were not equipped with belts.

Their study examined attitudes of male and female commuters and mothers which were possible to change through safety belt education intervention programs. Factors influencing safety belt behaviors were also noted. The results indicate that males appear to respond to themes that safety belts are desirable and effective equipment. Men did not respond well to the theme that safety belts are safe to use or that they provide peace of mind.

Peace of mind was speculated to be effective in appealing to mothers with children. Fear also seemed to be a motivator for women, but not for men. The author said a
better approach was to reach men through masculine images displayed in masculine magazines, such as Playboy or male adventure magazine or business newspapers.

Of special importance to this study is the finding that children present in vehicles had more influence on safety use than any other passenger. Drivers were more apt to ask a child to use safety belts than any other passenger and children were the most likely to ask the driver or other passengers to buckle up.

Child Restraint Device Factor Studies

Page (undated) explored the relationship between parents' intended use of safety belts and their attitudes, beliefs and intended use of CSSs in an attempt to develop effective educational interventions to increase safety belt and CSS use. Participants in the study were program participants in a CSS loaner program. More parent participants were classified as safety belt nonintenders (62%) than intenders (38%) However, the results were almost exactly the opposite when the intention of CSS use was measured: 68% intended to use CSSs and 32% did not. Eighty percent reported using CSS more often than safety belts. There was a 16% equivalent use of safety belts and CSSs.

Parents expressed strong beliefs that CSSs provide protection, a feeling of security for the parent, improve the behavior of the child and represent an "act of love."
They did not believe that CSS use helped them to remember to buckle up.

Respondents said barriers to CSS use included discipline on the parent's part, expense of CSSs, inconvenience, and they caused children to fuss and cry.

Further results showed no significant relationship to intended use of safety belts and CSSs and attitudes about CSSs. There was a significant relationship between positive attitudes about the benefits of using car seats and parents' intentions to use safety belts.

Safety belt intenders in general had more positive attitudes and beliefs about CSSs than non belt intenders. Safety belt intenders felt that using CSSs would result in more positive outcomes and using CSSs would help them remember to use their own safety belts.

The author concluded that there is a relationship between parents' seat belt use and intention to use CSSs. He also concluded that individuals are more motivated by positive aspects of health and safety behavior. He recommended that programs designed to increase CSS use should also include strategies to motivate parents to use safety belts.

Page points out that it is difficult to generalize from these findings. In addition, the mail survey had only a 50% return rate. No attempt was made to determine more information about the nonrespondents and how they may have
differed from the respondents. The greatest fault of the study is that no demographic data were collected, despite the fact that the literature shows great difference in attitudes, beliefs and use of CSSs and safety belts as related to sex, occupation, education and race. The author also failed to examine the interrelationship of variables through multivariate statistical analysis.

Chamber's 1981 study attempted to address the weakness of Pages' study by using a multivariate analysis of restraint use variables to determine which individual variables are important in relation to others. Chambers felt this approach would explain the "real-world interaction of restraint use variables."

One of his purposes was to discover factors which could be used to improve programs designed to increase CSS use. Data were gathered from a survey form sent to a random sample of parents of infants who were less than 18 months old. The sampling frame was the county birth list, which excluded birth to women who were not married. For this reason, Chambers concluded whites were overrepresented as respondents. A further analysis of the respondents showed them to be older mothers, better educated and of a higher income level. However, the sample seemed to represent all occupations and family sizes in the sampled county.

The dependent variable was the use of CSSs in city or highway driving situations. Results showed little
difference in claimed use of CSSs in highway or city traffic. He found that consistent, inconsistent, and nonusers in city traffic tend to remain in the same categories while in driving on the highway.

Chambers' frequency results may be questionable, because the findings were based upon a questionnaire which asked parents about their CSS and safety belt use, rather than through observations. Parents have been shown to claim higher use rates than are demonstrated through observed behavior. Furthermore, Chambers found inconsistent data when he asked respondents who had classified themselves as consistent CSS users whether they had used one on their last auto trip—more than 20% had not.

Chambers found the most consistent users to be white, older, better educated, parents of one child, and in a higher socioeconomic class. Mothers who consistently used safety belts were consistent CSS users. Chambers found nonusers to expose children to fewer traffic situations, use older unsafe automobiles, transport children in the front seat and be less likely to have the mother travel with the children.

Chambers also investigated whether knowledge, beliefs or reinforcing factors were important in CSS use. He found that 90% of the respondents had been exposed to CSS information; consistent CSS users knew that holding infants while traveling was unsafe. Consistent users believed that
CSSs were not too expensive. Nonusers did not believe that unrestrained children were at higher risk of injury or death.

Chambers found that almost 40% of the respondents knew users of CSSs. Of the consistent users, 90% knew of other users. Chambers found skill to be important in CSS use. Consistent users tended to report less often that CSSs are complicated.

By using a multivariate analysis, Chambers found these variables to be associated with low CSS use: young mothers, more children in the family, mother's nonuse of safety belts in city traffic, nonwhite mothers, mothers not accompanying the infant on trips, older automobiles in city traffic situations, parents not exposed to child restraint information doing the highway driving, and lower socioeconomic class.

To increase restraint use, Chambers suggested that educational efforts should be aimed at high risk groups who have shown to be non-CSS users. He proposed these efforts should contain information that explains to parents problems related to CSS use and should instruct parents how to remedy the problem.

Hoadley, Macrina and Peterson (1981) also studied parents' seat belt use and its relationship to frequency of use and attitudes toward CSSs. The primary reason given for not using both was discomfort and restrictiveness.
They measured other attitudes about child passengers and found most agree that children should not be held in another passenger's lap. About 10% of the parents--mostly males--thought this practice to be safe. Seventy and three-tenths percent of the parents felt it was acceptable for children to be restrained only on long trips.

The authors found a strong relationship between observed safety belt use by drivers and passengers wearing safety belts. According to the authors, intervention studies need to be developed which capitalize on the passenger-driver role-model effect where one can influence the other to use restraints.

Newmann, Newmann, Cockrell and Banani (1974) studied factors related to parent's use and nonuse of CSSs. Parents attending a pediatric clinic were interviewed to gather sociodemographic data, safety belt and CSS use, knowledge about motor vehicle crashes and correct CSS use, attitudes concerning CSS use and safety belts, and parent's external and internal locus of control.

Results showed that about half the parents improperly used CSSs when transporting their children. The main reason parents did not use CSSs was because they felt they were uncomfortable for the children or they forgot to use them. Over half the parents were aware of the dangers of auto crashes; however, only one-third knew vehicle crashes were the greatest threat to their children's health.
Parents were more aware of proper ways to restrain older children than infants. There was a strong relationship between parents' safety belt use and appropriate use of CSS and safety belts for their children. Parents with a strong sense of internal control properly restrained their children more often than parents who believed external factors controlled their lives. Better-educated parents used restraint devices properly more often for their children. Nonwhite parents more often improperly used child restraint; however, there was no relationship between race and nonuse of CSS. Parents of intact families used CSSs more often than single parents. No relationship was found between knowing relatives and friends who were involved in vehicle crashes and CSS use.

Newmann et al concluded that parents' safety belt use is the strongest predictor of CSS use. They felt a possible solution to the problem of nonCSS use would be to pass mandatory safety belt laws. The authors did not analyze the reasons for the relationship between safety belt use and CSS use.

They did, however, feel that knowledge alone was not an important predictor of parents' CSS use. Many parents surveyed knew the best methods to restrain children, were aware of the health threat of crashes and knew others who were injured or killed in auto crashes, yet were inconsistent CSS users. The authors felt that attitude was
an important predictor of CSS use—even more important than knowledge or experience.

Many nonusers believed CSSs were uncomfortable or inconvenient or believed it was safer to hold a child. Those who felt their lives were controlled by internal factors were more likely to use CSSs. Therefore, the authors felt that indirect appeal through pamphlets, posters and mass media campaigns were not effective. They suggested direct one-to-one health education as a better tool. They believed medical personnel are the most appropriate professionals to counsel parents on CSS use.

Hughes (1979) attempted to explain how parents' knowledge, attitudes and beliefs affected their CSS behavior by using the Green et al PRECEDE model. Although she did not include a discussion of the model in her literature review, she later applied the model to some of the results of a pre-Tennessee CSS law parent survey and a post law survey.

Results indicated that parents were more knowledgeable about the law after it went into effect than before. CSS users were more knowledgeable than nonusers. Hughes found no difference in the beliefs of the effectiveness of the law before the law took effect among users and nonusers. She suggested that this was related to the lack of the reinforcing factor of enforcement of the law.
Women were more likely than men to believe the law was effective. CSS users were also more accepting of government regulation, were more likely to use safety belts and perceived CSSs to be less costly and inconvenient for them and their children.

To explain the interaction of knowledge, attitudes and beliefs, Hughes modified the PRECEDE model showing the interaction of the predisposing, reinforcing and enabling factors in CSS use. She demonstrated the important interrelationship between factors and the necessity for all factors being positive to ensure consistent level of CSS use.

Hughes concluded that there is an association between beliefs and behavior; changes in the external environment (ie. legislative enforcement, educational intervention) can change beliefs; and knowledge will increase first, then attitudes and finally behavior will change. She could not establish the length of time or the intensity of interaction needed to change beliefs or behavior. She also believes that member of the higher socioeconomic classes were more likely to use CSSs, because they were more likely to possess more positive predisposing factors (knowledge, attitudes, beliefs) toward CSS use.

If predisposing, enabling and reinforcing factors are all important to consistent CSS use, Hughes believes that many people have a role in promoting these positive factors.
which lead to consistent positive CSS behavior. For example, she recommends that CSS loaner programs or give-away programs to new automobile buyers be used to promote enabling factors.

Education can enhance problem-solving skills, another enabling factor. Educators, policy makers and parents should strive, according to Hughes, to create an overall "reinforcing atmosphere" which fosters positive CSS and safety belt behavior. Hughes recommends that television should be influenced to present only positive restraint behavior, another reinforcing factor.

Erikson and Gielen (1983) described an on-going program that used the PRECEDE Model. The PRECEDE model was used to plan, implement and evaluate a comprehensive child restraint education and loaner program in Maryland. Most of the education and loaner sites were local health departments. The population served were parents of infants. The educational needs of the project were determined by reviewing the literature and analyzing state vehicle crash and safety data. Predisposing, enabling and reinforcing factors related to consistent and correct use of CSSs were analyzed to select appropriate educational methods and materials.

They determined that if the PRECEDE Model is used properly to develop a health education program, the resulting program should employ a variety of educational
methods and messages including:

- direct communication to reach individuals and groups through the use of oral or written instructions, films, pamphlets, etc. to address predisposing factors;

- community organization and training programs such as CSS loaner programs to address the enabling factors; and

- indirect communication through in-service training, consultation, continuing education, etc., to address the reinforcing factors.

The evaluation developed through the PRECEDE Model included a process evaluation which gathered data related to the number of education materials and their type distributed, the number of parents served, and the number of public speeches presented to interested community groups. With all educational materials evaluation, forms were included and data were gathered based upon responses.

Impact evaluation strategies were also used to determine if those provided education and loaner CSSs were properly and consistently using them. This was accomplished through on-site and community observations. Data was also gathered through the use of self-report forms, although it was stated that these data are not as reliable as observation data.
Finally, outcome evaluation was used to determine the impact of their program on the health status of their target population. Incidence of childhood morbidity and mortality from vehicle crashes were planned to be reviewed to determine if the project had any effect.

Cunningham, Hughes, Philpot and Pentz (1981) used data collected as part of a major study of the Tennessee CSS law and its effect on parents' knowledge, attitudes and behaviors. Some of these data were the same data used in the Hughes study. Data was gathered from four urban and five rural shopping centers. The subjects were primarily middle class parents of children under age four. Information gathered consisted of observed CSS and seat belt use, demographic data and parents' knowledge about and attitudes toward CSS and seat belt use. Data was collected two months before the Tennessee law went into effect and six months and one year after the effective date.

Results showed CSS users were more aware of the Tennessee law, parents were more aware of the law after passage, and nonusers believed that CSSs were inconvenient and uncomfortable for their children and disliked government regulation. CSS users supported seat belt use, knew more about the CSS law and perceived the legislation to be more effective than nonCSS users. Both CSS users and nonusers expressed less support for seat belt use after the passage of the law than before. Parents exposed to
educational intervention perceived CSSs to be less uncomfortable for children after the law took effect than before. Based on Hughes' use of the Green model, the authors predicted that the most consistent CSS users are affected by favorable predisposing, enabling and reinforcing factors. Inconsistent and nonusers may be parents who lack one or more of these factors.

According to the authors, implications of the research are that beliefs may change due to public policy or education intervention; awareness and knowledge are first to be affected by educational interventions and public policies; and the PRECEDE model can be used as a basis to devise strategies to improve CSS use.

Practitioners aware of the PRECEDE model could develop strategies, including policies and educational intervention programs, which ensure that all three factors are addressed. Public policy makers should fashion programs, the authors believe, which relate to enabling factors to ensure easy access to CSSs. Health educators can address the enabling factor needs by emphasizing the development of skills needed to properly use CSSs. Educators and policy makers can address reinforcing factors by creating a social climate which reinforces safe vehicle travel.

**Attitude Studies**

An important predisposing factor, according to Green, et al, which influences health behavior is attitude.
Several researchers have studied this factor to determine why seat belts and CSSs are used or not.

Eiser, Sutton and Wober (1979) compared the attitudes about seat belt use of smokers and nonsmokers. A representative sample of English television viewers were asked by the authors to respond to a television program about smoking. A questionnaire was sent to them which contained attitude and behavior questions about their smoking and seat belt wearing habits and attitudes.

The authors found a relationship between smoking and nonuse of seat belts, even after other variables were controlled. Both behaviors were associated with the attitudes that it was an individual's right to put his or her own health at risk. Neither group felt it had a moral obligation to avoid health risks.

In addition, the authors noted nonseat belt wearers were less apt to believe that seat belts protected them while riding in a vehicle and were more opposed to seat belt legislation. Both smokers and nonseat belt wearers were overrepresented in the lower socioeconomic class.

The authors suggested that nonseat belt wearers may simply believe that the behavior they are engaging in is not dangerous. They either underestimated the risks or believed no risks existed.

The authors are optimistic that education can be used to inform people of dangers of smoking or nonuse of seat
belts to change their attitudes about risks. However, they see little effect of its use on people who believe they have a right to risk their own health.

Knapper et al (1976) studied attitudes related to belt nonuse. Knapper et al believe that before behavior can be understood, information about attitudes, beliefs and opinions must be known. They believe that only seat belt campaigns which address attitudes, beliefs and opinions can be effective in changing seat belt behavior.

Knapper et al used a cluster sample design to randomly sample citizens of Regina, Canada, about their seat belt attitudes. Results showed that most people (among both seat belt and nonseat belt wearers) showed very positive attitudes toward seat belts. The most important factor, the authors believe, was not the attitude toward seat belts, but whether a habit of wearing them had been developed.

Knowledge about intervention campaigns which stress the safety advantages of seat belts, Knapper et al believe, would be redundant, since most people believe they are effective. Safety knowledge, the authors believe, may be more important for beginning drivers to learn.

Knapper et al's solution to the problem of nonseat belt use is not to teach the habit of wearing them, but to install passive protective devices in automobiles and pass mandatory seat belt laws.

Lindenmaier, Fisher and Kuner (1981) also found
generally positive attitudes toward seat belt use among a group of injured vehicle crash victims in Germany. Of those questioned, 75% believed safety belts could protect them from serious injury. However, 23% believed it was safer to be thrown clear of the crash. A higher percentage of drivers the authors labeled as those who engaged in "quite risky driving behavior" were more likely to say they refused to wear belts or were more undecided about seat belt use than more careful drivers.

Despite the type of driver or seat belt behavior, the authors found a distinct fear of being trapped by seat belts. Consistent wearers tended to believe the seat belt entrapment myth less than nonseat belt wearers; however, over half of consistent wearers expressed those fears. Over three-fourths of those questioned expressed fear that they would be unable to release the seat belt after a crash. Ninety percent felt this inability to release the seat belt would be related to injuries suffered in the crash.

The authors' solution is to equip all vehicles with exactly the same type of seat belt lock system or seat belt lock which opens automatically after crashes. This, of course, would not provide protection in multi-impact crashes.

Laws

Robertson and Williams (1978) gathered original data on
belt use in 19 cities in five countries over three years. They concluded that belt use laws do not reduce deaths and injury as much as might be expected, because teenagers and drunk drivers wear them less often, but are more likely to be involved in severe crashes. They also found greater compliance with seat belt laws when there were fewer exceptions.

Williams (1978a,b) argued that more passive countermeasures, such as better engineered and designed cars, would result in more protection of children than would required use of restraint systems which require individual action. He based this belief on Williams and Robertson’s observation study (1979) of seat belt use before and after the enactment of a mandatory seat belt law in British Columbia.

Belt use, which had increased to 79% the first week of the law, dropped to 66% in the ninth month. Robertson (1978b) had earlier reported on the observed effects of an Ontario seat belt law, in which use increased three fold after the law went into effect, but was cut in half when the law was weakened to exclude shoulder belt use in pre-1974 cars. Robertson also called for better vehicle design and air bags.

When the Ontario law was enforced strenuously for one week in Ottawa in 1979, Henry (1980) found that the usage rate one month later was 76%, up from 58.5% before the
enforcement campaign. She compared this rate to those provinces with no seat belt laws and found usage rates of 8%.

Another study conducted in New Zealand (Hurst, 1979) examined effects of a 1972 safety belt law. Hurst also found that while seat belt use increased, the effects on fatality reduction remained low, probably because those drivers who did not use belts did the most hazardous driving.

Williams and Wells (1981) examined the effects of the Tennessee and Rhode Island laws on CSS use rates. In their 1981 Tennessee study, they found use increased from 8% prior to the law to 29% two and one-half years after the law went into effect. Four months after the Rhode Island law went into effect, they found that use had increased from 11% to 23%.

In New Zealand, where drivers are required by law to wear seat belts, Geddis and Appleton (1982) found 65% of children between ages 6 months and 11 months were in seat restraints. Sixty-one percent of children age one were restrained, compared with 12% of children in the U.S. They hypothesized this dramatic difference could be due to differences in attitudes toward restraint systems, because of New Zealand's law. They did notice a decline, however, to a rate of 30% use for children ages three and four. They suggested that research efforts should be directed toward
determining why restraints aren't used for the ages for which they are appropriate.

**Intervention Studies**

The literature establishes (1) that vehicle crashes can be hazardous to our health, (2) vehicle restraints can save lives and prevent injuries, and (3) certain factors are related to use and nonuse of vehicle restraints. Researchers have extensively studied use and nonuse factors in an attempt to develop effective intervention programs designed to increase restraint use for the ultimate purpose of reducing vehicle deaths and injuries.

Fhaner and Hane (1973) reported on seat belt campaigns that were conducted in the 1960s and early 1970s, primarily in natural settings, rather than the laboratory. Generally, several approaches or materials were used simultaneously, such as films, pamphlets, group discussion and posters. Because so many different methods and materials were used simultaneously, it was impossible to evaluate the effect of these methods separately.

It is impossible to tell how successful most seat belt campaigns really are, because no base line or precampaign data were collected. The most successful intervention studies were those which were conducted with employees or lasted at least one year. The authors concluded that it could not be determined if rational approaches to influencing behavior change work, since this approach could
possibly arouse anxiety and trigger defensive-avoidance behavior. The best approach, the authors thought, was to reach people in smaller groups, rather than through mass media campaigns.

Robertson, Kelley, O'Neill, Wixom, Eiswirth and Haddon (1974) studied a mass media approach to increase seat belt use. Television public service announcements (PSAs) were developed from information garnered from interviewing both seat belt users and nonusers. Because a relationship was noted between seat belt use and having a friend or relative injured in crashes, the theme of the PSA was to wear seat belts and avoid disfigurement and disability.

The messages were judged by the TV-Radio Club to be of very high quality. They were shown on television for five months. Despite the high quality of the PSAs, they had no effect on seat belt use.

Other seat belt media intervention studies in both the U.S. and Canada have shown the same disappointing results (Pryor, 1970; Fleishcher, 1973; Auto Safe, 1972; Wilson, 1973). Particularly disappointing was Pryor's study which clearly showed the media message was received and comprehended by a substantial percentage of the target population. Wilson suggested the best type of mass media to change seat belt behavior is long-term use of billboards and radio messages which can be seen or heard while one is riding in a vehicle.
One early mass media campaign in 1964 in the U.S. was conducted before seat belts were standard equipment. Results showed an increase in installation of seat belts and of use (Schrader, 1972). Another campaign which featured print and television material in England found a doubling of seat belt use among the group of rural people to whom it was directed (Fabry, 1973).

Most of these mass media appeals were directed toward adults. Other approaches were not as direct. Wilson, Lonero and Ish (1973) attempted to influence adults' seat belt use by educating their children about the importance of seat belts. In a Canadian school district, children actively participated in a seat belt education project. For six months after the curriculum was introduced into the school system, parents' seat belt behavior was observed. There was a significant difference in seat belt use among parents of the treated group, compared to the nontreatment group.

A similar study (Senk and Schwartz, 1972) completed in the U.S. trained classroom teachers to teach their elementary and junior high students about the importance of consistent seat belt use. The program exposed children to about three hours of classroom instruction during one month. Two seat belt booklets and a safety belt game were given to teachers as curriculum materials which were designed for the grade levels they taught. In addition, teachers were asked
to distribute safety belt bumper stickers. It was hoped that this type of education would not only influence the children, but would have a "follow-the-leader" effect and influence their parents and others to wear seat belts. To measure the effect of the program, baseline data was collected two weekends before the program began by observing belt usage of everyone in vehicles which contained school-age children. For three weekends during the program and for three weekends after the program, the observations were repeated.

There was a significant increase in seat belt use by children involved in the study, compared with a control group. Seat belt use increase occurred primarily among children who sometimes used them, rather than among children who had never used them. Occupants of all ages in vehicles which displayed the bumper sticker were more likely to wear seat belts.

Data showed that there was not a strong "spin-off" effect, because the seat belt use of other groups not exposed to the curriculum did not change. This may not be surprising, since the children did not receive specific instructions to ask others in the vehicle to buckle up. However, according to self-report data, seat belt use among teachers did increase.

McPherson, McKnight and Weidman (1983) used four different seat belt modules with high school students. The
modules consisted of an Information Module, Peer Testimonial Module, In-vehicle Module and a Seat Belt Convincer Module. A knowledge posttest administered to all groups showed significant gains among the students exposed to the Information Module, Testimonial Module, and In-vehicle group, but not among those in the Convincer group. Significant attitude gains were found in all groups. However, those in the Convincer group and In-vehicle module groups had longer-term positive attitude changes about seat belt use. Most important, only students exposed to the In-vehicle Module continued to use seat belts at a significant level one month after they were exposed to the module.

Of special interest to this research are studies in which intervention methods were used to attempt to change parents' auto restraint behavior. Because parents visit their pediatrician over several years, pediatricians have a unique opportunity to offer counseling on health-promoting behavior over time.

Bass and Wilson (1964) studied the ability of pediatricians to influence parents even before seat belts became standard equipment. The object of the study was to see if pediatricians using various methods could persuade parents to install seat belts in their automobiles. Four experimental groups were established. One group received two letters from their pediatrician urging them to install belts. This group also received face-to-face counseling.
The second group received the letter, but no counseling. The third group received two letters from a state safety council. The fourth group acted as a control and received neither letters nor counseling.

The results of the self-report survey showed that those who received both the letter and counseling claimed to have a significantly higher rate of installation of seat belts. These results suggest the pediatrician may have an important counseling effect on parents. The findings of the study are impressive; however, seat belt installation was measured through self-reporting rather than observation. The influence of the pediatricians' counseling alone was not measured, because group one received both a letter and counseling. The study population may not be representative of parents in general and certainly not of high-risk parents. It is possible that parents who regularly visit a physician's office are more safety conscious than those who do not and therefore are more likely to engage in safety promotion behavior.

Although Bass and Wilson's findings suggest that pediatricians can influence parents' CSS behavior, other studies have not been able to replicate those results. Miller and Pless (1977) investigated parental CSS education in the pediatrician's office. Parents were divided into four groups: the first group received no educational intervention and served as a control group. The second
group received CSS safety literature; the third group received literature and oral advice from the pediatrician; the fourth group received literature, pediatrician counseling and a slide-tape presentation. No difference in CSS use was noted among the four groups two weeks later. The authors concluded that "the physician's office may not be the best place for such education to take place."

Restraint use was measured among two groups of pediatric patients in North Carolina (Hall, 1979). The first group was patients of pediatricians who encouraged CSS use. The second group was patients of pediatricians who did not offer such encouragement. The results seemed to indicate that counseling from the pediatrician had little effect because patients of pediatricians not promoting CSS use had the highest CSS use rate.

Saunders and Pine (1986) found much more encouraging results when restraint education was provided to a group of low-income mothers at a public health setting. Baseline restraint use was 4.9% before 268 WIC participants were provided intervention which consisted of a 10-minute discussion of vehicle crash statistics and the viewing of a 3-minute simulated crash film. The restraint use was observed to be significantly higher (12.6%) in the group after intervention.

The authors claim that the difference in safety belt use was solely attributable to the health education
intervention and not from outside influences. This could not be proven because no control group was used. The authors were encouraged by the results of their study and suggested that WIC clinic sites could be used elsewhere to encourage the use of safety belts. However, they caution despite the significant differences in before and after intervention use of safety belts, most of the population continued not to wear safety belts. The author recommends the adoption of more mandatory safety belt laws as a solution.

Conclusion

Parents don't use CSSs and seat belts for many reasons. The most common reasons expressed in many studies are forgetting, inconvenience, laziness, child's dislike of CSSs, and never getting into the habit (Weber & Allen, 1982; Williams, 1976). The topic of educating children about the importance of CSSs and seat belts is lacking empirical study. Children begin forming health and safety habits at an early age—educating them about the importance of protecting themselves in autos could result in life-long restraint use.

Children in Ohio and many other states may be very susceptible to this kind of education, because many of them have been exposed to CSSs as a result of the Ohio CSS law. Many children have been riding restrained since they were
born. It seems tragic that at a time when their age or weight no longer requires them to be restrained by law that this valuable habit could be lost. It seems sensible that both parent and child should become partners in health promotion by ensuring that each other and other vehicle passengers are properly restrained.
CHAPTER III
METHODOLOGY

Introduction

The study tested three health education intervention methods designed to positively increase knowledge and foster positive attitudes and behaviors to influence use of CSSs and safety belts among preschool children, their parents or others who transport them in vehicles to or from child care.

The design of this study provides an opportunity to answer the research question, can health education provided to preschool children and/or those who transport them positively affect vehicle restraint behavior? To answer this question, the study was conducted at The Ohio State University (OSU) Child Care Program, which was located in a rented building about three blocks from the OSU campus in Columbus, Ohio.

The main function of the child care program is to provide child care for infants, toddlers and preschool children of OSU students, staff and faculty. At the time the study was conducted, about 170 children attended the program: approximately one-third were children of staff, one-third were children of students, and one-third were
children of faculty. The majority of children were in the program full-time. Thirty percent attended a full-day session on Monday, Wednesday and Friday, or a full-day session on Tuesday and Thursday. Only six children attended a half-day session five days a week.

The child care center nonselectively assigned children by age to classrooms. The infants, birth to 18 months, were housed in two classrooms. The toddlers, ages 18 months to three years, were divided into four classrooms; 83 preschool children, ages three to five years, were also divided into five classrooms. One full-time teacher was assigned to each classroom. OSU work study and child development student interns assisted teachers to care for the children.

The child center had two parking lots. The north parking lot was reserved for the staff. The south parking lot, which accommodated about 25 automobiles, was reserved for parents and others transporting children to and from the center. The majority of children were transported in private automobiles to and from the center by their parents.

General Research Design

A quasi-experimental design was used, because the study was conducted in a natural setting with the intention of causing a minimum of disruption to the child care center. Specifically, a modified multiple time-series design was
used. According to Campbell and Stanley (1963), this design controls all eight classes of extraneous variables which can negatively affect internal validity. Because randomization of subjects into study and control groups was not possible in this natural setting, the use of the quasi-experimental design does not control for any of the variables associated with external validity. Results, therefore, will not be generalizable to the public.

Four of the five classrooms (groups) of preschool children and their parents or others transporting them from child care were designated as the study population. The four of the five preschool classrooms were chosen randomly by drawing the classroom numbers out of a container. Using the same method, three of the four classes were designated as treatment groups with the fourth serving as a control group. Each of four classrooms contained about 17 preschool children. The study is diagrammed in Figure 3 that follows:
<table>
<thead>
<tr>
<th></th>
<th>Observation</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>0</td>
<td>X</td>
<td>X1</td>
<td>X</td>
<td>0 0</td>
</tr>
<tr>
<td>Group 2</td>
<td>0</td>
<td>X</td>
<td>X2</td>
<td>X</td>
<td>0 0</td>
</tr>
<tr>
<td>Group 3</td>
<td>0</td>
<td>X</td>
<td>X1+2</td>
<td>X</td>
<td>0 0</td>
</tr>
<tr>
<td>Group 4</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>0 0</td>
<td></td>
</tr>
</tbody>
</table>

- X1 = Children provided safety education
- X2 = Parent or transporting adult provided safety education
- X1+2 = Both parents and children provided safety education
- 0 0 = CSS and safety belt observation

Figure 3: A Diagram of the Quasi-Experimental Design of A Study of a Vehicle Restraint Health Education Program For Preschool Children and Their Parents

Base line CSS and safety belt use data were collected by the researcher observing drivers and preschool children in vehicles when they departed from the child center's north parking lot. Data were recorded on a data sheet (Appendix A). To gather information about parents' or other transporting adults' vehicle restraint knowledge, attitudes and other PRECEDE Model factors, a self-administered pretest was sent to those who agreed to participate (Appendix B).

Children in Group 1 were exposed to safety education specifically designed to influence predisposing, enabling
and reinforcing factors of children's and drivers' use of CSSs and safety belts. The curriculum is shown in Appendix G. Drivers of children in Group 2 were exposed to safety education also designed to influence those factors. Both transporting adults and children in group 3 were exposed to safety education. Group 4 acted as a non-equivalent control group where neither the transporting adults nor the children were exposed to any restraint use health education. Adults again were post-tested using the same instrument after intervention was completed.

Subsequent observation of CSS and safety belt use in the center's parking lot occurred for all groups directly after the education intervention was completed. To assess the longer-term effects, two months later another observation was conducted as children and parents left the center. These observations were conducted by trained observers.

Instrumentation

The pretest/post-test (Appendix B) instrument was a self-administered questionnaire that contained primarily multiple choice questions designed to measure predisposing factors (knowledge, attitudes and demographic characteristics); enabling factors (access to safety equipment and skills to use it); reinforcing factors (whether use of safety equipment is encouraged by friends,
relatives and society); and reported vehicle restraints use behavior.

The instrument was developed after reviewing questionnaires from studies which attempted to measure factors related to the PRECEDE model. Questions about CSS use were primarily taken from a study conducted by Gielen et al (1984). A letter of permission is in Appendix C. Their telephone survey instrument was pretested to eliminate questions of low reliability. Attitude questions in the survey were found to have an alpha reliability of .76. Questions which related to safety belts were developed by the researcher by reviewing several safety belt questionnaires. Questions about safety belt attitudes were adapted from Knapper’s 1980 study (see permission letter in Appendix D). Knapper conducted exploratory research to develop questions with strong face and content validity. His questions were developed in two stages -- a pre-pilot and pilot stage. The wording of his questionnaire represented actual attitude statements expressed by the public and traffic safety experts during interviews (C. Knapper, personal communication, May 13, 1985). Some questions used to assess Nationwide Insurance employees’ attitudes and behavior about safety belts were also adapted by the researcher and incorporated into the questionnaire. Safety belt knowledge questions were derived by reviewing National Highway Traffic Safety Administration
safety belt pamphlets.

The instrument's validity was determined by the following panel of vehicle safety and child development experts:

1. Franklin R. Banks, Ph.D., Associate Professor, Department of Preventive Medicine, The Ohio State University;
2. Judy Fountain, M.A., Director, The Ohio State Child Care Program;
3. B. Monroe Barner, Researcher II, The Ohio Department of Highway Safety;
5. Robert J. Moore, Ph.D., Champion College, The University of Regina Department of Psychology; and,
6. Colleen I. Murray, Ph.D., Lecturer and Faculty Research Associate, Department of Home Economics and Child Development, The Ohio State University.

The panel members were sent copies of the proposed instrument and a letter asking them to indicate whether each question: (1) was written clearly, (2) was easily understood and (3) measured what it was designed to measure (see Appendix F). If a panel member felt a question was invalid, he or she were provided space to explain why or make suggestions.
The researcher summarized all the information gathered from the expert panel and presented it to Dr. Robert Kaplan, Professor of Health Education at The Ohio State University. At that time final language of the instrument was developed.

The reliability of the instrument was determined by field testing it at the North Broadway Child Care Center, located in a middle class neighborhood in Columbus, Ohio. This child care center was chosen because the population it serves is similar to the population served by the OSU Child Care Program. After permission was granted from the child care center director, a letter of explanation was sent to 100 preschool parents asking for their help and asking them to fill out an enclosed questionnaire (see Appendix F). Forty-eight parents returned the questionnaire. The reliability of six domains contained in the questionnaire and the overall reliability of the questionnaire were tested using the Cromback's Alpha reliability test. This test was performed using the SPSSX computer package on the OSU main frame computer. The following summarizes the findings:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Alpha Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Restraint Use</td>
<td>.6177</td>
</tr>
<tr>
<td>Safety Belt Attitudes</td>
<td>.8612</td>
</tr>
<tr>
<td>Child Safety Seat Attitudes</td>
<td>.6308</td>
</tr>
<tr>
<td>Vehicle Restraint Knowledge</td>
<td>.6762</td>
</tr>
<tr>
<td>Restraint Reinforcing Factors</td>
<td>.4145</td>
</tr>
</tbody>
</table>
According to the results, all of the domains showed an adequate level of reliability (above .6 alpha) except the restraint reinforcing factors domain.

Classroom Teacher Training

The principle classroom teachers in groups 1 and 3, who were assigned to teach vehicle restraint education to their students, were provided a two-hour training session by the researcher. The curriculum was examined and they were asked for suggestions to make it more suitable for preschool students. Many of the original instructional materials were developed by the Ohio Department of Highway Safety as part of their preschool auto restraint curriculum. Some modifications were made in the materials and the teaching methods based on recommendations from the director of the OSU Child Care Program, the Center’s Educational Director and the two classroom teachers. See Appendix G for material used in the teacher training and curriculum.

Baseline Restraint Use Observation

Baseline vehicle restraint use observation data were gathered by the researcher one week prior to any contact with the preschool children’s parents. Drivers’ and
preschool passengers' use of restraints was recorded on the "Vehicle Restraint Observation Tally Sheet" (see Appendix A). On the tally sheet the use of restraints by the driver was indicated by a circle around either "M" if they were male or "F" if they were female. If the driver was observed wearing a shoulder harness in an automobile built after 1974 the appropriate letter was circled. If the vehicle was built prior to 1974, which lacked a combination of shoulder and lap belt, the driver was observed to see if he or she buckled a lap belt. Preschool children's use of auto restraints was determined by observing both drivers' and children's behaviors. If the driver was observed buckling the child in the front or back seat, "M" or "F" was circled on the form depending upon the sex of the child. One of these was also circled if the child was observed sitting in a child safety seat or sitting still and correctly placed on the vehicle seat. Observations to determine if the child safety seat was being used correctly were not conducted because this could not be done without interviewing the drivers.

After restraint use was determined, the vehicle license number was recorded. For those vehicles with license plate which expired in October, November or December of 1985, a description of the vehicle was also taken. This procedure was followed because these license plates would be replaced with 1986 plates when subsequent observations were
scheduled. The researcher sought cooperation from The Ohio Department of Highway Safety (ODHS) to determine what later license numbers these vehicle were granted when subsequent observations were completed. See Appendix H for correspondence written to ODHS.

**Adult Participants**

After baseline vehicle restraint use data were gathered, a letter was sent to parents of children who were enrolled full time in the program. The letter asked those who transport their children from child care more than 50 percent of the time to participate in the study. If others transported their children from child care more than 50 percent of the time, they were instructed to pass the letter and other information included in the letter to the individual who did (Appendix I). Included with the letter was a description of the study, a participation form (Appendix J) and a pretest (Appendix B). Instructions for completing the participation form and the pretest were also included. One follow up letter was sent to further encourage parents to participate (Appendix I).

A total of 55 parents returned participation slips to their children's child care teachers and agreed to participate. All parents who agreed to participate returned completed pretests. One parent returned the participation slip and indicated he wished not to participate. One other
parent indicated that he did not wish to participate, because he did not have an automobile and the child was brought to and from child care on the city bus. Five other parents never responded to the three letters which asked for their participation. Results of one parent's questionnaire were not used because he had one child in a study group and one in the control group. All of the participation slips which were returned were signed by drivers who were parents of the preschool children in the study. The following outlines the number of parents who were included in each of the four groups:

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>55</td>
</tr>
</tbody>
</table>

After participation forms and pretest were gathered, the following health education treatments were given to the groups below:

**Group 1**

Children in this group were exposed to CSS and safety belt education. The education consisted of five different activities which lasted about 15 to 20 minutes each. The principle classroom teacher provided the instruction for one activity each day during the week of October 28th through November 1, 1985 (Curriculum is in Appendix G).
Parents or others who regularly transport children from the day care center were provided CSS and seat belt safety education. This education was provided at the time the child was picked up at the center. The education, which was provided by the researcher, consisted of a discussion of what the children were being taught in their classroom related to seat belt and car seat safety and the importance of everyone in the vehicle using restraints. The discussion about vehicle safety education children were receiving in their classrooms occurred while the researcher accompanied the adult to his or her vehicle. The Participant Education Form in Appendix K outlines the educational message. Upon arriving at the automobile, the researcher assisted the adult to properly secure the child or children in the CSS and answer questions related to proper CSS use and how the Ohio Child Safety Seat Law affected them. Then, with the adult in the driver's seat and the researcher in the passenger seat, the researcher (1) discussed the important benefits of consistent adult and child restraint use, (2) demonstrated how to use the safety belt by buckling the safety belt around himself, (3) explained how the inertia wheel of the safety belt works, (3) asked the driver to buckle his or her safety belt and (4) briefly explained safety belt and child safety seat literature which was then given to them in a six and one half by nine and one half
inch manila envelope. On the envelope were these words in bold letters:

YOUR ATTENTION PLEASE

THIS PACKET CONTAINS VALUABLE VEHICLE SAFETY INFORMATION WHICH COULD SAVE LIVES OR PREVENT SERIOUS INJURIES. PLEASE READ THE INFORMATION AND DISCUSS IT WITH OTHERS.

Contained in the envelope was the following vehicle restraint safety material:

1. "Ohio's New Child Restraint Law" -- This is a one sheet flier with information about Ohio's child safety seat law. On one side information is included about how the law affects parents, relatives, friends and car poolers who transport infants and young children. In addition, it includes information about the penalty for violating the law. The other side of the flier contains a child restraint shopping guide which lists information about approved child safety seats for children affected by the law.

2. A reprint of Edward Christophersen's July 1977 Pediatrics article, "Children's Behavior During Automobile Rides: Do Car Seats Make a Difference?", a short study which showed that children's behavior improved when they travel in child safety seats.

Administration (NHTSA) which outlines popular myths about child safety seats and provides information to refute them.

4. "Make them Secure" -- This brochure developed by the Ohio Department of Highway Safety explains the proper use of different child safety seats.

5. "How Many Fairy Tales Have you Told?" -- A NHTSA brochure that discusses and refutes six popular safety belt myths.

6. "Safety Belts: A History Lesson for Adults" -- Another NHTSA brochure that specifically emphasizes adult use of safety belts. It explains crash dynamics and why remaining on the vehicle seat in a crash is the safest place to be.

To ensure that the education given to each parent was consistent, the researcher used a Driver Restraint Education Form (Appendix K) which outlined the educational message. The education was directed toward the parent; however, it was provided in the presence of the preschool passenger.

Group 3

In this group, both the children and the parents or other transporting adults were exposed to CSS and safety belt education in the same way as for groups 1 and 2.
Group 4

Neither the children nor the driver was exposed to seat belt or CSS education. This group acted as a non-equivalent control group.

Posttest

Following completion of the educational intervention, the same self-administered questionnaire which earlier served as a pretest was sent to parents, along with a letter of explanation. Two follow-up letters were sent to encourage participants to complete the posttest questionnaire (Appendix L).

Subsequent Observations

One week after treatment was completed, restraint behavior was again observed. These observations were conducted by two trained OSU students, one of whom was a graduate student in the Department of Preventive Medicine at OSU. The other was an upperclassman in engineering. Both students were provided two hours of restraint observation training by the researcher at the child care center. The training included:

* Background information about the study;
* information about the observation site and observation techniques;
* information about how to recognize preschool children; and,
how to complete the observation tally sheet (Appendix A). For more information about the observer training see Appendix M.

The final observation which was conducted to determine the longer range affect of the intervention treatment was conducted 8 weeks later by the researcher.

After all observations were conducted, parents were asked to submit the license plate numbers of the vehicles in which their children are transported from preschool. The letter to the parents asked them to fill out a form on the bottom of the letter, detach it from the letter, deposit it in a drop box in their children's classroom and make a check next to their name on a list attached to the box (Appendix N). One follow up letter was also sent to those parents who did not check their names on the attached sheet (Appendix O).

Those license plate numbers which could not be collected in this manner were gathered from the Ohio Department of Highway Safety by submitting the names of those who failed to give license plate numbers.

Data and Analysis

Data were collected from two sources--questionnaire data from the pretest and the posttest and participant restraint use observation data before educational intervention, immediately after and two months later. Both pretest and initial observation data were analyzed to
determine if there were any significant differences between the groups. This was completed because participants could not be assigned randomly to groups. Pretest data were initially analyzed using Chi-square analysis, analysis of variance and Scheffe's Test. Pretest data were further analyzed using descriptive statistics to determine the demographic characteristics and describe participant's initial restraint reported use, attitudes, and knowledge influence of enabling and reinforcing factors. Descriptive data analysis was also used on the initial observation data to describe the study population's use of restraints by sex of the driver and transported preschooler.

To determine the effectiveness of the educational intervention, all study hypotheses were tested using both pretest, posttest and all restraint use observation data. First, pretest and posttest mean differences of the variable domains among the four groups were analyzed. Analysis of covariance was used, controlling for pretest scores on the dependent variables and pretest variables which were found to be significantly different among the group. Mean differences of observation data were analyzed similarly to determine differences in observed restraint use between the groups.
CHAPTER IV
RESULTS AND DISCUSSION

Introduction

In this study data were collected from two sources. Response data of parents or others who transported children from child care over 50 percent of the time were collected from pretest and posttest questionnaires. Both the pretest and posttest data included predisposing, enabling and reinforcing factors relating to restraint use. The other source of data was observed participant use of vehicle restraints. Prior to administering the pretest and posttest, the validity of the questions was established by a group of vehicle restraint and child development experts (Appendix E).

The study population was composed of 4 groups of parents and others who transport preschool children from The Ohio State University Child Care Program. The assignment of subjects to study groups was not random, but rather was determined by which of 4 classrooms the preschool children had been assigned by the OSU Child Care Program. According to the child care program director, children are assigned to classrooms on a first come, first served, basis. Although
subjects could not be individually assigned to study groups, the assignment of groups to be exposed to different types of treatment was done in a random fashion.

Analysis of the Data

Analysis of the pretest data included the use of descriptive information (frequencies, percentages, and factor analysis,) and inferential (Chi-square, Scheffe's Test, analysis of variance, analysis of covariance) statistics. Descriptive statistics are used to indicate demographic characteristics of the study population. Chi-square and analysis of variance were completed to determine if there were significant differences among the four study groups. Chi-Square analysis of pretest data was completed by cross-tabulating the variable of treatment group with all other variables. Similarly, a one-way analysis of variance of pretest data was completed to determine if there were any significant differences among the four study groups. Programs of the Statistical Analysis System (SAS) Institute Inc., (1981) were used to analyze the data collected in this study. A significance level of .05 was established to be used with this study.

Chi-square analysis showed several differences among study groups; however, the results of the analysis could not be used because none of the cells which showed significant differences had more than five expected subjects in them.
Significant differences between groups were noted in the responses to four pretest questions when analysis of variance and Scheffe's test were completed. Scheffe's test is a posteriori contrast test which compares all possible pairs of group means, not just pairwise comparisons. This test was used because it is stricter than other posteriori contrast tests and can be used for unequal group sizes. (Nil et al, 1975). Found to have significant response score differences between groups were questions 17, 35, 36 and 45b. Tables 1 through 4 state the questions and summarize the significant pretest variable findings.
Table 1—Analysis of Variance and Scheffe’s Test Comparing the Pretest Responses to Question 17 by Group.

<table>
<thead>
<tr>
<th>Stated Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 17:</td>
</tr>
<tr>
<td>Would most people whose opinions are important to you such as friends or relatives approve or disapprove of your using seat belts?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response Scores By Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Scheffe’s Grouping</td>
</tr>
<tr>
<td>Significantly Different Pairs (I, IV)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>12.35</td>
<td>4.12</td>
<td>4.03</td>
<td>.012</td>
</tr>
<tr>
<td>Within Groups</td>
<td>51</td>
<td>52.04</td>
<td>1.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>64.44</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows that study groups I and IV are significantly different from each other in their responses to question 17. In study group I children were provided classroom restraint education. Group IV served as a control group where neither children nor parents or other
transporters were provided restraint education. According to the Scheffé grouping, group I participants stated more often that "friends and relatives strongly approve of their use of safety belts" than those in group IV.

Table 2--Analysis of Variance and Scheffe's Test Comparing the Pretest Responses to Question 35 by Group

<table>
<thead>
<tr>
<th>Stated Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 35:</td>
</tr>
<tr>
<td>How often do your friends or relative with preschool children use car seats?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response Scores By Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Scheffe's Grouping</td>
</tr>
</tbody>
</table>

Significantly Different Pairs (I, II)

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
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<td>7.4B</td>
<td>2.49</td>
<td>4.04</td>
<td>.012</td>
</tr>
<tr>
<td>Within Groups</td>
<td>51</td>
<td>31.43</td>
<td>.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>38.91</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2 shows that the means of group I and II are significantly different from each other. The data show that group I participants stated significantly more often that friends and relatives with preschool children used car seats more often with their preschool children than did group II participants.

Table 3—Analysis of Variance and Scheffe's Test Comparing the Pretest Responses to Question 36 by Group

<table>
<thead>
<tr>
<th>Stated Question</th>
<th>Question 36:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has anyone personally recommended that you use car seats when transporting preschool children?</td>
<td></td>
</tr>
</tbody>
</table>

Response Scores By Group

<table>
<thead>
<tr>
<th>Group</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Mean</td>
<td>1.23</td>
<td>1.80</td>
<td>1.29</td>
<td>1.54</td>
</tr>
<tr>
<td>Scheffe's Grouping</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A,B</td>
</tr>
</tbody>
</table>

Significantly Different Pairs (I, II, III)

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>2.92</td>
<td>.97</td>
<td>4.59</td>
<td>.0065</td>
</tr>
<tr>
<td>Within Groups</td>
<td>51</td>
<td>10.80</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>13.71</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 shows group II is significantly different from groups I and III as related to participants' response to question 36. This indicates group II participants stated more often that no one had personally recommended they use child safety seats when transporting preschool children than did participants in groups I and III.

Table 4—Analysis of Variance and Scheffe's Test Comparing the Pretest Responses to Question 45b by Group

<table>
<thead>
<tr>
<th>Stated Question</th>
<th>Response Scores By Group</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 45b:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the weight of your youngest child?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Mean</td>
<td>30.8</td>
<td>32.4</td>
<td>38.2*</td>
<td>28.2*</td>
</tr>
<tr>
<td>Scheffe's Grouping</td>
<td>A,B</td>
<td>A,B</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>

Significantly Different Pairs (III, IV)

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>2179.2</td>
<td>726.4</td>
<td>3.00</td>
<td>.0386</td>
</tr>
<tr>
<td>Within Groups</td>
<td>51</td>
<td>12358.2</td>
<td>242.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>14537.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 shows that group III (both children and transporter are provided restraint education) and group IV are significantly different from each other as related to their response in question 45b. According to the results, participants’ youngest children in group III weighed more than those in group IV.

The four significant pretest variables were later used as covariants in analysis of covariance of posttest data. This was completed to statistically adjust for the groups’ pretest variance.

**Summary of the Response to the Pretest**

About 80 percent of the 69 potential subjects agreed to participate and returned the pretest. All pretest questionnaires were usable. Table 5 shows the pretest questionnaires received after the initial request and two subsequent requests.
Table 5—Summary of Pretest Questionnaires Received by Study Group

<table>
<thead>
<tr>
<th>Event</th>
<th>Groups</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial mailing of pretest on October 11, 1985</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaires received before first follow-up mailing (October 13, 1985)</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>After first follow-up letter (October 14, 1985)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>After second follow-up letter (October 21, 1985)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total number of pretest questionnaires received in each group</td>
<td>13</td>
<td>15</td>
</tr>
</tbody>
</table>

Demographic Characteristics of the Study Population

The pretest was used as a survey instrument to determine the study population's demographic characteristics and other characteristics. Table 6 summarizes the demographic characteristics of the study population as extracted from pretest questionnaires.
Table 6--Parent Participants' Demographic Data From the Pretest

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>13</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>female</td>
<td>42</td>
<td>74</td>
<td>100</td>
</tr>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under 25</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>26 to 30</td>
<td>10</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>31 to 35</td>
<td>24</td>
<td>44</td>
<td>71</td>
</tr>
<tr>
<td>36 to 40</td>
<td>13</td>
<td>24</td>
<td>95</td>
</tr>
<tr>
<td>above 40</td>
<td>3</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td><strong>Race:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>black</td>
<td>7</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>white</td>
<td>42</td>
<td>76</td>
<td>89</td>
</tr>
<tr>
<td>hispanic</td>
<td>4</td>
<td>7</td>
<td>96</td>
</tr>
<tr>
<td>other</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td><strong>Marital Status:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>married</td>
<td>44</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>divorced</td>
<td>7</td>
<td>13</td>
<td>93</td>
</tr>
<tr>
<td>separated</td>
<td>3</td>
<td>6</td>
<td>98</td>
</tr>
<tr>
<td>widowed</td>
<td>--</td>
<td>--</td>
<td>98</td>
</tr>
<tr>
<td>single</td>
<td>1</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td><strong>Number of Children:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>24</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>two</td>
<td>28</td>
<td>52</td>
<td>94</td>
</tr>
<tr>
<td>three</td>
<td>2</td>
<td>4</td>
<td>98</td>
</tr>
<tr>
<td>four</td>
<td>1</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td><strong>Education:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high school</td>
<td>9</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>associate degree</td>
<td>4</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>bachelor's degree</td>
<td>15</td>
<td>27</td>
<td>51</td>
</tr>
<tr>
<td>advanced degree</td>
<td>27</td>
<td>49</td>
<td>100</td>
</tr>
<tr>
<td><strong>Family Annual Income:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not answered</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>under $8,000</td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>$8,000 - $14,999</td>
<td>14</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>$15,000 - $24,999</td>
<td>8</td>
<td>15</td>
<td>49</td>
</tr>
<tr>
<td>$25,000 - $39,999</td>
<td>9</td>
<td>15</td>
<td>66</td>
</tr>
<tr>
<td>above $40,000</td>
<td>19</td>
<td>35</td>
<td>100</td>
</tr>
</tbody>
</table>
Almost three-fourths of the pretest respondents were female which indicated that mothers in the study population had the prime responsibility of transporting their children from child care. The data indicate that there were few very young (under 25) or older parents (over 40). About 85 percent of them were between the ages of 25 to 40. Only nine percent were under 25 and six percent were over 40 years of age.

Whites comprised 76 percent of the respondent population and blacks accounted for 13 percent of the population. Hispanics constituted seven percent. Two respondents (four percent) indicated their race as “other”. Both classified their race as American Indian. Forty-four or 80 percent of the respondents said they were married; 13 percent indicated they were divorced. Only two percent said they were separated and none were widowed. Over 90 percent of the respondents said they had fewer than three children with only one respondent having more than three children.

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family's University Affiliation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>student</td>
<td>19</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>staff</td>
<td>20</td>
<td>36</td>
<td>70</td>
</tr>
<tr>
<td>faculty</td>
<td>13</td>
<td>24</td>
<td>94</td>
</tr>
<tr>
<td>none</td>
<td>3</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
All of the respondents had graduated from high school. The large majority (76 percent) held a bachelor's or an advanced degree. The question related to family income was answered by all the respondents except one. Over 65 percent of the respondents had family annual incomes of over $15,000, with 35 percent having annual family incomes above $40,000. Only seven percent had incomes less than $8,000. Most of the respondents or other members of their families were affiliated with The Ohio State University. Nineteen (35 percent) were students; 20 (37 percent) were university staff; 13 (24 percent) were faculty; and only three (six percent) said they were not affiliated with the university.

The demographic data indicate that the study population is not representative of the general public because subjects are well educated with income far above the average. According to the literature, those with more education and income are more likely to be restraint users. As Table 6 indicates participants were well educated, with high incomes and mainly white females. This shows the study population does not represent the general public; therefore, the study may have a low external validity.

Reported Restraint Use Behavior

All of the participants transported their own children from child care. Fifty-one (93 percent) transported only
one child. The other parents transported two children from
care. As Table 7 indicates, most participants stated
they were strong users of vehicle restraints. Forty-nine
percent (27 parents) reported in the pretest they always
used safety belts. Another 33 percent reported usually
wearing them, with seven and 11 percent reporting they
sometimes and seldom wore them. None of the parents
reported never wearing safety belts while driving.

Parents reported a high use of both safety belts and
safety seats. Eight-two percent reporting always or
usually using safety belts and 87 percent reported always or
usually using child safety seats. Despite the reported
higher use of safety seats, more parents reported never
using child safety seats than never using safety belts.
This may have occurred because the age and weight of the
preschool children may not require them by law to ride in
safety seats. Respondents were not asked if they used safety
belts instead of car seats. Therefore, it is not possible
to determine if children not in car seats travel restrained
in safety belts.
Table 7—A Comparison of Participants' Reported Use of Safety Belts and Child Safety Seats

<table>
<thead>
<tr>
<th>Restraint Type</th>
<th>Percent of Participants who use them:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always</td>
</tr>
<tr>
<td>Safety Belt</td>
<td>49</td>
</tr>
<tr>
<td>Child Safety Seat</td>
<td>71</td>
</tr>
</tbody>
</table>

The results shown in Table 7 show a similar pattern which was found though the literature that children are more likely to travel in car seats than adults travel with safety belts buckled.

Reported Restraint Attitudes

The pretest questionnaire contained five safety belt attitude questions. The results showed that a large majority of the parents report positive attitudes toward safety belts. Almost 75 percent of them strongly disagreed or disagreed with the statement that safety belts are a nuisance to put on and adjust. Approximately 92 percent agreed or strongly agree that safety belts made them feel safe. Fifty-three participants (96 percent) agreed or strongly agreed they needed to use safety belts. Four participants strongly disagreed with the statement. About 65 percent of the participants indicated they did not feel
restricted wearing safety belts. All of the participants either strongly agreed or agreed that safety belts would prevent them from being thrown through the windshield in a crash. Only 10 percent agreed or strongly agreed that safety belts are difficult to buckle. Finally, 80 percent or 45 strongly agreed or agreed it was comfortable to wear safety belts.

The pretest contained six safety seat attitude questions. Participants’ child safety attitudes were found to be similar to those of their safety belts attitudes. See Table 8.

Table 8—Participants’ Child Safety Seat Attitudes

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Percent Who Strongly Agreed or Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car seats are comfortable</td>
<td>78</td>
</tr>
<tr>
<td>Car seats are not a waste of time</td>
<td>96</td>
</tr>
<tr>
<td>Car seats are not expensive</td>
<td>78</td>
</tr>
<tr>
<td>Preschool children behave better in car seats</td>
<td>80</td>
</tr>
<tr>
<td>I worry less when children travel in car seats</td>
<td>94</td>
</tr>
<tr>
<td>Car seats are not inconvenient</td>
<td>91</td>
</tr>
<tr>
<td>MEAN PERCENTAGE</td>
<td>86</td>
</tr>
</tbody>
</table>
Reported Restraint Knowledge

The pretest contained five safety belt knowledge questions. The questions specifically related to popular myths about safety belt use. As Table 9 shows, participants scored high on their knowledge of safety belts by not agreeing with popular safety belt myths.

Table 9--Participants Responses to Safety Belt Myths

<table>
<thead>
<tr>
<th>Myth</th>
<th>Percent Who Strongly Disagreed or Disagreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Belts are only necessary at higher speeds.</td>
<td>98</td>
</tr>
<tr>
<td>2. Being thrown from a crash is safer than being buckled in.</td>
<td>96</td>
</tr>
<tr>
<td>3. Belts would trap me in a burning or submerging car.</td>
<td>78</td>
</tr>
<tr>
<td>4. Belts will not protect me from injury in a crash.</td>
<td>98</td>
</tr>
<tr>
<td>5. Pregnant women should not wear safety belts.</td>
<td>96</td>
</tr>
<tr>
<td>MEAN PERCENTAGE</td>
<td>93</td>
</tr>
</tbody>
</table>

The mean percentage that the participants scored with the questions related to safety belts myths was 93 percent which is very high. This group percentage would have been higher except for question 3 where more participants believed the myth that safety belts can trap occupants in burning or submerging vehicles.
The pretest also contained five child safety seat knowledge questions of which four were specifically intended to test participant's knowledge of Ohio's child safety seat law. Similar questions related to safety belts could not be asked because at the time of the study a safety belt law did not exist in Ohio. Results showed the participants were very knowledgeable about the Ohio car seat law, but not as knowledgeable as they were about safety belt myths. Table 10 shows the results related to participant knowledge about car seats.
Table 10—Participants' Knowledge about the Ohio Child Safety Seat Law

<table>
<thead>
<tr>
<th>Question</th>
<th>Percent Who Knew the Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding a preschool child in your arms in a vehicle can protect him or her from injury in a crash</td>
<td>100</td>
</tr>
<tr>
<td>Three-year-old children who weigh 50 pounds or less being transported in their parent's vehicle are required by Ohio law to travel in car seats.</td>
<td>64</td>
</tr>
<tr>
<td>Five-year-old children who weigh 35 pounds or less being transported in their parent's vehicle are required by Ohio law to travel in car seats.</td>
<td>55</td>
</tr>
<tr>
<td>Ohio law requires a preschool child to be transported in a car seat if he or she is riding in a neighbor's car.</td>
<td>45</td>
</tr>
<tr>
<td>Ohio law requires a 9-month-old baby to be transported in a car seat if he or she is riding in a neighbor's car.</td>
<td>64</td>
</tr>
<tr>
<td>MEAN PERCENTAGE</td>
<td>66</td>
</tr>
</tbody>
</table>

Reinforcement of Restraint Use

Participants were asked if their two closest friends use safety belts regularly. Sixty-two percent reported the first of their friends wears them regularly. However, less than half (41 percent) said their second closest friend wear them regularly. When asked the degree to which friends or relatives would approve of their use of safety belts, 89
percent said friends or relative would either strongly approve or approve of their actions. When asked the average level of use among their friends and relatives, about 55 percent reported a 75 percent use or more. Another 30 percent of the participants reported their friends and relatives sometimes (50 percent of the time) wear them. Four percent reported their friends or relative seldom or never wore safety belts and another four percent did not answer the question.

When asked if anyone has ever recommended the regular use of safety belts, 71 percent of the participants reported "yes". As shown in Table 11, children were reported as the most likely to recommended that parents wear safety belts. Physicians were shown to be the least likely to recommend the use of safety belts. Almost 30 percent of the participants reported being asked by more than one person to regularly use safety belts and 9 percent were asked by 3 people or more.
Table 11—People Who Recommended Participants Wear Safety Belts

<table>
<thead>
<tr>
<th>Person</th>
<th>Percent of participants recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nobody</td>
<td>31</td>
</tr>
<tr>
<td>Spouse</td>
<td>32</td>
</tr>
<tr>
<td>Parents</td>
<td>21</td>
</tr>
<tr>
<td>Friends</td>
<td>29</td>
</tr>
<tr>
<td>Their Children</td>
<td>45</td>
</tr>
<tr>
<td>Doctor</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td>14</td>
</tr>
</tbody>
</table>

Note—the percentages add up to more than 100 because participants could choose more than one.

To further assess the influence that preschool children have on their parent's use of safety belts, participants were asked how often they are reminded by preschoolers to use safety belts. Results are shown in Table 12. When this question results were crosstabulated with the demographic variables no significant relationship was noted.
When these two questions are analyzed together, results show although only 45 percent of the participants said their children have recommended the regular use of safety belts, 89 percent report the children they transport to child care remind them to wear safety belts. About 82 percent of the participants report the preschool children they transport to child care reminded them 50 percent of the time or more to use seat belts.

As with safety belts, participants were asked if their two closest friends with preschool children use child safety seats. See the results in Table 13. Seventy-six percent reported their first close friend with preschoolers used car seats. Four percent reported their first friend did not use car seats; 15 percent reported they did know if this friend used car seats and five percent did not report their first
closest friend's car seat behavior.

Table 13—Participants' Reported Use of Child Safety Seats by Their Two Closest Friends

<table>
<thead>
<tr>
<th>Stated Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 15:</td>
</tr>
<tr>
<td>Do your two closest friends (not relatives) use safety belts regularly?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent who responded</th>
<th>yes</th>
<th>no</th>
<th>don't know</th>
<th>no response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friend #1</td>
<td>76</td>
<td>4</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Friend #2</td>
<td>58</td>
<td>9</td>
<td>22</td>
<td>11</td>
</tr>
</tbody>
</table>

As with the similar safety belt question, participants reported a lower use of car seats among their second closest friend with 58 percent. Nine percent reported these friends did not use child safety seats; 22 percent reported not knowing if their second closest friends use them and 11 percent chose not to answer this part of the question.

The data indicate both a high use of safety belts and car seat among both participants and their friends. The close relationship between the high use of restraints among participants and their friends is perhaps related to the high level of education of the participant and the likelihood that they would choose friends with a similar level of education. It may also show that friends' use of restraints
acts as a reinforcing factor and influences participant's use of restraints.

A child safety seat question asked who had recommended regular use of child safety seats, which was similar to the safety belt question explained above. Results show fewer parents were recommended they use child safety seat than were recommended by others that they wear safety belts. Fifty-three percent (29 participants) reported use of safety seats been personally recommended to them. The reported results are in Table 14.

Table 14--People Who Recommended Participants Use Child Safety Seats

<table>
<thead>
<tr>
<th>Person</th>
<th>Percent of participants recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nobody</td>
<td>47</td>
</tr>
<tr>
<td>Spouse</td>
<td>25</td>
</tr>
<tr>
<td>Parents</td>
<td>29</td>
</tr>
<tr>
<td>Friends</td>
<td>40</td>
</tr>
<tr>
<td>Their Children</td>
<td>25</td>
</tr>
<tr>
<td>Doctor</td>
<td>36</td>
</tr>
</tbody>
</table>

Note--the percentages add up to more than 100 because participants could chose more than one.

According to the results, friends were the most likely to recommend the use of child safety seats, with physicians a close second. Family members such as spouses, parents
or children, were less likely to recommend the use of child safety seats. About 55 percent had been recommended to use car safety seats by more than two people, 36 by more than three and 25 percent by more than four people.

When asked about friends' or relatives' use of car seats, almost 75 percent of the participants reported a 75 percent or more use among friends and relatives. Another 20 percent reported their friends use them sometimes or 50 percent of the time. Five percent of the participants did not answer the question; however, none of them reported their friends seldom or never used child safety seats.

Restraint Skills and Accessibility

The pretest and posttest contained the same questions which measured the enabling factors of accessibility to vehicle restraints and the skill to use them. In the pretest and the posttest several questions were related to restraint use skills. One of them was directed toward the drivers' safety belt skills and the others toward the drivers' child safety seat use skills. See Table 15.
Table 15—Participants' Reported Safety Belt and Child Safety Seat Skills

<table>
<thead>
<tr>
<th>Statement</th>
<th>Percent Who Strongly Agreed or Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat belts are easy to use.</td>
<td>89</td>
</tr>
<tr>
<td>Car seats are easy to use.</td>
<td>87</td>
</tr>
<tr>
<td>It is easy to fasten the car seat straps around a preschool child.</td>
<td>89</td>
</tr>
<tr>
<td>It is easy to fasten the adult safety belt around a car seat.</td>
<td>73</td>
</tr>
<tr>
<td><strong>MEAN PERCENTAGE</strong></td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

The results of the pretest show that drivers report a high safety belt use skill level with 89 percent of the driver participants strongly agreeing or agreeing that a safety belt is easy to put on. Eleven percent disagreed and none strongly disagreed with the statement.

Eighty-five percent of the participants agreed or strongly agreed with all the restraint skill statements which showed they report having high safety seat and safety belt skills. They reported a slightly higher percentage who found safety belts easier to use (89 percent) compared to car seat use (87 percent). It appeared that they have more difficulty buckling the safety belt around car seats than fastening the car seat straps around a child. Whether this meant that some participants did not use safety belts to
strap the car seat in the vehicle is not known because parents were not asked how often they buckle the safety belt around car seats.

When asked about the preschool children's skills to use safety belts and safety seat, 82 percent of the respondents reported the first child they transported from child care could buckle the safety belt; 14 percent reported the first child could not and the remaining four percent did not answer the question or didn't know if this child was capable of buckling the safety belt. Fifty-one of the participants transport only one preschool child to day care; therefore, only four parents reported the safety seat skills of the second child. Three of the four parents who transported a second preschool child from child care indicated this child was capable of bucking the safety belt and the final parent reported not knowing if this child could buckle a safety belt. The results of a second child restraint skill question showed that participants report the children they transport from child care are less skilled in buckling the car seat. However, the numbers are so few it is difficult to make this generalization. As Table 16 shows transported children were reported to be more skilled at buckling the automobile safety belts than the straps of car seats. Over 80 percent of the participants reported their preschool passengers buckle seat belts as compared to under 60 percent who reported preschoolers could buckle car seat straps.
<table>
<thead>
<tr>
<th>Statements</th>
<th>Percent Who Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can the preschool children you transport buckle their safety belt?</td>
<td>82 14 2 2</td>
</tr>
<tr>
<td>Can the preschool children you transport buckle their car seat straps?</td>
<td>56 38 4 2</td>
</tr>
<tr>
<td>MEAN PERCENTAGE . . . . . . . . . . . . . . . . . . . . . . . . . . . . .</td>
<td>69 26 3 2</td>
</tr>
</tbody>
</table>

Table 16 shows that an average of 69 percent of the participants reported their preschool passengers had skills to buckle both safety and car seat belts.

Having the skills to use restraints is of little importance if the restraints are not accessible to be used. From the results of the pretest questionnaire, it seems that both safety belts and safety seats are very accessible to the vehicles' occupants in this study. Table 17 shows that 96 percent of the participants reported safety belts were accessible in both the front and back seats of vehicles used to transport children from child care. Participants reported safety belts were slightly more accessible in the front than in the back seats (96 percent for front compared
to 93 percent for the back). Only one person said they were not accessible in the front and another indicated not knowing if they were accessible in the front seat. Two parents did not answer whether belts were accessible in the back seat, three reported they were not accessible and one did not know if they were accessible in the back seat.

Table 17--Participants' Reported Accessibility of Safety Belts in Vehicles Used to Transport Preschool Children to Child care

<table>
<thead>
<tr>
<th>Statement</th>
<th>Front Seat</th>
<th>Back Seat</th>
<th>Both Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the Safety belts in the Vehicle(s) used to transport preschool children accessible?</td>
<td>96</td>
<td>93</td>
<td>94</td>
</tr>
</tbody>
</table>

The final safety seat accessibility question asked participants if they use child safety seats. Only three participants said they did not use them. Another part of the same question asked if they purchased their first and second safety seat after 1981 when federal safety standards were adopted. Eighteen percent chose not to answer the question related to their first car seat. Sixty-five percent reported their first safety seat was purchased after 1981. Eleven percent reported their first seat was purchased before 1981 with five percent not knowing when
this seat was purchased. Sixty-five percent did not respond to the question related to the age of their second car seat. Thirteen (24 percent) of the respondents reported their second safety seat was purchased after federal safety standards were established. Nine percent reported their second seat was purchased before standards were set and two percent did not know if their second seat was purchased after 1981.

Restraint Use Observation Data

Restraint use data were collected by observing participant drivers’ use of safety belts and their preschool passengers’ use of child safety seats or safety belts. Data were collected in the child care program parking lot as parents left in the afternoon. Data collected consisted of driver’s sex, driver’s restraint usage, child’s sex, child’s restraint usage and transporting vehicle license number. Baseline data were collected for three afternoons, three days before parents were sent letters asking them to participate in the study. These data were collected by the researcher using the data collection form found in Appendix A. The second restraint use observation was conducted by trained observers three days after the treatment program was completed at the child care center. The third observation to collect longer-term restraint use data was completed six weeks after the treatment by the researcher and trained
observers. Restraint use data analyzed included only the safety belt use of the driver and restraint use of the first preschool child. Restraint use data of the first preschool child were used because few observed vehicles transported more than one preschool child. To match restraint use with treatment groups, license number information was requested by the parents (see Appendix 0). Forty license plates numbers were obtained from the parents. The Department of Highway Safety was consulted to obtain the remaining 15 license numbers. It was not possible to obtain license numbers for all the participants. Table 18 shows the number of participant license numbers it was possible to obtain and observe three times in each treatment group:
Table 18—Participant License Numbers Obtained By Treatment Group Compared to the Number of Participants

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>II</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>participants</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>55</td>
</tr>
<tr>
<td>numbers obtained</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>percent of the total</td>
<td>62</td>
<td>60</td>
<td>79</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>percent missing data</td>
<td>48</td>
<td>40</td>
<td>21</td>
<td>38</td>
<td>35</td>
</tr>
</tbody>
</table>

As can be seen in Table 18, all the restraint use data for the three observations were not collected. There were several reasons why all data were not obtained. All the participants did not submit their license numbers to the researcher. All the missing license numbers could not be obtained through the Ohio Department of Highway Safety. In addition many license number obtained from both participants and the Ohio Department of Highway Safety did not match the license numbers observed during the three observations.

Analysis of Restraint Observation Data

Analysis of restraint use data included the use of descriptive statistics such as frequencies and percentages. Base line restraint use data were analyzed, as was the pretest questionnaire data, to determine if there were any significant differences between the treatment groups. This
was completed because participants could not be randomly assigned to treatment groups. An analysis of variance and Scheffe's testing of the baseline observation data were completed to determine if there were significant differences in restraint behavior between treatment groups. No significant differences between treatment groups related to any restraint use observation variables were found.

Descriptive Restraint Behavior Data

Descriptive baseline restraint observation data are presented in the table that follows:

Table 19--Baseline Restraint Behavior Observation Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Sex:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>female</td>
<td>24</td>
<td>67</td>
</tr>
<tr>
<td>Driver's Restraint Behavior:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>26</td>
<td>72</td>
</tr>
<tr>
<td>not restrained</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Children's Sex:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>16</td>
<td>44</td>
</tr>
<tr>
<td>female</td>
<td>20</td>
<td>56</td>
</tr>
<tr>
<td>Children's Restraint Behavior:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>30</td>
<td>83</td>
</tr>
<tr>
<td>not restrained</td>
<td>6</td>
<td>17</td>
</tr>
</tbody>
</table>
Tables 19 through 21 indicate that the same drivers and preschool children were not observed because the number of males and females are different. Generally the observation data indicated that the majority of drivers were female with the children equally divided between male and female. A larger percent of the preschool children were judged to be restrained as compared to drivers. This was found to consistently reported in the literature.

It is not possible to directly compare the observation data to the pretest or posttest data because participants were not asked to identify on the tests the license number of vehicles they used to transport children to child care. It is also difficult to generalize from the pretest and posttest to the observation data, because 35 percent of the observation data are missing.

First follow up and second follow up observation data are presented in tables 20 and 21.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driver Sex:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>female</td>
<td>27</td>
<td>75</td>
</tr>
<tr>
<td><strong>Driver's Restraint Behavior:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>26</td>
<td>72</td>
</tr>
<tr>
<td>not restrained</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td><strong>Children's Sex:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>female</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td><strong>Children's Restraint Behavior:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>30</td>
<td>83</td>
</tr>
<tr>
<td>not restrained</td>
<td>6</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 21—Second Follow up Observation Restraint Behavior Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driver Sex:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>female</td>
<td>27</td>
<td>75</td>
</tr>
<tr>
<td><strong>Driver's Restraint Behavior:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>26</td>
<td>72</td>
</tr>
<tr>
<td>not restrained</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td><strong>Children's Sex:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>19</td>
<td>52</td>
</tr>
<tr>
<td>female</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td><strong>Children's Restraint Behavior:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restrained</td>
<td>30</td>
<td>83</td>
</tr>
<tr>
<td>not restrained</td>
<td>6</td>
<td>17</td>
</tr>
</tbody>
</table>

**Effectiveness of the Intervention Methods**

To determine the effectiveness of the three intervention methods, the four study hypotheses (see Research Hypotheses in Chapter I) were tested. This was accomplished by using analysis of covariance to first analyze both pretest and posttest data. Pretest and posttest data were analyzed to determine if there were changes in restraint knowledge, attitudes and reported use. In addition the data were analyzed to determine if there were any significant difference in reinforcing and enabling factors between the groups. The pretest and posttest data
were analyzed by testing the mean gains among the four
groups controlling for pretest score on the dependent
variables and other pretest outcomes. Observational data,
which were composed of three separate observations, were
then analyzed separately also using analysis of covariance
to test the four hypotheses. These data were analyzed to
determine if there were observed differences in restraint
use between groups over time. The mean differences were
tested among the four treatment groups controlling for the
sex of the driver and the preschool passenger.

When the first hypothesis was tested using the pretest
and posttest data, the results failed to reject the null
hypothesis. The first hypothesis states that positive
changes in restraint knowledge, attitude and behavior will
occur in the three treatment groups that are significantly
different from any changes that occur in the control group.
Results show in Table 22 no significant differences among
treatment groups and control group were noted in safety belt
and child safety seat attitudes, safety belt and child
safety seat knowledge, restraint reinforcing and enabling
factors, and reported restraint use.
Table 22--A Comparison of the Least Square Means Of Pretest-Posttest Data of Treatment Groups to the Non-Equivalent Control Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>I</td>
<td>.07728</td>
<td>.5487</td>
</tr>
<tr>
<td>Belt</td>
<td>II</td>
<td>-.08448</td>
<td>.0753</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>-.03134</td>
<td>.0811</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.1638</td>
<td>.-----</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>.03596</td>
<td>.8402</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>.01892</td>
<td>.9038</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>.05682</td>
<td>.7588</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.00361</td>
<td>.-----</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01862</td>
<td>.8820</td>
</tr>
<tr>
<td>Belt</td>
<td>II</td>
<td>-.01669</td>
<td>.8842</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>.02599</td>
<td>.9333</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.00989</td>
<td>.-----</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01546</td>
<td>.5440</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>-.07567</td>
<td>.7936</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>-.13491</td>
<td>.9164</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.11730</td>
<td>.-----</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>-.20977</td>
<td>.2479</td>
</tr>
<tr>
<td>Reinforc-</td>
<td>II</td>
<td>-.07567</td>
<td>.6979</td>
</tr>
<tr>
<td>ing Factor</td>
<td>III</td>
<td>-.04826</td>
<td>.8429</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.01507</td>
<td>.-----</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>.27680</td>
<td>.7721</td>
</tr>
<tr>
<td>Enabling</td>
<td>II</td>
<td>-.34727</td>
<td>.4985</td>
</tr>
<tr>
<td>Factors</td>
<td>III</td>
<td>-.20432</td>
<td>.1137</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07858</td>
<td>.-----</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>-.4916</td>
<td>.4326</td>
</tr>
<tr>
<td>Reported</td>
<td>II</td>
<td>.0270</td>
<td>.2585</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.2127</td>
<td>.8291</td>
</tr>
<tr>
<td>Behavior</td>
<td>IV</td>
<td>-.2728</td>
<td>.-----</td>
</tr>
</tbody>
</table>

Pretest-posttest data were also used to test hypothesis two which stated that the most positive changes in restraint knowledge, attitudes and behavior would occur
in the group (group III) where both the transporting adults and preschool children were provided vehicle restraint safety education intervention. To test this hypothesis the least square means of group III were compared to the other groups as shown in Table 23.
Table 23—A Comparison of the Least Square Means of Pretest-Posttest Data of Treatment Group III to the Other Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>I</td>
<td>.07728</td>
<td>.4165</td>
</tr>
<tr>
<td>Belt</td>
<td>II</td>
<td>-.08448</td>
<td>.6905</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>-.03134</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.1638</td>
<td>.1811</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>.03596</td>
<td>.9805</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>.01892</td>
<td>.8348</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>.05682</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.00361</td>
<td>.7588</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01862</td>
<td>.8017</td>
</tr>
<tr>
<td>Belt</td>
<td>II</td>
<td>-.01669</td>
<td>.8104</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>.02599</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.00989</td>
<td>.9333</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01546</td>
<td>.4420</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>-.07567</td>
<td>.7026</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>-.13491</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.11730</td>
<td>.9164</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>-.20977</td>
<td>.2991</td>
</tr>
<tr>
<td>Reinforce-</td>
<td>II</td>
<td>-.07567</td>
<td>.8540</td>
</tr>
<tr>
<td>ing Factor</td>
<td>III</td>
<td>-.04826</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.01507</td>
<td>.8429</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>.27680</td>
<td>.1583</td>
</tr>
<tr>
<td>Enabling</td>
<td>II</td>
<td>-.34727</td>
<td>.3003</td>
</tr>
<tr>
<td>Factors</td>
<td>III</td>
<td>-.20432</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07858</td>
<td>.1137</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>-.4916</td>
<td>.2909</td>
</tr>
<tr>
<td>Reported</td>
<td>II</td>
<td>.0278</td>
<td>.3522</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.2127</td>
<td>---</td>
</tr>
<tr>
<td>Behavior</td>
<td>IV</td>
<td>-.2728</td>
<td>.8291</td>
</tr>
</tbody>
</table>

No significant differences were noted in the above table; therefore, the results failed to reject the null
The same pretest-posttest data were also used to test hypothesis three which stated that positive changes in restraint knowledge, attitudes and behavior would be noted to a lesser degree in the group where only the parents or transporting adults were exposed to education intervention (group II). To test this hypothesis the least square means of group II were compared to the other groups as shown in Table 24.
Table 24—A Comparison of the Least Square Means Of Pretest-Posttest Data of Treatment Group II to the Other Groups.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>I</td>
<td>.07728</td>
<td>.2446</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>-.08448</td>
<td>.-----</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>-.03134</td>
<td>.6905</td>
</tr>
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<td></td>
<td>IV</td>
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<td>.0753</td>
</tr>
<tr>
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<td>I</td>
<td>.03596</td>
<td>.9277</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>.01892</td>
<td>.-----</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>.05682</td>
<td>.8348</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.00361</td>
<td>.9038</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01862</td>
<td>.9916</td>
</tr>
<tr>
<td>Belt</td>
<td>II</td>
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<td>.-----</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>.02599</td>
<td>.8104</td>
</tr>
<tr>
<td></td>
<td>IV</td>
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<td>.8842</td>
</tr>
<tr>
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<td>I</td>
<td>-.01546</td>
<td>.7774</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>-.07567</td>
<td>.-----</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>-.13491</td>
<td>.7026</td>
</tr>
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<td>IV</td>
<td>-.11730</td>
<td>.7936</td>
</tr>
<tr>
<td>Restraint</td>
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<td>.-----</td>
</tr>
<tr>
<td></td>
<td>III</td>
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<td>.8540</td>
</tr>
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<td></td>
<td>IV</td>
<td>-.01507</td>
<td>.6979</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>.27680</td>
<td>.7108</td>
</tr>
<tr>
<td>Enabling Factors</td>
<td>II</td>
<td>-.34727</td>
<td>.-----</td>
</tr>
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<td></td>
<td>III</td>
<td>-.20432</td>
<td>.3003</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07858</td>
<td>.4985</td>
</tr>
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<td>Reported</td>
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<td>-.4916</td>
<td>.0562</td>
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<td>Restraint</td>
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<td>.0278</td>
<td>.-----</td>
</tr>
<tr>
<td>Behavior</td>
<td>III</td>
<td>-.2127</td>
<td>.3522</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.2728</td>
<td>.2585</td>
</tr>
</tbody>
</table>

As the above table shows, no significant differences were noted when group II was compared to the other groups;
therefore, the results accept the null hypothesis.

The final hypothesis was tested using pretest-posttest data. This hypothesis stated that the least positive changes of the treatment group in restraint knowledge, attitudes and behavior would be noted the group where only the children were exposed to education intervention (group I). To test this hypothesis the least square means of group I were compared to the other groups as shown in Table 25.
Table 25—A Comparison of the Least Square Means Of Pretest-Posttest Data of Treatment Group I to the Other Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>I</td>
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<td>.1077</td>
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<td></td>
<td>II</td>
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<td>.0046</td>
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<td>Attitudes</td>
<td>III</td>
<td>-.03134</td>
<td>.4165</td>
</tr>
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<td></td>
<td>IV</td>
<td>.1638</td>
<td>.5487</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>.03596</td>
<td>.2477</td>
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<tr>
<td>Seat</td>
<td>II</td>
<td>.01892</td>
<td>.9277</td>
</tr>
<tr>
<td>Attitudes</td>
<td>III</td>
<td>.05682</td>
<td>.9085</td>
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<td></td>
<td>IV</td>
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<td>.8202</td>
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<td>-.01862</td>
<td>.8017</td>
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<td>-.01669</td>
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<td>.8017</td>
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<tr>
<td></td>
<td>IV</td>
<td>.00989</td>
<td>.8820</td>
</tr>
<tr>
<td>Safety</td>
<td>I</td>
<td>-.01546</td>
<td>.7074</td>
</tr>
<tr>
<td>Seat</td>
<td>II</td>
<td>-.07567</td>
<td>.4420</td>
</tr>
<tr>
<td>Knowledge</td>
<td>III</td>
<td>-.13491</td>
<td>.5440</td>
</tr>
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<td></td>
<td>IV</td>
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<td>.5440</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>-.20977</td>
<td>.4076</td>
</tr>
<tr>
<td>Reinforcing Factor</td>
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<td>-.04826</td>
<td>.2991</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.01507</td>
<td>.2479</td>
</tr>
<tr>
<td>Restraint</td>
<td>I</td>
<td>.27680</td>
<td>.4076</td>
</tr>
<tr>
<td>Enabling Factors</td>
<td>III</td>
<td>-.34727</td>
<td>.2991</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07858</td>
<td>.2479</td>
</tr>
<tr>
<td>Reported</td>
<td>I</td>
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<td>.0562</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>.0278</td>
<td>.0562</td>
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<tr>
<td>Behavior</td>
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<td>-.2127</td>
<td>.2809</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>-.2728</td>
<td>.4326</td>
</tr>
</tbody>
</table>

Again the results showed no significant differences between the groups related to restraint knowledge, attitudes, reported use of restraints and reinforcing and
enabling factors. Therefore, the results fail to reject the null hypothesis.

The study's four hypotheses were also tested using observational data. Hypothesis one was tested to determine if significant differences in observed behavior were noted when treatment groups were compared to the control group. The mean differences (least square means) of the variables were compared as follows: Observation one (base line data) was compared to observation two (first follow up data), observation one compared to observation three (second follow up) and observation two compared to observation three. The results show in Table 26 that no significant differences were found when the treatment groups were compared to the non-equivalent control group, when observation one data were compared to observation two data. The data were analyzed similarly to the pretest-posttest data. An analysis of covariance was conducted comparing observation data. The sex of the drivers and preschool children was used covariance.
Table 26—A Comparison of the Least Square Means Of Observation Data of Treatment Groups to the Non-Equivalent Control Group When Observation One is Compared to Observation two.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
<td>I</td>
<td>.06043</td>
<td>.8207</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>-.10261</td>
<td>.1100</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>-.02410</td>
<td>.3051</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.08815</td>
<td>.----</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.03487</td>
<td>.6442</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.09816</td>
<td>.3814</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.07470</td>
<td>.8289</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.04259</td>
<td>.----</td>
</tr>
</tbody>
</table>

No significant differences were found when observation one data were compared to observation three data as shown in Table 27.

Table 27—A Comparison of the Least Square Means Of Observation Data of Treatment Groups to the Non-Equivalent Control Group When Observation One is Compared to Observation three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
<td>I</td>
<td>.10240</td>
<td>.8767</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>-.22005</td>
<td>.0513</td>
</tr>
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<td>Use</td>
<td>III</td>
<td>.04858</td>
<td>.8286</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07835</td>
<td>.----</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.08965</td>
<td>.4338</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.05572</td>
<td>.5130</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.06149</td>
<td>.9718</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.06777</td>
<td>.----</td>
</tr>
</tbody>
</table>
As shown in Table 28 a significant difference was found when observation two data were compared to observation three data. The analysis indicated that group II was significantly different from the control group. The least square means of group II (-.20592) is significantly different from group IV’s (.05251). The data indicate that drivers significantly use restraints less in group II than in group IV. No significant differences between study groups and control group were noted with restraint use among preschool children.
Table 28—A Comparison of the Least Square Means Of Observation Data of Treatment Groups to the Non-Equivalent Control Group When Observation Two is Compared to Observation Three

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
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<td>.9573</td>
</tr>
<tr>
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<td>II</td>
<td>-.20592</td>
<td>.0336</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>.08880</td>
<td>.7183</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.05251</td>
<td>.----</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.04377</td>
<td>.6563</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>-.01793</td>
<td>.9911</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.00527</td>
<td>.9281</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.01634</td>
<td>.----</td>
</tr>
</tbody>
</table>

* significantly different at the .05 level

When hypothesis one was tested using observation data, the results partially rejected the null hypothesis. The significant differences between the restraint use by drivers in group II from observation two to three is difficult to explain, especially the negative direction. It is possible that the education provided the drivers had a negative effect or it could represent a random sampling error. Hypothesis two was tested using observation data in a similar manner as it was tested with pretest-posttest data, where group III was compared to the other groups. As with the testing of hypothesis one with observation data, sets of observation data were examined. Hypothesis two states that the most positive changes in restraint use will occur in the group where both parents and children are exposed to
restraint education (group III). Tables 29 through 31 show the results when group III is compared to the other groups:

Table 29—A Comparison of the Least Square Means of Observation Data of Treatment Group III to the Other Groups When Observation One is Compared to Observation Two.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
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<td>.4491</td>
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<td>Restraint</td>
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<td>-.10261</td>
<td>.4953</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>-.02410</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.08815</td>
<td>.3051</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.03487</td>
<td>.4736</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.09815</td>
<td>.2761</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.07470</td>
<td></td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.04259</td>
<td>.8289</td>
</tr>
</tbody>
</table>
Table 30—A Comparison of the Least Square Means Of Observation Data of Treatment Group III to the Other Groups When Observation One is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
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<td>Driver's</td>
<td>I</td>
<td>.10240</td>
<td>.7029</td>
</tr>
<tr>
<td>Restraint</td>
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<td>-.22005</td>
<td>.0728</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>.04852</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07835</td>
<td>.8286</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.08965</td>
<td>.4087</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.05572</td>
<td>.5335</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.06149</td>
<td>----</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.06777</td>
<td>.9718</td>
</tr>
</tbody>
</table>

Table 31—A Comparison of the Least Square Means Of Observation Data of Treatment Group III to the Other Groups When Observation Two is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
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<td>.05704</td>
<td>.7494*</td>
</tr>
<tr>
<td>Restraint</td>
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<td>-.20592</td>
<td>.0079</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>.08880</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.05251</td>
<td>.7183</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.04377</td>
<td>.6867</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.01793</td>
<td>.9205</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.00527</td>
<td>----</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.01634</td>
<td>.9201</td>
</tr>
</tbody>
</table>

* Significantly different at the .05 level

No significant results are found when group III is compared to the other groups when observation one data are
compared to observation two data and observation one data are compared to observation three data. However, when observation two data are compared to observation three data significant differences are noted (Table 31). The data indicate the least square means of group III are significantly different from the least square means of group II. However, the data indicate that drivers in group III, who were provided restraint education along with their preschool passengers, used their restraints significantly more than those in group II who only were provided restraint education. The data show that group III has a more positive change in restraint use than group II; therefore, the null hypothesis is rejected. It is important to be cautious in interpreting these results, because not all the data were collected.

Table 32 through 34 contain additional observation data that are used to test hypothesis three. The hypothesis states that group II will have less change in restraint use when compared to group III, but will have more positive changes than the other groups. The data indicate no significant difference when observation one data are compared to observation two data shown below:
Table 35—A Comparison of the Least Square Means of Observation Data of Treatment Group II to the Other Groups When Observation One is Compared to Observation Two.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
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<td>.1861</td>
</tr>
<tr>
<td>Restraint</td>
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<td>-.10261</td>
<td>.-----</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>-.02410</td>
<td>.4953</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.08815</td>
<td>.1100</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
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<td>.7037</td>
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<td>.-----</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.07470</td>
<td>.2761</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.04259</td>
<td>.3814</td>
</tr>
</tbody>
</table>

When observation two data are compared to observation three data, significant difference in driver's restraint use are seen. The data indicate group II drivers were observed less often than all the other groups, as shown in Table 33. A significant difference was noted in driver restraint use in group II as compared to group III when observation one data are compared to observation two data. See Table 33.
When hypothesis three is tested comparing observation data two to observation data three, group II driver data are significantly less positive than all the other groups (Table 34). Because group II does have significantly less positive change in restraint use than group III, the null hypothesis is rejected; however, it is important again to interpret these results cautiously.

Table 33—A Comparison of the Least Square Means Of Observation Data of Treatment Group II to the Other Groups When Observation One is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.0436*</td>
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<tr>
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<td>II</td>
<td>-0.22005</td>
<td>.----</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>0.04852</td>
<td>0.0728</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>0.07835</td>
<td>0.0513</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>0.08955</td>
<td>0.8644</td>
</tr>
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<td>II</td>
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</tr>
<tr>
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<td>0.5335</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
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<td>0.9718</td>
</tr>
</tbody>
</table>

*significant difference at the .05 level
Table 34—A Comparison of the Least Square Means of Observation Data of Treatment Group II to the Other Groups When Observation Two is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
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<td>.0307*</td>
</tr>
<tr>
<td>Restraint</td>
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<td>-.20532</td>
<td>.0079*</td>
</tr>
<tr>
<td>Use</td>
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<td>.08880</td>
<td>.0333</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.05251</td>
<td>.3205</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
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<td>.6651</td>
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<tr>
<td>Passenger</td>
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<td>-.01793</td>
<td>.9205</td>
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<tr>
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<td>III</td>
<td>-.00527</td>
<td>.9911</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.01634</td>
<td>.9911</td>
</tr>
</tbody>
</table>

* significant at the .05 level

The final hypothesis states that the least positive change of the treatment groups in observed restraint use would be in the group where only the children are taught (group I). The data indicated as shown in Table 35 that there are no significant differences between group I and the other groups when observation one is compared to observation two. However, as shown in Tables 36 and 37, driver observed restraint use is significantly more in group I than in group II, but no other group when observation two data are compared to observation three data and when observation two data are compared to observation three data.
Table 35—A Comparison of the Least Square Means Of Observation Data of Treatment Group I to the Other Groups When Observation One is Compared to Observation Two.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
<td>I</td>
<td>.06043</td>
<td>.10561</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>-.10261</td>
<td>.1551</td>
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<tr>
<td>Use</td>
<td>III</td>
<td>-.02410</td>
<td>.4491</td>
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<td></td>
<td>IU</td>
<td>.08015</td>
<td>.6207</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.03487</td>
<td>.4491</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.09816</td>
<td>.7037</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.07470</td>
<td>.4736</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.04259</td>
<td>.6442</td>
</tr>
</tbody>
</table>

Table 36—A Comparison of the Least Square Means Of Observation Data of Treatment Group I to the Other Groups When Observation Two is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
<td>I</td>
<td>.10240</td>
<td>.0307</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>-.22005</td>
<td>.7497</td>
</tr>
<tr>
<td>Use</td>
<td>III</td>
<td>.04852</td>
<td>.9673</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>.07835</td>
<td>.6673</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.08965</td>
<td>.4491</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.05572</td>
<td>.6673</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.06149</td>
<td>.4736</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>-.06777</td>
<td>.6563</td>
</tr>
</tbody>
</table>

*significant difference at the .05 level
Table 37—A Comparison of the Least Square Means of Observation Data of Treatment Group I to the Other Groups When Observation One is Compared to Observation Three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Least Square Means</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver's</td>
<td>I</td>
<td>.10240</td>
<td>.0436</td>
</tr>
<tr>
<td>Restraint</td>
<td>II</td>
<td>-.22005</td>
<td>.7029</td>
</tr>
<tr>
<td>Use</td>
<td>II</td>
<td>.04852</td>
<td>.8767</td>
</tr>
<tr>
<td>I</td>
<td>IV</td>
<td>.07835</td>
<td>.4087</td>
</tr>
<tr>
<td>Preschool</td>
<td>I</td>
<td>.08965</td>
<td>.8644</td>
</tr>
<tr>
<td>Passenger</td>
<td>II</td>
<td>.05572</td>
<td>.4087</td>
</tr>
<tr>
<td>Restraint</td>
<td>III</td>
<td>-.06149</td>
<td>.4338</td>
</tr>
<tr>
<td>Use</td>
<td>IV</td>
<td>.06777</td>
<td>.4338</td>
</tr>
</tbody>
</table>

*Significant difference at the .05 level

Since the least positive change did not occur in group I, according to the data, and not in the other groups, the null hypothesis is accepted. The data could indicate that providing educational intervention to preschool children may be more effective than teaching drivers, but the results should be viewed cautiously.
CHAPTER V
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to test three health education intervention methods designed to increase knowledge and foster positive attitudes and behaviors related to child safety seats and safety belts among preschool children and those who transport them from child care. The study examined the influence of the PRECEDE Model's predisposing, enabling, reinforcing factors on restraint use. Four classrooms of preschool children, ages three to five years old, were randomly selected to test the following three health educational methods:

1. Children were taught vehicle restraint education by their classroom teacher.

2. Children were not taught vehicle restraint education. However, their parents or others who transported them from child care were taught vehicle restraint education by the researcher.

3. Both children and transporter from child care were provided vehicle restraint education.
4. Neither the children nor the transporters were taught vehicle restraint education. This group served as a non equivalent control group.

Prior to educational intervention, an instrument was developed from existing questionnaires which measured PRECEDE Model factors. Several questions were clustered into domains designed to measure the factors of restraint knowledge and attitudes, and restraint enabling and reinforcing conditions. Validity of the instrument was established by a groups of professionals with expertise in health education, public health, vehicle safety and child development. After the validity of the questionnaire was established, the instrument was administered to a group of preschool parents similar to the study population. From the responses of this group the reliability of each domain and the complete instrument was established. Once the validity and reliability were established the instrument served as both a pretest and a posttest. Prior to educational intervention the pretest was administered to drivers who transported children from child care more than 50 percent of the time. The pretest assessed the drivers' PRECEDE Model predisposing factors (knowledge and attitudes), enabling factors (restraints being available and skills to use them) and reinforcing factors (social or legal pressure) related to vehicle restraint use. The use of restraints by drivers and their preschool passengers was observed in the preschool
parking lot prior to the treatment. After the treatment was delivered, the posttest was administered to the participating drivers. Subsequent restraint use observations were conducted directly following treatment and two months later.

Pretest data were used to describe the study population. The analysis showed driver participants were all parents of the child or children they transported from child care. None of the drivers transported other people's preschool children. Most of the drivers were women (74 percent) between 31 and 40 years old (68 percent) who were married and had one or two children. Seventy-six percent of the participants classified themselves as white; 13 percent said they were black; 7 percent hispanic and 4 percent wrote on the pretest that they considered themselves as native Americans. Participants were very well educated, with over 75 percent of them being college graduates. Over half had family incomes of over $15,000. The majority (60 percent) were staff or faculty or their spouses were staff or faculty of OSU. Thirty-five percent were students and the remaining 6 percent were from families who were not affiliated with the university.

When the PRECEDE Model factors were compared to results of the pretest questionnaire, participants scored very high. When a group of questions or domain which measured safety belt attitudes was examined together, 83 percent of the
participants showed positive attitudes. Similar results were found when safety seat questions were analyzed. The data indicated that 86 percent of the participants possessed positive attitudes about child safety seats. Participants' knowledge about safety belts was measured by their response to five questions related to popular safety belt myths. Participants showed they were very knowledgeable about safety belts by scoring a mean percentage of 93 percent who did not agree with the myths. Participants did not score as high on questions relating to child safety seat knowledge. When participants were asked questions about Ohio's child safety seat law, they scored a mean percentage of 66 who answered the questions correctly.

Participants scored high on both reinforcement and enabling factors related to safety belts and child safety seats. Over half of participants' closest friends used safety belts and 71 percent reported that someone, at one time, recommended the regular use of safety belts. Their children were reported most often to recommend this practice, with physicians being the least likely to recommend regular use. Eighty-nine percent of the participants indicated that their children they transported from day care reminded them to use safety belts.

Similar results were found with safety seat reinforcement with 76 percent of parents indicating that their closest friend with preschool children used child
safety seats. Over 50 percent of the participants reported others had recommended they use child safety seats. Friends and physicians were reported more often to recommend the use of safety seats.

Participants scored high on enabling factors of restraint skills and accessibility. Eighty-nine percent of the participants found safety belts easy to use. Eighty-seven percent found child safety seats easy to use. Participants found it slightly more difficult to buckle the adult safety belt around the car seat than to buckle the car seat straps around preschool children. More children were reported having the skills to buckle the automobile safety belts than had skills to buckle the child safety seat belts. Both safety belts and child safety seats were reported to be accessible to the participants. Safety belts were reported by over 90 percent to be accessible in both front and back seats of automobiles used to transport preschool children. Almost 95 percent of the participants indicated they had access to child safety seats, most of which met federal safety standards.

In general participants scored high on all the PRECEDE factors and not surprisingly, they reported a high use of vehicle restraint use. Over 80 percent reported either always or usually wearing safety belts. Over 65 percent reported a similar use of child safety seats. Although the observation data were not complete, with 65 percent of the
participant observed three times, the data showed a high use of both safety belt and child safety use. Restraint observation data showed that use of restraints was lower than the reported amount, with 72 percent of the drivers observed using safety belts and 83 percent of the children observed using child safety seats. This is consistent with the literature which reports a higher reported use compared to observed use.

Both the pretest and baseline restraint use data were analyzed to determine if significant differences existed between groups. This was completed to determine if there were initial differences in the four study groups because participants could not be randomly assigned. Chi square, analysis of variance and Scheffe's test were used to analyze the pretest data. Chi square analysis showed significant differences at the .05 level with 12 pretest variables; however, the results were not valid because the cells contained less than 5 expected subjects in them. Analysis of variance and Scheffe's showed a significant difference between groups at the .05 significant level for three variables. The significant differences of these variables were later corrected for in the final analysis of covariance data analysis.

Analysis of variance and Scheffe's test were also used to analyze baseline restraint use data. No significant differences at the .05 significance level were found between
groups with any of the variables.

The pretest and posttest data were analyzed using analysis of covariance to compare the four study groups to test four study hypothesis. Results showed no significant differences among the groups and the null hypothesis was accepted for each study hypothesis.

Observation data were also used to test the four study hypotheses to determine if there were significant differences in observed restraint use over time between groups. Results showed a significant difference in drivers' use of restraints in the group where only drivers were exposed to restraint education. The significant difference was found when observation two data (after intervention) were compared to observation three data (two months later). The results showed a decrease in the use of restraints among these drivers. The results may indicate that the type of education provided to parents was not effective and perhaps other methods should be explored to reach preschool parents to increase their use of restraints. These results, however, should be viewed cautiously because 35 percent of the restraint observation date were missing.

Conclusions

Given the limitations of this study, the following can be concluded:
1. The descriptive data and observation data seem to verify that the PRECEDE Model can be used to possibly predict who are more likely to be users of safety belts and who are not. The participants scored very high on all the factors of the PRECEDE Model which were incorporated into the pretest-posttest. The possible reasons for this is that they scored very high related to the predisposing, which included socioeconomic class, enabling and reinforcing factors.

2. Although no significant differences were found in restraint knowledge, attitudes and other PRECEDE factors between study groups and the control group, the study served to describe a population of well-educated young parents with preschool children attending a large university child care center.

3. A possible explanation of why no significant differences were found in restraint knowledge, restraint attitudes, reinforcing and enabling factors and reported restraint behavior between groups after intervention was that they initially scored high on these items. This left very little room for any significant changes.

Although restraint use observation was completed only on two-thirds of the study population, the results showed a very high restraint use for both the drivers and the
preschool children. Significant differences were found between the group where the drivers were taught and the other groups. However, the impact seemed to be negative.

Recommendations

Although the results of the study did not find any significant differences between the groups related to PRECEDE Model factors, it is recommended that similar research be conducted with the following modifications:

1. Continued application and possible modification of the PRECEDE Model is needed to establish its usefulness in predicting and modifying health behavior.

2. More testing is needed to determine which groups of variables constitute predisposing, enabling and reinforcing factors as they relate to vehicle restraints. This could be accomplished through administering questions used in this study or similar questions to a large group of preschool parents and completing factor analysis on the data.

3. Rather than using four groups, it may be more manageable to use only two groups to test the influence of vehicle safety education. One group could be given education (either children or parents) and compared to a similar group not provided education.
4. If education is provided to the parents it may be more advantageous to provide it in a group setting to save time for the researcher. It can be very time consuming to talk to each parent.

5. Another approach to parent education would be to have it provided by the child care staff as part of a general child care orientation. Day care centers could work with their local law enforcement officials to persuade them to regularly patrol their parking lot to insure that parents transport children in safety seats. This, along with a general atmosphere which reinforces the importance of restraint use though posters on the walls, doors and parking lots, could be tested for its effectiveness in reaching parents. This approach would mean intensive education of those who administer and work at child care centers. Specific recommendations related to vehicle safety could be put into day care licensure regulations to strengthen restraint use. Such regulations should apply to all child care centers regardless of the number served and who owns them.

6. Larger numbers of participants could be used from different child care centers which would provide greater control.
7. The educational methods should be tested at other child care centers who serve less educated parents, whom the literature indicates are at higher risk of vehicle crash death, to see if these methods will work or can be modified.

8. Similar research should be conducted by groups or individuals with greater resources such as the Ohio Department of Highway Safety. Such a program would be of great importance to this agency which has developed a preschool education program, some of which was used in this study. Such research may show that the material developed is effective in increasing the use of restraints or it may show that further work is needed before more resources are used for ineffective materials or programs. The Department of Highway Safety would be better able to collect more complete restraint use observation data. This is very important because significant differences were found in this study; however, the validity of the observed restraint use differences are questionable because of missing data.

9. Since the study was conducted before the passage and enforcement of Ohio's safety belt law, more research is needed to determine how the law affects the restraint use of drivers who transport
preschool and other children. In addition, more research is needed to determine the effect of the mandatory safety belt law on children. Will it encourage them to remain restrained while traveling or will it weaken safety habits they developed through the child safety law because it does not require back seat passengers to be restrained? Children mainly travel in the back seat.
APPENDIX A

VEHICLE RESTRAINT OBSERVATION TALLY SHEET
**VEHICLE RESTRAINT OBSERVATION TALLY SHEET**

Observer______ Place______ Date: __/__/__  Time______

**INSTRUCTIONS**  Record restraint use only in drivers and preschool children (ages 3 to 5) as follows: a circle indicates restraint use, an X indicates no restraint use. Mark M if the subject is male and F if female. See Example.

<table>
<thead>
<tr>
<th>Example</th>
<th>Driver</th>
<th>Preschooler</th>
</tr>
</thead>
<tbody>
<tr>
<td>M F</td>
<td></td>
<td>M F (This female driver was restrained, her male preschool passenger was not.)</td>
</tr>
<tr>
<td>M F</td>
<td></td>
<td>M F (This male driver and his female preschool passenger wore restraints)</td>
</tr>
</tbody>
</table>

**Preschool Passengers**

<table>
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<th>Observation</th>
<th>Driver</th>
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<th>No.2</th>
<th>No.3</th>
<th>License No.</th>
</tr>
</thead>
<tbody>
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<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
<tr>
<td>5</td>
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<td>M F</td>
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<td></td>
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<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td>M F</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

STUDY PRETEST/POSTTEST
SAFETY BELT AND CHILD CAR SEAT QUESTIONNAIRE
FOR PARENTS OR OTHERS WHO TRANSPORT PRESCHOOL CHILDREN

SAFETY BELT AND CHILD CAR SEAT QUESTIONNAIRE
PRETEST/POSTTEST

Instructions—Check or circle the appropriate responses

1. The preschool child or children (3 to 5 years old) you usually transport to or from child care are:
   1. Your child(ren) _____ How many_____
   2. Other's Child(ren) _____ How many _____

2. How often do you use a safety belt for yourself when you drive a car?
   1. Always (100%) ______
   2. Usually (75%) ______
   3. Sometimes (50%) ______
   4. Seldom (25%) ______
   5. Never (0%) ______

For each of the following statements, please circle the appropriate number, according to whether you Strongly Agree, Agree, Disagree, or Strongly Disagree with the statement.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

3. Safety belts are a nuisance to put on and adjust.
   1              2          3          4

4. Safety belts make me feel safe.
   1              2          3          4

5. I feel I don't need to use a safety belt.
   1              2          3          4

6. I feel restricted wearing a safety belt.
   1              2          3          4
<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

7. A safety belt would prevent me from being thrown through the windshield in a crash.
   1    2    3    4

8. I am comfortable wearing a safety belt.
   1    2    3    4

9. My safety belt is difficult to buckle up.
   1    2    3    4

10. Safety belts are only necessary when I ride or drive at higher speeds.
    1    2    3    4

11. In a crash, being thrown clear is safer than being kept in by a safety belt.
    1    2    3    4

12. Safety belts would trap me in a burning or submerging car.
    1    2    3    4

13. A safety belt will not protect me from injury.
    1    2    3    4

14. Pregnant women should not wear safety belts.
    1    2    3    4

15. Do your two closest friends (not relatives) use safety belts regularly?
    
    **Friend #1 (check 1)**  
    Yes ______  
    No ______  
    Don't know______

    **Friend #2 (check 1)**  
    Yes ______  
    No ______  
    Don't Know______
16. Has anyone personally ever recommended that you use safety belts regularly?

   Yes______ No______

16a. If YES, who? Check all who have. If NO go to question 17.

   1. Spouse _____
   2. Parents _____
   3. Friends _____
   4. My child(ren) _____
   5. Doctor _____
   6. Other _____ Specify________________________

17. Would most people whose opinions are important to you, such as friends or relatives, approve or disapprove of your using seat belts?

   1. They would strongly approve _____
   2. They would approve _____
   3. They would disapprove _____
   4. They would strongly disapprove _____
   5. I don't know if they approve or disapprove _____

18. How often do your friends or relatives wear safety belts?

   1. Always (100%)_____  
   2. Usually (75%)_____  
   3. Sometimes (50%)_____  
   4. Seldom (25%)_____  
   5. Never (0%)_____  

19. Your preschool child(ren) or other preschool children you transport to child care remind you to put on your safety belt.

   1. Always (100%)_____  
   2. Usually (75%)_____  
   3. Sometimes (50%)_____  
   4. Seldom (25%)_____  
   5. Never (0%)_____  

20. Your safety belt is easy to put on.

   1. Strongly agree _____
   2. Agree _____
   3. Disagree _____
   4. Strongly disagree _____
21. The safety belts in the vehicle(s) which you use to transport preschool children are accessible.

Front seat (check 1) Back seat (check 1)
Yes _____ Yes _____
No _____ No _____
Don't know _____ Don't know _____

22. How often are preschool children in car seats when you transport them?

1. Always (100%)_____
2. Usually (75%)_____
3. Sometimes (50%)_____ 
4. Seldom (25%)_____ 
5. Never (0%)_____ 

If you presently use car seats, continue with question 23. If you do not, go to question 24.

23. Are the car seats you use to transport preschool children manufactured after January 1981?

First Seat Second Seat
1. Yes _____ Yes _____
2. No _____ No _____
3. Don’t know _____ Don’t know _____
4. Don’t use car seats _____

For each of the following statements, please circle the appropriate number, according to whether you Strongly Agree, Agree, Disagree, or Strongly Disagree with the statement.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>


1  2  3  4

25. Securing preschool children in car seats every time I drive wastes time.

1  2  3  4

26. A car seat is very expensive.

1  2  3  4
27. Preschool children behave better in car seats.

1 2 3 4

28. I worry less if preschool children are in car seats.

1 2 3 4

29. Using car seats regularly is inconvenient.

1 2 3 4

30. Holding a preschool child in your arms in a vehicle can protect him or her from injury in a crash.

1. Yes _____
2. No _____
3. Don't know _____

31. Four-year-old children who weigh 50 pounds or less being transported in their parents' vehicle are required by Ohio law to travel in car seats.

1. Yes _____
2. No _____
3. Don't know _____

32. Five-year-old children who weigh 35 pounds or less being transported in their parents' vehicle are required by Ohio law to travel in car seats.

1. Yes _____
2. No _____
3. Don't know _____

33. Ohio law requires a preschool child to be transported in a car seat if he or she is riding in a neighbor's car.

1. Yes _____
2. No _____
3. Don't know _____
34. Ohio law requires a 9-month-old baby to be transported in a car seat if he or she is riding in a neighbor's car.

1. Yes _____
2. No _____
3. Don't know _____

35. How often do your friends or relatives with preschool children use car seats?

1. Always (100%) _____
2. Usually (75%) _____
3. Sometimes (50%) _____
4. Seldom (25%) _____
5. Never (0%) _____

36. Has anyone personally recommended that you use car seats when transporting preschool children?

Yes _____ No _____

37. If YES, who? Check all who have.

1. Spouse _____
2. Parents _____
3. Friends _____
4. My child(ren) _____
5. Doctor _____
6. Other _____ Specify __________________________

38. Do your two closest friends with preschool children use car seats regularly?

Friend #1 (check 1)     Friend #2 (check 1)
Yes _____    Yes _____
No _____    No _____
Don't know _____    Don't know _____

39. Can the preschool children you transport to or from child care buckle the straps of their car seats?

1. Yes _____
2. No _____
3. Don't know _____
4. Don't use car seats _____
40. Can the preschool children you transport to child care buckle a vehicle seat belt?

<table>
<thead>
<tr>
<th>Child #1 (check 1)</th>
<th>Child #2 (check 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Yes _____</td>
<td>1. Yes _____</td>
</tr>
<tr>
<td>2. No _____</td>
<td>2. No _____</td>
</tr>
<tr>
<td>3. Don’t know _____</td>
<td>3. Don’t know _____</td>
</tr>
</tbody>
</table>

41. Car seats are easy to use.

1. Strongly agree _____
2. Agree _____
3. Disagree _____
4. Strongly Disagree _____

42. It is easy to fasten the car seat straps around a preschool child.

1. Strongly agree _____
2. Agree _____
3. Disagree _____
4. Strongly Disagree _____

43. It is easy to fasten the adult safety belt around a car seat.

1. Strongly agree _____
2. Agree _____
3. Disagree _____
3. Strongly Disagree _____

44. How many children do you have? ______________

45. What is the age, approximate weight and sex of each of your children five years of age and younger?

Please start with the youngest.

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
</tr>
<tr>
<td>1.</td>
<td>Youngest child:</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Second youngest child:</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Third youngest child:</td>
<td></td>
</tr>
</tbody>
</table>

46. What is your birth date? ___/___/___

MO DAY YR
47. What is your current marital status?
   1. Married _____
   2. Divorced _____
   3. Separated _____
   4. Widowed _____
   5. Single _____

48. How many years of school did you complete?
   1. Eighth grade or less _____
   2. Some high school _____
   3. High school graduate _____
   4. Associate degree _____
   5. Bachelor's degree _____
   6. Advanced degree _____

49. What was the approximate income range of your family last year?
   1. Under $8,000 _____
   2. $8,000 - $14,999 _____
   3. $15,000 - $24,999 _____
   4. $25,000 - $39,999 _____
   5. $40,000 and above _____

50. What is your racial background?
   1. Black _____
   2. White _____
   3. Hispanic _____
   4. Other Specify ___________________________

51. What is your sex?
   1. Male _____
   2. Female _____

52. What is your relationship to the child or children you transport to or from child care?

   Child #1 (check 1)               Child #2 (check 1)
   1. Mother _____                  1. Mother _____
   2. Father _____                  2. Father _____
   3. Other Family Member _____     3. Other Fam. _____
   4. Other _____                  4. Other _____
53. How often do you transport preschool children TO child care?
   1. Always (100%) ______
   2. Usually (75%) ______
   3. Sometimes (50%) ______
   4. Seldom (25%) ______
   5. Never (0%) ______

54. How often do you transport preschool children FROM child care?
   1. Always (100%) ______
   2. Usually (75%) ______
   3. Sometimes (50%) ______
   4. Seldom (25%) ______
   5. Never (0%) ______

55. What is your affiliation or your spouse's affiliation with The Ohio State University?
   1. Student ______
   2. Staff ______
   3. Faculty ______
   4. Not affiliated with the University ______

56. Check the name(s) of the principal preschool teacher(s) of the children you transport FROM child care 50 percent of the time or more. Please check only one teacher for each child.

   Teacher Room No. Child #1 Child #2 Child #3
   1. Donna 22 ______ ______ ______
   2. Cathy 24 ______ ______ ______
   3. Kelly 25 ______ ______ ______
   4. Lisa 200 ______ ______ ______

PLEASE RETURN THIS QUESTIONNAIRE TO ONE OF THE ABOVE PRESCHOOL TEACHERS AS SOON AS POSSIBLE
APPENDIX C
GELELN'S LETTER OF PERMISSION
May 16, 1985

Patrick J. Harsch
157 Piedmont Road
Columbus, Ohio 43214

Dear Mr. Harsch:

In response to your letter of April 17, you have permission to use the telephone survey instrument developed by Project KISS. Please acknowledge the source for this interview as the Maryland Department of Health and Mental Hygiene Health Education Center, Project KISS, Kids and Safety Seats (with funds from the Maryland Department of Transportation).

Thank you for your interest. I'm pleased that Project KISS materials are of help to you and wish you success with your research.

Keep in touch.

Sincerely,

[Signature]
Andrea Gielen, Sc.M.
Senior Research Project Coordinator

cc: Lorraine Cohen
    Project Kiss
APPENDIX D

KNAPPER'S LETTER OF PERMISSION
May 15, 1985

Patrick Harsch
Division of Maternal and Child Health
Ohio Department of Health
246 North High Street
Columbus, Ohio 43216
U.S.A.

Dear Patrick:

As I promised in our telephone conversation, I am sending you three papers describing our study of attitudes to seat belts. You will note that the questions in the survey stage of the study derive from information gathered in two previous stages (a pilot stage and a pre-pilot), and hence, we would claim, have high "content validity". Indeed, we derived our "quasi-clinical strategy" for attitude measurement specifically to ensure such content validity, and are critical of surveys that are constructed largely on the basis of the "hunches" of the investigator. The questionnaire also has high reliability, and there is indirect evidence for other types of validity: for example, responses on the questionnaire could successfully predict both city and highway usage of belts (see Knapper, Cropley and Moore, 1976, pages 243 - 244). Incidentally, you will notice from these papers that we concluded the only way to drastically raise levels of seat belt wearing would be to enact legislation. At the time no such law existed in Canada, but since then several provinces have made seat belt wearing compulsory. In all cases our predictions were supported, with usage rates rising very substantially.

I can confirm that you are welcome to incorporate items from our instrument into your own questionnaire. Please acknowledge the source where appropriate, and please send me a copy of any report or publication that results.

Best wishes with your research.

Yours sincerely,

Christopher K. Knapper, Ph.D.
Teaching Resource Person

Encl. (3)
APPENDIX E

VALIDITY EXPERTS' COVER LETTERS
Dear Dr. Paulson:

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and/or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

I would like you to evaluate whether each of the enclosed safety belt and child safety seat questions is (1) clearly written, (2) easily understood by preschool parents and, (3) a measure of vehicle restraint reported behavior, attitudes, knowledge, reinforcing or enabling factors.

Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.

Sincerely,

Patrick J. Harsch
157 Piedmont Road  
Columbus, Ohio 43214  
July 12, 1985  

B. Monroe Barner  
Researcher II  
ODHS/GHSR  
240 South Parsons Avenue  
Columbus, Ohio 43266-0563  

Dear Mr. Barner:

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and/or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

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Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.

Sincerely,

Patrick J. Harsch
Dear Dr. Banks:

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and /or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

I would like you to evaluate whether each of the enclosed safety belt and child safety seat questions is (1) clearly written, (2) easily understood by preschool parents and, (3) a measure of vehicle restraint reported behavior, attitudes, knowledge, reinforcing or enabling factors.

Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.

Sincerely,

Patrick J. Harsch
Dear Ms. Fountain:

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and/or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

I would like you to evaluate whether each of the enclosed safety belt and child safety seat questions is (1) clearly written, (2) easily understood by preschool parents and, (3) a measure of vehicle restraint reported behavior, attitudes, knowledge, reinforcing or enabling factors.

Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.

Sincerely,

Patrick J. Harsch
157 Piedmont Road  
Columbus, Ohio 43214  
July 12, 1985

Colleen I. Murray, Ph.D.  
Lecturer and Faculty Research Associate  
315 Campbell Hall  
1787 Neil Avenue  
Columbus, Ohio 43210-1399

Dear Dr. Murray:

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and/or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

I would like you to evaluate whether each of the enclosed safety belt and child safety seat questions is (1) clearly written, (2) easily understood by preschool parents and, (3) a measure of vehicle restraint reported behavior, attitudes, knowledge, reinforcing or enabling factors.

Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.

Sincerely,

Patrick J. Harsch
157 Piedmont Road
Columbus, Ohio 43214
July 12, 1985

Robert J. Moore, Ph.D.
Champion College
University of Regina
Regina, Saskatchewan S4S 0A2

Dear Dr. Moore:

I am working toward a Ph.D. in health education. My dissertation topic is related to safety belt and car safety seat use among preschool children and their parents. I have been corresponding with Dr. Knapper, who has been assisting me with my work. In my last letter, I asked him to help validate my questionnaire which measures parent's restraint reported behavior, attitudes, knowledge and other factors. Due to another commitment, he is unable to help me. He suggested I contact you because of your expertise in vehicle safety.

With the hope that you will help me establish the validity of my questionnaire, I have enclosed the questionnaire and instructions.

Thank you very much.

Sincerely,

Patrick J. Harsch
QUESTIONNAIRE VALIDATION INSTRUCTIONS

Thank you for agreeing to help establish the validity of a self-administered safety belt and child safety seat questionnaire. You and other professionals have been asked because of your expertise in vehicle safety and/or child development to participate.

Once the enclosed research instrument is validated, it will be administered to parents of preschool children at The Ohio State Child Care Program as part of my health education doctoral research.

This instrument was developed after I reviewed studies which measured vehicle restraint factors of reported behavior, attitudes, knowledge, reinforcement (society encouragement) and enabling factors, which refer to the accessibility and skill to use restraints. Others were developed from Highway Traffic Safety Administration pamphlets.

I would like you to evaluate whether each of the enclosed safety belt and child safety seat questions is (1) clearly written, (2) easily understood by preschool parents and, (3) a measure of vehicle restraint reported behavior, attitudes, knowledge, reinforcing or enabling factors.

Next to each question, please circle a "yes" or "no" as to whether it meets the above criteria. For those questions that do not meet all three criteria, please indicate why in the comments column or on additional paper. Feel free to add suggestions. Then place the questionnaire and your responses in the self-addressed stamped envelope and send them back to me.

If you have any questions please contact me. Again, I would like to thank you for your assistance.
APPENDIX F

RELIABILITY STUDY COVER LETTER
157 Piedmont Road
Columbus, Ohio 43214
August 25, 1985

Dear Parent or Guardian:

I am conducting research to earn a graduate degree in health
education at The Ohio State University. My research will
test different educational methods designed to increase car
seat and safety belt use among preschool children and those
adults who transport them.

Before I can conduct my research, however, I must field test
the enclosed questionnaire. This can only be done by
administering the questionnaire to parents whose children
attend a day care center similar to the one where my
research will be conducted.

I have obtained permission from Judy Tough, North Broadway
Children's Center Director, to ask for your assistance in
field testing the questionnaire.

I would greatly appreciate it if you would take a few
minutes to complete the enclosed questionnaire and return
it either to the "orange box" at the entry door or to one of
the preschool teachers.

Should you have any questions about my research study,
please contact me. If you have any suggestions as to how to
improve the questionnaire, please note those on the
questionnaire.

Sincerely,

Patrick J. Harsch
263-9433 (home)
466-8932 (work)
APPENDIX G

CHILDCARE TEACHER TRAINING
TEACHER TRAINING

TEACHER TRAINER MATERIALS NEEDED

**FILMS**

1. "CHILDREN AND INFANTS INVOLVED IN CAR CRASHES"

2. "THE BIG CLICK" SAFETY FILM

3. "OTTO THE AUTO"

**HANDOUTS**

1. "OHIO'S NEW CHILD RESTRAINT LAW"

2. CHILD BEHAVIOR AND SAFETY SEAT ARTICLE

3. "MYTHS AND FACTS ABOUT CHILD CAR SAFETY"

4. "MAKE THEM SECURE"

5. "HOW MANY FAIRY TALES HAVE YOU BEEN TOLD?"

6. "SAFETY BELTS: A HISTORY LESSON FOR ADULTS"

**OTHER AIDS**

1. MINI CONVINCER

2. "SAFETY BELT ACTIVITY BOOK"

3. "HOW CHILDREN SAFELY TRAVEL"

4. SAFETY BELT SONG

5. SAFETY BELT STICKERS

6. SAFETY BELT CHAIR

7. BOOSTER SAFETY SEAT
TRANSPORTING ADULT EDUCATION MATERIAL NEEDED

HANDOUTS

1. "OHIO'S NEW CHILD RESTRAINT LAW"
2. CHILD BEHAVIOR AND SAFETY SEATS ARTICLE
3. "MYTHS AND FACTS ABOUT CHILD CAR SAFETY"
4. "MAKE THEM SECURE"
5. "HOW MANY FAIRY TALES HAVE YOU BEEN TOLD"
6. "SAFETY BELTS: A HISTORY LESSON FOR ADULTS"

PRESCHOOL CHILD EDUCATION MATERIALS NEEDED

FILMS

OTHER AIDS

1. "OTTO THE AUTO"

1. MINI CONVINCER

2. SAFETY BELT ACTIVITY BOOK

3. "HOW CHILDREN SAFELY TRAVEL" STORY BOOK

4. SAFETY BELT SONG

5. SAFETY BELT STICKERS

6. SAFETY BELT CHAIR

7. BOOSTER SAFETY SEAT
TEACHER TRAINING NARRATIVE

MY NAME IS PATRICK HARSH. I AM WORKING TOWARD A PH.D AT OHIO STATE IN HEALTH EDUCATION. I AM ALSO THE FATHER OF BRETT HARSH, WHO WAS A STUDENT AT THE OSU CHILD CARE PROGRAM FOR THE PAST SIX YEARS. I AM EMPLOYED AT THE OHIO DEPARTMENT OF HEALTH AS A HEALTH PLANNER WITH THE DIVISION OF MATERNAL AND CHILD HEALTH.

BEING A PARENT, A HEALTH EDUCATION STUDENT AND A HEALTH PLANNER IN MATERNAL AND CHILD HEALTH, I HAVE BECOME VERY AWARE OF CHILDREN'S HEALTH PROBLEMS. I HAVE CHOSEN TO STUDY FOR MY DISSERTATION WHAT I CONSIDER TO BE THE MOST IMPORTANT CHILD HEALTH PROBLEM: THAT IS DEATH AND INJURY FROM VEHICLE CRASHES. MOST OF THESE DEATHS AND INJURIES ARE PREVENTABLE THROUGH THE USE OF CAR SEATS AND SAFETY BELTS. THE GOAL OF MY DISSERTATION IS TO STUDY THREE DIFFERENT HEALTH EDUCATION METHODS TO INCREASE THE USE OF VEHICLE RESTRAINTS AMONG PRESCHOOL CHILDREN AND THOSE WHO TRAVEL WITH THEM.

BEFORE I DISCUSS MY PROPOSED DISSERTATION, I WOULD LIKE TO FURTHER DESCRIBE THE HEALTH PROBLEM OF VEHICLE CRASHES.

OVERVIEW OF THE PROBLEM

AUTO CRASHES ARE THE NUMBER ONE CAUSE OF DEATH IN CHILDREN AFTER THE AGE OF ONE. NOT ONLY ARE THEY A SIGNIFICANT CHILD HEALTH PROBLEM, AUTO CRASHES ARE A LEADING CAUSE OF DEATH FOR PARENTS AND OTHER YOUNG ADULTS AS WELL. LAST YEAR, IN OHIO AUTO CRASHES WERE THE LEADING CAUSE OF DEATH FOR CHILDREN AND ADULTS UP AGES 34.
TO FURTHER ILLUSTRATE THIS PROBLEM, I WILL SHOW A FIVE MINUTE FILM, "CHILDREN AND INFANTS INVOLVED IN CAR CRASHES," PRODUCED BY THE NATIONAL INSURANCE INSTITUTE. THIS FILM SHOWS HOW UNRESTRAINED AND RESTRAINED DUMMIES OF CHILDREN AND ADULTS ARE AFFECTED BY VEHICLE CRASHES.

CHILDREN'S INFLUENCE ON RESTRAINT USE IN OTHERS

STUDIES HAVE SHOWN THAT SEVERAL FACTORS CAN EFFECT THE USE OF VEHICLE RESTRAINTS. SOME STUDIES HAVE FOUND THAT CHILDREN CAN EFFECT RESTRAINT USE AMONG OTHERS IN THE VEHICLE. THIS IS AN IMPORTANT POINT BECAUSE I WOULD LIKE TO TEST WHETHER VEHICLE RESTRAINT EDUCATION TO PRESCHOOL CHILDREN CAN EFFECT THEIR USE AND THOSE WHO TRANSPORT THEM. THE FILM CALLED "THE BIG CLICK" TALKS ABOUT THE IMPORTANCE OF SAFETY BELTS AND ALSO THE INFLUENCE CHILDREN CAN HAVE ON OTHERS IN PROMOTING THEIR USE.

OHIO'S CHILD SAFETY LAW

MANY EUROPEAN COUNTRIES, AUSTRALIA AND SOME SOUTH AMERICAN COUNTRIES REQUIRE ADULTS TO WEAR SAFETY BELTS. IN THE UNITED STATES, ALL STATES NOW HAVE LAWS REQUIRING YOUNG CHILDREN TO TRAVEL RESTRAINED. PRESENTLY, FIVE OR SIX STATES HAVE LAWS REQUIRING BOTH ADULTS AND CHILD TO BUCKLE UP. IN MOST STATES, MANDATORY SAFETY BELT LEGISLATION HAS BEEN INTRODUCED. TWO BILLS WERE INTRODUCED INTO THE OHIO LEGISLATURE THIS YEAR, HOWEVER, NEITHER PASSED.

OHIO, DOES HOWEVER, HAVE A CHILD SAFETY SEAT LAW.
BASICALLY, THE LAW SAYS THAT WHEN CHILDREN UNDER THE AGE OF
4 OR UNDER FORTY POUNDS TRAVEL IN THEIR PARENT'S OR CHILD
CARE CENTER'S VEHICLE, THEY MUST BE RESTRAINED IN A
FEDERALLY APPROVED CAR SEAT. FEDERALLY APPROVED CAR SEATS
ARE THOSE MANUFACTURED AFTER 1981.

INFANTS (CHILDREN BIRTH TO ONE YEAR OLD) TRAVELING IN
CARS NOT OWNED BY THEIR PARENTS MUST ALSO USE A CAR SEAT.
OTHER CHILDREN UNDER 4 YEARS OR 40 POUNDS MUST BE SECURED BY
A CAR SEAT OR SAFETY BELT WHEN TRAVELING IN A CAR OTHER THAN
THEIR PARENTS'. MOST OF THE PRESCHOOL CHILDREN YOU TEACH
ARE AFFECTED BY THIS LAW. THIS HANDOUT, "OHIO'S NEW CHILD
RESTRAINT LAW," FURTHER EXPLAINS THE LAW.

OUTLINE OF THE STUDY

I WOULD LIKE TO BRIEFLY DESCRIBE MY STUDY. I WILL TEST
THREE HEALTH EDUCATION METHODS DESIGNED TO POSITIVELY
CHANGE PRESCHOOL CHILDREN'S AND THEIR FAMILIES' AUTO
RESTRAINT BEHAVIOR. TO ACCOMPLISH THIS, I NEED YOUR HELP.

I WILL BE WORKING WITH THREE OF THE PRESCHOOL
CLASSROOMS AT THE OSU CHILD CARE PROGRAM. THEY ARE
CLASSROOMS 24, 25 AND 200. CLASSROOM 22 WILL SERVE AS A
CONTROL GROUP FOR THE STUDY. IN CLASSROOMS 24 AND 25, AN
AUTO SAFETY CURRICULUM WILL BE TAUGHT BY YOU, THE CLASSROOM
TEACHERS, TO YOUR STUDENTS DURING THE LAST WEEK OF OCTOBER.
SOME OF THE CURRICULUM TO BE USED IS ADAPTED FROM ONE
DESIGNED BY THE OHIO DEPARTMENT OF HIGHWAY SAFETY WITH THE
HELP OF CHILD DEVELOPMENT SAFETY PROFESSIONALS. I WILL
EXPLAIN THE CURRICULUM FURTHER LATER.

IN CLASSROOM 200 AND 22, CHILDREN WILL NOT BE TAUGHT. IN CLASSROOMS 25 AND 200, I WILL WORK WITH EACH PARENT OR OTHER ADULT WHO PICKS UP CHILDREN. IN CLASSROOM 22 NEITHER THE CHILDREN NOR THE ADULTS WHO DRIVE THEM HOME WILL RECEIVE RESTRAINT EDUCATION. A DIAGRAM OF THE PROCEDURES AND WHO IS INVOLVED IS AS FOLLOWS:

<table>
<thead>
<tr>
<th>CHILDREN</th>
<th>DRIVERS</th>
<th>BOTH</th>
<th>CONTROL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONLY</td>
<td>ONLY</td>
<td>TAUGHT</td>
<td>(NEITHER</td>
</tr>
<tr>
<td>TAUGHT</td>
<td>TAUGHT</td>
<td>(NEITHER</td>
<td></td>
</tr>
<tr>
<td>ROOM NO.</td>
<td>24</td>
<td>200</td>
<td>25</td>
</tr>
<tr>
<td>TEACHER</td>
<td>KATHY</td>
<td>LISA</td>
<td>KELLY</td>
</tr>
</tbody>
</table>

IN CLASSROOMS 25 AND 200 I WILL ASK THE TEACHERS TO INTRODUCE ME TO TRANSPORTING ADULTS, WHO HAVE AGREED TO PARTICIPATE, WHEN THEY ARRIVE TO PICK UP PRESCHOOL CHILDREN. I WILL ACCOMPANY THEM AND THE CHILD(REN) THEY TRANSPORT AS THEY LEAVE THE CLASSROOM IN THE AFTERNOON. ON THE WAY TO THEIR CAR, I WILL DISCUSS WITH THE ADULT WHAT THE CHILDREN ARE LEARNING (IF CHILDREN ARE IN A CLASSROOM WHERE THEY WILL RECEIVE AUTO SAFETY INSTRUCTION). IF THEY ARE THE TRANSPORTER OF A CHILD IN A CLASSROOM WHERE THE CHILDREN ARE NOT BEING TAUGHT, I WILL EXPLAIN THAT THESE CHILDREN WILL RECEIVE INSTRUCTION AFTER THE STUDY IS COMPLETED.

THE CHILDREN WILL BE TAUGHT:

1. WHY IT IS IMPORTANT TO BE BUCKLED UP WHILE TRAVELING IN VEHICLES.
2. HOW TO USE VEHICLE RESTRAINTS.
3. HOW TO ASK FOR HELP IF NEEDED TO USE RESTRAINTS
4. HOW TO ASK OTHERS IN THE VEHICLE TO USE RESTRAINTS.

IN ADDITION, I WILL DISCUSS THE FOLLOWING CONCEPTS WITH THE DRIVER:

1. CHILDREN CAN BE SERIOUSLY HURT EVEN IN MINOR CRASHES OR SUDDEN SWERVES.
2. VEHICLE RESTRAINTS CAN REDUCE SERIOUS OR FATAL INJURIES IN A CRASH.
3. VEHICLE RESTRAINTS HAVE BEEN SHOWN TO IMPROVE CHILDREN'S BEHAVIOR WHILE IN A CAR AND REDUCE DRIVER DISTRACTION.
4. ADULTS IN THE CAR MUST BE RESTRAINED, BECAUSE UNRESTRAINED OCCUPANTS CAN BE THROWN INTO CHILDREN AND CAUSE INJURY.


I WILL TELL THEM THAT THE SEAT BELT IS PERHAPS THE MOST IMPORTANT SAFETY FEATURE, BECAUSE IT SAVES LIVES BY:
1. PREVENTING THE OCCUPANTS FROM HITTING THE INTERIOR OF THE AUTOMOBILE OR THE WINDSHIELD.
2. PREVENTING THE OCCUPANTS FROM BEING THROWN OUT, WHICH IS FAR MORE DANGEROUS THAN REMAINING INSIDE THE VEHICLE.
3. ALLOWING THE DRIVER TO REMAIN BEHIND THE STEERING WHEEL AND BETTER ABLE TO CONTROL THE AUTOMOBILE.

I WILL DEMONSTRATE HOW TO USE THE SEAT BELT BY BUCKLING THE SAFETY BELT AROUND ME ON THE PASSENGER SIDE. I WILL ASK THE DRIVER TO BUCKLE HIS OR HER SAFETY BELT. I WILL EXPLAIN THAT IT IS VERY EASY TO DO, TAKES LITTLE TIME AND IS THE MOST IMPORTANT HEALTH BEHAVIOR THEY CAN ENGAGE IN ON ANY GIVEN DAY.

I WILL TELL DRIVERS THAT SAFETY BELTS CAN BE A POSITIVE FORCE. THEY CAN PROVIDE A FEELING OFSECURITY. THEY CAN HELP TO KEEP THE DRIVER IN CONTROL OF THE AUTOMOBILE. MOST SAFETY BELTS ALSO ALLOW US FREEDOM OF MOVEMENT (I WILL DEMONSTRATE THIS BY PULLING ON THE SHOULDER BELT) AND ONLYRESTRAIN US DURING A SUDDEN STOP OR SWERVE.

PARENTS AND OTHER DRIVERS WHO USE SAFETY BELTS ARE SETTING A GOOD EXAMPLE FOR CHILDREN. STUDIES HAVE SHOWN THAT CHILDREN ARE MOST LIKELY TO BE BUCKLED IN IF THEIR PARENTS OR OTHER DRIVERS ARE BUCKLE IN.

I WILL THEN GIVE THE DRIVER APPROPRIATE CAR SAFETY SEAT AND SAFETY BELT HANDOUTS. THE CAR SEAT SAFETY HANDOUTS INCLUDE AN ARTICLE BY CHRISTENSEN ABOUT HOW CHILDREN'S
BEHAVIOR CAN BE IMPROVED BY USING CAR SEATS, A NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION Flier called "MYTHS & FACTS ABOUT CHILD CAR SAFETY," AN OHIO DEPARTMENT OF HIGHWAY SAFETY SUMMARY OF THE OHIO CAR SEAT LAW CALLED "OHIO'S NEW CHILD RESTRAINT LAW AND INFORMATION ABOUT APPROVED CAR SEATS," WHICH IS INCLUDED IN AN OHIO DEPARTMENT OF HIGHWAY SAFETY BROCHURE CALLED "MAKE SURE THEY'RE SECURE!" SAFETY BELT LITERATURE WILL INCLUDE TWO NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION BROCHURES, ONE ADDRESSING SAFETY BELTS MYTHS, "HOW MANY OF THESE FAIRY TALES HAVE YOU BEEN TOLD?", AND ONE EXPLAINING HOW SAFETY BELTS WORKS, "SAFETY BELTS: A HISTORY LESSON FOR ADULTS."

BEFORE IMPLEMENTING THE INSTRUCTION PHASE OF THE STUDY, A PRETEST WILL BE ADMINISTERED TO ALL OF THE PARENTS OR OTHER ADULT TRANSPORTERS IN EACH OF THE FOUR CLASSROOMS. THE PRETEST WILL CONSIST OF A SELF-ADMINISTERED QUESTIONNAIRE WHICH ASKS ABOUT DRIVERS' KNOWLEDGE, ATTITUDES AND BEHAVIORS RELATED TO CAR SAFETY SEATS AND SAFETY BELTS. THE SAME QUESTIONNAIRE WILL BE USED AS A POSTTEST ADMINISTERED TO THE SAME DRIVERS AFTER THE EDUCATIONAL INTERVENTION PHASE IS COMPLETED. DRIVERS WILL BE ASKED TO VOLUNTARILY COMPLETE BOTH THE PRETEST AND POSTTEST AND RETURN IT TO A TEACHER OR THE OFFICE SECRETARY.

BEFORE TEACHING THE CHILDREN OR DRIVERS, THE CAR SEAT AND SEAT BELT BEHAVIOR OF DRIVERS AND PRESCHOOL CHILDREN WILL BE OBSERVED IN THE PARKING LOT BY TRAINED GRADUATE
STUDENTS. THIS BEHAVIOR WILL AGAIN BE OBSERVED DIRECTLY AFTER THE CHILDREN AND DRIVERS ARE TAUGHT AND FOUR WEEKS LATER. AFTER THE FINAL OBSERVATION, OTHER PRESCHOOL TEACHERS WILL BE TRAINED AND CHILDREN WHO DO NOT RECEIVE AUTO RESTRAINT SAFETY EDUCATION AS PART OF THE STUDY WILL RECEIVE THE EDUCATION.

CURRICULUM

THE FOLLOWING ACTIVITIES HAVE BEEN DEVELOPED WITH THE HELP OF THE OHIO DEPARTMENT OF HIGHWAY SAFETY AND SEVERAL CHILD DEVELOPMENT EXPERTS. I WOULD LIKE TO DISCUSS THEM WITH YOU. PLEASE FEEL FREE TO COMMENT AND ADD SUGGESTIONS WHEN YOU FEEL IT IS APPROPRIATE. THE FOLLOWING IS MY SUGGESTED WAY TO INCREASE VEHICLE RESTRAINT KNOWLEDGE, FOSTER POSITIVE RESTRAINT ATTITUDES AND TEACH PRESCHOOL CHILDREN AND DRIVERS TO INFLUENCE OTHER PASSENGERS' USE OF RESTRAINTS.

MONDAY

THE TEACHERS WILL INTRODUCE THE TOPIC BY TELLING THE CHILDREN IT IS VERY IMPORTANT FOR EVERYONE, INCLUDING PARENTS, OTHER DRIVERS, SIBLINGS AND OTHER PASSENGERS, TO BE BUCKLED UP WHILE RIDING IN A CAR. THEY WILL USE THE MINI-CONVINCER TO SHOW THE IMPORTANCE OF BEING RESTRAINED. THE MINI-CONVINCER IS A DEVICE CONSISTING OF A SMALL WOODEN AUTOMOBILE EQUIPPED WITH VELCRO SAFETY BELTS IN BOTH THE
FRONT AND BACK SEATS, TWO WOODEN FIGURES AND A WOODEN RAMP. THIS DEVICE WAS DEVELOPED BY THE OHIO DEPARTMENT OF HIGHWAY SAFETY AS PART OF THEIR PRESCHOOL AUTO RESTRAINT SAFETY KIT. THE TEACHER WILL DEMONSTRATE TO THE CHILDREN WHAT HAPPENS TO AN OCCUPANT WHEN HE OR SHE IS NOT BUCKLED IN BY ROLLING THE CAR DOWN THE RAMP, THEN THEY WILL DEMONSTRATE WHAT HAPPENS WHEN BELTS ARE USED. THE TEACHER WILL DEMONSTRATE WHAT HAPPENS WHEN BOTH OCCUPANTS ARE BUCKLED AND/OR UNBUCKLED. THE TEACHER WILL SAY "SAFE" OR "DANGEROUS RIDE" BEFORE THE CAR IS RELEASED DOWN THE RAMP, DEPENDING ON WHETHER THE FIGURES ARE BELTED IN. A DISCUSSION WILL FOLLOW ABOUT WHY THE SEAT BELT IS IMPORTANT. POSSIBLE DISCUSSION QUESTIONS ARE:

1. WHAT MAKES IT A SAFE OR UNSAFE RIDE?
2. WHY ARE SEAT BELTS AND CAR SEATS CALLED SAFETY BELTS AND SAFETY SEATS?
3. WHAT WOULD CAUSE A REAL CAR TO STOP QUICKLY?
4. WHAT COULD HAPPEN IF THE SAFETY BELTS ARE NOT PROPERLY FASTENED?

TEACHERS WILL STRESS IT IS IMPORTANT FOR THE CHILD TO LET SOMEONE KNOW IF HE OR SHE IS NOT FASTENED IN. IF THE CHILD NEEDS HELP BUCKLING UP, HE OR SHE SHOULD ASK AN OLDER OCCUPANT FOR HELP. ALSO TELL THE CHILDREN TO REMIND THE DRIVER AND OTHER PASSENGERS TO BUCKLE UP. CHILDREN WILL BE TOLD THAT ALL WEEK DURING SUPERVISED PLAY, THEY WILL BE GIVEN A CHANCE TO SEE HOW THE MINI-CONVINCER WORKS.
CHILDREN WILL BE ASKED TO SAY "SAFE RIDE" OR "DANGEROUS RIDE" WHEN EITHER FIGURE IS RESTRAINED OR UNRESTRAINED BEFORE THEY RELEASE THE CAR DOWN THE RAMP.

TUESDAY

AT STORY TIME, TEACHERS WILL READ TO THE CHILDREN "HOW CHILDREN TRAVEL SAFELY." THIS SHORT BOOK DEVELOPED BY THE UNIVERSITY OF NORTH CAROLINA'S HIGHWAY SAFETY RESEARCH CENTER DISCUSSES HOW ANIMALS CARRY THEIR YOUNG AND HOW PARENTS AND OTHERS SHOULD TRANSPORT CHILDREN IN VEHICLES. THE BOOK EMPHASIZES PARENTS' USE OF CHILD SAFETY SEATS.

WEDNESDAY

CHILDREN WILL SEE A SHORT FILM CALLED "OTTO THE AUTO" IN THEIR ROOM (NOT AS PART OF REGULAR FILM DAY) WHICH TALKS ABOUT THE IMPORTANCE OF BUCKLING UP. CHILDREN WILL SING THE SAFETY BELT SONG LATER THAT DAY. THIS HANDOUT CONTAINS THE WORDS TO THE SONG. WE CAN NOW SEE THE FILM.

THURSDAY

CHILDREN WILL MAKE TAGS TO BE PUT IN THEIR CAR TO REMIND THEM AND OTHER OCCUPANTS TO BUCKLE UP. THIS NATIONAL HIGHWAY TRAFFIC ADMINISTRATION "SAFETY BELT ACTIVITY BOOK" SHOWS HOW TO MAKE THEM. CHILDREN WILL BE GIVEN THESE OHIO DEPARTMENT OF HIGHWAY SAFETY STICKERS TO PUT ON THE HANG TAGS. TEACHERS WILL TELL CHILDREN THAT IT IS AN IMPORTANT
JOB TO REMIND FAMILY MEMBERS AND OTHERS TO WEAR SAFETY BELTS OR TO BE IN A CAR SEAT. TELL THE CHILDREN THEY CAN BE BUCKLED-UP HELPERS BY ASKING OTHERS IN THE CAR TO "PLEASE BUCKLE UP." TELL THE CHILDREN THAT IF NO SEAT BELTS ARE VISIBLE IN THE FRONT OR BACK SEAT OF A CAR TO ASK AN ADULT TO GET THEM OUT FROM UNDER THE SEAT.

FRIDAY

CHILDREN WILL PRACTICE BUCKLING UP WITH A CHAIR EQUIPPED WITH A SAFETY BELT. THE CHILDREN WILL BE DIVIDED INTO TWO GROUPS. THE FIRST GROUP WILL BE MADE UP OF THOSE CHILDREN UNDER FOUR ALONG WITH THOSE OVER FOUR WHO ARE LESS THAN 40 POUNDS. THE SECOND GROUP WILL BE CHILDREN OVER FOUR WHO ARE OVER 40 POUNDS. THE FIRST GROUP WILL PRACTICE BUCKLING UP SETTING IN A BOOSTER CHAIR. THE OTHER GROUP WILL PRACTICE BUCKLING UP JUST USING THE CHAIR EQUIPPED WITH THE SAFETY BELT. THIS ACTIVITY WILL HELP THE CHILDREN DEVELOP PHYSICAL SKILLS NECESSARY TO BUCKLE UP. EXPLAIN TO THE CHILDREN THE IMPORTANCE OF PROPERLY PLACING THE BELT AROUND THEIR HIPS AND NOT THEIR STOMACHS. REMIND EACH CHILD AS HE OR SHE SITS IN THE CHAIR ABOUT THE PROPER PLACEMENT OF THE BELT. AFTER EACH CHILD BUCKLES UP, THE CHILD WILL BE GIVEN A OHIO DEPARTMENT OF HIGHWAY SAFETY BELT STICKER. TELL THE CHILDREN TO SHOW THE STICKER TO EVERYONE THEY TRAVEL WITH IN THE AFTERNOON AND REMIND EVERYONE TO BUCKLE UP. THE TEACHER WILL AGAIN EXPLAIN THE IMPORTANCE OF EVERYONE IN THE
CAR BUCKLING UP. THE TEACHER WILL EMPHASIZE ESPECIALLY TO THOSE CHILDREN COVERED BY THE OHIO CHILD RESTRAINT LAW THE IMPORTANCE OF USING CAR SEATS WHEN THEY ARE AVAILABLE.

ARE THERE ANY QUESTIONS OR COMMENTS?
APPENDIX H

LETTER TO THE OHIO DEPARTMENT OF HIGHWAY SAFETY
157 Piedmont Road  
Columbus, Ohio 43214  
October 21, 1985

Mrs. Georgia S. Jupinko  
Administrator for the Office of the  
Governor’s Highway Safety Representative  
P.O. Box 7164  
Columbus, Ohio 43205

Dear Mrs Jupinko:

One of your staff, Jill Berington, referred me to you. I am a graduate student at OSU conducting research in methods to increase safety belt and child safety seat use among preschool children and those who transport them. My research site is the OSU Child Care Program.

I am observing restraint use before and after different safety education methods are introduced. I am collecting license plate numbers before and after treatment to compare different groups’ restraint behavior. I have made my initial observation and plan to observe restraint use again in about four weeks. At the end of my study I will present a list of license numbers collected to the study participants and ask them to indicate which of four study groups they are in.

Because new license plates are being issued, it will be difficult comparing restraint use among participants who receive new plates between the first and last observation. Participants who obtain new plates during the study period may not remember their old license number. I am requesting your assistance to obtain the information about approximately 15 study participants who have not received new plates yet this year. I would like to know either their names or the plate number they may have received between the time of the initial observation and the final observation.

My research has the approval of the OSU Human Subjects Review Committee and the administration of The OSU Child Care Program. Please feel free to discuss the project with my advisor, Dr. Robert Kaplan, at 422-6116 or Judy Fountain, Director of the OSU Child Care Program, at 294-1681. If you would like to discuss this further with me, please contact me at 466-8932.
Thank you very much. Your assistance is greatly appreciated.

Sincerely,

Patrick J. Harsch
APPENDIX I

LETTERS TO PARENTS ASKING FOR THEIR PARTICIPATION
Dear Parent or Guardian:

I am working toward a graduate degree in health education at Ohio State University. With the approval of the Director, Judy Fountain, I am conducting research at The Ohio State University Child Care Program to test different methods designed to increase car seat and safety belt use among preschool children and adults who transport them. To conduct this research, I need your assistance. Your participation will simply take about 20 minutes.

Enclosed you will find a pretest questionnaire designed to be completed by the adult who transports your child from child care 50 percent of the time or more. If you generally transport your child from child care and wish to participate, please check the appropriate box on the enclosed VEHICLE RESTRAINT STUDY PARTICIPATION FORM and complete the bottom portion of the form. Then complete the enclosed questionnaire. Separate the participation form from the questionnaire to ensure confidentiality and give them to your child's teacher. Please return them by Wednesday October 16, 1985. In about ten days you will be asked to complete a posttest questionnaire.

If you do not wish to participate, indicate this on the participation form, complete the bottom portion and return the form to your child's teacher by the same above date.

If you do not transport your child from child care 50 percent of the time or more give this letter, participation form and questionnaire to the adult who does. Ask this person to read the material.

If you or another adult who transports your child from child care have any questions about my study or the enclosed material, please contact Judy Fountain or Lynn Gallagher. I can be contacted at 466-8932 during the day or at 263-9493 in the evening.

Your participation will be greatly appreciated. Thank you very much.

Sincerely,

Patrick J. Harsch, Ph.D. Candidate
Dear Parent or Guardian:

I am working toward a graduate degree in health education at Ohio State University. With the approval of the director, Judy Fountain, I am conducting research at the Ohio State University Child Care Program to test different methods to increase car seat and safety belt use among preschool children and adults who transport them. To conduct this research, I need your assistance. Enclosed you will find a questionnaire which is designed to be completed by the adult who transports your child from child care 50 percent of the time or more. If you generally transport your child from child care and wish to participate, please check the appropriate box on the enclosed study participation form and then fill out the enclosed questionnaire. Give both of them to your child's teacher.

If you do not wish to participate, indicate this on the participation form and return the form to your child's teacher. If you do not transport your child from child care 50 percent or more give all this information to the adult who does. If you have any questions about my study or the enclosed questionnaire, please talk with Judy Fountain or Lynn Galagore or contact me during the day at 466-8932 or 263-9493 in the evening.

Your participation will be greatly appreciated. Thank you very much.

Sincerely,

Patrick J. Harsch, Ph.D. Candidate
Dear Parent or Guardian:

As I explained in two previous letters, I am conducting graduate research at The OSU Child Care Program related to vehicle restraint use. Most parents or guardians have agreed to help me by completing a participation form and a questionnaire.

Please take a few minutes and complete the enclosed participation form and questionnaire and return them to your child's preschool teacher. Your assistance is greatly appreciated.

Thank you very much.

Sincerely,

Patrick J. Harsch, Ph. D. Candidate
APPENDIX J

STUDY PARTICIPATION FORM
VEHICLE RESTRAINT STUDY PARTICIPATION FORM

NAME ____________________________________

(FIRST) (LAST)

/_____ AS A TRANSPORTER OF PRESCHOOL CHILDREN FROM THE OHIO STATE UNIVERSITY CHILD CARE PROGRAM, I WISH TO PARTICIPATE IN AN APPROVED VEHICLE RESTRAINT EDUCATION STUDY.

/_____ AS A TRANSPORTER OF PRESCHOOL CHILDREN FROM THE OHIO STATE UNIVERSITY CHILD CARE PROGRAM, I DO NOT WISH TO PARTICIPATE IN AN APPROVED VEHICLE RESTRAINT EDUCATION STUDY.

Please check the name(s) of the principal preschool teacher(s) of the child(ren) you transport from The OSU Child Care Program 50 percent of the time or more.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Room No.</th>
<th>Child #1</th>
<th>Child #2</th>
<th>Child #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Donna</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cathy</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Kelly</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Lisa</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PLEASE RETURN THIS FORM TO ONE OF THE ABOVE PRESCHOOL TEACHERS AS SOON AS POSSIBLE.
APPENDIX K

DRIVER RESTRAINT EDUCATION FORM
Hello, my name is Patrick Harsch. I am working with the OSU Child Care Program to test different methods to enhance restraint use among preschool children and those who transport them from child care. My records show you have signed a participation slip and are willing to help me with my research. First, I would like to obtain some information and then tell you about my research and how it effects you and the child(ren) you transport from child care.

Name of Driver

Transport Information

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Child #1</th>
<th>Child #2</th>
<th>Child #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>% from child care</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Age of child</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Weight of child</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Teacher</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
</tbody>
</table>

Concepts Taught to Preschool Children

1. Why it is important to be buckled up.
2. How to use vehicle restraints.
3. How to ask for help if needed to use restraints.
4. How to ask others in the vehicle to use restraints.

To Vehicle Discussion

1. Children can be seriously hurt even in minor crashes or swerves.
2. Vehicle restraints can reduce serious or fatal child injuries.
3. Vehicle restraints have been shown to improve children's behavior and reduce driver distraction.
4. Vehicle crashes are also a great cause of adult death and injury.
IN VEHICLE DISCUSSION

1. OBSERVE/ASSIST WITH CHILD RESTRAINTS.
2. HOW OHIO'S CHILD RESTRAINT LAW EFFECTS TRANSPORTED CHILD(REN).
3. SAFETY FEATURES OF CAR (WIPERS, HORN, DASH, STEERING COLUMN).
4. IMPORTANCE OF RESTRAINTS IN CRASHES--PREVENT HITTING INTERIOR, BEING THROWN OUT, ALLOWS MORE DRIVER CONTROL OF VEHICLE.
5. DEMONSTRATE BELT, EXPLAIN INERTIA REEL, POSITIVE ASPECTS (SECURITY, FREEDOM, SET GOOD EXAMPLE FOR CHILDREN).
6. HANDOUTS--OHIO'S CSS LAW, "MAKE THEM SECURE", "HOW MANY OF THESE FAIRY TALES HAVE YOU BEEN TOLD", "SAFETY BELTS: A HISTORY LESSON FOR ADULTS"

THANK YOU VERY MUCH. LISC. # ____________
APPENDIX L

PARTICIPANT POSTTEST COVER LETTERS
157 Piedmont Road
Columbus, Ohio 43214
November 14, 1985

Dear

Thank you for agreeing to participate in my graduate research vehicle restraint education study. Also thank you for completing the research pretest questionnaire.

As a follow-up to the pretest questionnaire, I have enclosed a posttest questionnaire. I would greatly appreciate it if you would take a few minutes to complete the posttest questionnaire and give it to your child’s preschool teacher by November 21, 1985.

Thank you very much.

Sincerely,

Patrick J. Harsch,
Ph.D. Student, Health Education
157 Piedmont Road
Columbus, Ohio 43214
November 25, 1985

The Ohio State University Child Care Program
1895 Summit Avenue
Columbus, Ohio 43201

Dear

Thank you for agreeing to participate in my graduate research vehicle restraint education study. Also thank you for completing the research pretest questionnaire.

Last week, as a follow-up to the pretest questionnaire, I asked that you also complete a posttest questionnaire and return it to your child's preschool teacher. If you have already completed the posttest, thank you very much. If you have not had an opportunity to complete this test, please take a few minutes to complete the enclosed posttest. Please accept the enclosed dollar as a token of my appreciation for your assistance with my study.

Should you have any questions about the posttest or other aspects of my research, please contact me during the day at 466-8932 or at 263-9493 in the evening.

Again, thank you very much.

Sincerely,

Patrick J. Haensch,
Ph.D. Student, Health Education
APPENDIX M

OBSERVER'S TRAINING
Resources Needed


Narrative

My name is Patrick Harsch. I am working toward a Ph.D. at Ohio State in health education. For my dissertation, I am conducting an auto restraint education study at the Ohio State University Child Care Program. Here I will test three health education methods designed to positively effect preschool children's and their families' vehicle restraint behavior.

To determine if the educational methods effect auto restraint behavior, observations will be conducted in the child care parking lot. Restraint behavior of only drivers and their preschool passengers will be recorded as they leave in the afternoon. The data collection procedures are as follows:

1. Site of observation.

The observation will occur at the child care center at 1895 Summit Street in Columbus. Most of your observations will be done in the North parking lot which is reserved for those transporting children to and from child care. However, one observer will be assigned one day to observe the restraint habits of those leaving the south parking lot. Although this lot is reserved for child care
staff, it is sometimes used by parents or others transporting children. Observations at the north parking lot will occur at its two parking lot entrances. Observations can be conducted at the single entrance of the south parking lot. The observers can sit in or stand next to their automobile and observe drivers and preschool children as they enter vehicles and leave the parking lot. One observer will be positioned near the front parking lot exit and the other observer will be at the rear exit.

2. Who should be Observed?

Only the restraint behavior of preschool children and the drivers transporting them should be noted. Before observers do actual observation, you will visit a preschool classroom at the child care center to better recognize preschool children while they are walking to vehicles. By being able to recognize preschool children you will be less likely to observe other groups who are part of the study. Restraint behavior will be noted in all vehicles (cars, vans, trucks) which leave the parking lot which contain preschool children.

Observation Technique

The observers usually will be in parked vehicles at the two exits of the parking lot. While in vehicles, the observers can follow preschool children as they leave the building and enter parked vehicles.
The observer should remain as inconspicuous and discreet as possible; however, you do not have to remain in the vehicle at all times. It is important not to be noticed because some drivers may become upset when they notice personal information such as license numbers is being collected. If someone asks what you are doing, tell them you are part of a research study with is approved by the OSU Child Care Center and direct questions to the child care program director.

4. Data Collection Form

The enclosed form called The Vehicle Restraint Observation Tally Sheet will be used to collect restraint data (see Appendix A). Instructions for filling out the tally sheet are as follows:

a. General Information

The top portion of each tally sheet should be completed prior to the remainder of the form.

*Observer: Write in your name

*Place: Write in North of South depending upon which parking lot you are doing observations

*Date: Write in the month, date and year.

*Time: Put down the time you start observing.

b. Recording Restraint Use

Follow the instructions on the form to record drivers' and preschool children's restraint use. Restraint behavior will be recorded only of drivers and preschool children. Driver use of restraints will be determined by the use of
shoulder belts. Preschool children are considered to be restrained if they are in a child safety seat or if they are sitting still and correctly placed on the seat. After each observation is completed record the vehicle's license number. For automobiles with license plates that expire in October, November or December also describe the automobile (color, make and year, if possible) in the space labeled DOV which means description of vehicle. This additional information is gathered on those vehicles because when the next observation takes place they will have a different number. Vehicles then can be matched by description.

Are their any questions?
APPENDIX N

LETTER TO PARTICIPANTS ASKING FOR LICENSE NUMBERS
Dear Parent or Guardian:

I would like to thank you for your participation in my vehicle restraint education graduate study at The OSU Child Care Program.

The study used four preschool classes. In one class vehicle restraint education was provided to the children by their classroom teacher. In another classroom parents were exposed to vehicle restraint education. In the third classroom both the children and their parents were exposed to vehicle restraint safety education. The final classroom acted as a control group where restraint education was not provided to the children nor their parents.

As it is standard procedure in vehicle restraint education studies to determine the effect of the education, participants' vehicle restraint use was observed in the child center's parking lot. This was done before the study began and after vehicle restraint education was provided. Information collected included both restraint use and vehicle license number.

I would like to identify which observed vehicles transported children from the four study classrooms. To do this I need your help. I would like to know the license number of the vehicle(s) used to transport your child from day care. However, to ensure confidentiality, I do not need to connect you nor your child's name with a license number. Please fill in the form below and deposit it in the RESTRAINT STUDY DROP BOX in your child's classroom. Then please check your name off on the sheet attached to the drop box. Once license number information is used to determine which observations fit into which study group, it will be destroyed.

If you have any question please contact me at 466-8932 or 266-9483. Again, thank you very much for your participation.
Sincerely,

Patrick J. Harsch, Ph.D. Student

PLEASE TEAR OFF THE COMPLETED FORM, DEPOSIT IT IN THE RESTRAINT STUDY DROP BOX IN YOUR CHILD'S CLASSROOM AND CHECK OFF YOUR NAME ON THE LIST ATTACHED TO THE BOX.

Children's Principle Preschool Teacher License Number of Vehicle(s) Used to Transport From Child Care
Child #1_________ Vehicle #1___________
Child #2_________ Vehicle #2___________
APPENDIX D

FOLLOW UP LICENSE LETTER
157 Piedmont Road  
Columbus, Ohio 43214  
February 6, 1986  

Dear Parent or Guardian:  

Last week I wrote you to ask for the license numbers of the vehicle(s) in which you transport your child from child care. I explained I need license numbers to see if vehicle restraint education has any influence on the use of safety belts and child safety seats. I do not, however, need to link your name or child's name with a license number.  

Won't you please fill in the form below and deposit it in the RESTRAINT STUDY DROP BOX in your child's classroom? Then please check your name off on the sheet attached to the drop box. Once license number information is used to determine which observations fit into which study group, it will be destroyed.  

For your convenience more forms will be placed next to the RESTRAINT STUDY DROP BOXES.  

If you have any questions, please contact me at 466-8932 or 266-9493. Again, thank you very much for your participation.  

Sincerely,  

Patrick J. Harsch, Ph.D. Student
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BACKGROUND READING


Nine months and no results: How do these TV commercials grab you? (1972). *Autosafety,* 1, 18-20.


Procedures for observing the use of child restraints. A Project of the Michigan Motor Vehicle Occupant Protection Program.


