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# Health promotion initiative for booster seats: A school-based educational intervention.

Jody Ann. McGinnis  
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HEALTH PROMOTION INITIATIVE FOR BOOSTER SEATS:  
A SCHOOL-BASED EDUCATIONAL INTERVENTION

by

Jody A. McGinnis

A Thesis

Submitted to the Faculty of Graduate Studies and Research through  
the Faculty of Nursing in Partial Fulfillment of the Requirements for  
the Degree of Master of Science at  
the  
University of Windsor

Windsor, Ontario, Canada

2003

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## ABSTRACT

The National Highway Traffic Safety Administration (NHTSA) reported, in 1997, that restraint use for children zero to age one was ninety-seven percent and for ages one to four was ninety-one percent. While safety experts estimated that booster seat usage, in the weight and height category considered appropriate for booster seats, was between 15 and 21 percent. (Boost America, State By State Data Chart, 2002; Decina & Knoebel, 1996; USA, DOT Public Meeting, 2001). The state by state data chart published by Boost America (Appendix A) shows an average of seventy-one percent of parents nationwide are unaware of proper booster seat ages and furthermore, only eighty-eight percent of parents nationwide have even heard of booster seats (Boost America, State By State Data Chart, 2002).

The purpose of this study was to investigate the effect of a booster seat educational intervention on the purchasing/obtainment behavior of parents. A quasi-experimental methodology was utilized, including an educational seminar for parents and their children. Data analysis combined a mixed factorial ANOVA, with one between subjects factor (group; intervention vs. control) and one within subjects factor (session; pretest vs. post-test). Pre-test and post-test scores were examined related to the dependent variables of use and obtainment. Analysis of differences in retention of information and child's cooperation using the booster seat were also examined as independent variables.

Results showed an increase in obtainment/usage behavior within both the control and the intervention groups, which may be related to media blitzes and promotional giveaways. There was a significant increase in recall of safety critical factors noted in the

intervention group when compared to the control group after the educational sessions were completed.

Findings support the development of educational programs focused on parents and children. The information compiled during this study can be used to guide future development of educational programs by advanced practice nurses in the community, as well as in the family practice setting.

## DEDICATION

This thesis is dedicated to my family. To my husband Michael, whom I cherish, because of our past and for the possibilities in our future. To my daughters, Amanda and Kristina, you are my world. You can do anything you choose. I hope that my example will motivate you to seek out all of the opportunities available to you. To my Mom, my Dad, and my Grandmother...thank you.

## ACKNOWLEDGEMENTS

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To Dr. Brian Adelman who NURSED me through my illness. I truly owe you my life!

Finally, to my life-line, Michael, Amanda, and Kristina, I LOVE YOU all so much and I am looking forward to a lifetime of special memories.

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## HEALTH PROMOTION INITIATIVE FOR BOOSTER SEATS: A SCHOOL- BASED EDUCATIONAL INTERVENTION

### CHAPTER I

The National Highway Traffic Safety Administration (NHTSA) in the United States of America and Transport Canada recommend that children 12 years of age and under should sit properly restrained in the back seat of motor vehicles (National Highway Traffic Safety Administration [NHTSA], 2003). This ideal seating configuration includes a booster seat for children 4 to 8 years of age. The American Academy of Pediatrics (AAP, 2000) promotes the use of child restraint systems (CRS) for every child passenger in automobiles and proposes that parents set the example by wearing their seatbelts as well. Children generally outgrow convertible child safety seats at about the age of 4 years or 40 lbs. Lap/shoulder belts are considered dangerous for use by children before they reach 58 inches tall, have a sitting height of less than 29 inches, and weight of less than 80 pounds (Klinich, Pritz, Beebe, Welty, & Burton, 1994).

Children age 4 to 8 years or 40 lbs. to 80 lbs. need to be restrained in a booster seat using the lap/shoulder belt in the vehicle to provide upper torso restraint (Decina & Knoebel, 1997). A booster seat is a type of child safety device designed to raise the child up above the bench seat frame to better facilitate the lap/shoulder belt fit away from the throat and cheek. This is the after market device that allows for proper fit of the lap belt to be low around the hips and the shoulder belt to be kept off the neck area comfortably.

It is widely acknowledged that seatbelts save lives. Even so, motor vehicle

accidents remain a leading cause of death and injury for children (Insurance Institute for Highway Safety: Fatality Facts, 1997). There are numerous educational programs, many in which advanced practice nurses are active. Major auto companies like General Motors, Daimler Chrysler, and Ford Motor Company and also charitable foundations such as The United Way fund health promotion clinics, incentives, and educational initiatives. There are some legislated safety promotions in existence as well (USA-DOT Public Meeting 2001; Turner & Lister, 2002). However, the laws in many states and provinces have significant gaps and exemptions in coverage. This lack of consistent legislation, whether of national or international levels significantly diminishes the protection of all children in motor vehicles (National Highway Traffic Safety Administration [NHTSA], 2003) putting these children's health at risk. There are differences in coverage under the law throughout the fifty American states. Six states have recently passed legislation requiring the use of a booster seat beyond 4 years or 40 lbs. Not one of the Canadian provinces required the use of booster seats as of February, 2001 (CBC News, Feb., 2001).

### *Rationale*

Children are particularly vulnerable to injury during a motor vehicle crash because their bodies cannot tolerate the same force as an adult body (Decina & Knoebel, 1997). While it is safer to travel with an ill-fitting seat belt than no restraint at all, many injuries have been associated with ill-fitting restraints (Winston, Durbin, Kallan, & Moll, 2000). The most fatal of these injuries are head injuries. Other commonly documented injuries include abdominal/internal organ damage, spinal cord damage, and pelvic injuries (Johnston, Rivara, & Soderberg, 1994; Lane, 1994; Reid,

Letts, & Black, 1990; Tso, Beaver, & Haller, 1993; Turner & Lister, 2002; Winston, et al., 2000). When a child is moved into car-fixed safety belts prematurely, there are increased risks of neck injury and damage to internal organs due to poorly fitting belts (Decina & Knoebel, 1997). This death toll results in statistical documentation of premature loss of life while injury and lifelong disability are also documented as lost potential (Boost America, State By State Data Chart, 2002; Decina & Knoebel, 1996; Insurance Institute for Highway Safety: Fatality Facts, 1997). Advanced practice nurses utilize research findings and statistics to promote injury prevention and health promotion programs that can facilitate the education of the community on the issue of booster seat use.

The National Highway Traffic Safety Administration (NHTSA) reported, in 1997, that restraint use for children from birth to age one was ninety-seven percent, and for ages one to four years was ninety-one percent. Safety experts estimated that booster seat usage, in the weight and height category considered appropriate for booster seats, was between 15 and 21 percent (Decina & Knoebel, 1996; Glassbrenner, 2002). There is an apparent disconnect, a missing link, between the multistage, convertible infant/child car seat and the booster seat. The statistics demonstrate that there is a severe drop-off in use of booster seats. Parents still must assure that their children are restrained properly. The parental health behavior of continuing safety device usage seems to fall by the wayside as the child reaches the age of four.

There is little understanding about why this situation occurs. The current literature suggests that there is a lack of education for parents regarding booster seat

use (Ramsey, Simpson, & Rivara, 2000; Starr, 2001; Walker, 1998). To facilitate movement toward behavioral change and a more health-focused outcome, it is important to inform parents about the health and safety, even lifesaving benefits of health behaviors, such as usage of booster seats, and to educate parents about correct usage (Pender, 2002). It has been estimated that there is evidence of misuse in ninety percent of the child restraint seats inspected across the U.S. and Canada (Decina & Knoebel, 1996). Morris, Arbogast, Durbin, and Winston (2000), found a “relatively high” rate of booster seat misuse, the largest portion of this misuse falling under the category of seat belt use rather than a booster. One common contributing factor to the misuse identified has been the inability to provide booster seats to families who own an older model vehicle. The older cars are not equipped with rear-seat shoulder belts. A booster seat must be used in combination with a lap/shoulder belt system. There is a need to educate parents about how they are best able to transport their children safely as documented by United States of America Department of Transportation: National Highway Traffic Safety Administration public meeting held in July 2001 in Washington, DC.

There are many reports and suggestions made to promote the health and life-sustaining activity of seat-belt use (Bull & Sheese, 2000; Geller, 1996; Glassbrenner, 2002; Johnston, Britt, D’Ambrosio, Mueller, & Rivara, 2000; Katcher, Bull, Palmer, Rodgers, Smith, Spivak, & Tully, 1996). However, there have been few research studies documenting the reasons for parent’s failure to use booster seats for children after removing them from an infant or convertible car seat. Some common themes relative to booster seat usage might be lack of education, the desire

to promote independence in children, and the absence of legislation mandating the use of booster seats (Starr, 2001). Pender's (2002) cues to action give some insight into behavior and health choices and can offer experts another avenue of exploration for this health problem. To frame the investigation of change in health promoting behavior related to booster seat usage Pender's Health Promotion Model will be utilized.

This study has been designed based on Pender's (2002) theory as a framework to examine the reasons associated with patterns of use of booster seats. The researcher planned to quantitatively and qualitatively examine the purchase and usage habits of parents after receiving information designed to increase the knowledge about booster seats for the purpose of developing suggestions for nursing roles and best practice guidelines that would reduce injury and risk from non-use of booster seats.

### *Theoretical Framework*

The Nola Pender Health Promotion Model (2002) (HPM) was adopted for this research study. This model differs from others in that neither threat nor fear is viewed as a major contributing source of motivation. It focuses on the individual's perception that the action taken will prove beneficial and that individuals themselves have the ability to overcome any barriers. The decision to take action is influenced by past experiences and personal factors that are relevant to the proposed action. Pender's (2002) inclusion of these factors, as well as interpersonal and situational influences on behavior, fit well with what is known to be influential in the adoption of child safety measures. Meaningful behavioral outcomes require a commitment on the part of the individual to the plan of action. It is this commitment, Pender (1996)



believes, which “will propel the individual into and through the behavior unless a competing demand that the individual can not avoid or competing preference that the individual does not resist intervenes” (p. 72).

The HPM allows for consideration of individual characteristics, experiences, perceived barriers, perceived benefits, and prior related behavior. This model explores the personal factors of behavior: biology, psychology, sociology, and culture. Behavior- specific cognitions and affect are examined with this framework as well. The cognitions and affects may include perceived benefits to action, perceived barriers to action, perceived self-efficacy, and activity related affect. Pender (2002) asserts that “those behaviors resulting in a positive affect will likely be repeated” (p. 34). Pender further proposes that interventions concentrating efforts on the interpersonal and situational influences will offer further insight into the proposed behavior change. The behavioral outcome or positive change takes place when the individual makes a commitment to a plan of action. Pender (2002) postulates that the decision to undertake a certain behavior is not enough to guarantee success; strategies to influence a positive change must be developed. Pender specifically cites the difficulty in operationalizing transient behavior predictors, but also states “cues to action may well be potentially important predictors of health-promoting behaviors” (Pender, 2002, p. 64). The particular cue to action identified in the area of child safety devices was “safety”. Pender (2002) defines two types of cues, internal and external. An external cue is defined as environmental or visual stimuli. An internal cue is defined as a bodily state or an affective state. Safety should be considered an internal cue. The motivation to keep one’s child safe or the concern for another’s

safety is an affective state of mind or unconscious feeling. It will be important to integrate that behavioral motivator or aspect into the teaching curriculum for future implementation of successful programs. The Pender (2002) model removed “cues to action” due to the transient nature of responses and wide-range of motivational history within every population.

For all the reasons and fit of the model with the nature of the inquiry, Pender’s (2002) model was chosen as the theoretical framework for examining booster seat usage and associated child safety measures for a junior school population selected from a suburban community. Utilization of the model allows for a detailed examination of the factors influencing adoption of a specific behavior. Using this information in conjunction with research findings, healthcare professionals will be able to develop strategies aimed at facilitating adoption of health promoting behaviors while promoting the reduction of injury/risk of premature loss of life or chronic disability. All these aims can be summarized in a set of proposed standards known as best practice guidelines.

### *Purpose*

Within a cooperative school district in a suburban community a plan was developed to enhance the usage of booster seats. Efficacy of such a health promotion activity was of interest to the researcher was the development of best practice guidelines. The purposes of this study were to investigate the effects of a booster seat educational intervention on the purchasing/obtainment and usage behavior of parents and acceptance of the booster seat by their children who fit the seating criteria. The aims of the study were (a) to measure current booster seat usage in the participant

sample; (b) to measure the purchasing behavior of parents after an educational intervention when compared with a group of parents who did not receive an educational program; (c) to test the recall of learned knowledge related to booster seats by parents after an intervention when compared with a group of parents who did not receive an educational intervention; and (d) to measure the acceptance of children regarding booster seats after an intervention.

The educational intervention strategy that was developed included informational packets, a one-hour scripted seminar with the introduction of a video sponsored by the International Center for Injury Prevention (ICIP) starring Will Smith and Jada Pinckett-Smith. Lastly, there was a hands-on instruction period demonstrating appropriate booster seat choice, installation procedure followed by return demonstrations, and guidelines for use. In the intervention program prepared for the age/weight cohort, considering their cues to action and known barriers to use, the children received information through a video, play activities, stickers, a certificate, posters, and age-appropriate toys that educated the children about booster seats and encouraged them to use booster seats.

## CHAPTER II

*Review Of Literature*

The following literature review focuses on the most important and relevant points related to booster seats. Articles have been organized according to their relationship to the constructs proposed in Pender's Health Promotion Model (2002). These include: personal factors: socio-cultural influences, psychological influences, and biological influences; interpersonal influences; situational influences; prior related behavior; health promotion strategies or mechanisms. Research has been conducted into the questions associated with the different aspects of booster seats including: health benefits (Bull, et al., 2000; Carlin & Sandy, 1990; Glassbrenner, 2002; Katcher, et al., 1996; Sesame Street Parents, 1999; Starr, 2001), appropriate installation (Campbell, Macdonald, & Richardson, 1997; Decina & Knoebel, 1996; Decina & Knoebel, 1997; Lehman, & Geller, 1990; Radius, McDonald, & Bernstein, 1991; Ramsey, et al., 2000; Starr, 2001; Walker, 1998), and injuries commonly experienced by children not using a booster seat (Johnston, et al., 1994; Lane, 1994; Morris, et al., 2000; Reid, et al., 1990; Tso, et al., 1993; Winston, et al., 2000). Less attention in the literature has been focused on the factors influencing the use of booster seats.

*Personal Factors: Socio-cultural Influences, Psychological Influences, And Biological Influences.*

Of the socio-cultural influences, income and social status are thought to be the most influential determinants of health (Bracht, 1999). Each level of the socioeconomic ladder shows an increase in health. Booster seats cost between \$60.00 and \$140.00 American dollars. Although not specifically cited as a cause for non-use

in the literature, many individuals have indicated they were unable to afford appropriate restraint devices and/or that upgrading existing safety devices on an old car was too expensive (Decina & Knoebel, 1997). Winston et al. (2000) found no credible data on restraint use by sub-groups, including race, ethnicity, or socio-economic status. Campbell, Macdonald, & Richardson, (1997) cited “The large proportion of unbelted children in the study in older cars may arise from families having limited resources and driving cheaper, less safety equipped cars” (p.234). Ramsey, et al. (2000) explained that some parents found it too difficult to find, or too expensive to afford a booster seat big enough to fit a 60 pound child. Morris, et al. (2000) points out that “although belt positioning boosters may be more costly than shield boosters, inexpensive models do exist” (p.284).

It has been demonstrated that levels of health increase as level of education increases (Bracht, 1999). The reasons proposed are an increase in opportunities for higher income and a higher sense of control over one’s life circumstances. The literature does not directly contribute a positive correlation between education level and booster seat use. Rather, in educational programs aimed at teaching, appropriate child safety restraint use is noted as an issue. Survey data show that an overwhelming majority of the public believes children should be required to use safety restraint devices (Katcher, et al., 1996). Many studies have determined a lack of child restraint system education leads to booster seat misuse or non-use (Campbell, et al., 1997; Decina & Knoebel, 1997; Johnston, et al., 2000; Morris, et al., 2000; Ramsey, et al., 2000; Winston, et al., 2000).

The composition of variables to be matched to the child’s physical build may

make choice and installation of child restraint systems a complex task. Standards exist that guide seating for young children. Infants up to one year old and at least 20 lbs. should ride in a rear-facing infant seat in the back of the vehicle. Children between the ages of one and four but less than 40 lbs. should be restrained in a convertible safety seat. Children who have outgrown a convertible safety seat should then be moved into a booster seat. The booster seat raises the child up high enough so that the lap and shoulder belts will fit properly. Lap shoulder belts usually do not fit children properly until they are 58 inches tall and weigh 80 lbs. (Klinich, et al., 1994). There is evidence of parental misconceptions about size and safety of restraint equipment (Decina & Knoebel, 1997; Morris, et al., 2000; Ramsey, et al., 2000). Parents express difficulty fitting multiple seats in one vehicle, difficulty with the vehicle seats themselves, and the bulkiness of the child restraint (Ramsey, et al., 2000).

There are numerous articles that discuss the risk for injuries during motor vehicle crashes (Johnston, et al., 1994; Tso, et al., 1993; Winston, et al., 2000). Tso, et al. (1993) took an in-depth look at the types of abdominal injuries sustained in the pediatric population when using seatbelts too soon and being unrestrained during a crash. Their findings demonstrated that children are at particular risk for abdominal injuries, head injuries, and internal organ damage due to ill-fitting seatbelts. Figure 1 below depicts a belt-positioning booster seat and shows the proper placement of the shoulder strap. This is a critical aspect of safely restraining children to avoid the serious injuries discussed in the literature.



*Figure 1.* Proper Shoulder Strap Placement (Boost America Web Page Photo, 2001).

#### *Interpersonal Influences.*

According to Pender, interpersonal influences include norms, social support, and modeling (Pender, 2002). Individual and community support has shown to positively impact health. When adult drivers are restrained in safety belts, the use of child restraint systems also increases (Decina & Knoebel, 1997). A NHTSA study (Decina & Knoebel, 1996) addressing the patterns of child safety seat misuse in four states, suggested that if the driver was a parent or grandparent there was a higher incidence of restraint use. However, when the driver was a friend or other relative, there was an increase in the percent of unrestrained children (Decina & Knoebel, 1996). There are many legislative exemptions related to restraint systems for adults and children. The exemptions related to child restraint laws can be viewed in Appendix B. Not only are children at risk when traveling with individuals other than primary caregivers but also research shows that as the child ages the use of restraints decreases even when

traveling with parents (NHTSA, 1997b). The number of 2, 3, and 4 year olds in car crashes is 33% higher than the rate of crashes involving infants (Johnston, et al., 1994).

The current norm has been established as the discontinuation of car seat use after the age of four. A child is allowed more freedom and certainly exerts their own independence around the age of four. Young school-aged children are concerned about fitting in with the rest of their peer group. This independence leads to a nonchalant attitude about safety and protection. “Susceptibility to the influence of others may vary developmentally” (Pender, 2002, p. 72). This may be particularly evident in the early school-aged child attempting to fit into their peer group. The susceptibility to the influence of peers may also be relevant to this research as parents as well as children may be influenced by peers or more experienced family members.

Several interventions have targeted the social support determinant by providing car seat safety training to child-care-providers, school officials, and neighborhood organizations. Examples of such programs operating today are: Safe Kids Coalition, Fit for a Kid, and Boost America. By increasing knowledge on a community level, the acceptance of unrestrained children will be reduced. Recently the NHTSA (2001) and law enforcement agencies have teamed up to enforce the laws enacted on behalf of child safety restraints (National Highway Traffic Safety Administration [NHTSA], 2003), Sesame Street Magazine, Parents Magazine, and Project Safe Kids).

#### *Situational Influences.*

Johnston, et al. (1994) reported a decrease in injuries and fatalities caused by car crashes despite an increase in the number of miles being driven. This decrease in



injuries has been associated with changes in automobile design, restraint use, roadway construction, and legislation. Pender (2002) explains “situations may directly affect behaviors by presenting an environment loaded with cues that trigger action” (p. 73). Some examples of this would be the manufacturer’s label on the passenger sun visor that warns drivers not to seat children in front of an airbag. Another example is demonstrated in manufactured vehicles with tether and anchor points being placed in plain sight. These “cues to action” will be incorporated by the researcher in the analysis to explore behavioral cues with the parents included in this study.

There have been no noted studies that tested the “cues to action” construct in the area of booster seat usage. Pender revised her 1996 model to exclude cues to action in the 2002 version of the model. Even though the construct of “cues to action” was deleted from the model, Pender discusses ways to control the environment. In order to control the environment Pender suggests cue elimination, cue restriction, and cue expansion. Cue elimination is represented when environmental cues that lead to undesired behavior are decreased to zero. Cue restriction can be observed when the cues for undesired behavior are restricted to certain aspects of the environment or certain situations. Cue expansion is observed when prompts to desired behaviors are increased (Pender, 2002, p. 49). If the significance of cues to action can be established then the possibility of focused extensive educational programs can be established to increase booster seat usage. She describes cues to action as transient and difficult to assess (Pender, 2002, p. 64). Figures 2 and 3 below show the changes in Pender’s constructs and the flow of ideas.

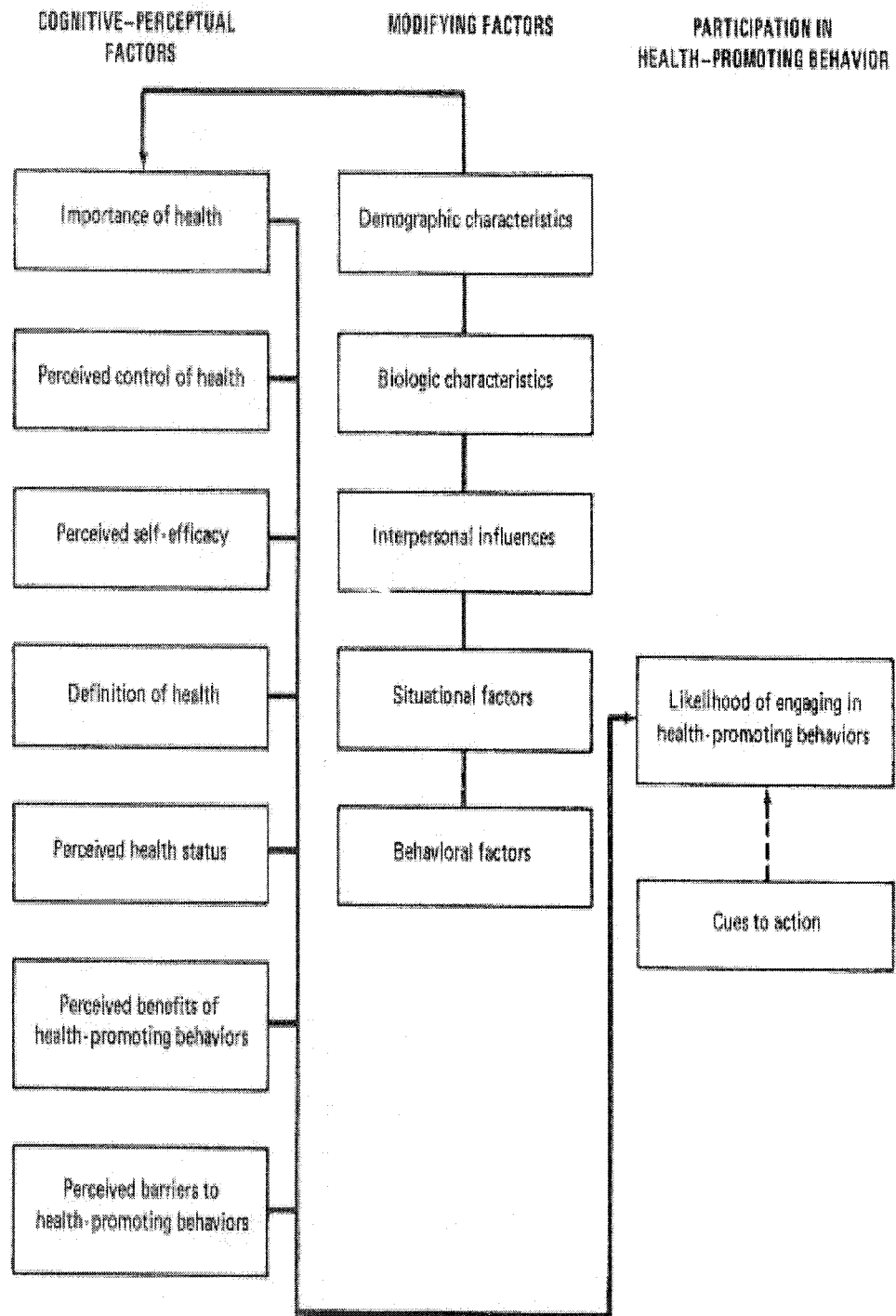


Figure 2. Health Promotion Model (Initial Version) (Pender, 2002, p. 79).

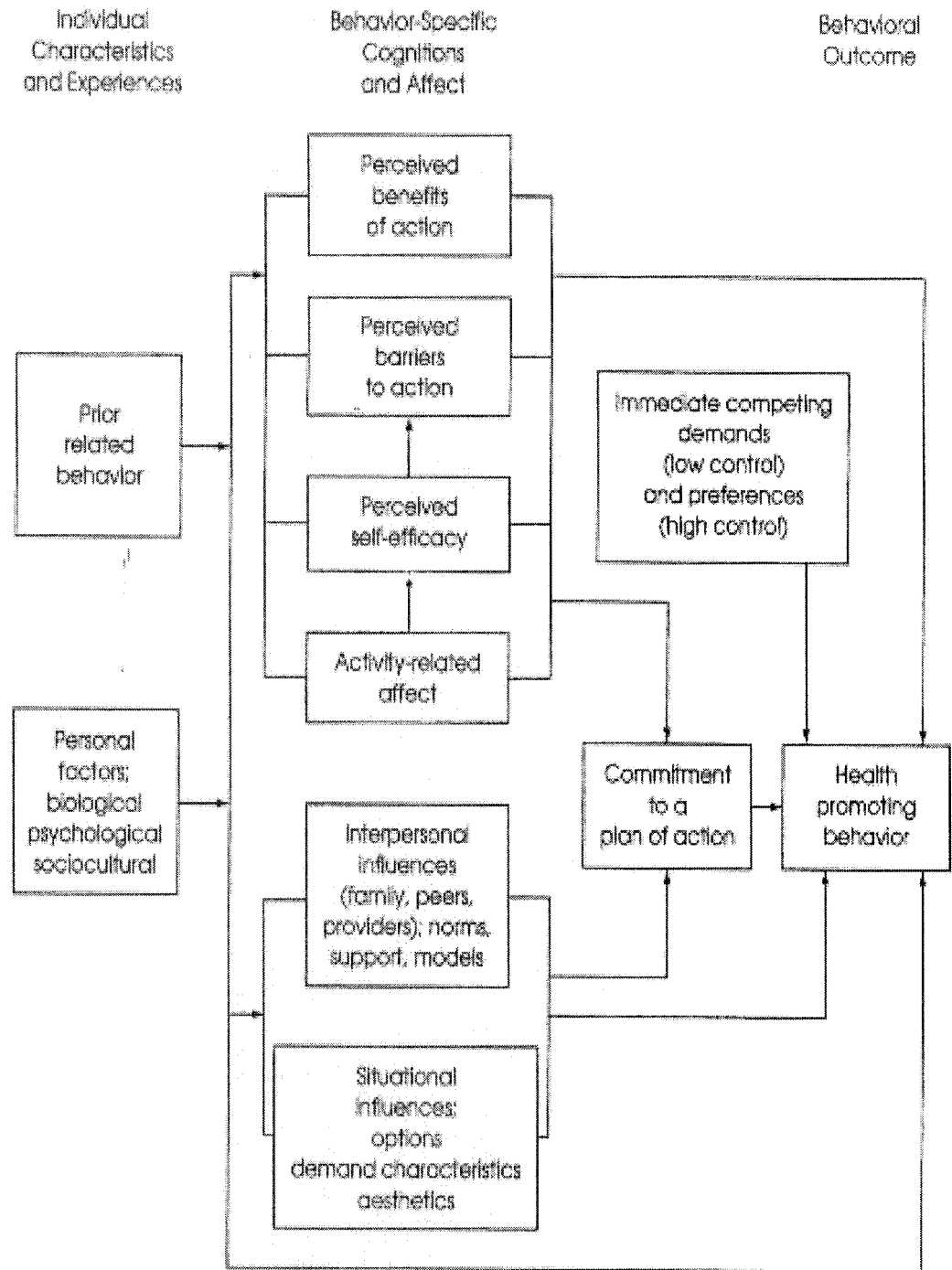


Figure 3. Health Promotion Model (Revised Version) (Pender, 2002, p.60).

The “cues to action” construct is an important aspect of behavior because it explains an individual’s motivation for performing a particular action. Therefore the researcher deduced that this construct would be a valuable aspect to investigate within the framework of this study. Parental “cues to action” may well lend valuable insight into future health promotion intervention by defining specific behaviors or attitudes that must be included in teaching criteria for safety related interventions.

With an increase in multi-car families it is necessary to move booster seats and other child restraint devices from one vehicle to another. Grandparents and babysitters are transporting children more often. The booster seat transfer should happen at that time too. Decina & Knoebel (1997) observed that when CRS’s were frequently removed from the vehicle there was a higher percent of misuse than when the CRS’s were only occasionally or never removed from the vehicle. A common reason noted for lack of booster seat use was “not enough time” (Campbell, et al., 1997; Ramsey, et al., 2000). This is consistent with the above observation in that there is a perception that there is not enough time to move the seat.

*Prior Related Behavior.*

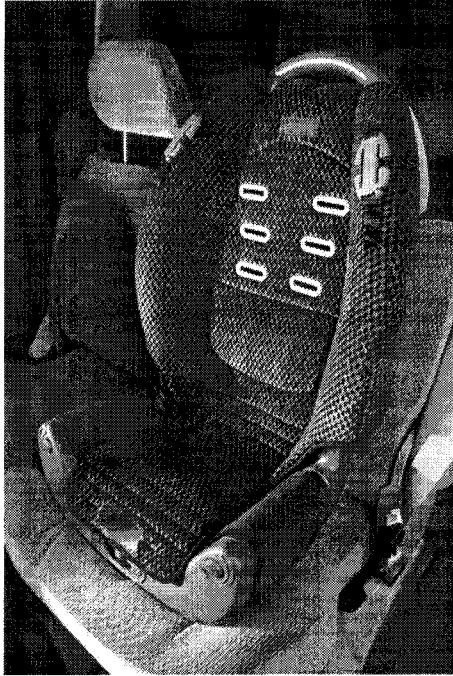
“Social environments that enable and support healthy choices and lifestyles” are key influences on health (Strategies for Population Health, 1994, p. 3). In terms of booster seat usage, coping skills and personal health practices are essential determinants of success. Adult use of seat belts overwhelmingly proved that there was a parallel increase in CRS use (Decina & Knoebel, 1996). It is difficult to seek support from grandparents who never used safety seats with their children. In fact, adults voice complaints about adult safety devices as well, which leads to the less

than satisfactory use of seatbelts. “The direct effect of past behavior on current health-promoting behavior may be due to habit formation, predisposing one to engage in the behavior automatically” (Pender, 2002, p. 68). When parents fail to set the example of restraint use, children will reject restraint use as well. Strong, consistent parental enforcement of restraint use will assist with habit formation from an early age.

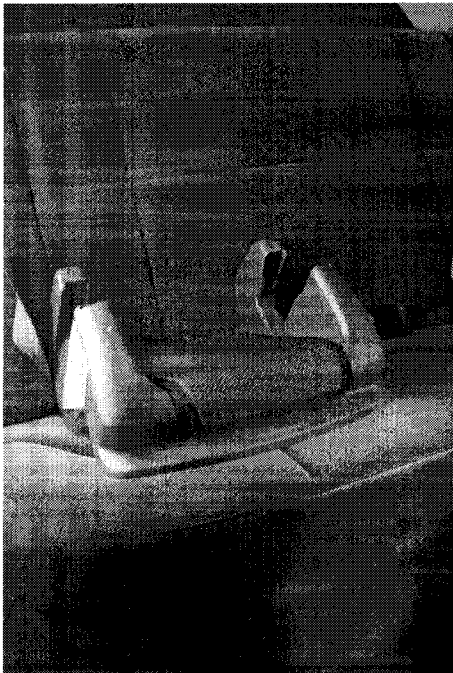
A very common reason reported for not using a booster seat was because kids do not like them. Many parents have experienced their children’s temper tantrums. In reality however, they are far more difficult to deal with while you are driving. Childcare experts suggest that the adult drivers should not just give in; rather, they suggest being firm in the expectations for buckling up (USA, DOT Public Meeting, 2001). Parents should explain to the child that they must sit in the child safety seat. Sesame Street’s *Parents Safety Seat News Magazine* (1999) suggests planning activities for the children and involving them in games or singing while driving.

Child Restraint Systems were introduced in the United States in the early 1970’s. FMVSS-213 (Federal Motor Vehicle Safety Standard-213) was also introduced in the early 1970’s. This standard was designed to outline minimum United States federal standards for child restraints. Shield booster seats were introduced in the United States in 1979. A Shield Booster Seat is “a platform that raises the child and positions a small convex shield across the lap and lower abdomen to restrain the child. A vehicle lap belt restrains the booster seat. Some models have removable shields and convert to a belt-position booster seat (BPB)” (National Highway Traffic Safety Administration [NHTSA], 2003). Finally, in 1994, NHTSA revised FMVSS

213 to include belt-positioning booster seats. It was documented in 1994 that NHTSA had not produced a crash test dummy child larger than 50 pounds. Amazingly, nine years later, the standard FMVSS 213, Federal Motor Vehicle Safety Standard, pertaining to all restraint systems intended for use as crash protection in vehicles, still is relevant for children only up to 50 pounds because a larger dummy has not yet been produced (Turner & Lister, 2002). “Booster seats are intended to be used as a transition to lap and shoulder belts by older children who have outgrown convertible seats (over 40 pounds). They are available in high backs, for use in vehicles with low seat backs or no head restraints, and no-back; booster bases only” (National Highway Traffic Safety Administration [NHTSA], 2003). Figure 4 below depicts a belt-positioning high-back booster seat. The manufacturer instructs consumers to use this product with children only up to 60 lbs. Figure 5 depicts a low-back belt-positioning booster seat. The manufacturer instructs consumers to use this product up to 80 lbs. The seat seen in Figure 4 meets the U.S. federal standard FMVSS-213 and the seat seen in Figure 5 exceeds federal guidelines.



*Figure 4.* High-back Booster Seat (Boost America Web Page Photo, 2001).



*Figure 5.* Low-back Booster Seat (Boost America Web Page Photo, 2001).

*Health Promotion Strategies Or Mechanisms.*

In the literature associated with health promotion strategies and interventions, common health promotion strategies or mechanisms are designed to facilitate empowerment, advocacy, social marketing, public policy, and health communication and health education. The role of the advanced practice nurse includes expectations and responsibilities such as utilization of the strategies outlined above to implement change toward healthy lifestyles within any given community. Because of the advanced practice nurse's integration of collaboration, research criteria, empowerment mechanisms, grasp of nursing theory, assessment ability, and education methodologies, they can create opportunities and implement health promotion programs that reflect the contemporary needs, networks, and contemporary knowledge to effect sustainable health behavior changes.

Advanced practice nurses must forge partnerships with community agencies, businesses, and philanthropists. This is very important in the car seat safety initiatives across the North American continent. A goal was set by the automobile industry to give away one million seats in the year 2001 (USA, DOT Public Meeting, 2001). To help meet this goal several programs were launched. "Safe Kids Buckle Up", sponsored by General Motors, Daimler-Chrysler sponsors "Fit For a Kid", and National Safe Kids Campaign does numerous safety checks and gives away seats to families in need. Ford Motor Company's "Boost America" program has given away more than 150,000 booster seats across the United States. Many organizations, such as Daimler-Chrysler, Ford Motor Company, and General Motors, provide funding for research projects into automotive safety and seatbelt restraining systems as well. The



National Highway Traffic Safety Administration offers a website (National Highway Traffic Safety Administration [NHTSA], 2003) dedicated to child passenger safety with links to other sites and provides the feature to download information. As professionals, nurses are expected to educate themselves about the growing number of available resources and to share this information with the clients in their care. All advanced practice nurses need to be well versed in grant-proposal writing and should attempt to expand the research base that is currently available. Those nurses who deal with families should pay particular attention to information pertaining to car seat safety and health seeking behaviors of the motoring public on behalf of their passengers.

There are numerous public awareness campaigns associated with booster seat use on the television and radio, for example, the State Farm Insurance “Good Neigh Bear” campaign and frequent neighborhood car dealerships performing car seat checks are announced on television. Many pediatrician’s and family practitioner’s offices and clinics have “Boost ‘em” posters from the Boost America website displayed in their offices. Popular evening news shows have focused on the dangers for children not in a CRS. There have also been public service announcements in the press recently explaining the rationale for and encouraging an increased enforcement of child safety restraint laws. To help facilitate the public’s adherence to the law, it is imperative that programs available to assist parents with purchasing or renting booster seats are advertised on a broader more far-reaching scale. It is important that these programs do not promote or make it possible to recycle car seats between customers, as this is not an acceptable safety standard for quality control (National Highway Traffic

Safety Administration [NHTSA], 2003). While there are advocacy groups that successfully give away booster seats, there seems to be a breakdown in the consistent marketing of these events. In fact, many department stores will not carry or carry very few selections because of a lack of demand for booster seats (USA, DOT Public Meeting, 2001, p. 86). Advanced practice nurses could assume the responsibility to spread the word about child passenger safety in the context of their family interventions. Assessments of child safety restraints should be done with all clients, not just young families. As the make up of nuclear families today has changed, health professionals must realize that many grandparents are charged with daily care and upbringing of grandchildren. No one should be excluded from being asked about child passenger safety.

CRS legislation has only recently begun to be enforced: however, the legislation does not address the booster seat population specifically because most states do not have legislation relative to the booster seats (see Appendix B). There have been some strides made over the last three years in the discussion of the need for booster seats. One example of enhanced legislation is found in the requirement for anchors in all vehicles manufactured after January 2002 to increase the stability of the car seats in cars throughout the United States. The Transportation Recall Enhancement, Accountability, and Documentation Act (TREAD) was enacted in November 2000. This act charged the Secretary of Transportation with reducing injuries and deaths in the 4 to 8 year old population by twenty-five percent within five years. Parents mistakenly assume their older kids are safe in the regular fitted seat belts because the law only requires children up to four to be in a CRS. Advocates in the area of child

safety are professionals from many fields such as: safety officials, police officers, insurance companies, and doctors. Other visible supporters and advocates should be nurses. This is an opportunity for advanced practice nurses to become involved. One area in particular is the need for lobbyists to address security CRS and seating public policy/legislation subject. Historically nurses have been reluctant to become politically involved. Advanced practice nurses can contribute research-based data, offer expert testimony, publish research findings, and contribute personal experience and enthusiasm. Through these health promotion strategies, they can act as advocates for their clients and enhance the social context to support optimal child safety in motor vehicles.

Clients look to healthcare professionals for health information. Education is one strategy that could be employed with families early in the child rearing process. Safety seat training is available during prenatal/Lamaze classes but nothing related to booster seats is specifically provided (Radius, et al., 1991). Parents require education regarding CRS devices right through to booster seats. Advanced practice nurses can communicate with their clients and stress the importance of safety. “Parents may not routinely consider the full implications of safe travel, but pediatricians can raise awareness with parents by asking them to carefully read their child safety seat instructions and vehicles owner’s manual and informing parents of the principles” (Bull & Sheese, 2000, p. 1115). Even though there is information available at doctors’ offices, many times that information is outdated. Pediatric nurse practitioners can provide updated information to parents and caregivers. School nurse programs can be utilized as part of the school preparedness programs to bring the

message to parents and children in day care centers and elementary schools all across the country.

As health care professionals we are entrusted with the challenge of helping people to develop healthy lifestyles and to promote healthy practices. Pender states that “Specifically, a person will engage in a given action and will persist in it (1) to the extent that the outcome of taking action is of positive personal value, and (2) to the degree that based on available information, taking this course of action is likely to bring about the desired outcome” (Pender, 2002, p. 61). The challenge of voluntarily using a booster seat is one behavior that might meet the above criteria for health and safety practices while providing benefits of personal safety for children who “fit” the description of the booster seat population.

The review of current literature concerning education programs for booster seat usage does not address the issue of effectiveness of educational interventions. Rather, a lack of education is cited as a problem (Boost America, 2001; Johnston, et al., 2000; Ramsey, et al., 2000; Starr, 2001). There have been numerous strategies to implement booster seat usage such as media blitzes, promotional giveaways, and legislative efforts; a lack of booster seat knowledge is still identified as an issue (Boost America, 2001). Because a lack of parental recall of learned material has been noted as problematic (Boost America, 2001; Bull & Sheese, 2000; Decina, & Knoebel, 1996) it is necessary to examine the effectiveness of educational programs offered to parents.

### *Hypotheses.*

Based on Pender’s statements above it was hypothesized that parents in an

intervention group would be more likely to purchase or obtain a booster seat after the intervention and the control group level would stay the same. It was also hypothesized that the intervention group parents would have a higher level of recall of critical safety information when compared to the control group at post-test. Finally, it was hypothesized that parents in the intervention group would observe a greater acceptance of booster seat use in their children after attending an educational session with their child.

The following research hypotheses were formulated:

*Hypothesis 1:* The intervention group of parents will show an increase in booster seat purchase/usage compared to the control group.

*Hypothesis 2:* Booster seat knowledge will increase in the intervention group of parents with a significant difference observed between the intervention group and the control group.

*Hypothesis 3:* Parents will observe an increased acceptance toward booster seat use by their children in the intervention group with a significant difference observed between the intervention group and the control group.

#### *Research Design.*

After ethical review by the Research Ethics Board of the University of Windsor and the school district board of education the research plan was applied to an elementary school population. The study used a quasi-experimental design. Pretest –

Post-test with a control group methodology was incorporated. The research was conducted within a co-operative suburban elementary school, randomly selected from the population by the researcher. Both the experimental and control groups were conveniently assigned to their respective groups following the voluntary return of a consent and the pretest questionnaire. This convenience assignment was based upon the parents' availability and willingness to participate in the one-hour educational seminar. The primary researcher only conducted the seminars and interviews. The researcher set-up a planned 2 x 2 study with the least cell containing 19 subjects per cell, an expected large effect size ( $R^2 = .14$ ), and carried out at .05 level of significance.  $R^2$  represents the proportion of variance accounted for by the data in the study. Using Aron & Aron (1994), *Statistics for Psychology*, the researcher established that this study would have a large effect size, a minimum of 14 subjects per group was required to achieve 80% power. The effect size of each main and interaction effect had to be considered separately. All data collected were coded and entered into an SPSS program for analysis.

The goals of this research were:

1. To apply the principles of Pender's health promotion model (2002) to construct an educational intervention activity for parents and children that would promote health-seeking, health-maintenance, and injury prevention behaviors associated with booster seats.
2. To examine the impact and efficacy of such an educational strategy on knowledge retention and behavior change of participants receiving the intervention.
3. To examine the effectiveness of a booster seat education program on the

purchasing/obtainment behavior of parents.

4. To assess the level of children's acceptance (observed by parents) regarding booster seat usage after being exposed to a video, receiving a certificate

of use, and experiencing booster seat use during the educational sessions.

5. To qualitatively identify parents' reasons for using and not using booster seats prior to and after the program implementation.

## CHAPTER III

*Method**Participants.*

The suburban school district chosen as the setting for the research project consisted of six elementary schools. A preschool class and one elementary school were randomly selected from the population to participate in the study. The preschool class consisted of just over 100 preschool aged children. The elementary school that agreed to participate was a low to middle income school located inside the city limits. There are four kindergarten classes and four first-grade classes at the school for a total of 93 kindergarten students and 102 first graders. Fifty-six families volunteering their participation were conveniently split into two groups, a control group and an intervention group based on availability to watch a video and attend a one-hour presentation. Both groups received a pre-test questionnaire and a consent form along with an outline of the project distributed via the children's backpacks. The families interested in participating were asked to sign the consent form and complete the pretest questionnaire and return it to the researcher's mailbox, located in their child's classroom. Participants signed a consent form giving the researcher permission to contact them by telephone in two months time for a post intervention interview.

Four scheduled seminars were developed in order to encourage attendance. The one-hour sessions included an informational video produced by ICIP, demonstrations of booster seat placement in the vehicle, explanations by the researcher on the importance of booster seats, state law requirements, how to choose a booster seat, and



ended with a question and answer period. The students of parents who volunteered to be in the intervention group were exposed to posters, stickers, and were awarded a “certificate of participation” at the end of each session. The seminar was lead by the principal researcher at a convenient time and place.

The post-questionnaire was administered two months after the intervention, through structured telephone interviews. Two months after the intervention was chosen as the timeframe to give the parents time to observe behavior modification in their children, as well as to establish a specified time lapse by which recall of safety information could take place. Information from both questionnaires was entered into an SPSS statistical data file and comparisons between the intervention and control groups were made at pre and post questionnaire time periods.

*Inclusion Criteria / Exclusion Criteria.*

To be included in the research study, participants were required to be English speaking and able to read as well as write legibly. Each family was asked to complete one questionnaire only, regardless of number of children in these grades. If there was more than one sibling in this age group, the researcher assigned siblings to the same group. This was done to prevent diffusion of the intervention group to the control group.

*Ethical Considerations.*

An information letter inviting parents to participate (Appendix C), a consent form asking for permission to contact the participant by phone in two months time (Appendix D), and the pre-test questionnaire (Appendix E) were sent home in the children’s backpacks. The parents interested in participating were asked to return all

three items to a mailbox at the school for the researcher to retrieve. Permission to take photos at the intervention sessions and to tape record the telephone interviews was obtained on the consent form. All information remained confidential. All demographic information was used for comparative analysis only. Any information collected was used expressly for this study and was destroyed by shredding after the completion of the research. The intervention was offered to the control participant pool after the completion of the study. The intervention was also offered to the other elementary schools throughout the district on an ongoing basis. All families participating in the study, regardless of group assignment, received a free booster seat upon completion of the study. Ethical approval was obtained from University of Windsor Research Ethics Board. This information was explained to the parents in the Information Letter to Parents (see Appendix C).

#### *Data Collection.*

After an explanation to participating teachers, prepared questionnaires were sent home from the school setting after permission was granted by the principle. The returned questionnaires were split into appropriate groups, intervention versus control. The responses were examined and coded by the researcher. The follow-up phone interviews were conducted (see Appendix F) and the final analysis was completed.

#### *Measures.*

The main outcomes measured in this study were use/obtainment of a booster seat, recall of critical safety information, and behavioral change noted in the children participating in the study. The researcher authored the tools used for data collection.

Three experts in the field of child passenger safety reviewed the questionnaire for utility. All experts provided letters of testimony regarding the utility of the questionnaire and the importance of the study. The same questionnaire was adapted for use in pre-test collection as well as post-test collection of data.

In this study current use was defined as using a booster seat at the present time. Current use was measured on a five-point Likert Scale reflecting no use at all, use 25% of the time, use 50% of the time, use 75% of the time, and use 100% of the time. Purchasing behavior was adapted to reflect obtainment. Parents were asked if they had purchased a booster seat or if they had obtained a booster seat from another defined method. Those methods were defined as: a gift, a social program, or did not obtain a booster seat.

The second measure in this study was to examine parental recall after an educational intervention. Recall was asked regarding ten items considered critical safety guidelines by experts in the field of child passenger safety. The components taught during the intervention and measured during the post-questionnaire interview were age, weight, height requirements, lap belt position, shoulder belt position, use of internal harnesses, the bend of the knee, seating position of the child, use of tethers or anchors, and airbag safety instructions.

The third measure of behavior change was studied through self-report from parents regarding the type of difficulty they experienced with their child and subsequently the behavior change they observed after the intervention. Parents were asked to describe the difficult behavior, if any that their child exhibited when being restrained and then they were asked if their child's behavior had changed.

The qualitative question, “What are the reasons you use or do not use a booster seat for your child?” was utilized to test the construct of “*cues to action*”. This variable has recently been deleted from the Health Promotion Model due to the difficulty to assess the outcomes (Pender, 2002). Pender (2002) suggests that more research employ this construct to illicit more information to establish reliability for “Cues to Action”.

*Procedure.*

All kindergarten and first-grade students attending the chosen elementary and the preschool class at the district’s Early Childhood Center had a packet containing a letter of explanation, consent form, and pre-questionnaire sent home in their backpacks. Once a signed consent and the pre-questionnaire were received, participants were contacted by telephone to arrange an intervention session. If participants were unable to attend an intervention, they were assigned to the control group. Those who were available for a teaching session were assigned to the experimental group.

Following school district guidelines for after-hours activities, four educational seminars were scheduled. Each intervention group member and their child were asked to participate in one session. These sessions included a Boost America video aimed at educating children and parents about proper use of a booster seat. Each child and parent team was given creative tasks to work on together and the researcher outlines critical safety information relating to booster seats. Every child in the intervention group was given stickers, activities, and a safety certificate upon completion of the session.

Participants were contacted via the telephone two months later in order to complete the post-questionnaire. During the post-questionnaire interview every participant was invited to one last intervention session. The researcher explained that a booster seat, donated by the International Center for Injury Prevention (ICIP) was to be distributed at the final session. In accordance with the guidelines of ICIP for booster seat distribution, each participant was required to receive training from a certified passenger safety technician (CPST) prior to receiving a free booster seat.

Every family attending the final educational session signed a booster seat redemption voucher that was later returned to ICIP for tracking purposes. Thirty-four booster seats were given to the families from this study, 19 intervention group members and 15 control group members.

#### *Statistical Analysis.*

This research study employed a quasi-experimental design. Pretest - post- test with a control group methodology was incorporated. Both the experimental and control groups were randomly selected from an overall sample population. A mixed factorial ANOVA, with one between subjects factor (intervention vs. control) and one within subjects factor (pre-test vs. post-test) was used to make inferences regarding the data.

## CHAPTER IV

*Results**Survey Descriptive Statistics.*

The purpose of this study was to investigate the effect of a booster seat educational intervention on the purchasing/obtainment behavior of parents. Current use and obtainment of a booster seat was measured by self-reported data collection questions included on a pre and post-test questionnaire. Current booster seat usage was recorded prior to and two months after the educational session within the intervention group and the control group. It was hypothesized that those parents attending an educational session would show a higher incidence of booster seat purchase and subsequent usage as compared to a control group not attending the intervention. It was also hypothesized that parents in the intervention group would have a higher incidence of recall of critical safety related information pertaining to booster seats than their counterparts in the control group. Children were in attendance and participated in the interventional sessions, therefore another hypothesis was that the parents attending the educational session with their children would observe a higher frequency of positive behavioral changes in relation to the booster seat by their children than the parents not attending an educational session would observe in their children.

From three hundred questionnaires sent home with students, a total of fifty-six questionnaires were returned; 22 intervention participants and 34 control participants. Those volunteering to attend the intervention seminar and the control participants were enlisted in the study beginning April 10, 2002 through July 15, 2002. Out of

300 questionnaires sent home with the kindergarten and first grade classes at the chosen elementary school and the preschool class of the Early Childhood Center of a suburban school district in the state of Michigan, 56 (19%) questionnaires were returned. Backpacks were chosen to distribute the initial questionnaire in order to avoid disruption in the classrooms and to contain costs for the study. Each participant gave permission for the experimenter to call them in two months to complete the post-questionnaire. Due to the difficulty with contacting the participants, as many as four calls were placed per participant to ensure the best response rate possible. School was no longer in session, many of the families were on summer vacation and therefore the data for eleven participants was incomplete and stricken from the post-questionnaire data collection. Some of the children did reach the weight limit prescribed for graduating from a booster seat, however none of the children reached the height restrictions for graduating from a booster seat. An 80 percent response rate (N=56) was achieved for the post-test conducted over the telephone. Eleven participants were unable to complete the study and therefore were excluded from the post-test analysis areas of comparison. The researcher performed the telephone interviews only. This method was employed due to a marked increase in response with personal contact versus impersonal mailings. It was important for the interviewer to interact with each of the respondents in order to facilitate the iterative process during data collection. Subjects were conveniently assigned to two groups: the intervention group (INTV) and the control group. The assignment was based upon the parent's willingness and availability to attend an educational session. The intervention group parents were asked to attend a one- hour educational seminar with

their child on April 30, 2002, May 2, 2002, May 8, 2002, or May 10, 2002. It was concluded that at least one event affected the outcome of the study. The State Farm Insurance “Good Neigh Bear” program was a nationally advertised program and was instituted in this community during the time of the study. It is known by the researcher that at least four of the control participants did participate and receive education during this campaign.

*Demographic Information/Frequencies.*

The children in this study ranged from 4 to 8 years of age with 62.5% being 5 and 6 year-olds. The grade level attended by each child was recorded and showed 25% attended preschool, 39.3% were in kindergarten, 30.4% were in 1<sup>st</sup> grade, and 5.4% attended second grade. The weight category for the children ranged from 30 to 82 pounds and height ranged from 36 to 55 inches. The age of the parents ranged from 22-44 years old, 51.8% being younger than 35 and 48.2% being over the age of 35. Parental marital status showed 44 parents were married or 78.6%. Median household income was \$68,000, with a range from as low as \$22,000 to a high of \$140,000. The children living with two parents totaled 80.4%. The participants were asked whether their child had an older sibling, to which 20 responded “yes” and 36 responded “no” to this question. Thirty-one study children had younger siblings, 25 did not. Ninety-five percent of the participants reported having used an infant seat with their child and 75% reported having used a convertible seat with their child. Those participants reporting that they currently used a booster were asked the cost of that seat. Fifty percent of participants reported the seat cost \$40.00 or less. Because the use of automobile restraints by adults has been shown to have a positive effect on



the use of child safety restraints, parental belt use was recorded. Results are displayed in Table 1.

Table 1

*Reported Belt Use By Parents On Pre-test Questionnaire*

<b>BELT USE BY PARENTS</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
<b>50% of the time</b>	1	1.8 %
<b>75% of the time</b>	4	7.1 %
<b>100% of the time</b>	51	91.1 %
<b>Total</b>	56	100 %

The majority of the seats were not registered with the manufacturer prior to or after the intervention. It should be noted that each and every booster seat distributed at the end of this study was registered with the manufacturer by the researcher. This is important for follow-up product safety information and safety services.

The data collected were numerically coded and then analyzed using SPSS (2002). Qualitative data elements were grouped into common themes by the primary researcher using the principles of phenomenological analysis. The results were included as part of the study.

Separate one-way analysis of variance (ANOVAs) and Chi-Square tests were performed to measure the effect of the intervention on purchase/obtainment behavior of parents, recall of parents, and possible behavior change in study children toward the booster seat. Frequencies were performed on the statistical data to measure pre-test and post-test scores for each independent variable. The dependent variable was designated as the condition variable defining the assignment of the participant to intervention group or control group (COND = 1. intervention and 2. control).

Reported booster seat usage prior to the intervention showed the largest percentage of parents did not use a booster seat at all and the next largest category was 100% usage. Reported booster seat usage at the time of the pre-questionnaire and then after the intervention shows an increase in the number of parents using a booster seat 100% of the time, (see Table 2).

Table 2

*Pre-test And Post-test Levels Of Booster Seat Usage For All Participants*

<b>CURRENT USE PRE-TEST</b>	<b>PRE-TEST FREQUENCY</b>	<b>PERCENT OF PRE-TEST RESPONSES</b>
<b>Not at all</b>	24	42.9
<b>50% of the time</b>	3	5.4
<b>75% of the time</b>	6	10.7
<b>100% of the time</b>	23	41.1
<b>Total</b>	56	100.0
<b>CURRENT USE POST-TEST</b>	<b>POST-TEST FREQUENCY</b>	<b>PERCENT OF POST-TEST RESPONSES</b>
<b>Not at all</b>	8	14.3
<b>25% of the time</b>	1	1.8
<b>75% of the time</b>	6	10.7
<b>100% of the time</b>	30	53.6
<b>Total</b>	45	80.4
<b>Missing</b>	11	100.0

Different analyses were performed to test the hypotheses. A multivariate repeated measures analysis of variance test (MANOVA) was performed to determine the effect of the intervention on current usage. Current use was measured before and after the intervention. The responses were coded categorically from “not at all”, 25% of the time, 50% of the time, 75% of the time, to 100% of the time. Analysis showed there was no significant effect on usage noted in the intervention group compared to the control group based upon  $p = .05$  significance level.

*Hypothesis #1:* The intervention group will show an increase in booster seat purchase/usage compared to the control group.

Ho:  $\mu$  booster seat purchase in the intervention group =  $\mu$  booster seat purchase in the control group.

An increase in booster seat usage was observed in both groups. However, this increase could not be attributed to the intervention. While a larger increase in percentage was noted in the intervention group, comparative analysis proved to be of no significance, (see Table 3). Current use was measured on the pre-test questionnaire and again on the post-test questionnaire interview. Current use was coded based on a five point Likert Scale (1= Not at all, 2= 25% of the time, 3= 50% of the time, 4= 75% of the time, and 5= 100% of the time). Current use was measured on the pre-questionnaire within the intervention group to be  $M = 3.58$ ,  $SD = 1.710$ ,  $n = 19$ , and the control group  $M = 2.88$ ,  $SD = 1.966$ ,  $n = 26$ . Current use at the time of post questionnaire or post-intervention showed the intervention group increased usage to  $M = 4.79$ ,  $SD = .419$ ,  $n = 19$ , and the control group also increased usage to  $M = 3.58$ ,  $SD = 1.858$ ,  $n = 26$ . Repeated measures considering current usage before intervention showed a Pillai's Trace Value (a test of the condition effect conducted using multivariate MANOVA) = .268,  $F = 15.724$ , significance = .000 and current usage after the intervention by intervention versus control group showing a Pillai's Trace Value = .026,  $F = 1.166$ , and significance = .286. There was an increase in usage noted in both groups over time from pre-test to post-test. However, this change over time could not be attributed to the intervention nor was there a significant difference noted when considering condition. Considering a significant

result at  $p < .05$ , the experimenter was unable to reject the null hypothesis.

Table 3

*Current Use Scores At Pre-test And Post-test By Group Intervention And Control Group*

Condition	Mean	Std. Deviation	N
<b>CURRENT USE (Pre-test)</b>			
Intervention group	3.58	1.71	19
Control group		1.97	26
Total	2.88	1.87	45
	3.18		
<b>CURRENT USE (Post-test)</b>			
Intervention group		.42	19
Control group	4.79	1.86	26
Total	3.58	1.55	45
	4.09		

Obtainment of a booster seat was measured by self-report responses on the post-test questionnaire. The responses were categorized in the following manner: 1= I have not recently obtained a booster seat, 2= I have recently purchased a booster seat, 3= I have recently received a booster seat as a gift, and 4= I have recently obtained a booster seat from a social program or safety promotion. All of the responses were measured considering the relationship/motivational aspect, which parents displayed to obtain a booster.

A cross-tabulation Chi-Square table was used to analyze the data. There was no significant relationship between obtaining a booster seat and group assignment to the intervention group or the control group. The cross-tabulation table revealed 42.1% (n=8) of the intervention group and 42.3% (n=11) in the control group had not

obtained a booster seat at the time of the post-test interview. Furthermore, 31.6% (n=6) of the intervention participants and 23.1% (n=6) of the control group participants reported purchasing a booster seat; 5.3% (n=1) of the intervention group members and 11.5% (n=3) of the control group members received a booster as a gift; and lastly, 21.1% (n=4) of the intervention participants and 23.1% (n=6) of the respondents in the control group obtained a booster through a social program or safety program. The obtainment of a booster seat was not related to the intervention and therefore the researcher was unable to reject the null hypothesis,

$$\chi^2 (3, N = 45) = .804, p < .05.$$

*Hypothesis # 2:* Booster seat knowledge will increase in the intervention group with a significant difference observed between the intervention group and the control group.

Ho:  $\mu$  booster seat knowledge in the intervention group =  $\mu$  booster seat knowledge in the control group.

A one-way ANOVA analysis revealed a significant increase in recall for the intervention group as shown in Table 4.

Table 4

*Recall Of Significant Safety Related Information By Parents Pre-test And Post-test Levels In The Intervention Group Versus The Control Group*

	<b>Condition</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>N</b>
<b>Pre-test Recall</b>	Intervention Group	.95	1.03	19
	Control Group	1.00	1.55	26
	Total	.98	1.34	45
<b>Post-test Recall</b>	Intervention Group	3.26	.87	19
	Control Group	1.96	1.66	26
	Total	2.51	1.52	45

Recall was measured on the pre-questionnaire within the intervention group to be  $M = .95$ ,  $SD = 1.03$ ,  $n = 19$ , and the control group  $M = 1.00$ ,  $SD = 1.55$ ,  $n = 26$ . Recall at the time of the post questionnaire or post-intervention showed the intervention group increased their recall to  $M = 3.26$ ,  $SD = .87$ ,  $n = 19$ , and the control group also increased recall levels to  $M = 1.96$ ,  $SD = 1.66$ , and  $n = 26$ . Eleven missing participant responses were stricken from analysis. The largest increase in recall level from pre-test to post-test was found to be within the intervention group. Recall was based upon how many critical teaching components related to booster seat usage the parents

recalled. The critical teaching components were as follows: age, weight, height requirements, lap belt position, shoulder belt position, use of internal harnesses, the bend of the knee, seating position of the child, use of tethers or anchors, and airbag safety instructions.

Post-intervention recall scores were examined using one-way analysis of variance ANOVA. Post-intervention recall was significantly higher for the intervention group ( $M = 18.60$ ,  $SD = 18.60$ ) than for the control group ( $M = 1.92$ ,  $SD = 82.65$ ),  $F$  ( $df 1$ ,  $df 43$ ) = 9.68,  $p = .003$ . Of the 19 intervention participants only three (1.26%) had been involved in previous safety related classes. Of the 26 control participants 11(42%) stated they had received previous education. Through examination of the data, the experimenter was able to determine four of these control group members received education during the study period.

*Hypothesis #3:* Parents will observe an accepting attitude/behavior toward booster seat use by their children in the intervention group with a significant difference observed between the intervention group and the control group.

$H_0$ :  $\mu$  acceptance in the intervention group =  $\mu$  acceptance in the control group

Nine parents in the intervention group reported having difficulty with getting their children to use a booster seat prior to the intervention. One hundred percent reported a change in behavior after the intervention. However, this could not be considered a significant result due to the small sample size. Nine parents in the control group also reported behavioral difficulties with their children. Seven of those observed an increased acceptance of booster seat use by their children. Chi-square cross-tabulation analysis was performed using post-test behavior change as the dependent

variable. The variable was coded using “1” as “yes” and “2” as “no”, and the condition (control group versus intervention group) was the variable used for comparison. The Pearson Chi-square results show  $\chi^2 (1, N = 18) = 2.25, p < .13$ .

The intervention group showed a 100% change within the group (n=9). The control group resulted in a 77.8% change within the group (n=7) and 43.8% remained unchanged in the control group (n=2). Results of this data are displayed in Table 5.

Table 5

*Cross-Tabulation Results Of Post-test Behavior Changes Noted By Parents In Their Children*

<b>Condition of the Group</b>	<b>Number</b>	<b>% Within the Group</b>	<b>% Of Total</b>
<b>Intervention group behavior difficulty</b>	9	100 %	50.0%
<b>Intervention group behavior change</b>	9	100 %	50.0%
<b>Control group behavior difficulty</b>	9	100 %	50.0%
<b>Control group behavior change</b>	7	77.8 %	38.9%
<b>Control group with no behavior change</b>	2	22.2 %	11.1%
<b>TOTALS For Behavior Change</b>	16	88.9 %	88.9%

*Supplementary Findings.*

The following is a content analysis of the open-ended questions included in the study. When asked to describe the difficulty experienced regarding use of a restraint, parents frequently cited that their child was “too big for the seat”. Other common responses were that “their child cried” or “threw a temper tantrum” when being placed in a restraint.



Parents' most common response to the question "What would persuade you to use a booster seat continuously with your child passenger?" was if it were a law. When asked "discuss with me some of the reasons you use a booster seat for your child?" and "please explain your motivation to obtain a booster seat for your child?" showed 100% of parents cited their child's safety as their primary motivation to use a booster seat. "Special news reports", "a means to assist him/her to see out the window", and the impact of intervention activity were also given as explanations for use.

An unexpected outcome was that of the responses to the question "what are the reasons you use/do not use a booster". The reasons for use could be considered significant: 18 respondents replied that it makes the seatbelt fit better, and 11 participants expressed having seen news/media reports, while 2 participants expressed the reason they use a booster seat was because they believe it is the law. Reasons for non-use were also overwhelmingly similar, with 17 participants reporting that they did not feel it was necessary for their child because the child was "too big".

The participants outlined five specific challenges encountered when using a booster seat. They were self-reported in the following manner: 12 participants cited moving the seat between vehicles, 8 cited positioning the seat in the car, i.e. the backseat was too small for three or more car seats. Four participants cited the child had difficulty getting into and/or out of the booster seat. Three participants spoke of others who transport their children not using seats, and finally only 2 participants cited cost as a challenge to using a booster.

## CHAPTER V

*Discussion*

Hypothesis #1 measured parental purchase/obtainment behavior. There was an increase in booster seat purchase/obtainment noted in both the intervention group and the control group. Even though this increase could not be attributed to the intervention, this is a positive outcome. Another positive outcome of this study is that the usage rate of booster seats was shown to increase in both groups. Current use on the post-questionnaire showed 53.6% of the participants reported using a booster seat 100% of the time (see Table 2). The Boost America study results (Appendix A) showed booster seat usage in the state of Michigan to be 19%. This discrepancy may be explained by examining past behavior. Thirty-eight percent of the respondents in the current study reported having an older sibling indicating a previous usage pattern might have been established. Eighty-nine percent reported previous use of a convertible seat with the child participating in the intervention. This finding is supported by Geller's (1996) principle that "all perception is biased and reflects personal history, prejudices, motives, and expectations" (p. 243).

Belt use reported by parents showed 51 or 91.1% of the participants used a seatbelt 100% of the time. Numerous studies have reported the positive impact parental seat belt use has on booster seat usage, (see Table 1). However, nationally, belt use only reached 75% in 2002 (Glassbrenner, 2002, U.S. DOT HS 809 501). Glassbrenner, (2002) found that seatbelt use was higher in states with primary enforcement versus secondary enforcement. Primary enforcement laws allow motorists to be stopped explicitly for not wearing a seatbelt. Comparatively, a

secondary enforcement law states that a motorist must be stopped for another violation and only then can they be cited for not wearing a seatbelt. Michigan is a primary enforcement state and averaged 82.3% seatbelt use in the year 2001. The usage rate in the study population is higher. Decina & Knoebel, (1997) reported a positive correlation between increased parental seatbelt use and an increased child restraint (CRS) usage rate.

There was a positive correlation between laws and the age of coverage and the usage rate of booster seats. This is consistent with this finding that parents' most common response to the question "What would persuade you to use a booster seat continuously with your child passenger?" was if it were a law. Also, some studies discuss parental risk perception (Carlin, 1990; Geller, 1996) and this was reflected in the response parents gave "if I thought my child was in danger" and "if we were traveling long distances". It is interesting to note that 12 participants reported using booster seats only during long periods in the car and not on short distance trips. Further nursing research should include data collection regarding crashes resulting in death or injury in relation to distance from residence.

Ramsey, et al. (2000) examined what compelled parents to use a booster seat for their children. She reported that one half of the participants in the study "cited general safety, 7% had used a booster for an older child, while another 7% had obtained the information through literature". The present study also asked parents to reflect upon their motivation to use a booster seat. This was done in an attempt to establish common themes relevant to the participant's cues to action. The responses to "discuss with me some of the reasons you use a booster seat for your child?" and

“please explain your motivation to obtain a booster seat for your child?” showed similar results to Ramsey’s report.

When asked to discuss reasons for using a booster seat, 100% of parents responded by citing safety as their primary reason for use. Reasons attributed to rationale for parental use of booster seats were: special news reports, to assist child to see out the window, and for participation in the intervention in this research project were also given as explanations for use. Based on the parental discussions, summarized above, this study appears to lend support to the continued inclusion of the phenomenon of Pender’s “cues to action” in the model.

It was hypothesized that recall of safety details would be higher in the intervention group when compared with the recall of control group parents. There was a significant difference in the recall of parents in the intervention group when compared to the recall of parents in the control group. An unexpected finding, in this study, was the responses to the question “What are the reasons you do not use a booster?”. Reasons for non-use were also overwhelmingly similar, with 17 participants reporting that they did not feel it was necessary for their child because the child was too big. This misconception has been noted in numerous other research studies (Decina & Knoebel, 1997; Morris, et al., 2000; NHTSA, 2001; Ramsey, et al., 2000). The previous studies also report that while the current weight, height, and age guidelines have been established to simplify child safety issues, parents often find the guidelines confusing or inadequate. Because children develop and grow at differing rates there has recently been a push by safety experts to promote “proper fit” rather than strict adherence to the guidelines outlined throughout this study. Winston, et al.

(2000) propose that “achieving proper and consistent use of optimal restraints will require more knowledge and skills on the part of parents and children it will also involve considering issues surrounding child maturity and development” (p. 1182). Certainly parents will require frequent updated information regarding safety advances in order to make informed choices.

A knowledge deficit related to booster seats is a nationwide concern. However, this study shows that once knowledge is imparted to parents they will heed recommendations. Education of parents relating to child passenger safety, specifically booster seats, is in an early phase. In the Boost America Data Chart (see Appendix A) only 85% of Michigan respondents had heard of booster seats. Further, only 72% of those interviewed in the state of Michigan were aware of proper booster seat ages. The national average for having heard of booster seats was 88% and the national average for knowing the appropriate ages was 71%. While Boost America boasted of distributing the “Blue’s Clues” program to every preschool and elementary school across America, I was unable to find one school in the school district studied who acknowledged the receipt of this program, much less reported the implementation of the program. This educational intervention implemented the “Blue’s Clues” program and found it to be successful. It remains to be seen how this and other booster seat and child safety programs will affect the future of child passenger safety.

Hypothesis # 3 examined the behavior of children and their acceptance of booster seats. It was hypothesized that children who participated in the intervention would show a greater acceptance of a booster seat than children who had not participated in

the intervention. The increase in acceptance of booster seats by the children in the study could not be considered to have a significant generalizable impact due to a small sample size; nonetheless, this may be considered a positive outcome. A number of participants (n=12) expressed having difficulty with using a booster seat due to the child being embarrassed. This could be explained because many children in the study graduated to an adult seatbelt and after the laws changed, were moved back into a booster seat. Winston et al. (2000) expressed the need for parental and child acceptance of the booster seat. She states, “the parent must set rules to use the booster seat each and every time; and the child must feel that others his or her age are also using the seats” (p.1180). Pender (2002) explains that “the direct affect of past behavior on current health-promoting behavior may be due to habit formation, predisposing one to engage in the behavior automatically” (p. 68). According to Geller’s (1996) principle of long-term behavior change, people need “to change inside as well as outside” (p. 243). Consistent with this principle, this study demonstrated changes in attitude of the children and reported differences in purchase behavior of parents.

The biggest challenges to using a booster seat were self-reported in the following manner: twelve participants cited moving the seat between vehicles, 8 cited positioning the seat in the car, i.e. the backseat was too small for three or more car seats. This last finding is consistent with that of Ramsey, et al. (2000), who reported parental frustration in fitting multiple seats in the back of their vehicle. Four participants cited the child had difficulty getting into and/or out of the booster seat. Three participants spoke of others who transport their children not using seats, and

finally only 2 participants cited cost as a challenge to using a booster. This last issue is surprising due to the study by Ramsey et al. (2000), who cited cost as a deterrent to use. This may be due to the population demographics because the median household income was \$68,000.

*Limitations.*

Limitations of this study are related to those of a quasi-experimental method using pre-test post-test with control group design. True control within a community setting is not completely possible. Bracht (1999) discusses the difficulties of doing research in a community setting. Because the research was not done in an tightly controlled situation, participants were diverse in their history and experiences, and the participants were able to continue their normal routines and were not restricted to a clinical setting, it has been hard to clearly establish cause and effect behavior change that is linked to a specific intervention. As the children grow out of booster seat, criteria groupings were considered to be a threat to internal validity due to the changeable maturation of the subjects. Because the growth rate of children varies to a large degree stability and conformity of fit is not a possibility. Standardization of research tools is needed in the future.

The questionnaire itself may have initiated a change in the parental attitudes toward booster seats or increased the participant's knowledge regarding booster seats without ever having undergone the intervention. Each participant showed a tendency to regress toward the mean whether they received the intervention or not, indicating some statistical regression took place. The pretest questionnaire scores were compared between the groups to assure randomization and to examine differences in

the control vs. intervention groups. The use of the convenience group assignment due to the excessive demands on the time of parents could be considered a limitation.

Attrition was of specific concern in this study. Loss of participants due to unavailability after 4 phone calls is an indicator of busy lives, absence from their residence for summer holidays, and perhaps little priority on seating safety.

Interaction of history and treatment was examined fully within the context of the research setting, i.e. previous programs or other interventions. The researcher attempted to examine and document community events and media programs during the study that could contaminate the designation of the control group.

Costs for the research process precluded other aggressive follow-up being done. Had cost containment or funding been possible then a larger more expansive program could have been implemented. The results can be generalized to a suburban setting however an urban or rural setting may prove to have different results.



## CHAPTER VI

*Conclusion*

Pender's Health Promotion Model was used as the framework of this study. The study findings primarily address the constructs of cues to action, prior related behavior, and situational influences. Pender specifically states that fear cannot and should not be used as a motivating factor for behavior change. Fear was not used in this study, however one parent did say she was frightened by the statistics explained during the intervention. All other participants rated the intervention as "good" and as "having appeal for children".

The results show that health promoting behavior can be introduced and demonstrated to children at a young age and can create an impact their subsequent behavior. The implementation of booster seat education and certification program with pre-school children would be a worthwhile venture for school-nurse professionals.

There continues to be an issue with educational programs related to booster seats. As evidenced in this study, parental recall remained low even after a focused intervention. While an increase in recall was noted in the intervention group immediately following the intervention, it is necessary to continue to study these results to determine long-term recall. Further nursing research should include a time-lapse series study related to recall of safety information by parents. This would allow researchers to ascertain and integrate their client's needs for learning into evidence-based practice. Advanced practice nurses should search for feasible methods to explicate and evaluate health promotion teaching. By refining a method to collect

and evaluate data pertaining to the efficacy of child vehicular seating programs, nurses can then facilitate the ease and effectiveness of teaching car seat safety and booster seat use by other healthcare professionals.

A second implication of the study relates to the utilization of results supporting evidence-based practice. The results of this study show a greater level of acceptance of booster seats by children after being exposed to a structured program. This supports the role of advanced practice nurses integration of booster seat education into their child safety training programs. Current guidelines and protocols for car seat safety and seating devices cover children only up to fifty pounds. There is a necessity to improve federal standards and improve crash test guidelines to include children up to eighty pounds. The prompt development of a crash-test dummy for older children should be advocated.

Another implication of the study is the discovery of an ongoing need for continuous education for parents. Beginning with Lamaze classes and continuing through their child's twelfth birthday, future research should investigate continual educational updates for parents as their children move from one safety stage to another. It could be hypothesized that recall of significant safety information would be reinforced with each additional educational experience. With frequent updates to the body of research literature and subsequent standards and laws that parents must have access to could be continued through the updates to reinforce "cues for action". Parents need to understand and believe the benefits of booster seats and support in their desire to find the security of using a booster seat valuable in everyday life without adding time to their schedules.

Another area for future focus is the exploration of the effect that socioeconomic status has on compliance. Ramsey, et al. (2000) reported that the cost of booster seats is a reason for non-use. The current study was conducted in a middle/upper class school district. The fact that the sample was not highly diverse in terms of socioeconomic status could explain why cost of procurement of a booster seat was not a major factor in this study. Further study should be designed to explore cost as a factor in the booster seat use patterns and how it might influence this phenomenon. In addition, subsequent studies will be of assistance in the development of a more reliable measure of “cues to action”. A more significant, more generalizable pilot test to measure the validity and reliability as well as vigor of this construct could enhance reliability of Pender’s theory related to booster seat use.

The researcher suggests several areas for future research. NHTSA reported booster seat usage in the state of Michigan at 15%; however, pre-test scores on current use documented forty-one percent of participants reported using a booster seat all of the time. Statewide interventions including seat belt use laws, educational campaigns, and large-scale media blitzes all demonstrated a contribution to the increase in compliance among the experimental intervention group. NHTSA reported seatbelt use in the year 2002 had increased to 75% among adult drivers, 82.3% for adult usage in the state of Michigan specifically. The current study showed 91.1% of this population wore their seatbelt all of the time. This is significant for experts who lobby for grants to fund educational programs or advocate for changes in legislation. The possibility of changing the legislation must be addressed in the future if the problem of irregular booster seat use is to be eliminated.

The present study sought to determine the effect of a booster seat educational intervention on the purchasing behavior of parents. Unlike previous studies, this research went beyond measuring the behavioral and attitude change and assessed self-reported purchase behavior of parents. Inferences were drawn regarding behavior change/acceptance of booster seats by the children. The analysis indicated that evaluation of a program intervention containing education classes, news media items and events, safety programs, etc. were more effective than no intervention in influencing the purchase/obtainment of a booster seat. Although 300 questionnaires were sent home to parents there was a limited and disappointing response noted. Numerous research studies have reported a serious lack of education for parents and may reinforce the importance of education in changing behaviors. (Campbell, et al., 1997; Decina & Knobel, 1997; Johnston et al., 2000; Morris, et al., 2000; Ramsey, et al., 2000; Winston, et al., 2000) Future research in the utilization of booster seats may focus on barriers to usage, such as situations in which parent's participation is difficult due to the busy lifestyles of school-aged children and their parents. Other areas of inquiry could include a need for collaborative efforts by the manufacturers of vehicles to make cars safer and easier to fit two child safety seats in the back seat of passenger vehicles, and other safe ways to transport children in booster seats. Bull and Sheese (2000) noted the importance of using the manufacturer's manual as a tool for instructions relating to booster seats. Adequate methods to clearly demonstrate the effectiveness of after-market booster seats versus integrated child safety seats remains uncharted due to a lack of crash test or sled test parameters, such as appropriate sized mannequins. Therefore, a major area of manufacturing continues to go unnoticed and

consequently under-scrutinized.

This study may prove to be valuable in the field of child passenger safety particularly in the understanding of booster seat use and procurement. Many critical components for successful education program implementation and implications for future research were identified. Advanced practice nurses will have a role to play in the advancement of children's vehicular passenger safety as they move from convertible car seats to booster seats, before a transition to adult fixed seat belt use. The appreciation of parental and juvenile "cues to action" and information retention outcomes can foster effective educational programs for children and adults, in the near and distant future.

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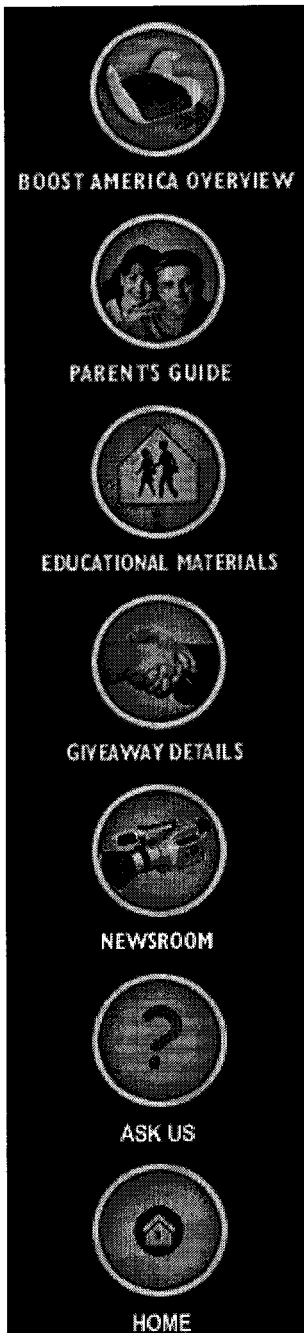
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**APPENDIX A**

**STATE-BY-STATE DATA CHART: Statistics Collected And Published By  
Boost America (Sponsorship By Ford Motor Company)**



## STATE BY STATE DATA CHART

State	Heard or Read of Booster Seats**	Unaware of Proper Booster Seat Ages**	Booster Seat Usage***	1999 Fatalities (Children 4 - 8)****	2000 Fatalities (Children 4 - 8)****
ALABAMA	92%	76%	21%	14	8
ALASKA	86%	79%	12%	2	1
ARIZONA	85%	71%	19%	15	12
ARKANSAS	86%	79%	28%	9	9
CALIFORNIA*	87%	77%	17%	41	56
COLORADO	85%	74%	29%	4	7
CONNECTICUT	90%	61%	29%	3	3
DELAWARE	88%	73%	29%	2	0
D. C.	87%	63%	18%	0	0
FLORIDA*	84%	78%	19%	23	21
GEORGIA*	88%	74%	24%	34	20
HAWAII	82%	66%	17%	0	0
IDAHO	87%	73%	18%	7	6
ILLINOIS*	85%	73%	22%	17	10
INDIANA*	86%	78%	17%	9	10
IOWA	85%	79%	18%	9	6
KANSAS	91%	68%	21%	7	5
KENTUCKY	91%	73%	15%	10	9
LOUISIANA	83%	78%	20%	7	5
MAINE	87%	68%	25%	2	2
MARYLAND	89%	66%	30%	2	4
MASSACHUSETTS*	92%	60%	23%	1	0
MICHIGAN	85%	72%	19%	10	10
MINNESOTA*	92%	67%	30%	4	8
MISSISSIPPI	88%	78%	21%	19	21
MISSOURI*	86%	78%	18%	12	21
MONTANA	90%	70%	18%	2	4
NEBRASKA	85%	75%	21%	3	3
NEVADA	83%	84%	20%	6	11
NEW HAMPSHIRE	92%	57%	26%	1	2
NEW JERSEY*	89%	65%	23%	5	3
NEW MEXICO	90%	73%	20%	6	4

NEW YORK*	91%	66%	18%	10	6
NORTH CAROLINA*	88%	71%	27%	19	18
NORTH DAKOTA	89%	69%	20%	1	2
OHIO*	84%	76%	17%	9	19
OKLAHOMA	90%	75%	19%	13	3
OREGON	86%	74%	18%	5	5
PENNSYLVANIA*	90%	65%	21%	15	11
RHODE ISLAND	91%	63%	21%	1	0
SOUTH CAROLINA	84%	69%	19%	20	8
SOUTH DAKOTA	89%	71%	15%	4	2
TENNESSEE	85%	80%	22%	22	11
TEXAS*	85%	73%	17%	66	67
UTAH	84%	74%	21%	4	6
VERMONT	92%	60%	24%	1	1
VIRGINIA*	89%	74%	24%	8	5
WASHINGTON	93%	63%	27%	11	7
WEST VIRGINIA	86%	75%	17%	4	6
WISCONSIN	87%	82%	23%	6	6
WYOMING	90%	71%	22%	4	4
<b>NATIONAL</b>	<b>88%</b>	<b>71%</b>	<b>21%</b>	<b>509</b>	<b>468</b>

The total sample of the survey included 11,701 interviews yielding results that can be generalized to the entire universe of American parents of young children within +/-1.0 percentage points in 95 out of 100 cases. There were 300 interviews completed in each of the fifteen most populated states, and 200 interviews in each of the remaining 35 states and the District of Columbia. In several portions of the report results are based on parents or caregivers of children between 4-8 years old. This sample size is 7,720 interviews and has a sample error of +/- 1.17. This survey should be used to compare states against the national average only.

\*300 Interviews completed in this state.

\*\*Asked of parents and caregivers with children 12 years of age and younger.

\*\*\*Asked of parents and caregivers with children between 4 and 8 years of age.

\*\*\*\*The data is from the National Highway Traffic Safety Administration of children ages 4, 5, 6, 7 and 8 (or 4 through 8) who were killed in 1999 in car crashes.

\*\*\*\*\*The data is from the National Highway Traffic Safety Administration of children ages 4, 5, 6, 7 and 8 (or 4 through 8) who were killed in 2000 in car crashes.

*Ford Motor Company*

**APPENDIX B**

**OVERVIEW OF UNITED STATES LAWS REGARDING  
CHILD SAFETY SEATS AND SEAT BELTS**

State	Rear Seat Belts Required?	Safety Seat Required	May Use Child Seat or Seat Belt	Penalty		Major (1) Exceptions to Child Passenger Laws 1 for CPS law does not apply if	Children Allowed in Rear of Pickups?
				Fines Per Day	Days		
AL	< 6 yrs	< 4 yrs	Age 4-5 yrs	\$10	2	To trucks or buses weighing ≥ 1 ton	No
AK	< 16 yrs	< 4 yrs	Age 4 yrs	\$50		All vehicle's belts are in use	Yes
AZ	< 5 yrs	Age 6 yrs and ≥ 60 lbs	Age 6 yrs or ≥ 60 lbs	\$10		No	Yes
AR	< 15 yrs	Age 6 yrs and ≥ 60 lbs	Age 6 yrs or ≥ 60 lbs	\$100	1		No (2)
CA	< 16 yrs	< 6 yrs	Age 4-15 and ≥ 40 lbs	\$50		Transported in motor vehicle as a result of a medical emergency	Yes (2)
CO	< 16 yrs	< 4 yrs and < 40 lbs	Age 4-15 and ≥ 40 lbs	\$60		No medical emergency	No (2)
CT	< 16 yrs	< 4 yrs	40 lbs and over	\$28.27	2	All vehicle's belts are in use (1)	No
DE	< 16 yrs (3)	< 6 yrs	60 lbs and over	\$35	3	All vehicle's belts are in use (1)	No
DC	< 16 yrs	< 4 yrs	Age 3 yrs-15 yrs	\$70			No
FL	< 16 yrs	< 6 yrs	Age 4 yrs	\$50	1	May use belt if age five and over	If on non-interstate roadway
GA	< 16 yrs	< 5 yrs	Age 3-4 yrs	\$100		All vehicle's belts are in use (1), (4)	No (2)
HI	< 18 yrs	< 3 yrs	Age 4 yrs	\$100		Vehicle is registered out of state	Yes
IA	< 16 yrs	< 4 yrs	Age 4-15 yrs	\$50	4	Vehicle is registered out of state	Yes
IL	< 16 yrs	< 4 yrs	Age 4 yrs-11 yrs	\$25		Vehicle is registered out of state	Yes
IN	< 12 yrs	< 4 yrs	Age 3 yrs-5 yrs	\$25		Vehicle is registered out of state	No
LA	< 6 yrs	< 3 yrs	Age 3 yrs-5 yrs	\$20		All vehicle's belts are in use	If > 13 yrs
KS	< 14 yrs	< 4 yrs	Age 3 yrs-12 yrs	\$50		All vehicle's belts are in use	Yes
KY	< 16 yrs	40" & Under	Age 3 yrs-12 yrs	\$30		If > 11 years	If > 11 yrs
LA	< 13 yrs	< 3 yrs	Age 4 yrs-17 yrs	\$60		All vehicle's belts are in use (1)	< 16 yrs not allowed
ME	< 18 yrs	< 4 yrs	Age 4 yrs-17 yrs	\$60		All vehicle's belts are in use (1)	No
MD	< 16 yrs	< 5 yrs	> 40 lbs	\$25		All vehicle's belts are in use (1)	If > 16 yrs
MA	< 16 yrs	< 5 yrs (4)	> Age 5 yrs	\$25		All vehicle's belts are in use (1)	No (2)
MI	< 16 yrs	< 4 yrs		\$15		The child is being nursed	No (2)
MN	< 4 yrs	< 4 yrs		\$50			No (2)
MS	< 8 yrs	< 4 yrs		\$25			Yes
MO	< 16 yrs	< 2 yrs		\$25			No
MT	< 16 yrs	< 2 yrs	Age 2, 4 or < 40 lbs	\$25+		no more than 3 cars required in a vehicle	No (2), (3) and (3)
NE	< 16 yrs	< 5 yrs (4)	< 40 lbs	\$25			Yes
NV	< 16 yrs	< 5 yrs (4)		\$100			No
NH	< 18 yrs	< 4 yrs		\$25			No
NJ	< 5 yrs	< 5 yrs	Age 1.5 yrs-5 yrs (3)	\$25		All vehicle's belts are in use (1)	No
NM	< 11 yrs	< 5 yrs (4)	Age 5-11 yrs	\$25	3	If > 10 years	If > 10 yrs
NY	< 16 yrs	< 4 yrs		\$25		If child's personal needs being attended to	Yes (2)
NC	< 16 yrs	< 5 yrs		\$25	2	All vehicle's belts are in use, or transported in an emergency situation	If > 11 yrs (2), (3) and (3)
ND	< 18 yrs	< 4 yrs	Age 4 yrs-17 yrs	\$0	1		Yes

State	Rear Seat Belt Required <sup>(1)</sup>	Safety Seat Required	May Use Child Seat or Seat Belt	Penalty Fine	Fts	Major <sup>(2)</sup> Exceptions to Child Passenger Laws The CRS law doesn't apply if:	Children Allowed in Rear of Pickups <sup>(3)</sup>
OH	< 4 yrs <sup>(4)</sup>	< 4 yrs <sup>(4)</sup>	Age 4-5 yrs	\$100		Vehicle is registered out of state	If traveling < 25 MPH <sup>(5)</sup>
OK	< 13 yrs	< 4 yrs <sup>(6)</sup>	Age 6 yrs or over	\$25		All vehicle's belts are in use	Yes
OR	< 16 yrs	< 6 yrs <sup>(7)</sup>	Age 6 yrs or over	\$75		All vehicle's belts are in use	Yes
PA	< 16 yrs	< 4 yrs	Age 5 yrs or over	\$25		All vehicle's belts are in use	Yes
RI	< 12 yrs	< 7 & 5'7" & 80 lbs in FACTS in back seat		\$50		All vehicle's belts are in use	No up to age 16
SC	< 17 yrs	< 5 yrs or < 80 lbs	≥ 1 but < 6yrs & > 40lbs	\$25		If all the vehicle's belts are in use	Yes
SD	< 18 yrs	< 5 yrs and < 40 lbs	Age 5-17, & > 40lbs	\$20		None	Yes
TN	< 18 yrs	< 4 yrs	Age 3-4 yrs	\$50 <sup>(11)</sup>		All vehicle's belts are in use <sup>(14), (18)</sup>	If > 5 yrs or moving < 20 mph
TX	< 17 yrs	< 4 yrs or < 36 in	Age 3-4 yrs	\$100		All vehicle's belts are in use	If > 17 yrs or moving < 35 mph
UT	< 16 yrs	< 5 yrs	Age 5 yrs-16 yrs	\$45		All vehicle's belts are in use	No
VT	< 13 yrs	< 5 yrs	Age 3-4 <sup>(9)</sup> yrs	\$25	3	All vehicle's belts are in use <sup>(19)</sup>	Yes
VA	< 16 yrs	< 5 yrs	Age 6 yrs-16 yrs	none		No medical exemptions	Yes
WA	< 16 yrs	< 6 yrs or < 60lb 1/2	Age 6 yrs-16 yrs	\$86		All vehicle's belts are in use	Yes
WV	< 16 yrs	< 3 yrs	Age 3 yrs-8 yrs	\$20		According to child's personal needs	Yes <sup>(20)</sup>
WI	< 8 yrs	< 4 yrs	Age 4 yrs-8 yrs	\$75		Physician provides medical exemptions and/or care rendered to child by parent/guardian	No <sup>(21)</sup>
WY	< 12 yrs	< 5 yrs and < 40 lbs	Age 5 yrs - 11 yrs	\$50			Yes
PR	< 12 yrs	< 4 yrs		\$100			No

**Footnotes**

- (1) This chart applies to children under age 16
- (2) Front seat restraints are required for all children under 16
- (3) Children < 12 years old and < 66 inches may not occupy front seat if equipped with passenger-side air bag.
- (4) Or less than 60 lbs.
- (5) And less than 60 lbs.
- (6) And less than or equal to 60 lbs.
- (7) Children under age 6 must be transported in the rear
- (8) In rear only.
- (9) If the size and weight of the child makes the use of a seat belt practical and the use of a child safety seat impractical and Maximum fine for first offense of child safety seat laws. Fines may be different for older children.
- (10) Or 30 days in jail.
- (11) Major exceptions are considered to be exemptions in private passenger vehicles (cars, vans, or pickups). Many states have exemptions for buses, taxis, or other public transportation, children with medical conditions, and emergency situations.
- (12) Unrestrained children must be in the rear
- (13) Law doesn't apply if the child's personal or physiological needs are being met
- (14) Only for children > 1 year old
- (15) Or primarily operated
- (16) Law doesn't apply if all the vehicle's belts are in use
- (17) Only for ages 4 through 11
- (18) Only for children over age 4.
- (19) Unless properly restrained in a seat belt or child safety seat
- (20) If sitting and belted is closed
- (21) Unless number of children exceeds number of safety belts available
- (22) Unless used in farm work or farm activity
- (23) Unless there are more than 5 children under age 18 not accompanied by a person more than 18
- (24) Unless supervised by an adult.
- (25) Children < 7 years old must be secured in the rear with a rear-facing child passenger restraint
- (26) Physical or medical reasons per physician
- (27) Or transported in an emergency situation
- (28) Rendering aid or assistance to the child by parent or guardian
- (29) O:\NTM\12\Law\CPS Laws--State Key Provisions Sept 2002 DRAFT.doc



**APPENDIX C**

**INFORMATION LETTER TO PARENTS**

## LETTER OF INTRODUCTION AND REQUEST FOR PARTICIPATION

Dear Parent(s),

I, Jody McGinnis, am a certified passenger safety technician and a graduate student from the School of Nursing, University of Windsor. I am investigating booster seat education in the South Lyon School District. The National Highway Transportation Safety Administration reported, in 1997, that restraint use for children to age one was 97 percent and ages one to four was 91 percent, close to the target of 100% compliance. Given all the evidence accumulating in support of booster seat use, as a health promoting practice it is surprising that in the targeted older age group of five to fifteen years, restraint use dropped to 68.7 percent. Though there are programs available to educate children and their parents regarding booster seats, booster seat usage remains the lowest utilized form of child restraint system. Thus, the purpose of this study is to examine the effectiveness of a booster education program aimed at encouraging the students and their parents to use a booster seat. This study may assist in the future format of booster seat educational programs.

This study will include a questionnaire to be filled out by parents, which will take approximately 30 minutes to complete. There will be an educational program offered to the parents and children at the school. This program will last about 1 hour. The actor Will Smith and his wife, Jada Pinckett-Smith, have been utilized in this program to make it fun for the kids. The group will be split in half. Half of the class will attend the educational program in April and the remaining half will be invited for the program in September. The April participants will receive a letter enclosed in this packet, as well as a telephone call confirming the date of attendance for the intervention. The September participants will be contacted by telephone with further details regarding specific dates and times of the educational sessions. A follow-up, taped interview will take place with all participants 2-months after completion of the initial questionnaire. This interview will take approximately 45 minutes.

This study has been approved by the Ethics Committee of the University of Windsor. You may contact the University Office of Research Services (519-253-3000, ext. 3916) if you have ethical concerns regarding this study. Your participation is completely voluntary and presents no risk to you personally nor will there be a risk to your child personally or academically. To maintain confidentiality, the questionnaires are coded by numbers rather than names, and all questionnaires will be kept in a locked cabinet. The questionnaires will be destroyed once the data is no longer needed for analysis. The study results will be presented in grouped form at a school board meeting in the fall semester to further ensure confidentiality of the participants. If you have more than one child in the Bartlett Elementary kindergarten or first grade classes please choose one child and complete the questionnaire with that child in mind only. If there are individual questions you prefer not to answer just leave the answer blank and move on to the next question. The questionnaire will take

approximately 30 minutes to complete.

If you are interested in participating in this research study please complete the enclosed questionnaire and sign the attached consent form giving me permission to contact you and return it by April 26, 2002 sealed in the attached envelope to the researcher's locked mailbox located in your child's classroom.

A summary of the survey findings will be made available upon completion of this research study. If you have any questions, feel free to contact me (Jody McGinnis) at my home 248-437-6455 or my Faculty of Nursing Advisor, Debbie Kane, in her office at 519-253-3000 ext. 2268.

Sincerely,

Jody A. McGinnis, R.N. MSN[c]

**APPENDIX D**

**CONSENT FOR TELEPHONE CONTACT TO SCHEDULE  
INTERVENTION AND QUESTIONNAIRE IN 2-MONTHS**

**CONSENT FOR TELEPHONE CONTACT TO SCHEDULE  
INTERVENTION AND QUESTIONNAIRE IN 2-MONTHS**

I realize by signing this consent and returning it with this first questionnaire I am giving the researcher permission to contact me via telephone to schedule an educational session and again in 2-months (July 2002) for an interview. I realize the telephone interview may be recorded and that recorded tape will be destroyed after the study completion along with the other material. As explained in the Letter of Introduction and Request for Participation, my participation is completely voluntary and presents no risk to me, personally, or my child, personally or academically. The interview will take approximately 45 minutes to complete.

To maintain confidentiality, the questionnaires are coded with numbers rather than names. All questionnaires will be kept in a locked mailbox. Only the researcher will have access to the information given on the questionnaires. To ensure none of the information given by the participants can be used for any reason other than the explicit needs of this project, the questionnaires and tapes will be destroyed once the data is no longer needed for analysis. The study results will be presented in grouped form to further ensure confidentiality of the participants.

I agree to continue my participation in this study by voluntarily attending an educational program and/or completing a telephone conducted questionnaire in 2-months time. I understand I have the right to withdraw from the study at any time. If for any reason, I decide not to be called back, all I need to do is to notify the researcher. I understand that I will not receive payment of any kind for participating in this project. I have been given a copy of this form.

Name (please print) \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

Phone Number \_\_\_\_\_

Most Convenient Time To Contact You Daytime      or      Evening  
(Please circle one)

**APPENDIX E**

**PRE-TEST QUESTIONNAIRE**

Participant Number \_\_\_\_\_

Please complete the following questionnaire by responding to the questions to the best of your ability. There is no “right” or “wrong” answer. All responses will be kept confidential.

Child’s Age-----

Child’s Weight-----

Child’s Height-----

Parent’s Age-----

Marital Status-----

Who does the child live with-----

Household Income-----

Grade your child attends-----

Does your child have an older sibling?-----

Does your child have a younger sibling?-----

Do you currently own a booster seat?-----

If yes, do you use the booster seat?

Not at all -----

25% of the time -----

50% of the time -----

75% of the time -----

100% of the time -----

Did you use an infant car seat with your child?-----

Did you use a convertible car seat with your child?-----

Did you ever experience difficulty getting your child to use their seat?-----

What type of difficulty did you experience?-----

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Has this behavior changed?-----

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Explain how it has changed?-----

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Do you use your seatbelt?-----

25% of the time -----

50% of the time -----

75% of the time -----

100% of the time -----

What would you say are the biggest challenges to using a booster seat?-----

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Please discuss with me some of the reasons you use/do not use a booster seat for your child? Please indicate whether you use a booster seat and then explain your decision

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Have you received booster seat education or child passenger seat education in the past?-----

Can you briefly describe for me what you learned/recall?-----  
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Have you recently purchased a booster seat?-----

If yes, what was the cost of the booster seat?-----

Where was the booster seat purchased?-----

Did you register the seat with the manufacturer?-----

Who is the manufacturer?-----

Have you recently received a booster seat from some other method besides purchase?  
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If yes, what was that method?-----

If you recently purchased a booster seat, please explain your motivation to do so?  
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If you have not purchased a seat recently, do you plan to?-----

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What would persuade you to use a booster seat continuously for your child  
passenger?-----

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Thank you for taking the time to complete this questionnaire and for participating in  
this research study.

I will be contacting you by telephone in 2-months. Many of the same questions will  
be asked in the 2<sup>nd</sup> questionnaire in case any of your information has changed. I look  
forward to working with you and your child on this very important issue.

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**APPENDIX F**

**POST-TEST QUESTIONNAIRE**

Participant Number \_\_\_\_\_

Interviewer Script: I am Jody McGinnis, RN. I am contacting you to complete the follow-up interview regarding the booster seat education project at Bartlett

Elementary. Please remember that this interview will be recorded. I am going to begin the recording. For my records, could you please state your agreement to record this interview? All responses will be kept confidential. The tapes and written responses will be destroyed after the data has been analyzed. Thank you for agreeing to participate in the research of this very important subject. Please respond to the questions to best of your ability. Keep in mind, there are no “right” or “wrong” answers. If you choose not answer a particular question, please just respond with “not applicable”. I will be asking some of the same questions that you answered on the first questionnaire; these questions have been included in case any of the information may have changed in the meantime. This interview will last approximately 45 minutes. You have the right to end the interview at any point. I would like to start with:

Child’s Age-----

Child’s Weight-----

Child’s Height-----

Parent’s Age-----

Marital Status-----

Who does the child live with-----

Household Income-----

Grade your child attends-----

Does your child have an older sibling?-----

Does your child have a younger sibling?-----

Do you currently own a booster seat?-----

If yes, do you use the booster seat?

Not at all -----

25% of the time -----

50% of the time -----

75% of the time -----

100% of the time -----

Did you use an infant car seat with your child?-----

Did you use a convertible car seat with your child?-----

Did you ever experience difficulty getting your child to use their seat?-----

What type of difficulty did you experience?-----

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Has this behavior changed?-----

Explain how it has changed?-----

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Do you use your seatbelt?-----

25% of the time -----

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50% of the time -----

75% of the time -----

100% of the time -----

What would you say are the biggest challenges to using a booster seat?-----

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Please discuss with me some of the reasons you use/do not use a booster seat for your child?-----

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Have you received booster seat education or child passenger seat education in the past?-----

Can you briefly describe for me what you learned/recall?-----

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Have you recently purchased a booster seat?-----

If yes, what was the cost of the booster seat?-----

Where was the booster seat purchased?-----

Did you register the seat with the manufacturer?-----

Who is the manufacturer?-----

Have you recently received a booster seat from some other method besides purchase?  
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If yes, what was that method?-----

If you recently purchased a booster seat, please explain your motivation to do so?-----  
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If you have not purchased a seat recently, do you plan to?-----  
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What would persuade you to use a booster seat continuously for your child  
passenger?-----  
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Thank you again for taking the time to participate in this study. The findings will be presented at a School Board meeting in the fall semester. Take care and enjoy your day.

## VITA AUCTORIS

Jody Ann McGinnis was born on November 14, 1967, in Columbus, Ohio. After attending Ohio State University for 1-½ years, she moved to Michigan. She received her Bachelors degree in nursing from Wayne State University, in Detroit, Michigan in May of 1993. Jody worked as a clinical nurse/preceptor in the Pulmonary Intermediate Care Area of Sinai Hospital in Detroit, Michigan and the Intensive Care Unit Pool of Botsford Hospital in Farmington Hills, Michigan. She later worked as Director of Admissions for the Detroit Medical Center's Hutzel Hospital. She currently is employed by Caretech Solutions as a Lead Clinical Liaison. Jody is entering a new frontier by building and implementing online nursing documentation for the Detroit Medical Center.

She entered The University of Windsor in April of 2000. She received the following awards during her Graduate studies: Yvette Miller Memorial Graduate Nursing Award, Dr. DeVamma Puroshotham Neuroscience Bursary Award, and The Thesis Research Award.

Jody became interested in child passenger safety after the birth of her two daughters. The National Highway Traffic Safety Administration as a Certified Child Passenger Safety Technician has trained her. She has been certified since May 2000 and has participated in numerous car seat checks, as well as planning and directing one of her own checks in South Lyon, Michigan in July 2000.