Identifying Information That Promotes Belt-Positioning Booster Use

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16. Abstract

Many parents with low educational attainment prematurely graduate their children to seat belt restraint rather than use belt-positioning booster seats. This study aimed to identify interventions that promoted booster seat use among this population. Focus groups were used to elicit factors contributing to booster seat nonuse, which informed subsequent intervention development. A first phase (12 focus groups, n=107) identified parents' perceived barriers, benefits, and threats relating to booster seats. These findings were used to identify existing and create new interventions. A second phase (16 focus groups, n=142) elicited parents' reactions to these interventions and provided parents with belt-positioning booster seats and education on their use.

Lack of education and fear of injury were the primary barriers to booster seat use. Parents were motivated by interventions that provided clear, concrete messaging relating to use. Parents favored the intervention that presented a real story detailing a child's severe injury that could have been prevented with appropriate restraint. At follow-up, parents credited this intervention with motivating booster seat use most often. Although parents cited their children's lack of comfort and noncompliance as barriers to use, they were not as motivated by interventions that addressed these barriers. Effective intervention programs can be created by identifying and addressing factors that contribute to a population's intention to use belt-positioning booster seats. In addition, successful programs must use messages that motivate the target population by addressing their perceived threats to booster seat nonuse.

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Glossary

BPB	Belt-Positioning Booster Seat
CHOP	The Children's Hospital of Philadelphia
CPS	Child Passenger Safety
CRS	Child Restraint System
FARS	Fatality Analysis Reporting System
IFCK	Injury Free Coalition for Kids
NASS	National Automotive Sampling System
NHTSA	National Highway Traffic Safety Administration
PAPM	Precaution Adoption Process Model
PCPS	Partners for Child Passenger Safety
PI	Principal Investigator
PIF	Participant Information Form
PSA	Public Service Announcement
BB&T	Barriers, Beliefs, and Threats

Executive Summary

Motor vehicle crashes remain a leading cause of injury among children in the United States (NHTSA, 2006). Use of appropriate restraints in motor vehicles is an effective strategy for reducing the risk of injury and death to child passengers in a motor vehicle crash (Arbogast, Durbin, Kallan, & Winston, 2003; Elliott, Kallan, Durbin, & Winston, 2006; NHTSA, 2003). Although child restraint use for children under 8 years old in the United States has increased since 1998 (Arbogast, Durbin, Kallan, & Winston, 2004), children between the ages of 4 and 8 years continue to be at highest risk for inappropriate restraint by seat belts alone (Fact and Trend Report, 2006). Among this age group, children of parents with a high school education or less were 27% more likely to be inappropriately restrained than those of parents with higher educational attainment (Winston, 2006). The reasons for low appropriate restraint use among these at-risk populations were unclear.

In order to inform future efforts to increase belt-positioning booster seat (BPB) use among this population, this study focused on identifying reasons for booster seat nonuse for children (age 4 through 8) of parents with a high school education or less. While children 4 through 8 were the target population for booster seat use, parents were recruited into the study who had children as young as age 3, as their children would presumably be making the transition from a child restraint into a booster seat in the near future.

The Theory of Planned Behavior (Ajzen and Fishbein, 1991) formed the theoretical foundation for the study. According to Ajzen and Fishbein, behavior is preceded by a positive intention to perform the behavior, which, in turn, is informed by the perceived benefits, barriers, and threats to performing that behavior. According to this theory, to promote booster seat use it is necessary to encourage positive intentions toward booster seat use. This can be done by overcoming the parents' perceived barriers to booster seat use, highlighting parents' perceived benefits to booster seat use, and reducing parents' perceived threats to booster seat use. Therefore, this research aimed to:

1. identify factors that influence parents' current child restraint use behaviors and intentions for future use, and

2. test interventions that address these factors as a means to promote *appropriate* restraint use behaviors, particularly the use of booster seats.

This multi-site study used focus groups to elicit contributing factors to booster seat nonuse, which informed subsequent intervention development. A first phase (12 focus groups, n=107) identified parents' perceived barriers, benefits, and threats relating to belt-positioning booster seats. These findings were used to identify existing and create new interventions. A second phase (16 focus groups, n=142) elicited parents' reactions to these interventions and provided parents with belt-positioning booster seats and education on their use.

Lack of education and fear of injury were the primary barriers to belt-positioning booster seat use. Parents were motivated by interventions that provided them with clear, concrete messaging relating to use. Parents favored the intervention that presented a real story detailing a child's severe injury that could have been prevented with appropriate restraint. At follow-up, parents credited this intervention with motivating booster seat use most often. Although parents cited their child's lack of

comfort and noncompliance as barriers to use, they were not as motivated by interventions that addressed these barriers. Effective intervention programs can be created by identifying and addressing factors that contribute to a population's intention to use belt-positioning booster seats. In addition, successful programs must use messages that motivate the target population by addressing their perceived threats to booster seat nonuse.

Table of Contents

1. Introduction

1.1 Study background

Motor vehicle crashes remain a leading cause of death and acquired disability among children in the United States (NHTSA, 2006). Use of appropriate child restraints is an effective strategy for reducing the risk of injury and death to child passengers in a motor vehicle crash (Elliott et al., 2006; NHTSA, 2003; Arbogast et al., 2003). Appropriate restraint use is categorized into four stages or steps, based on the weight and height of the child passenger (NHTSA, 2005):

- *Step One:* Rear-facing infant child safety seats from birth until children have reached age 1 and are at least 20 pounds;
- *Step Two:* Forward-facing child safety seats for children at least 20 pounds to at least 40 pounds;
- *Step Three:* Belt-positioning booster seats for all children who have outgrown their child safety seats until they are 4'9 tall;
- *Step Four:* Seat belts for children taller than 4'9.

While seat belts are better than no restraint at all, appropriate restraint use along with riding in the rear seat have been found to decrease the risk of injury for children under age 12 (Durbin, Chen, Smith, Elliott, & Winston, 2005); more specifically, booster seats have been demonstrated to reduce the risk of consequential injuries by 59% for 4- to 7-year-old children when compared to seat belt restraint. Booster seats virtually eliminated seat belt syndrome in these children (Arbogast et al., 2003).

Although child restraint use has increased significantly since 1998 (Arbogast et al., 2004) and is currently at its highest level in history (Glassbrenner, 2003), many children still travel in motor vehicles restrained inappropriately, incorrectly, or not at all. Recent data show that 72.6% of restrained children less than 80 lbs. are inappropriately or incorrectly restrained and 11.8% of child passengers less than 80 lbs. are not restrained at all (Decina et al., 2005). The use of appropriate child restraint is an area where behavioral intervention for both parent drivers and child passengers is essential to increase compliance. Recent interventions have been found to change behavior pertaining to booster seat use in select populations; however, in order to facilitate this behavioral change among those least likely to use appropriate restraints further action must be taken.

1.2 Literature review: Previously identified at-risk parent driver populations

Appropriate child restraint use is the responsibility of the vehicle driver, who is most often the parent. A review of the literature reveals several populations, based on driver age, sex, race or ethnicity, and socioeconomic status, who are at-risk for sub-optimal child restraint use or nonuse.

1.2.1 Age of driver

Age of the driver is associated with inappropriate restraint use by their child passengers and may also be a marker for different beliefs about the risk of injury. Studies have found both young and old drivers to be at-risk for restraint nonuse, incorrect use, or inappropriate use. Child restraint use was found in several studies to be lower among passengers of younger drivers (< 20 years) (Miller et al., 1998; Kostaridou et al., 1997; Verreault et al., 1982). Additional studies have shown that older drivers (> 40 years) were less likely to restrain their child occupants (Wagenaar et al., 1988); however, older drivers were found to be better at restraining infants than older children (Miller et al., 1998). In a separate study, increasing parent age was associated with fewer child safety seat installation errors (Lane et al., 2000).

1.2.2 Sex of driver

Research shows an unclear picture of the effect of sex on child restraint system nonuse or misuse. Children driven by males were less likely to be in a child safety seat; child passengers who were restrained in a vehicle with a male driver were more likely to be restrained sub-optimally (Eby & Kostyniuk, 1999). However, on closer examination, a study conducted by Ebel and colleagues revealed that no significant association was found between booster seat use and the driver's sex in a multivariate comparison that controlled for variables such as child's age and location of passengers in the vehicle, as males were more frequently driving older child passengers (Ebel et al., 2003).

1.2.3 Race or ethnicity of driver

Several studies demonstrate a lower prevalence of child restraint use among African Americans and Hispanic Americans (Istre et al., 2002; Hanfling et al., 2000; Margolis et al., 1992). In addition, these populations also experience a higher risk of fatal motor vehicle crashes (NHTSA, 2006; Braver, 2003; Baker, et al., 1998). Despite these results, it remains difficult to disentangle the influence of socioeconomic status and level of education from the cultural factors associated with child restraint use (Elliott et al., 2006). Further, CRS practices among other racial and ethnic minority groups have been largely unstudied.

1.2.3.1 African American parent drivers

Multiple studies have suggested that African American drivers use vehicle restraints less than their White counter-parts (Baker et al., 1998; Niemcryk et al., 1997; Zempsky et al., 1996; Vivoda et al., 2004; Margolis et al., 1992); however, additional studies have indicated that this difference is not significant after controlling for socioeconomic status (Russell et al., 1994). Baker et al. found African American children and teenagers to be at higher risk for being involved in a fatal motor vehicle crash (NHTSA, 2006; Braver, 2003; Baker et al., 1998). Related studies have shown African American parents to be at an increased risk to restrain their child passengers sub-optimally (NHTSA, 2006; Winston, 2006).

1.2.3.2 Hispanic American parent drivers

Hispanic Americans are involved in a disproportionately high percentage of motor vehicle crashes (Stiles & Grieshop, 1999; Baker et al., 1998), and, like African Americans, are at a greater risk to be injured fatally in a crash (Braver, 2003). Latino children are more likely to be unrestrained passengers in motor vehicles than non-Latino children (Lee et al., 2003; Istre et al., 2002). Previous work has shown that language differences and cultural barriers hinder the adoption of seat belts and child safety seats by Latino families. (Vaca et al., 2002; Stiles & Grieshop, 1999)

In addition to child safety seats, booster seats are also not commonly used in the Latino community. This may be attributed to the lack of awareness and education, coupled with a low perception of potential risk (Lee et al., 2003; Istre et al., 2002). According to data collected by Stiles et al., Latino drivers report believing that it is safe not to use child restraints if the child is older than 4 (Stiles & Grieshop, 1999). Although many recognized that some State laws require restraint use, the laws were disregarded if no law enforcement officers were present (Stiles & Grieshop, 1999).

1.2.4 Socioeconomic status of driver

Survey and observational data indicate that socioeconomic status can act as a predictor for child restraint use. Individuals with higher levels of socioeconomic status have a higher prevalence of both general restraint use and appropriate restraint use (Elliott et al., 2006; Kostaridou et al., 1997; Russell et al., 1994; Margolis et al., 1992; Wagenaar et al., 1988; Webb et al., 1988; Hletko et al., 1983). Parents of lower socioeconomic status are less likely to use safety precautions, placing their children at the highest risk for injury (Elliott et al., 2006). Socioeconomic differences in reference to the relative risks of being injured in crashes are negligible in the early years of life (0-4 years). However, for children older than 4, the risks are higher in low socioeconomic status families (such as those of unskilled workers) than for those of high or intermediate level salaried employees (Elliott et al., 2006; Laflamme & Engstrom, 2002).

Socioeconomic status is largely related to family income level and educational attainment (Istre et al., 2002; Wagenaar et al., 1988). When examined separately, both low family income and educational attainment of less than a high school education (Funk et al., 2003; Hanfling et al., 2000; Russell et al., 1994) were strongly associated with lower prevalence of use. The driver's level of education may be a predictor of child safety seat use (Lane et al., 2000; Margolis et al., 1992); however, data from one study revealed that when race, primary medical source, and age were controlled, the parent's level of education and income were not important predictors of child safety seat use (Zempsky et al., 1996). One study examined multiple factors simultaneously and found several independent characteristics to be associated with an increased risk for sub-optimal restraint. The risk factors identified included parent drivers 35 or older, less educated parent drivers, non-Hispanic African American parent drivers. and parent drivers with an annual income below $20,000 (Winston, 2006).

1.3 Literature review: Identification of at-risk child passenger populations

Numerous studies have shown that child restraint system use declines as the age of the child passenger increases. This drop is precipitous around age 4 (Ebel et al., 2003; Funk et al., 2003;

Hanfling et al., 2000; Agran et al., 1998; Russell et al., 1994; Margolis et al., 1992). Children 4 to 8 years old, in particular, represent a challenging population in regard to child restraint. Many of these children have outgrown child safety seats designed for younger passengers and frequently ride unrestrained or are prematurely placed in adult seat belt systems (Winston, 2006; Decina & Lococo, 2004; Ramsey et al., 2000; Centers for Disease Control and Prevention, 2000; Decina & Knoebel, 1997). As of 2000, 83% of children 3 to 8 years old are prematurely graduated to seat belts rather than being restrained in a child safety seats or belt-positioning booster seats; children age 2 to 5 who are inappropriately restrained in seat belts are 3.5 times more likely to sustain injuries, particularly head injuries, than children in child safety seats or belt-positioning booster seats (Winston et al., 2000).

Data from the Partners for Child Passenger Safety (PCPS) study suggest that the use of appropriate restraints is improving. belt-positioning booster seat use among 4- to 8-year-old children, the targeted population for their use, increased significantly from 4.6% to 13% between December 1998 and December 2000, representing an annual increase of 74%. The greatest age-specific increase in use occurred among 4-year-olds, rising from 14% to 34% over the two-year period, representing an annual increase of 80% (Durbin et al., 2001).

More recent data indicate appropriate restraint use continues to be on the rise, and parents are becoming ever more aware of the dangers associated with placing children under age 13 in the front seat of a motor vehicle. From 1999 through 2005, use of appropriate restraint increased for all children through the age of 8 from 51% to 73%. In addition, during the same time period, appropriate restraint use among children age 4 to 8 tripled from 15% to 54%. Specifically, belt-positioning booster seat use among this age group grew from 4% to 36%. Similarly, front seating for children 4 to 8 declined from 19% in 1999 to 6% in 2005 (Partners for Child Passenger Safety, 2006).

In light of the high prevalence of inappropriate restraint of child passengers in motor vehicles, particularly among certain populations of children between the ages of 4 and 8, this study sought to identify ways to increase booster seat use in at-risk populations. Through the use of focus groups grounded in behavior change theory, this study defined the beliefs of these populations concerning child restraint, crashes and injuries, and the barriers the parent drivers face in implementing appropriate restraint practices. Several interventions were examined for their potential in effecting behavior change, and data were collected to identify key components necessary in child passenger safety interventions to increase belt-positioning booster seat use in the study populations.

1.4. Study goals

This research sought to:

1. identify factors that influence parents' current child restraint use behaviors and intentions for future use, and
2. test interventions that address these factors as a means to promote *appropriate* restraint use behaviors, particularly the use of belt-positioning booster seats .

This study targeted White, African American, and Hispanic parents with a high school education or less who routinely drive with children 3 to 8 years old (this target age range differs slightly from the traditional age range for booster seat use (4 to 8 years old); this choice is explained in Section 2.2.2.1) A first wave of focus groups was guided by a trans-theoretical behavior change model and aimed to identify beliefs about, and barriers to, appropriate restraint use. Themes culled from these focus groups were grouped into advantages to booster seat use, barriers to their use, perceived threats, and people who influence child restraint decisions. The themes informed the design and selection of interventions that address the concerns of the target audiences with the hope of leading to use of booster seats. The second wave of focus groups involved ranking the themes followed by review and discussion of interventions, focusing on which messages facilitated behavioral change. The selection of interventions was based on group rankings of themes in order to determine interventions of relevance to the group. Through this method, this study was able to identify and describe parents':

- child restraint use beliefs, including potential benefits of and threats incurred by using child restraint systems;
- child restraint use barriers;
- suggested intervention strategies to improve child restraint use; and
- insights on methods for implementation of these strategies.

As part of this study, the research team also assessed whether or not differences existed between several different populations of parent drivers. These study findings will provide a foundation for the development of primary injury risk-reduction interventions used to promote proper child restraint use behaviors among diverse populations.

2. Methods

2.1 Theoretical foundation for methods

The Theory of Planned Behavior (Ajzen, 1991), as depicted in Figure 2.1, forms the theoretical foundation for the study design. This theory is built on the assumption that a person's intention to perform a behavior predicts his behavior and these intentions result from the person's beliefs about the behavior. The three types of beliefs that form the theory are:

- Beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs that form favorable or unfavorable **attitudes** about the behavior; e.g., **benefits and disadvantages**);

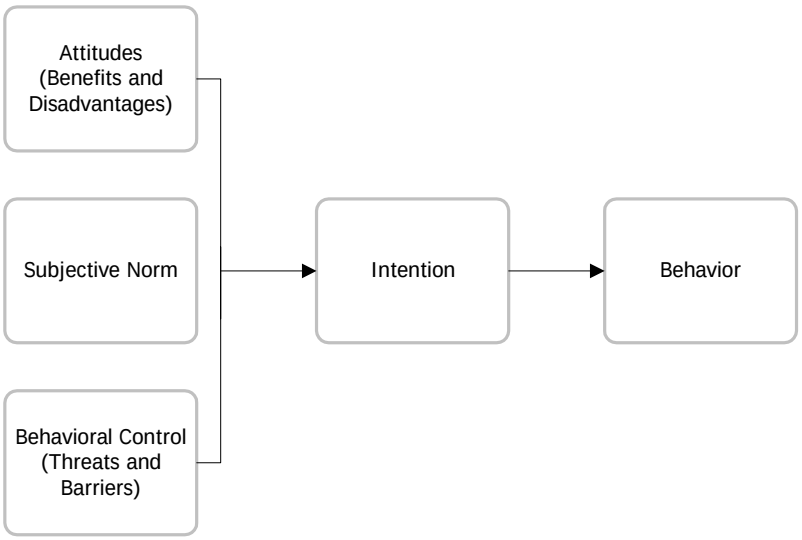
- Beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs that result in perceived social pressure to perform the behavior, or **subjective norm**); and

- Beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs about personal control or

ability to perform the behavior, also known as **behavioral control**; e.g., **threats and barriers**).

Therefore, the more favorable the attitude and subjective norm and the greater the perceived control, the more positive should be the intention to perform the behavior.

Figure 2.1: The theory of planned behavior (simplified)



In order to apply this theory to research design, the behavior under investigation has to be clearly defined: a specific action **by a specific** target population **under specific** circumstances**. For this study, the behavior under investigation was** the use of booster seats for children 4 to 8 years old **(action) by** parents who do not consistently use booster seats for their children **(population)** on every trip **(circumstance).** (While children 4 to 8 were the target population for booster seat use, parents were recruited into the study who had children as young as 3, as their children would presumably be making the transition from child restraints into booster seats in the near future [see sections 2.2.2.1 and section 2.4.1.1]).

According to the Theory of Planned Behavior, interventions that reduce perceived barriers and threats to, and enhance benefits of, booster seat use will promote positive intentions and therefore promote the consistent use of booster seats.

Behavior change was further defined according to the Precaution Adoption Process Model (PAPM), used to categorize current behavior according to stages of progress towards action (Weinstein & Sandman, 1992). In this study, six stages were identified: 1) booster seat nonuse and unaware of booster seats; 2) booster seat nonuse and aware of booster seats but with no plans to use; 3) booster seat nonuse but aware of booster seats, plans to use but has not yet used one; 4) booster seat used at least once; 5) booster seat used most of the time; 6) booster seat nonuse extinguished as demonstrated by telling others about the importance of booster seats.

Therefore, this study was conducted in three phases (Figure 2.2) with the associated goals:

Phase 1: *Formative Research*

Goal 1: Define the target populations that are at highest risk for nonuse of booster seats for children.

Goal 2: Within the target populations, define the current use and intended future use of booster seats, and the determinants of these intentions (attitudes – benefits and disadvantages; subjective norm; behavioral control – threats and barriers).

Phase 2: *Development*

Goal 1: Identify existing interventions and create new interventions that reduce perceived barriers and threats to and enhance benefits of booster seat use for the target populations.

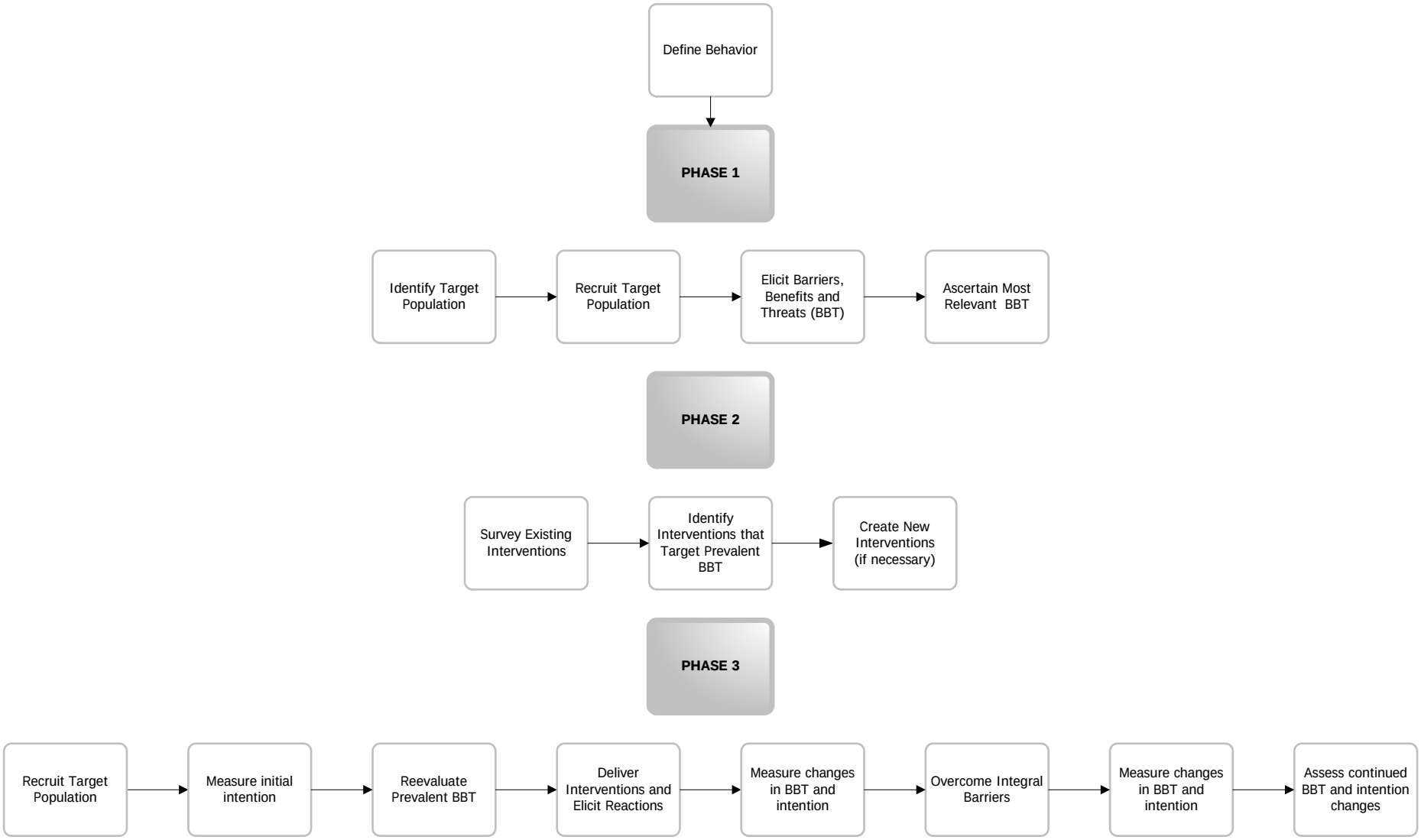
Phase 3: *Evaluative Research*

Goal 1: Elicit target population reactions to interventions and any changes in intentions to use booster seats.

Goal 2: Measure changes in booster seat use behavior.

The Institutional Review Board of The Children's Hospital of Philadelphia approved the protocol for this study, along with all instruments and scripts.

Figure 2.2: Study phases and corresponding objectives

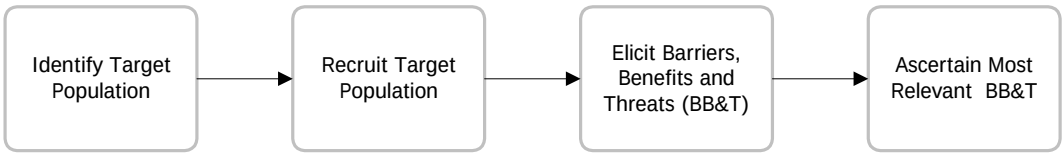


2.2 Phase 1: Formative Research

The first phase of this study was designed to elicit the factors that influence child restraint behavior. To do this a target population was first defined. Within this target population, the current and intended future use of booster seats was then identified, along with the key determinants of intention (attitudes – benefits and disadvantages; subjective norm; behavioral control – threats and barriers).

Figure 2.3 outlines the steps taken in Phase 1 to achieve these goals.

Figure 2.3: Phase 1 objectives



2.2.1 Identifying the target population

Goal 1: Define the target populations that are at highest risk for nonuse of booster seats for children.

The target populations of parents at highest risk for nonuse of booster seats for their children were determined by analyzing data from the Partners for Child Passenger Safety. PCPS is a partnership between the Children's Hospital of Philadelphia and State Farm Insurance Company (Bloomington, IL) to create an on-going surveillance system of children in crashes. Other databases were explored to answer this question (NHTSA's FARS and NASS) but were rejected due to small sample sizes and/or missing information relating to the socio-demographic information about the drivers. In brief, for the PCPS system, insurance claims from State Farm function as the source of subjects, with telephone surveys and on-site crash investigations serving as the primary sources of data. The socio-demographic variables evaluated included: parent driver's sex, age, racial/ethnic background, education, and annual household income.

This investigation demonstrated that African American and Hispanic American parent drivers were less likely to use booster seats to restrain their children under age 8 than non-Hispanic white parent drivers. Sub-optimal restraint was also found to increase as either driver income or education level decreased.

As a result, the target populations for this study included parents of children age 3 to 6 with the following characteristics:

- *Educational attainment*: high school education or less;
- *Household income*: under $20,000;
- *Race/ethnicity representation*: diverse, including African American, White, and Hispanic populations; and
- *Geographic representation*: diverse, including suburban, urban, and rural.

For further information on the eligibility criteria, see section 2.2.2.1.

2.2.2 Recruiting target subjects

2.2.2.1 Eligibility criteria for Phase 1

Carefully selected criteria were used to recruit the desired target population. Not all of the proven indicators for sub-optimal restraint use were used, as this would have severely limited the available population, and would have made recruiting a sufficient number of participants extremely difficult. The screening document used for this phase is shown in Appendix 1.2.

As a result, limited educational attainment and participant race or ethnicity were the primary characteristics used to recruit for this study. All study participants were required to have obtained at most a high school diploma. This education-based criterion was also used as a proxy for recruiting individuals from low socioeconomic status households. Race and ethnicity were used as additional screening criteria. Individuals of both African American and White race, as well as Hispanic American ethnicity were recruited for this phase. Each discussion group consisted of individuals of a single race or ethnicity.

In addition to the above criteria, several other criteria were also imposed. Parents were selected who had at least one child 3 to 6 years old. A ceiling age of 6 was chosen because, at this time, children age 7 and 8 who are using seat belts have likely been doing so for several years; therefore, they are less likely than their younger child passenger counterparts to return to a child restraint. Parents of children as young as age 3 were included as this age is often a transitional period where children move out of a child safety seat. Therefore this was a strategic targeting point for intervention. Additional selection criteria identified parents who drove or rode in a vehicle with their child frequently. This question served to remove parents who primarily used public transportation, or rarely rode in a vehicle with their children.

One final criterion identified the type of restraint used by the parent drivers for their child passengers. This criterion served to eliminate individuals who used neither booster seats nor seat belts, as well as to assign the eligible participants into discussion groups. Each discussion group (focus group) was separated into participants using a particular type of restraint (booster seats or seat belts), of a particular sex, and of a particular race or ethnicity. Therefore, a single group consisted of regular booster seat users, sporadic booster seat users, or regular seat belt users; males or females (mothers or fathers); and African Americans, Hispanic Americans or Whites.

2.2.2.2 Recruitment for Phase 1

All recruiting efforts for this phase were conducted and facilitated by a subcontractor. Recruitment began with distribution of flyers (Appendix 1.1) to communities and groups in the area of the focus group sites. Interested individuals were instructed to call a designated toll-free number given on the flyer. Study personnel at the subcontracted agency then screened all respondents.

Eligibility to participate in this study was determined via telephone. Eligible candidates were invited to participate after hearing an overview of the focus group goals or objectives, and provided information regarding the scheduled date, time, and location. Eligible candidates were told they

would receive an honorarium for participation. Potential candidates were excluded from participating in this study if they either (1) failed to meet the inclusion criteria as set forth in section 2.2.2.1, (2) were known to have participated in a focus group within three months prior to the start of this study, or (3) were employees of one of the market research firms that were used to recruit participants for this study. Subjects were precluded from participating in more than one focus group.

Qualifying individuals were assigned a focus group date, based on their restraint use, race or ethnicity and sex. These participants received follow-up telephone calls reminding them of their commitment 24 hours prior to the discussion date.

Local chapters of the Injury Free Coalition for Kids (www.injuryfree.org, IFCK) partnered with the subcontractor to recruit focus group participants. For more information on IFCK see Appendix 3.1. Each local IFCK chapter provided historical information on the populations in its community and suggested specific locations for holding the sessions. IFCK personnel also assisted in distributing recruitment flyers and in advertising the focus groups in local sites. The final locations and demographics for the focus groups are shown in Table 2.1.

Table 2.1: Location and demographic composition of each Phase 1 focus group

Location	Demographic Segments
Prince George's County, MD (Pilot Test)	One session African American mothers
Little Rock, AR	Two sessions with Spanish-speaking Hispanic mothers
	Two sessions with African American mothers
Cincinnati, OH	Two sessions with African American mothers
	Two sessions with White mothers
Langley Park, MD	One session with Spanish-speaking Hispanic mothers
	One session with Spanish-speaking Hispanic fathers
Baltimore, MD	One session with African American fathers

2.2.3 Phase 1 focus groups: Determining current booster seat use, intended future use, and determinants of future use

Goal 2: Define the current use of booster seats, intended future use, and determinants of intentions to use (of target populations)

The Phase 1 focus groups sought to identify and describe participants' current use and intended future use as well as perceived child restraint use barriers, benefits and threats. To do this, six key topics framed the discussion:

- *Child passenger safety messages* - the prior knowledge relating to child restraint systems, received and held by the participants;

- *People who matter* - the participants' trusted sources of information relating to child passenger safety;
- *Perceived barriers* - the obstacles that bar participants from using child restraint systems;
- *Perceived benefits* - the advantages that promote participant child restraint systems use;
- *Perceived threats* - the concerns faced by participants when driving in a vehicle with children;
- *Control beliefs* - the extent of control the participants perceived themselves as having over selecting, accessing, and using child restraint systems for their children.

These topics are each reflected question types in the Phase 1 Moderator's Guide (Appendix 1.3). The moderator's guide was used as a framework for each discussion; however, the discussions were not limited to topics in the guide. This was done to ensure that each discussion was free flowing, and allowed the participants to explore the issues that were most relevant to their lifestyles. The guide broke the time allotted to the groups into five segments: the introduction, an icebreaker, discussion topics and probes, the card sort exercise, and a brief closing. The timing and order of these segments is detailed in Table 2.2.

Table 2.2: Timing and flow of Phase 1 focus groups

Topic	Time Allowed
Introduction	10 min
Icebreaker	10 min
Discussion Topics and Probes	60 min
Child's reaction	10 min
CPS messages and knowledge	10 min
Perceived threats and barriers	10 min
Perceived benefits	10 min
Prior restraint use	10 min
Current restraint use	10 min
Card sort exercise	15 min
Summary and closing	5 min
TOTAL TIME	**100 min**

As participants arrived, a member of the subcontracted agency's staff greeted them. The Participant Consent Form (Appendix 1.4) and the Participant Information Form (PIF; Appendix 1.5) were distributed at this time. The PIF asked questions covering general demographic information (age, race, sex, etc.), as well as information specific to the participant's driving behaviors. Participants were encouraged to fill out the PIF upon arrival. Once all participants had arrived, the consent form was read aloud. Participants were briefed on the format and duration of the group, and were provided the ground rules for the discussion.

The discussion then began with an icebreaker. Here, participants were asked to state their names and the ages of their children. This provided a segue into the discussion topics. The discussion was divided into six topics (Child's Reaction to Restraint, CPS Messages and Knowledge, Perceived

Threats and Barriers, Perceived Benefits, Prior Restraint Use, and Current Restraint Use), each of which included three to seven questions. Questions in the moderator's guide were chosen to elicit participants' current use; intended future use; and perceived child restraint use barriers, benefits, and threats. In the discussion, questions from each topic were covered in each group; however, since these questions were used as a guide for the discussion, and not as a script, not all questions were covered in every group.

Each discussion concluded with a semi-quantitative method known as "card sort." The card sort was used to gain further insight into the relative importance of specific issues related to child restraints and their use (ease of use, cost, comfort, etc.). With this method, the participants choose the best combination of child restraint attributes that reflect their experience. Rather than weighing each attribute individually, this technique allows participants to provide the best description of their experience by choosing multiple attributes simultaneously.

The card sort, described in the moderator's guide for this phase (Appendix 1.3), asked participants to select the attributes that best described their experiences with child restraints from a list of multiple phrases. Each attribute, shown in Table 2.3, was printed on a separate card, and a set of all 24 cards was provided to each participant. The participants were asked to place the cards they selected into an envelope. The focus group moderator then collected the envelopes and conducted the remaining portion of the conversation based on the selections of the participants.

The discussion following the card sort was based on the selections that the participants made. The moderator reviewed the cards that were placed in the envelopes, and questioned participants about the "good" and "bad" outcomes of using a booster seat with their child passengers. Details on these questions and all others in the Phase 1 focus groups can be found in the Moderator's Guide, (Appendix 1.3).

Table 2.3: Child restraint attributes listed in the card sort exercise

Child Restraint Attributes Used in the Card Sort	
Comfortable	Uncomfortable
Safe	Unsafe
Easy to use	Hard to use
Light weight	Heavy
Easy to move to another car	Hard to move to another car
Cheap	Expensive
Good features	No features
Child can see out of window	Too bulky
Child likes	Child dislikes
"Big kid" seat	"Baby" seat
Keeps child under control	Child can easily get out
Easy to put in car	Hard to put in car

2.2.4 Analysis: Delineating relevant barriers, benefits and threats and trusted sources

The analytic goal was to generate lists of barriers, benefits, and threats to booster seat use among the target populations and delineate their trusted information sources and preferred delivery channels for messages. These lists served to inform Phases 2 and 3 of the research.

After each focus group and in-depth discussion, the moderator drafted an initial summary of the findings for review by the project team (field notes that contained the key themes). The focus group discussions were transcribed for analysis; discussion groups conducted in Spanish were translated into English. Transcripts and the field notes were reviewed for common themes and new ideas that emerged. A rubric (Appendix 1.6) was constructed based on the identified themes, and organized according to the Theory of Planned Behavior, as benefits, barriers, and threats to booster seat use. One investigator then coded statements within the transcripts into the relevant thematic areas from the outline. This was done using N6 software (QSR International, Doncaster, Victoria, Australia).

Once each of the transcripts was coded, a report summary generated by N6 was used to select noteworthy quotes. These selections were then included in a summary report. Single reports were generated for each demographic group in each city. All researchers who observed the focus groups reviewed the summaries and made comments, ensuring that the reports were representative of the groups. The researchers and the moderator discussed all comments to reach consensus. In situations where consensus could not be reached, all possible interpretations were included in the summary document.

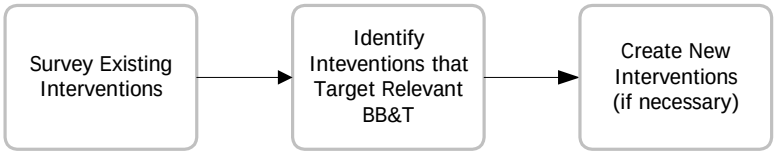
To supplement this transcript data, participant answers to the questions on the PIF were used to establish a demographic profile of the study population for Phase 1. For categorical variables, frequencies were calculated. For descriptive analyses of continuous variables, e.g., participant age and number of children, the mean, median, mode, and range were obtained. Descriptive analyses were also performed on the participants' selections from the card sort exercise. To do this, the number of participants who selected each statement was first quantified. Data from 14 participants were removed from the data set as their card selections included statements that were contradictory (*e.g.,* selecting both expensive and inexpensive). These modified quantities were further defined by determining the number of participants who selected each statement from each sex, race/ethnicity, and type of CRS used. Pearson's chi-square test was used to determine any significant differences between these groups (i.e., females versus males).

2.3 Phase 2: Development

The second phase of this study was designed to identify existing interventions and create new ones that promoted the benefits and addressed the barriers and threats identified in the Phase 1 focus groups.

Figure 2.4 outlines the steps taken in Phase 2 to achieve these goals.

Figure 2.4: Phase 2 objectives



2.3.1 Surveying existing interventions: A literature and internet review

A review of the literature was performed to identify proven effective interventions to increase booster seat use. This search was supplemented with a review of interventions described on the Internet.

2.3.2 Identifying interventions that target relevant barriers, benefits and threats

Each intervention was presented to the research team, comprised of members from NHTSA, the IFCK, the subcontracting firm and the Children's Hospital of Philadelphia to evaluate which interventions targeted the relevant benefits, barriers, and threats. Interventions were eliminated that had unclear or non-relevant messages. Interventions were also eliminated that used a medium that the participants in Phase 1 cited as being ineffective, such as flyers.

Four interventions or intervention programs were selected for evaluation by the participants in Phase 3. Three targeted booster-seat-aged children: the IFCK of Austin's The Buckleteers; the Cinderella public safety announcement by NHTSA, the Walt Disney Company, and the Ad Council; and Weiner/Seaman Production's "Riding with the Big Green Snake." A fourth intervention targeted Latino parents and was created by the University of Washington's Harborview Injury Center: the "*Abrocha Tu Vida*" campaign. Table 2.4 describes these interventions and highlights the barriers and threats they address.

2.3.3 Creating new pilot interventions to address new ideas/themes from Phase 1

New pilot interventions were created to supplement the chosen existent interventions. The goals of these new interventions were to inform, persuade, remind, and provide benefit to the target audience who received the message. Five key elements were considered in creating the interventions: the desired **behavior** *(action*), the **target audience** *(receiver)*, the intended **message**, the **source** *(sender)* who delivers the message, and **channel** by which the message is delivered (Allen, 1999).

For this study, the target **behavior** was defined as booster seat use by parents for their children age 4 to 8. The **target audience** was defined by determining the population of parents at highest risk for nonuse of booster seats for their children (see Section 2.2.1). The intended **message** and trusted **sources** for the message were determined from analysis of focus group discussions with the target audience in which themes emerged that encompassed issues of importance to the audience (see

Section 2.2.3). The source serves to translate the theme into a message that will be received well and be understood by the target audience.

Given these factors, set criteria were used to explore presentation formats to deliver messages for behavior change. When completed, the intervention must:

- engage the target audience;
- hold their interest for the duration of the delivery; and
- inspire a desired action.

It is important to take into account that the target audience is receiving countless messages in a given day, some of which may contradict the message delivered. Therefore, an effective message should be meaningful to the population (placed in a context that is relevant), address specific barriers and threats to accomplishing the behavior, highlight benefits that are meaningful and provide practical solutions to overcoming the barriers and threats. A successful message will move an audience one step closer to achieving the desired behavior (see Section 2.1).

The appeal of the message can be rational (communicate rational benefits of the behavior and assume that the target audience will make the rational decision to adopt the behavior); emotional (gain the attention of the target audience by generating emotions that will motivate them to adopt the behavior); or moral (discourage undesirable behavior and direct audiences to the right behavior). Recent research in these appeals distinguishes between the emotions that they arouse and the coping mechanisms that they mediate (Miller et al., 1995). Appeals that generate fear can paralyze the audience while those that generate guilt and regret can promote behavior change by providing the necessary coping strategies (the preventive behavior) that will avoid the guilt and regret.

The channel chosen for message delivery was the one that best targets and reaches the target population. Television, radio, and word-of-mouth were most often cited by the target audiences. See Section 3.1.2.2 for more results about the channels for safety information described by the target audiences.

Three messages were identified as being relevant to the target populations but were not clearly addressed by previously existing interventions: importance of booster seat laws, CPS (particularly booster seat) education (around injuries that are prevented), and booster seats as part of good parenting in the car. As a result, the research team created new pilot interventions to convey these messages. These interventions, summarized in Table 2.5, were each designed to deliver a single message

Table 2.4: Summary of the interventions selected in Phase 2

Campaign Title	Sponsor(s)	Materials	Target population	Mode of Distribution	Targeted barriers
"Abrocha Tu Vida" *(Buckle up your life)*	Harborview Injury Prevention and Research Center, Latino Kids Safety Coalition, and State Farm Insurance	▪ Four radio commercials in Spanish	Spanish-speaking parents and their children 4 to 8 years old	▪ Regional radio	▪ Resistance of family members ▪ No one enforcing law ▪ Lack of info
The Buckleteers	Injury Free Coalition for Kids of Austin	▪ DVD ▪ Membership card ▪ Sticker ▪ Poster ▪ Height chart ▪ Bracelet	English- and Spanish-speaking children 4 to 8 years old	▪ Childcare centers ▪ School health classes ▪ Educational programs ▪ Community centers ▪ Doctors' offices	▪ Child resists restraint ▪ Booster is a "baby seat"
Riding With the Big Green Snake	Weiner/Seaman Productions	▪ Video Tape ▪ Posters ▪ Coloring/Story Book ▪ Stickers ▪ Board Game	English- and Spanish-speaking children 4 to 8 years old	▪ Childcare centers ▪ School health classes ▪ Educational programs ▪ Community centers ▪ Doctors' offices	▪ Child resists restraint ▪ Booster is a "baby seat"
Cinderella Interventions	NHTSA, the Walt Disney Company, and t he Ad Council	▪ Web site ▪ PSA ▪ Activity Guide	English- and Spanish-speaking children 4 to 8 years old	▪ National television ▪ Previews to movies	▪ Child resists restraint ▪ Booster is a "baby seat" ▪ Lack of info ▪ Resistance of family members

Table 2.5: Summary of the interventions designed in Phase 2

Campaign Title	Designer	Materials	Target population	Mode of Distribution	Targeted barriers
"It's the law"	The Center for Injury Research and Prevention at The Children's Hospital of Philadelphia	▪ Two radio PSAs in English	English-speaking parents and their children 4 to 8 years old	▪ Regional radio	▪ Resistance of family members ▪ No one enforcing law ▪ Lack of info
"Safer for kids, easier for you"	The Center for Injury Research and Prevention at The Children's Hospital of Philadelphia	▪ Four-minute video	English-speaking parents and their children 4 to 8 years old	▪ Childcare centers ▪ School health classes ▪ Educational programs ▪ Community centers ▪ Doctors' offices ▪ National television ▪ Previews to movies	▪ Child resists restraint ▪ Booster is a "baby seat" ▪ Lack of info
"Avoid regret"	The Center for Injury Research and Prevention at The Children's Hospital of Philadelphia	▪ Five-minute video	English-speaking parents and their children 4 to 8 years old	▪ Childcare centers ▪ School health classes ▪ Educational programs ▪ Community centers ▪ Doctors' offices ▪ National television ▪ Previews to movies	▪ Lack of info

2.3.3.1 Target Message: Importance of booster seat laws

Participants in the Phase 1 focus groups strongly expressed the importance of laws in informing their behavior and persuading their actions. While most were uncertain about the details of the laws, parents were extremely worried about getting a ticket. *Abrocha Tu Vida* addressed this issue for Spanish-speaking communities; however, very few materials were available to educate English-speaking parents about booster seat laws in their State. Two radio commercials titled "It's the law" were designed, modeled after those available in Spanish. These commercials explained booster seat use as not only a safe practice, but also as the law.

2.3.3.2 Target Message: Belt-positioning booster seat education (focusing on injuries that are prevented)

Participants in Phase 1 conveyed a lack of awareness about the added safety benefit provided by a booster seat (as opposed to a seat belt). They expressed interest in hearing these stories from real parents. In response, a true story intervention titled "Avoid Regret" was designed. This video intervention described a father's regret that his daughter had not used a booster seat, as she had been severely injured in a crash. He spoke of how his wife was fatally injured, and how his two daughters in the back seat survived. His four-year-old child, restrained in a child safety seat, suffered only very minor injuries. His seven-year-old child, seated next to the four-year-old, but restrained in a seat belt alone, suffered severe injuries resulting in brain damage. The narrator in the video, the father, described life after the crash with a disabled daughter and how and why proper restraint in a booster seat would have reduced the severity of her injuries.

2.3.3.3 Target Message: Belt-positioning booster seats as part of good parenting in the car

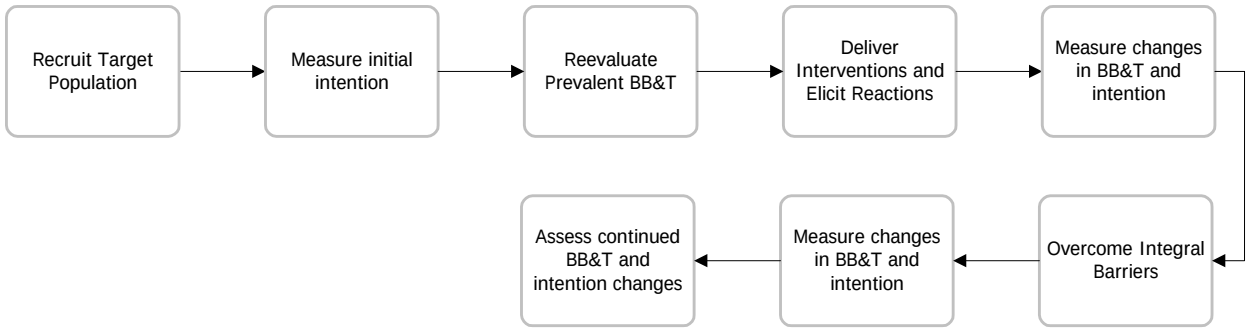
A final barrier described by the participants was the challenge of parenting in the car. Children removed their restraints, distracted the driver, and in general misbehaved, highlighting a key threat that parents feared – getting into a crash with their child in the car. Parents felt ill equipped to manage their child's behavior in the car. Although interventions were available to explain the benefits of restraint use to children, no programs were found that helped parents use discipline and restraint in booster seats to enforce better behavior in the car. A video was created, titled "Safer for Kids, Easier for You," that illustrated parenting techniques for controlling children in the back seat. In this video, a trusted source, a pediatrician, described what the parents could do to improve the situation. Among the suggested techniques was the use of booster seats to ensure children were comfortable in their restraints, and would therefore stay in place in the vehicle.

2.4 Phase 3: Evaluation

Phase 3 was designed to obtain parents' assessments of the interventions selected and created in Phase 2. This phase also elicited recommendations for revision to the interventions to enhance their appeal.

Figure 2.5 outlines the steps taken in Phase 3 to obtain these goals.

Figure 2.5: Phase 3 objectives



2.4.1 Recruiting target subjects

2.4.1.1 Eligibility criteria for Phase 3

This phase sought to evaluate the designated interventions using the same populations for which they were intended; therefore, the eligibility criteria for Phase 3 were very similar to those used in Phase 1. Again, the selection criteria excluded anyone whose education level exceeded a high school diploma. Separate focus groups were organized for African American, Hispanic American and White populations. As in Phase 1, selection criteria required that participants rode with their children in a vehicle at least several times a month.

Two criteria differed between the two phases. In Phase 3, participants who had at least one child between the ages of 3 and 8 years old were recruited. This differed from Phase 1 where only parents who had at least one child between the ages of 3 and 6 years old were recruited. This change was made to increase the number of respondents able to be recruited. As in Phase 1, while children 4 to 8 were the target population for booster seat use, parents were recruited into the study who had children as young as age 3, as their children would presumably be making the transition from a child restraint into a booster seat in the near future.

A second change removed the type of child restraint used by the respondents from the selection criteria. This was done because parents were more reluctant to accurately describe how they restrained their children in vehicles in this phase, creating a selection bias. This change was attributed to the highly publicized booster seat laws in the target States (Maryland, Arkansas, and Ohio). Parents were hesitant to admit to not using booster seats, as this was currently being described in the media as an unsafe practice. As a result, this screening criterion was changed on the first day of recruiting. For all recruited participants, data concerning the type of child restraint used was collected but not used to screen.

2.4.1.2 Recruitment for Phase 3

A different agency was subcontracted to recruit and conduct the Phase 3 focus groups. As in Phase 1, recruiting at each focus group site was facilitated through flyers handed out in public areas and meetings. The flyers (Appendix 2.1) displayed a toll-free number that people could call to express interest in the study. Staff from the subcontracted agency used a standardized screening document to screen all callers (Appendix 2.9), and eligible candidates were recruited into specific focus groups based on their location and ethnicity. The Injury Free Coalition chapters in each of the focus group cities aided in recruitment.

As in Phase 1, eligibility to participate in Phase 3 was determined via telephone. Eligible candidates were invited to participate after hearing an overview of the focus group goals or objectives, and information regarding the scheduled date, time, and location. Eligible candidates were told they would receive an honorarium for participation. Potential candidates were excluded from participating in the focus groups based on the same criteria used in Phase 1 (see Section 2.2.2.1). Qualifying individuals were assigned a focus group date based only on their race or ethnicity and sex. Type of restraint used was not used to determine focus group segmentation in Phase 3. Eligible participants received follow-up telephone calls reminding them of their commitment 24 hours prior to the discussion date.

In Phase 3, the IFCK chapters closest to each focus group location assisted the subcontractor with recruiting. For more information on IFCK see Appendix 3.1. The final locations and demographics for the focus groups are shown in Table 2.6.

Table 2.6: Location and demographic composition of each Phase 3 focus group

Location	Demographic Segments
Silver Spring, MD (Pilot Test)	One session with African American mothers Three sessions with English speaking Hispanic mothers
Baltimore, MD	Two sessions with African American mothers Two sessions with African American fathers
Little Rock, AR	Two sessions with African American mothers Two sessions with English speaking Hispanic mothers
Cincinnati, OH	Two sessions with African American mothers Two sessions with white mothers

2.4.2 Phase 3 focus groups: Evaluating interventions that address relevant determinants

The Phase 3 focus groups were designed to achieve two objectives:

1. elicit the reactions of designated target populations to selected interventions, and

2. determine if the selected interventions motivated any changes in intentions to use booster seats.

A focus group moderator's guide was constructed to achieve these goals. Four key topics provided a framework for the group:

- the effect of key barriers, and threats on current behavior,
- the strength of targeted intervention messages,
- the identity of appropriate intervention sources, channels, and audiences (see section 2.3.3), and
- the propensity of selected interventions to change behavior.

As in Phase 1, the moderator's guide (Appendix 2.3) was used as a framework for each focus group discussion. Discussion was again free-flowing, allowing participants to explore the issues that were most relevant to their lifestyles. The guide broke the groups into five segments: the introduction, an icebreaker, a list ranking exercise and an accompanying discussion, the viewing and discussion of four interventions, and a brief closing. The timing and order of these segments is detailed in Table 2.7.

Table 2.7: Timing and flow of Phase 3 focus groups

Topic	Time Allowed
Introduction	5 min
Icebreaker	10 min
List ranking exercise and discussion	20 min
Delivering interventions and eliciting reactions	80 min
Selected intervention 1	20 min
Selected intervention 2	20 min
"Safer for Kids, Easier for You" intervention	20 min
"Avoid Regret" intervention	20 min
Summary and closing	5 min
TOTAL TIME	120 min

As in Phase 1, a member of the subcontracted agency's staff greeted participants as they arrived. A Participant Consent Form (Appendix 2.4) and the Participant Information Form (Appendix 2.5) were distributed upon arrival. These documents were available in both English and Spanish, depending on the language the participants preferred. The PIF asked questions covering general demographic information (age, race, sex, etc.), as well as, information specific to the participant's driving behaviors and intentions toward booster seat use (for more information on the PIF and other questionnaires distributed in Phase 3, see section 2.4.2.4). Participants were encouraged to fill out the PIF upon arrival. Once all participants had arrived, the consent form was read aloud. Participants were briefed on the format and duration of the group, and were provided the ground rules for the discussion.

2.4.2.1 The list ranking exercise: Prioritizing relevant benefits of and barriers and threats to booster seat use

Analysis of the Phase 1 focus groups generated lists of benefits, barriers and threats to booster seat use and preferred sources and channels for safety information. The first task of the focus groups in the Evaluation phase was then to prioritize these lists. This served to determine which issues were of greatest relevance to each group of focus group participants.

Four different lists (Appendix 2.7), each composed of an average of 13 items, were printed on poster paper and also read aloud to overcome literacy barriers:

- perceived threats, or “Bad things that I worry about when I drive with my children in the car”;
- perceived benefits, or “Good things that might happen if my child is in a booster seat”;
- perceived barriers, or “Things that might make it hard for me to use a booster seat for my child”; and
- people who matter, or “People or places whose opinions about booster seats matter to me."

Each list was color coded (benefits = green, barriers = red, threats = orange, people who matter = blue), and participants were given five round stickers in each of the four colors. The participants were asked to place their stickers next to the statements that most closely represented their experiences, using the green stickers with the green list, the blue stickers with the blue list, etc. Participants were encouraged, but not required, to use all of their stickers. They were also allowed to place more than one sticker on an item that they felt strongly about. The focus group moderators, in addition to personnel from the Children’s Hospital, were present and available to answer questions concerning the lists. Following the list ranking, the participants were asked to discuss why they had chosen the items that they had. The participants were also asked if they believed any topics were missing from the lists.

The most highly ranked items on the lists were then identified and used to select interventions to be shown to the group. For example, if a group ranked the barrier relating to the law or police officers highly, an intervention addressing the law would be presented. For more information on the interventions shown in this study see Section 2.4.2.2.

This activity served a dual purpose. It served to validate whether the populations selected for Phase 3 had similar concerns regarding booster seat use as those in Phase 1. However, the list-ranking exercise also served to prioritize the issues of greatest importance to the target population. By identifying the most important issues, the study team was able to identify which interventions would best fit the needs of the focus group participants.

2.4.2.2 Delivering interventions and eliciting reactions

Each focus group presented participants with four interventions. These interventions were selected from a list of seven possible interventions. Four had been previously implemented while three were designed by the Children's Hospital research team in response to Phase 1. For more information see Sections 2.3.1-2. Of the four interventions that were shown, two were selected based on the participants' responses to the list-ranking activity, and two were shown to each group no matter which topics they ranked highly on the lists. The list from which the interventions were selected was as follows:

- The Buckleteers,
- Abrocha Tu Vida,
- The Cinderella PSA,
- The Big Green Snake, and
- The Children's Hospital Booster Seat Laws Radio PSA.

For more information on the barriers, benefits, and threats that each of these interventions addresses see Table 2.4 and 2.5. The remaining two interventions, which addressed potential injury and parental tips, were designed by CHOP in response to a perceived deficit in existing interventions and were shown to all groups (see Sections 2.3.1-3 and Table 2.5).

Each intervention was assessed via focus group discussion using the same series of questions shown in the Phase 3 Moderator's Guide (Appendix 2.3). These questions were based on theories of social marketing, and sought to identify whether each intervention created intention and motivation to engage in the targeted behavior.

The purpose of these discussions was to determine which interventions best addressed the barriers and threats and highlighted the benefits of booster seat use. By selecting interventions that specifically addressed the issues important to the participants, the study was able to directly address the effectiveness of the intervention itself, without being solely focused on the relevance of the intended message.

Each intervention was evaluated using the same set of questions. This was done to assure that each intervention was evaluated on the same basis. The effectiveness of these questions was evaluated in the four pilot groups run at the start of this phase. For more information on the segmentation of the groups in Phase 3, see Table 2.6.

2.4.2.3 Booster seat giveaway: Overcoming access

As a supplement to this phase of the study, the contractor funded a booster seat giveaway, giving participants the opportunity to receive a free booster seat. Following the discussion of the interventions, participants were informed that they could receive a booster seat for no cost. Participation in this portion of the study was completely optional; focus group members could choose not to receive the booster seat and depart the group at this time. The giveaway was not announced until the end of the focus group discussion; participants were not aware of the giveaway

prior to this time. Participants were required to sign a separate consent form (Appendix 2.11) to participate in the giveaway.

Each participant electing to receive a booster seat was required to listen to a 15-minute educational presentation that detailed how to properly use the booster seat. The script for this giveaway and presentation is shown in Appendix 2.12. Certified child passenger safety technicians from the local IFCK chapter did the training. Following the presentation, participants were allowed to ask questions of the technician.

This booster seat giveaway eliminated the barriers of access to booster seats that the participants might have faced, including cost and lack of knowledge about where to buy a booster seat. By eliminating these barriers, the research team was able to examine the effectiveness of the intervention messages, as none of the interventions shown in the group were able to overcome the cost or inaccessibility barriers alone. The effectiveness of the giveaway in changing the participant's intention to use booster seats was evaluated through a follow-up telephone interview (see section 2.5). Results from these interviews, also funded by the contractor, will be published separately.

2.4.2.4 Participant questionnaires: Measuring changes in intention determinants

In order to obtain a quantitative measure of behavior change, several feedback instruments were administered to the participants throughout the course of Phase 3. These instruments collected not only pertinent demographic data (as done in Phase 1; see section 2.2.3) but also documented behavioral intentions of the participants throughout the course of the phase.

The first instrument, the Participant Information Form (Appendix 2.5) was administered to the participants upon their arrival at the focus group site. This document obtained the participants' demographic data as well as their intentions toward child restraint system use. The behavioral intention questions were used to discern the participants' beliefs prior to taking part in the discussion, and would be gauged against data from subsequent feedback. The Post-Discussion Form (Appendix 2.14) was administered to the participants immediately following the focus group discussion and prior to the giveaway announcement. The PDF contained many questions identical to those in the PIF, which surveyed participant intention toward belt-positioning booster seat use. This form was used to discern the effects of the focus group discussion and interventions on behavioral intention toward booster seat use. A final instrument was administered to those participants who took part in the giveaway. The Booster Seat Giveaway Form (Appendix 2.13), administered directly following the giveaway, repeated several of the questions related to behavioral intention, and also obtained brief demographic data about the child receiving the booster seat. All three documents — the PIF, PDF and BGF — were available in both English and Spanish, depending on the language that the participants preferred.

This process of collecting subjective data about intention at several time points in the phase served several purposes. It allowed for quantitative data collection about the beliefs of the population and measurement of trends regarding changes in intention within various demographic groups as a result of the research process: baseline attitudes and intentions; changes in attitudes and intentions as a

result of viewing and discussing the interventions; and further changes in attitudes and intentions after receiving a booster seat. In addition, immediate changes in knowledge were assessed.

2.4.3 Phase 3 analysis: Assessing changes in attitudes and intentions

As in Phase 1, Phase 3 focus group analyses combined quantitative and qualitative methods. The overall goals of the analyses of the Phase 3 focus group data were:

1. to summarize participants' rankings of barriers, benefits and threats to booster seat use and the reasons for the rankings;
2. to evaluate reactions to the proposed interventions using discussion and reported change in attitude towards booster seats; and
3. to summarize participant suggestions for improvements in content and distribution of the interventions.

The most highly ranked barriers, benefits and threats were found by summarizing by each focus group the top five items chosen for each list in the list ranking exercise. This was done by counting the number of stickers next to each barrier, benefit, threat, or person who mattered. A summary was created, documenting the top five choices for each group on each list. For each top-five-list item, quotes were taken from the transcripts that explained why the item was significant.

The reactions of the participants to the selected interventions were analyzed in two ways: by coding sections of the focus group discussion and by tracking changes shown in the participant information collection forms. As in Phase 1, focus group discussions were transcribed for analysis; all focus groups performed in Spanish were translated to English and the English translation transcripts were used in the analyses. Each transcript was coded using a rubric (Appendix 2.6), which was designed based on the topics covered in the group. This rubric classified comments based on their nature and the intervention they addressed. All coding was performed using N6 software. Coded transcripts were then analyzed for recurring themes or other noteworthy content. These themes were used to qualitatively evaluate the participants' reactions to each selected intervention.

Changes in attitudes and intentions to use booster seats were assessed quantitatively. This quantitative analysis was performed by comparing participant's responses in the PIF to those in the PDF. For descriptive analyses of interval scale variables, e.g., participant age and number of children, the mean, median, mode, and range were obtained. These variables were also categorized for later cross-tabulation analysis. For categorical variables, frequencies were calculated. Among the 143 participants in the Phase 3 focus groups, we excluded one Baltimore participant from the whole analysis because her questionnaires were mostly blank.

2.5 Follow-up interviews: Assessing behavior change

As indicated in section 2.4.2.3, a supplementary study, including a booster seat giveaway and follow-up telephone calls, was funded by the contractor. The telephone interviews were made to each subject at six weeks following their participation in the focus group as part of a follow-up companion study. The purpose of the calls was to measure behavior change (booster seat use) and retention of messages delivered as part of the focus groups. Each phone call, made by one of two

members of the CHOP research team, asked a series of questions, detailed in the follow-up interview script (Appendix 2.15). Phone calls were recorded using a telephone pickup microphone and a digital recorder to allow for separate assessment of adherence to the protocol.

Results from these interviews will be published separately, by the contractor.

2.6 Additional Considerations

2.6.1 Phase 1: Formative Research

Twelve focus groups were held in this phase (see Table 2.1). Each group was conducted by one of three moderators from the first subcontracted agency. One moderator, along with a representative from Children's Hospital, was present for each group in Phase 1. Groups were conducted in multiple locations in each of the five target cities, including churches and community centers. Groups included between 7 and 13 participants.

A Respondent ID number was generated for each participant in the 12 focus groups. These IDs were designed to replace participants' names during the data analysis process, thereby helping to maintain participants' anonymity. The respondent IDs began with 001 for the first participant in the pilot group and increased upward numerically, with the next participant having the ID 002, and so on throughout the groups.

Digital audio recordings were made of all group discussions, in addition to a back-up audio recording that was not digital. All digital recordings were saved to compact disks, while all non-digital back-up recordings were recorded to audiocassette. All recordings were used only to create discussion transcripts, and were destroyed at the completion of the study.

2.6.2 Phase 3: Evaluative Research

Sixteen focus groups were held in this phase. Each focus group was conducted by one of two moderators from the second subcontractor. The two moderators comprised the "expert moderating team" assembled for the study. For each focus group, one member served as the moderator, while the remaining member assisted with the technical aspects of facilitating the focus group. Both team members, along with representatives from the Children's Hospital, were present for each focus group in Phase 3. Groups were conducted in a variety of locations in each of the four cities targeted, including churches and community centers. Groups generally included 6 to 10 participants.

Expanding on the methods used in Phase 1, unique respondent ID numbers were created for each participant in each of the 16 focus groups. These IDs were designed to replace participants' names during the data analysis process, thereby helping to maintain participants' anonymity. Each respondent ID functioned as a code that described the city the discussion took place in and the group number for that city, the participant number, the date of the discussion, and the time of day the discussion was held. For example, S1P1384 represented Silver Spring Group 1/ Participant 1/ March 8/ 4pm. Digital audio recordings were made of all groups using two PZM omni-directional microphones; in addition, digital recordings were taken of each participant individually. The recordings were made using Olympus Digital Audio Recorders. This was done to ensure that every participant's contribution to the discussion was successfully and clearly recorded.

3. Results

3.1 Phase 1: Formative Research

3.1.1 Study sample: Demographic PIF data

Demographic data describing the study sample was taken from the Phase 1 PIF (Appendix 1.5), administered to focus group participants prior to the focus group discussion. A total of 107 participants from one pilot group and 11 focus groups were included in Phase 1 of this study (Table 3.1). The plurality of parent drivers who participated in Phase 1 were African American (46.7%), female (86.9%), age 26 to 30 (35.5%), and married (51.4%). Many participants were employed outside of the home (45.8%), with 63.3% of those employed working full time, and 44.9% working in a service-oriented position.

The Phase 1 participants answered several questions relating to their driving behaviors (Table 3.2). The majority of participants drove a vehicle (77.6%). Of these parent drivers, 51.2% drove cars Almost one-half of driven vehicles (47.6%) were model years 1996 to 2000. The participants also provided information on their driving behaviors with child passengers (Table 3.3). Each participant had between 1 and 6 children, with 3 being the mean number of children per participant household. Of those children 3 to 6 years old, the mean age of the youngest child was 4.2 years. Most participants rode in a vehicle with their child or children 3 to 6 almost every day (73.8%). On these rides, 46.7% of respondent said they were always the driver. Independent of who drove the vehicle 79.4% of participants said that they alone made the decision concerning where their child sat in the car and 85.0% made the decision concerning the type of restraint used for the child or children. Of the 107 participants, 89 (83.2%) had used booster seats for their children at some point.

Additional questions were asked in the PIF (Appendix 1.5, Questions 15 -18) relating to the type of restraint currently used and the type of restraint intended for future use. These questions were completed by less than one-third of the participants. As a result, no conclusive results could be drawn on the current and future restraint patterns of the Phase 1 Participants.

Table 3.1: Phase 1 participant demographics

	n =	% of sample
Age *(N = 107)*		
Range: 21 – 53 years		
Mode: 29.9 years		
21 to 25	28	26.2
26 to 30	38	35.5
31 to 35	18	16.8
36 to 40	12	11.2
41 to 45	6	5.6
45 and older	3	2.8
Blank	2	1.9
Race *(N = 107)*		
African American/Black	50	46.7
White	19	17.8
Hispanic/Latino	38	35.5
Sex *(N = 107)*		
Female	93	86.9
Male	14	13.1
Marital status *(N = 107)*		
Married	55	51.4
Living w/partner	8	7.5
Single, never married	33	30.8
Separated	6	5.6
Divorced	4	3.7
Other	1	0.9
Employed *(N = 107)*		
No	54	50.5
Yes	49	45.8
Blank	4	3.7
Work status *(N = 49)*		
Full-time	31	63.3
Part-time	10	20.4
Blank	8	16.3
Job Type *(N = 49)*		
Medical	2	4.1
Service	22	44.9
Administrative	10	20.4
Other	10	20.4
Blank	5	10.2

Table 3.2: Driving characteristics of Phase 1 participants

	n =	% of sample
Respondent drives a vehicle *(N = 107)*		
No	24	22.4
Yes	83	77.6
There is vehicle respondent usually drives *(N = 83)*		
No	1	1.2
Yes	82	98.8
Type of vehicle driven most of the time *(N =82)*		
Car	42	51.2
Pickup truck	4	4.9
SUV	12	14.6
Van	23	28.0
Blank	1	1.2
Model year of vehicle driven most of the time *(N = 82)*		
1985 and older	1	1.2
1986 - 1990	3	3.7
1991 - 1995	22	26.8
1996 - 2000	39	47.6
2001 and newer	11	13.4
Blank	6	7.3

Table 3.3: Driving characteristics of Phase 1 participants when accompanied by child passengers

	n =	% of sample
Frequency riding in a vehicle with youngest child **in the past 3 months** *(N = 107)*		
Almost every day	79	73.8
A few times a week	22	20.6
A few times a month	6	5.6
Frequency respondent was the driver *(N = 107)*		
Always	50	46.7
Sometimes	30	28.0
Rarely	4	3.7
Never	23	21.5
Person who usually decides where child sits in the vehicle *(N = 107)*		
Respondent	85	79.4
Spouse/partner	10	9.3
Child	4	3.7
Respondent and spouse	5	4.7
Other	3	2.8
Person who usually decides type of CRS *(N = 107)*		
Respondent	91	85.0
Spouse/partner	9	8.4
Child	1	0.9
Respondent and spouse	6	5.6
Ever used booster seat for child *(N = 107)*		
No	14	13.1
Yes	89	83.2
Never heard of until now	2	1.9
Blank	2	1.9
Number of children living with respondent		
Mean number: 3 children	*Mean age*: 6.1 years	
Range: 1-6 children	*Age range*: 0 to 19 years	
Age of youngest child between 3 and 6 years		
Mean age: 4.2 years		
Mode age: 4 years		
Range: 3 to 6 years		

3.1.2 Focus group discussion: Qualitative analysis of transcripts

The focus group discussion in Phase 1 sought to describe the factors that contribute to booster seat use or intention toward booster seat use in the targeted population. Several prevalent themes emerged across all targeted populations; other themes were more relevant for particular groups. These findings are summarized based on the six key subjects covered in Phase 1 (see Section 2.2.3). Specific quotes that support the results are listed in Appendix 1.7. Differences based on location, race, sex or ethnicity are noted where applicable.

3.1.2.1 Discussion topic: CPS messages

Participants discussed whether or not they had heard messages about child restraints and CPS practices, in general. Participants in all groups showed marked confusion on when children should progress from one type of restraint to another, and often remarked that they were particularly unsure when to move a child from a child safety seat to a booster seat to a seat belt. Furthermore, it was often unclear whether parents understood the difference between a child safety seat and a booster seat prior to the focus group. Parents who were familiar with booster seats often cited not knowing the benefits of a booster seat over restraint in a seat belt alone. This lack of knowledge was often identified as a primary reason for not purchasing a booster seat.

Limited knowledge also led many parents to lack confidence that booster seats were safer than seat belts or even that booster seats were safe at all; this concern was especially present among Hispanic and African American participants. Lack of confidence in booster seats was often coupled with lack of understanding on how to properly install or use a booster seat. Furthermore, participants repeatedly compared booster seats to child safety seats, which they found safer as they were anchored to the seat with the seat belt.

3.1.2.2 Discussion topic: People who matter

Parents in every group noted that their own opinion was most important when deciding when and how to restrain their child passengers. Parents who did not make the decisions themselves usually noted that this responsibility belonged to their spouse or partner. This was most prevalent with Hispanic women, who relied on their husbands to make decisions concerning vehicles and restraints. The participants varied in the involvement of their children in this decision. No pattern to child involvement was discerned according to race, ethnicity or location.

When asked where they preferred to receive information about child restraint systems, many cited community groups and law enforcement organizations. Receiving information from doctors' offices or medical professionals was also preferred, especially among Hispanic participants. Outside of the professional community, the participants placed the most trust in friends and family. Advice from other parents was often cited as valuable, especially if that parent was recently involved in a crash, or had received a ticket. Parents who had been in a car crash in the past were highly influential to the participants.

Parents cited several channels through which messages about child passenger safety were most likely to be seen and heard. Participants in all groups favored television as a means to receive

information. Members of the Hispanic groups also cited the radio as an important source of information. Magazines and newspapers were mentioned; however, not all participants agreed that these were good vehicles to get messages about child passenger safety to parents.

3.1.2.3 Discussion topic: Perceived threats

All parents identified the possibility of a crash as a threat that concerned them. Many participants trusted their own driving abilities, but were fearful of other drivers on the road. Participants in Little Rock were particularly concerned with the possibility of being hurt in a crash, returning to the topic frequently; they most often cited the fear of being stuck in the vehicle as a threat that influenced their behavior. The parent drivers described a variety of behaviors they performed to avoid the possibility of a crash or serious injury, including driving slowly, not driving in rainy weather, leaving early so as not to be in a rush, and establishing and enforcing rules for their children (such as no loud talking, no distracting the driver, not leaving until everyone is buckled in properly).

Interactions with law enforcement, or the possibility thereof, had a large impact on both parents' and children's use of booster seats. This threat was often cited as a motivating factor to restrain children properly in the back seat, as the fear of fines was discussed frequently. Many parents in the focus groups reported getting tickets or warnings for not complying with the existing law. Parents also repeatedly reported misinformation concerning the provisions of the child safety seat laws in their States (e.g., unclear about height, weight, and age requirements; amount of fines; whether primary enforcement is in effect; etc.).

Another threat reported by parents in all groups was the potential for children to misbehave. Parents repeatedly discussed the behaviors performed by children in the car. These included: shouting, fighting, throwing things, getting out of one's seat, climbing into the front seat, walking around, hanging out the window, and throwing things out the window. Parents found these behaviors frustrating, and expressed that they had little control when in the car (see Section 3.1.2.6).

3.1.2.4 Discussion topic: Perceived barriers

Participants noted factors that they and their children disliked about using child restraint systems. Factors that parents disliked tended to pertain to the use of the seats (e.g., they were hard to use, too large, and difficult to move from car to car). In this discussion, it was not clear whether the parents were referring to child safety seats, or booster seats. Many parents, especially those in Little Rock and Cincinnati, said they were unsure whether booster seats were safe. This was often stated in reference to low-back booster seats.

An additional barrier experienced by the participants was their perceptions of the cost of a booster seat. When asked, parents in Baltimore and Langley Park priced booster seats over $50 each.

The participants also identified barriers relating to their children's response to booster seats. These barriers included: the child complaining, the child thinking he or she is being punished, the child being made fun of by other children, the child feeling confined, and the child being uncomfortable. Each of these was mentioned across multiple groups as factors that decreased or prohibited booster seat use.

3.1.2.5 Discussion topic: Perceived benefits

The participants summarized the key factors that both they and their children liked about using booster seats. Parents saw safety as the primary benefit; however, several of the female groups concluded that they were unsure of any safety advantages of the booster seat over restraint by a seat belt alone. Features of the booster seat the parents liked included: size (smaller and easier to use than a child safety seat) and comfort (more comfortable for the child than a seat belt alone). The participants also listed several benefits that their children found from using booster seats. These included: that the booster seat was their "personal seat" or a "big kid seat," that the child could see out the window when in the booster seat, and that the child had his or her own cup holder and other extra amenities.

3.1.2.6 Discussion topic: Control beliefs

Participants repeatedly expressed a lack of control over their children's behavior in the car. Parent drivers described very active children whose behaviors in the vehicle were distracting and difficult to control while driving. The participants reported that their child passengers often knew how to remove their restraint, which often led to an increase in active behavior. The participants noted that this behavior was both a barrier to proper restraint use, and a threat, which motivated parents to use proper restraint; parents often expressed becoming "worn down" in the effort to keep their children restrained.

As a result, the parents in several groups, specifically the female groups, said that they would often allow their children to ride in a seat belt or unrestrained. Situations where children rode without a booster seat or even a seat belt included: when riding in someone else's car (especially if it's unexpected), when driving with many passengers in the car, when the driver refuses to use the booster seat (e.g., the grandmother, father, or babysitter), and when the child is sick. Hispanic and African American respondents more often than White respondents reported large numbers of passengers or frequent car switching.

The participants often supplemented these comments with mention of parenting methods used to diminish misbehavior in the back seat. Parents repeatedly mentioned using threats (e.g., "You will cause mommy to get a ticket") or punishments (e.g., taking toys or privileges away from the child). The use of bribes or rewards (e.g., offering toys or treats) was also mentioned in several groups.

3.1.3 Card sort exercise: Frequencies of selections

A card sort exercise was performed in 11 groups with 98 participants; the card sort was not used in the pilot group. Of these 98 participants, data from 14 were removed from the data set as their card selections included statements that were contradictory (e.g., selecting both expensive and inexpensive). The responses from the remaining 84 participants are summarized in Table 3.4. Data comparing the differences in response related to sex, race and ethnicity, and type of child restraint system used are not reported, as no significant differences were found among these populations.

Several variables were fairly homogenous, with over 90% of participants selecting cards marked "comfortable," "safe," "easy to use," "easy to move to another car," and "easy to put in car." Other

variables had more variation, with 64.3% of participants selecting the card marked “cheap,” and 51.2% electing the card representing “good features.” Cards related to the child’s attitude drew a similarly divided reaction, with 69% choosing that the “child likes” card, and 25% choosing the “child thinks it’s a baby seat” card. Non-paired variables, such as “child can easily get out” and the seat is “too bulky”, showed similar variability, with 45.2% and 66.7%, respectfully.

3.2 Phase 3: Evaluation

3.2.1 Study sample: Demographic PIF data

Participants for Phase 3 were recruited using criteria similar to those used in Phase 1 (For differences between Phase 1 and Phase 3 recruiting criteria see Section 2.4.1.1). As a result, the study population for Phase 3 was similar to that of Phase 1. Demographic data were collected in this phase using a Participant Information Form (Appendix 2.5), administered to participants prior to the group discussion. A total of 142 participants from 4 pilot groups and 12 focus groups (6 to 10 participants per group) were included in Phase 3 of this study (Table 3.5). As in Phase 1, the majority of parent drivers who participated in this phase were African American (57.7%), and were female (87.3%). Phase 3 participants were slightly older than those in Phase 1, with a median of 32.5 years (as compared to 29.9 years in Phase 1; see Table 3.1). In addition, the plurality of participants in Phase 3 were single and had never been married (40.8%), which differed from Phase 1. In Phase 3, the majority of participants were employed outside of the home (64.1%), with 62.6% of those employed working full-time, and 46.2% working in a service-oriented position. The participants in Phase 3 (Table 3.6) showed similar driving characteristics to those in Phase 1 (Table 3.2). In Phase 3, 88.7% of participants drove a vehicle; 95.2% of these parent drivers had a vehicle they drove regularly, and 60.3% of these participants drove a car.

Data on the participants’ family size and driving behaviors in Phase 3 (Table 3.7) were also similar to those from Phase 1 (Table 3.3). The range of family size in Phase 3 was larger than in Phase 1 (between 1 and 12 children); however, the mean number of children was slightly lower (with an average of 2.5 children in Phase 3 and 3 children in Phase 1). Despite a change in the recruitment criteria (with Phase 3 recruiting parents with children between 3 and 8 years; see Section 2.4.1.1) very little change in the total sample population was seen in terms of child ages. Participants in Phase 3 rode in a vehicle with their children more often than their Phase 1 counterparts, with 83.8% of participants reporting that they rode in a vehicle with their child or children “almost every day” (compared to 73.8% in Phase 1). On these rides, 59.9% of Phase 3 participants reported they were always the driver, and 88% of participants reported that they made the decision themselves concerning where their child sat in the car. Similarly, 90.8% decided on the type of CRS used for their child or children on their own. In Phase 3, of the 142 participants, 113 (79.6%) had used booster seats for their children at some point.

Table 3.4: Phase 1 participants' responses to the card sort exercise

	n =	% of sample
Comfort *(N = 84)*		
comfortable	81	96.4
uncomfortable	1	1.2
neither	2	2.4
Safety *(N = 84)*		
safe	82	97.6
unsafe	1	1.2
neither	1	1.2
Cost *(N = 84)*		
cheap	54	64.3
expensive	24	28.6
neither	6	7.1
Ease of use *(N = 84)*		
easy to use	80	95.2
hard to use	3	3.6
neither	1	1.2
easy to move to another car	76	90.5
hard to move to another car	7	8.3
neither	1	1.2
too bulky	56	66.7
easy to put in car	79	94.0
hard to put in car	3	3.6
neither	2	2.4
Weight *(N = 84)*		
light weight	66	78.6
heavy	17	20.2
neither	1	1.2
Beneficial features *(N = 84)*		
good features	43	51.2
no features	33	39.3
neither	8	9.5
Child's attitude *(N = 84)*		
child likes	58	69.0
child dislikes	24	28.6
neither	2	2.4
child thinks it's a "big kid" seat	54	64.3
child thinks it's a "baby" seat	21	25.0
Neither	9	10.7
Child's behavior *(N = 84)*		
keeps child under control	70	83.3
child can easily get out	38	45.2
enables child to see out of window	76	90.5

Table 3.5: Phase 3 Participant Demographics

	n =	% of sample
Age *(N = 142)*		
Range: 19 – 53 years		
Median: 32.5 years		
21 to 25	35	24.6
26 to 30	30	21.1
31 to 35	33	23.2
36 to 40	21	14.8
41 to 45	14	9.9
45 and older	9	6.3
Race *(N = 142)*		
African American/Black	82	57.7
White	32	22.5
Hispanic/Latino	28	19.7
Sex *(N = 142)*		
Female	124	87.3
Male	18	12.7
Marital status *(N = 142)*		
Married	48	33.8
Living w/ partner	20	14.1
Single, never married	58	40.8
Separated	6	4.2
Divorced	9	6.3
Blank	1	0.7
Employed *(N = 142)*		
No	51	35.9
Yes	91	64.1
Work status *(N = 91)*		
Full-time	57	62.6
Part-time	28	30.8
Blank	6	6.6
Job Type *(N = 91)*		
Medical	5	5.5
Admin/Office	30	33.0
Service	42	46.2
Other	12	13.2
Blank	2	2.2

Table 3.6: Driving characteristics of Phase 3 participants

	n =	% of sample
Respondent drives a vehicle *(n = 142)*		
No	16	11.3
Yes	126	88.7
There is vehicle respondent usually drives *(n = 126)*		
No	5	4.0
Yes	120	95.2
Blank	1	0.8
Type of vehicle driven most of time *(n = 126)*		
Car	76	60.3
Pickup truck	4	3.2
SUV	25	19.8
Van	17	13.5
Blank	4	3.2

Table 3.7: Driving characteristics of Phase 3 participants when accompanied by child passengers

	n =	% of sample
Frequency riding in a vehicle with youngest child **in the past 3 months** *(n = 142)*		
Almost every day	119	83.8
A few times a week	17	12.0
A few times a month	5	3.5
Blank	1	0.7
Frequency respondent was the driver *(n = 142)*		
Always	85	59.9
Sometimes	39	27.5
Never	16	11.3
Blank	2	1.4
Person who usually decides where child sits in vehicle *(n = 142)*		
Respondent	125	88.0
Spouse/partner	5	3.5
Child	6	4.2
No one	2	1.4
Other	2	1.4
Blank	2	1.4
Person who usually decides type of CRS *(n = 142)*		
Respondent	127	89.4
Spouse/partner	7	4.9
Child	3	2.1
Respondent and spouse	2	1.4
Blank	3	2.1
Ever used booster seat for child *(n = 142)*		
No	22	15.5
Yes	113	79.6
Never heard of until now	6	4.2
Blank	1	0.7
Number of children living with respondent *Mean number:* 2.5 children; *Mean age*: 6.5 years *Range:*1- 12 children; *Age range*: 0 to 20 years		
Age of youngest child between 3 and 8 years *Mean age = 4.4 years* *Mode age = 4 years* *Range = 3 to 8 years*		

3.2.2 Focus group discussion: Qualitative transcript analysis

3.2.2.1 List ranking discussion

Participants selected barriers, benefits, threats and people that were most relevant to their lives. These selections were then discussed briefly. Appendix 2.8 reports the top five selections from each group, and Appendix 2.9 summarizes selected statements from the focus group transcripts on the relevance of each highly ranked barrier, benefit, threat, and person who matters.

3.2.2.1.1 Top 5 threats: Bad things that I worry about when I drive my children in the car

Threats of similar type were ranked highly among all groups. Every group ranked "my child might get seriously hurt in an accident" within the top five. Participants in each group identified this as a threat they thought about often when they drove with their children. Most groups rated either "I will get pulled over by the cops," or "I might have to pay a ticket" highly. These concerns stemmed primarily from hearing stories from other parents, or having been pulled over themselves. Participants in each group cited the resultant fine as a strong motivator to restrain their child properly; however, many also cited that money should not be a primary factor in their behavior, repeatedly stating that they restrain their children to keep them safe.

3.2.2.1.2 Top 5 benefits: Good things that might happen if I use a booster seat

Parents in each group ranked items relating to their child's safety highly. Benefits such as "My child will feel safe and snug in a booster seat" or "I will know that my child is safe when he is in a booster seat" were ranked in the top five in all groups. Participants reiterated their emphasis on the safety of their children when commenting on these selections; parents noted that the benefit of increased safety was paramount to any other possible benefit. As a result, parents considered any other benefits, such as their child liking the restraint, as a "bonus."

Perceived benefits incurred by the child (My child will feel like a "big kid" in a booster seat and "My child can see out the window when he is in a booster seat"), were highly ranked in many groups. Parents stated that these benefits were important to them, as it increased their children's willingness to use booster seats. These benefits were crucial to many parents, especially White parents, who struggled to get their children to use proper restraint. In contrast, African American participants often noted that their child's approval or disapproval had no effect on their choice of child restraint.

3.2.2.1.3 Top 5 barriers: Things that might make it hard to use a booster seat

Participants in most groups were hesitant to select items on this list, noting that there were no factors that completely barred them from keeping their child safe. As a result, less than half of the participants in Phase 3 placed stickers on this list. Discussion showed that parents felt strongly that

nothing would stop them from keeping their children safe; however, some did concede and note several things that made it harder to use a booster seat for their children.

Of the barriers discussed in the groups, the most commonly identified was the effect of the child passenger's behavior on restraint use. Several participants in each group noted that their children, although comfortable in a booster seat, just did not want to be restrained at all. In many groups, a subset of participants disagreed with this, stating that their children often reminded other passengers to put on a seat belt. As a result, the effect of the child passenger's opinion was divided between those parents whose children liked their booster seat, and those parents whose children did not.

Another factor that made using booster seats hard for many parents was lack of room in their vehicle. African American participants, as well as those participants in Little Rock most often noted this. The participants agreed that a booster seat took up a lot of room in a car, and made it difficult to restrain multiple children properly.

3.2.2.1.4 Top 5 information sources: People and places whose opinions I trust

Participants across all sites, sexes, and racial and ethnic groups agreed that they trusted their own opinions about booster seats the most. Parents in all groups emphasized this, noting that although they may accept advice from other sources; their own feelings about what keeps their child safe supersede all others. The most highly ranked outside sources included: government officials, physicians and the police. Family members and friends also ranked highly, with participants noting that most of their information on child passenger safety is received by word of mouth.

3.2.2.2 Intervention discussion

Following the presentation of each intervention, participants in Phase 3 were asked a series of questions designed to evaluate the impact of the selected interventions. Review of coded transcripts revealed themes in participant answers to these questions. Several themes were consistent across all focus groups; others were more relevant to just a subset of the groups. These findings are summarized below for the six interventions shown (see Sections 2.3.2-3 for intervention descriptions). Differences based on location, race, sex, or ethnicity were noted where applicable. Quotes selected from the focus group transcripts to support these findings are summarized in Appendix 2.10.

3.2.2.2.1 Intervention: Cinderella ad campaign

Participants had mixed feelings about the Cinderella campaign. Most participants felt that the commercial only targeted girls instead of children of both sexes; this hindered many participants from feeling it would be successful in motivating their children. In addition, participants felt that the inclusion of Disney characters affected the clarity of the message, as Disney is often associated with entertainment rather than safety messages. Some parents were also concerned that the right audience was not targeted by the commercial, as parents were the ones to primarily make the decision about the restraint habits of their children.

3.2.2.2.2 Intervention: Riding With the Big Green Snake

Riding With the Big Green Snake was successful in motivating the parents of younger children. These parents noted that the characters caught their attention, and that the message would interest both boys and girls alike. Parents of older children believed that the commercial was too childish and expressed negative feelings about the snake, suggesting it should be replaced with a more traditional type of animal, such as a cat or dog. However, in general, parents liked the simplicity of the video, and how it included much of the information that they needed to make the choice about proper restraint.

3.2.2.2.3 Intervention: The Buckleteers

The Buckleteers video was praised for including children as spokespeople and for targeting a broad age group. Parents expressed apprehension that children would miss the safety message and instead become wrapped up in the idea of "joining" the Buckleteers and collecting Buckleteers paraphernalia. Some parents were not bothered by this possibility and felt that the video would still result in less opposition from children concerning booster seat use. Parents suggested the Buckleteers should be played on traditional children's television networks, such as Nickelodeon.

Many parents admitted, however, that this was not the type of intervention that would attract their attention, because it specifically targeted children. Again, these parents emphasized that they were the ones who made the decisions about restraint use; therefore, interventions geared toward children would be less effective.

Parents in Little Rock were additionally concerned since they were skeptical themselves about the safety benefit of booster seats. Little Rock women preferred interventions that settled their questions about restraint rather than sold their children on the idea of booster seat use.

3.2.2.2.4 Intervention: "Safer for Kids, Easier for You"

Overall, parents found the "Safer for Kids, Easier for You" video to be dry. Parents appreciated that the spokesperson was a mother, and many parents expressed that "pulling over" to control their children would be effective and intended on trying it with their children after watching the video. However, they emphasized that although they might have agreed with some of the messages, this intervention did not provide them with the motivation they needed to purchase and use a booster seat.

In addition, some parents felt the commercial misrepresented the effect of booster seats in controlling children's behavior. African American mothers in particular were reluctant to try the parenting tips, finding them too time-consuming and not effective enough.

3.2.2.2.5 Intervention: "Avoid Regret"

The "Avoid Regret" intervention was received well, often with a round of applause, by parents in all groups. The majority of parents expressed that the video motivated them to get a booster seat

immediately, despite their previous barriers. Parents also thought that this intervention would positively affect their children's views on safety, noting that they would show the video to even their youngest children if they were given the opportunity.

Parents in all groups cited that this intervention was particularly eye-opening because it answered all of their questions about booster seats, while also speaking to their fear of a crash. Each group spoke at length about the crash, speaking about their fears as well as stories they had heard. Parents frequently asked for copies of the video, hoping to show it to their families and friends.

3.2.2.2.6 Intervention: "It's the Law" radio commercials (by the Children's Hospital of Philadelphia [English] and Harborview Injury Research Center [Spanish])

A difference of opinion existed between participant groups concerning the English-language radio commercials. Overall, African American and White participants agreed that the commercials would not reach as large an audience as interventions aired on television. These parents also noted concern for their child's safety should be enough of a motivation without the added consequence of a ticket.

In contrast, Hispanic participants were very receptive to the information presented in the Spanish-language radio commercials. They felt that there was a lack of commercials promoting child safety and were happily surprised by the amount of detailed information addressing age-appropriate restraint included. Some parents believed, though, that ticketing was unfair due to ignorance of the law on the part of immigrants and the associated cost of a booster seat.

3.2.3 Participant questionnaires: Observing change in intention over time

Quantitative analysis of changes in intention to use and attitudes towards booster seats revealed a positive shift as a result of the interventions and focus group discussions. The ability of the Phase 3 focus groups to change intention was evident in the number of participants who became more likely to use a booster seat by the conclusion of the groups (Table 3.8). When asked how likely they were to use a booster seat in the next two months, only 57.7% of participants noted that they were "very likely" prior to the focus group discussion. Following the discussion, 87.3% of participants considered themselves very likely. On a similar track, 12.0% of participants noted that they were "very unlikely" to use a booster seat in the next two months prior to the discussion, and only 0.7% remained as "very unlikely" after the discussion.

Participants were also asked to rate their opinions toward the following statements, both before and after the focus group:

- "I think I could get my child to try a booster seat."
- "I think that children between the ages of 3 and 5 years old will like using a booster seat."
- "High-back boosters look safe."
- "No-back boosters look safe."
- "I think it is important to use seat belts."
- "I think I could get my child to use a seat belt on every trip."

Table 3.8: Changes in participant intention toward booster seat use as a result of Phase 3 focus groups

	% of sample	
	PIF	**PDF**
Likely booster use next 2 months (N = 142)		
Very likely	57.7	87.3
Somewhat likely	17.6	4.9
Somewhat unlikely	0.7	0.7
Very unlikely	12.0	0.7
Don't know	9.2	4.9
Blank	2.8	1.4
Could get child to use booster seat (N = 142)		
Strongly agree	78.2	90.1
Somewhat agree	9.2	6.3
Neither agree nor disagree	3.5	1.4
Somewhat disagree	0.7	0.0
Strongly disagree	2.8	0.0
Blank	5.6	2.1
High-backs look safe (N = 142)		
Strongly agree	65.5	87.3
Somewhat agree	21.1	7.0
Neither agree nor disagree	9.2	3.5
Somewhat disagree	0.0	0.0
Strongly disagree	0.0	0.7
Blank	4.2	1.4
No-backs look safe (N = 142)		
Strongly agree	22.5	34.5
Somewhat agree	38.7	35.9
Neither agree nor disagree	16.2	12.0
Somewhat disagree	9.9	4.2
Strongly disagree	7.7	9.2
Blank	4.9	4.2
Children will like boosters (N = 142)		
Strongly agree	43.7	74.6
Somewhat agree	34.5	17.6
Neither agree nor disagree	10.6	3.5
Somewhat disagree	4.9	2.1
Strongly disagree	2.1	0.7
Blank	4.2	1.4

The last two statements were eliminated from analysis, as the participants' responses indicted that they had inferred that this was a "trick question," assuming that children should not use seat belts alone. Each of the remaining questions showed an increase in the percentage of parents who "strongly agreed" and several showed a decrease in the percentage of parents who "strongly disagreed."

Focus group interventions and discussion specifically served to improve participants' opinions of the safety of the high-back booster seat; however, many parents were still hesitant to fully commit that

no-back boosters were safe. This smaller percentage of parents who "strongly agreed" that low-back boosters were safe (compared to those who "strongly agreed" that high-back booster seats were safe) serves to validate the data, as mostly high-back boosters were included in the interventions shown.

4. Discussion

For parents with limited educational attainment (high school education or less), lack of knowledge about injury consequences of inappropriate restraint was the major barrier to booster seat use. Parent participants endorsed a simple direct message that reinforced the life-saving benefits of restraint use and described the injuries that could be prevented with booster seat use. These parents reported positive changes in attitudes and intentions as a result of the information acquired from this message.

4.1 Key finding: Lack of knowledge as the primary barrier to use

Few participants demonstrated strong knowledge about appropriate child restraint. To varying degrees participants were unaware:

- that children age 4 to 8 should use booster seats;
- that their children could incur injuries from poorly fitting seat belts;
- of what injuries children could suffer in motor vehicle crashes; and
- that booster seats provided a safety advantage over seat belts for children.

Lack of knowledge was the most prevalent barrier across groups differing in sex, race, and ethnicity and was cited frequently by participants as their primary barrier to use.

This result demonstrates that previous intervention tactics have not fully educated the targeted at-risk populations concerning appropriate child restraint, particularly restraint of 4- to 8-year-old children in booster seats. The parents targeted in this study were representative of differing racial, ethnic, sex, and geographic groups; however, all participants were of low educational attainment (achieving a high school diploma or less), representing 46.1% of United States residents over the age of 25 (United States Census Bureau, 2006). Research has shown that education for these populations, particularly health education, must be concrete and personal (Riley et al., 2006; Bass, 2005). It is important not to simply provide information to these populations, but to truly educate them. This education involves providing knowledge coupled with messages that motivate the target parents, shown through channels and media that the parents trust and respect.

4.2 Using perceived threats to create motivation toward behavior change

Effective interventions must include relevant knowledge packaged with messages that the target population deems strong and motivational. Social marketing research has shown that a strong motivator is avoidance of perceived threats (i.e., the possibility of resulting death, injury, or illness) (Henley & Donovan, 2003; Rogers & Mewborn, 1976). In this study, participants cited the potential of their child being hurt in a crash as the primary threat they perceived relating to driving with their

children in the car. A clear educational message toward appropriate restraint use would therefore be strengthened by being paired with a message confronting the possibility of injury resulting from a child being improperly restrained in a vehicle.

4.3 Sending strong, educational messages through targeted channels and media

Using media and spokespeople who are trusted and well received by the targeted audience can further strengthen health messages. This study found that differing populations are receptive to different forms of media. For example, Hispanic participants noted that they listened to the radio frequently; whereas African American and White participants gave the most credence to information conveyed by television, noting they did not listen to the radio frequently. All participants emphasized that printed media, such as newspapers and magazines, were a much less effective means of communicating health messages.

While African American and White participants cited the Internet as a trusted source, Hispanic participants noted that they rarely accessed the Internet for information regarding their child's safety. These differences demonstrate that messages, if conveyed through an ineffective media source, could be received poorly or lost completely.

Finally, the choice of spokesperson is critical to success. In this study, all participants agreed on a set of spokespeople they would trust to relate messages on child safety. The list included: other parents, doctors (and other medical personnel), and police officers. Participants also noted that their children would respond best to a child spokesperson. These two findings revealed a common theme: effective messaging should be conveyed by members of the target community - people with whom the population identifies with as a result of shared experience.

4.4 Designing interventions for targeted at-risk populations

Through Phase 1, this study collected information from selected at-risk populations on the factors that would contribute to strong intervention messaging. Common factors expressed by all participants in Phase 1 were the need for:

- relevant, up-to-date information on booster seats, including:
  - *clear instruction on the benefits of a booster seat over a seat belt, and*
  - *concise details on when and how a booster seat should be used,*
- information that addressed the most prevalent threat: becoming injured in a crash, and
- advice from a trusted source, such as another parent, through a frequented media source, such as television.

These suggestions were used to create three interventions, including one that detailed the injuries a child could incur from being prematurely restrained in a seat belt in the event of a crash. This intervention addressed each of the factors raised by the participants in Phase 1, and was extremely well received by the participants of Phase 3. This intervention used an actionable emotion (Kahn et al., 2006; Taylor, 1997; Zeelenberg, 1999), regret, coupled with education to correct participants'

previous misconceptions and promote booster seat use. It was cited by participants as both educational *and* motivational. Parents felt that this intervention alone had changed their intention to use a booster seat as it provided them with the knowledge necessary to use a booster seat properly, *in addition to* the motivation to overcome their additional barriers. This response demonstrates that interventions targeted toward the needs of a specific population are effective in motivating change in behavioral intention.

4.5 Additional findings

4.5.1 Participant responses to other selected messages

Participants indicated that many of the other messages they were shown (section 3.2.2.2) did not change their intention to use a booster seat. Interventions using messaging that addressed the threat of the law, distractions by child passengers, or lack of child compliance did not provide the participants with education on when and why to use a booster seat, demonstrating that it is not enough to address a relevant and motivational threat (a fine or distractions from children). Effective interventions must also provide parents with the necessary, and often lacking, educational component.

4.5.2 Unaddressed barriers

Participants in Phase 3 occasionally discussed barriers that were not addressed by the chosen interventions. Often, these barriers persisted, despite educational and motivational messaging, because they required additional supplementary interventions to motivate parents toward booster seat use. For these parents, education was just not enough, showing that for some populations other strong barriers exist toward booster seat use.

Myths about restraints: In accordance with an old myth, female participants in Little Rock felt that a restraint would trap a person in the vehicle in the event of a crash, prohibiting medical personnel from reaching them. As a result, several participants in Little Rock maintained that booster seats and seat belts were unsafe. Participants in Cincinnati, Baltimore, and Silver Spring did not mention this myth, and felt that booster seats provided a safety benefit over seat belts alone after watching the targeted interventions. In light of this finding, parents in Little Rock may require additional education on the benefits of seat belts before they would be able to respond positively to an intervention on booster seats.

Crowding in the car: African American participants often said that there was not enough space in their vehicle for the needed number of child restraints. Many parents expressed frustration that they would have to choose which children to properly restrain, as they couldn't find the space to restrain them all. These parents often noted that they chose to put each of their children in a seat belt, rather than restrain each child differently. As a result, these parents had difficulty in changing their intention to use booster seats.

Cost of a booster seat: Some parents believed booster seats were expensive; however, this barrier was not nearly as strong as many of the others. Participants who perceived the cost of a booster seat to be prohibitively high expressed the need for safety clinics or classes that provided CRS at a

discounted cost. In addition to these types of programs, a preliminary message relating to the cost of a booster seat would be necessary for this population, prior to any supplementary education.

4.6 Study limitations

This study was limited by the use of focus groups. Although this format allowed for a thorough discussion on a wide range of topics relating to booster seat use, it restricted the ability of this study to reach a larger sample of the target population. A larger sample would have allowed for further exploration of the differences between parents of different racial and/or ethnic groups, and geographic locations.

4.7 Future work

It would be beneficial for additional work to be conducted to obtain a larger sample size. This additional work could also expand the study population to include additional cities in areas that were not evaluated, such as those in the northwestern or southern regions of the United States.

In addition to broadening the geographic range of the study, it would be beneficial to expand study populations to include other at-risk groups. These populations could include older and younger parents, and parents of other at-risk racial and ethnic minorities. This study could also be modified to identify barriers contributing to other at-risk safety behaviors, such as partial belt use.

In follow-up to the results of this trial, it would be advantageous to implement and evaluate the interventions tested within the study, especially the “Avoid Regret” intervention designed by Children’s Hospital. This would require professional production of the interventions and a clear dissemination plan.

4.8 Implications

Education that provides parents with clear knowledge translated from research but put in the context of a true story was found to change intention relating to booster seat use. Parents noted that a more graphic message, detailing specific injuries that could result from improper restraint, would not scare them from using seat belts, but would motivate them to use booster seats. These findings support the design of this study as an effective means to determine the barriers, benefits, and threats experienced by a population, and in designing interventions to target these factors. Use of focus groups was found to be an effective medium to elicit the concerns faced by parents relating to child restraint. These focus group discussions were supported by quantitative data, documenting participants’ change in intention over time.

5. References

1. Agran, P. F., Anderson, C. L., & Winn, D. G. (1998). Factors associated with restraint use of children in fatal crashes. *Pediatrics, 102*(3), E39.
2. Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior & Human Decision Processes, 50*, 179-211.
3. Allen, G. (1999). *Marketing*, from http://ollie.dcccd.edu/mrkt2370/Chapters/ch9/9commun.htm
4. Arbogast, K. B., Durbin, D. R., Kallan, M. J., & Winston, F. K. (2003). Effect of vehicle type on the performance of second generation air bags for child occupants. *Annual Proceedings/Association for the Advancement of Automotive Medicine, 47*, 85-99.
5. Arbogast, K. B., Durbin, D. R., Kallan, M. J., & Winston, F. K. (2004). Evaluation of pediatric use patterns and performance of lap shoulder belt systems in the center rear. *Annual Proceedings/Association for the Advancement of Automotive Medicine, 48*, 57-72.
6. Baker, S. P., Braver, E. R., Chen, L. H., Pantula, J. F., & Massie, D. (1998). Motor vehicle occupant deaths among Hispanic and black children and teenagers. *Arch Pediatr Adolesc Med, 152*(12), 1209-1212.
7. Bass, L. (2005). Health literacy: implications for teaching the adult patient. *Journal of Infusion Nursing, 28*(1), 15-22.
8. Braver, E. R. (2003). Race, Hispanic origin, and socioeconomic status in relation to motor vehicle occupant death rates and risk factors among adults. *Accident Analysis & Prevention, 35*(3), 295-309.
9. Centers for Disease Control and Prevention. (2000). Motor-vehicle occupant fatalities and restraint use among children aged 4-8 years-United States, 1994-1998. *MMWR Morb Mortal Wkly Rep, 49*(7), 135-137.
10. Decina, L., Lococo, K., & Block, A. (2005). *Misuse of Child Restraints: Results of a Workshop to Review Field Data Results.* DOT HS 809 851. Washington, DC: National Highway Traffic Safety Administration.
11. Decina, L. E., & Knoebel, K. Y. (1997). Child safety seat misuse patterns in four states. *Accident Analysis & Prevention, 29*(1), 125-132.
12. Decina, L. E., & Lococo, K. H. (2004). *Misuse of child restraints.* DOT HS 809 671. Washington DC: National Highway Traffic Safety Administration.
13. Durbin, D. R., Kallan, M. J., & Winston, F. K. (2001). Trends in booster seat use among young children in crashes. *Pediatrics, 108*(6), E109.
14. Durbin, D.R., Chen, I., Smith, R., Elliott, M.R., & Winston, F.K. (2005). Effects of Seating Position and Appropriate Restraint Use on the Risk of Injury to Children in Motor Vehicle Crashes. *Pediatrics, 115*(3), 305-309.
15. Ebel, B. E., Koepsell, T. D., Bennett, E. E., & Rivara, F. P. (2003). Too small for a seat belt: predictors of booster seat use by child passengers. *Pediatrics, 111*(4 Pt 1), e323-327.

16. Eby, D. W., & Kostyniuk, L. P. (1999). A statewide analysis of child safety seat use and misuse in Michigan. *Accid Anal Prev, 31*(5), 555-566.

17. Elliott, M. R., Kallan, M. J., Durbin, D. R., & Winston, F. K. (2006). Effectiveness of child safety seats vs. seat belts in reducing risk for death in children in passenger vehicle crashes. *Archives of Pediatrics & Adolescent Medicine, 160*(6), 617-621.

18. Funk, D. L., McErlean, M., & Verdile, V. P. (2003). Parental report of child restraint device use in an emergency department population. *J Emerg Med, 24*(3), 247-251.

19. Glassbrenner, D. (2003). *The use of child restraints in 2002.* Research Note. DOT HS 809 555. Washington, DC: National Highway Traffic Safety Administration.

20. Hanfling, M. J., Mangus, L. G., Gill, A. C., & Bailey, R. (2000). A multifaceted approach to improving motor vehicle restraint complicance. *Inj Prev, 6*(2), 125-129.

21. Henley, N., & Donovan, R. J. (2003). Death Anxiety and Threat Appeals: Toward a Practical Application in the Context of Health Promotion. *Omega, 46*(3), 225-239.

22. Hletko, P. J., Hletko, J. D., Shelness, A. M., & Robin, S. S. (1983). Demographic predictors of infant car seat use. *Am J Dis Child, 137*(11), 1061-1063.

23. Istre, G. R., McCoy, M. A., Womack, K. N., Fanning, L., Dekat, L., & Stowe, M. (2002). Increasing the use of child restraints in motor vehicles in a Hispanic neighborhood. *Am J Public Health, 92*(7), 1096-1099.

24. Kahn, B. E., Luce, M. F., & Nowlis, S. M. (2006). Debiasing Insights From Process Tests. *Journal of Consumer Research, 33*(1), 131-137.

25. Kostaridou, S., Anastasea-Vlachou, K., Sotiropoulou, F., Panagopoulou, G., Panagopoulou, M., Papathanasiou-Klontza, D., et al. (1997). Car transportation conditions of preschool children: use of children's car safety seats. *Acta Paediatr, 86*(2), 192-195.

26. Laflamme, L., & Engstrom, K. (2002). Socioeconomic differences in Swedish children and adolescents injured in road traffic incidents: cross sectional study. *BMJ, 324*(7334), 396-397.

27. Lane, W. G., Liu, G. C., & Newlin, E. (2000). The association between hands-on instruction and proper child safety seat installation. *Pediatrics, 106*(4 Suppl), 924-929.

28. Lee, J. W., Fitzgerald, K., & Ebel, B. E. (2003). Lessons for increasing awareness and use of booster seats in a Latino community. *Inj Prev, 9*(3), 268-269.

29. Margolis, L. H., Wagenaar, A. C., & Molnar, L. J. (1992). Use and misuse of automobile child restraint devices. *Am J Dis Child, 146*(3), 361-366.

30. Miller, D. T., & Taylor, B. R. (1995). Counterfactual thought, regret, and superstition: How to avoid kicking yourself. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 305-331). Mahwah, NJ: Lawrence Erlbaum.

31. Miller, T. R., Spicer, R. S., & Lestina, D. C. (1998). Who is driving when unrestrained children and teenagers are hurt? *Accid Anal Prev, 30*(6), 839-849.

32. National Highway Traffic Safety Administration. (2003). *Traffic safety facts 2002: children.* DOT HS 809 620. Washington , DC: National Highway Traffic Safety Administration.

33. National Highway Traffic Safety Administration. (2005). *Improving the Safety of Older-Child Passengers.* DOT HS 809 953. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration.

34. National Highway Traffic Safety Administration. (2006). *Race and Ethnicity in Fatal Motor Vehicle Traffic Crashes 1999 - 2004.* DOT HS 809 956. Washington, DC: National Highway Traffic Safety Administration.

35. Niemcryk, S. J., Kaufmann, C. R., Brawley, M., & Yount, S. I. (1997). Motor vehicle crashes, restraint use, and severity of injury in children in Nevada. *Am J Prev Med, 13*(2), 109-114.

36. Partners for Child Passenger Safety. (2006). *Fact and Trend Report*.

37. Ramsey, A., Simpson, E., & Rivara, F. P. (2000). Booster seat use and reasons for nonuse. *Pediatrics, 106*(2), E20.

38. Riley, J. B., Cloonan, P., & Norton, C. (2006). Low health literacy: a challenge to critical care. *Critical Care Nursing Quarterly, 29*(2), 174-178.

39. Rogers, R. W., & Mewborn, C. R. (1976). Fear appeals and attitude change: effects of a threat's noxiousness, probability of occurrence, and the efficacy of coping responses. *Journal of Personality and Social Psychology, 34*(1), 54-61.

40. Russell, J., Kresnow, M. J., & Brackbill, R. (1994). The effect of adult belt laws and other factors on restraint use for children under age 11. *Accid Anal Prev, 26*(3), 287-295.

41. Stiles, M. C., & Grieshop, J. I. (1999). Impacts of culture on driver knowledge and safety device usage among Hispanic farm workers. *Accid Anal Prev, 31*(3), 235-241.

42. Taylor, K. (1997). A Regret Theory Approach to Assessing Consumer Satisfaction. *Marketing Letters, 8*(2), 229-238.

43. United States Census Bureau. (2003). *S1501: Educational Attainment.* 2006 American Community Survey. Washington, DC: U.S. Department of Commerce: Economics and Statistics Administration.

44. Vaca, F., Anderson, C. L., Agran, P., Winn, D., & Cheng, G. (2002). Child safety seat knowledge among parents utilizing emergency services in a level I trauma center in Southern California. *Pediatrics, 110*(5), e61.

45. Verreault, R., Stulginskas, J., Keyl, P., Read, J., & Pless, I. B. (1982). Use of automobile seat restraints by children in two Canadian cities. *Can Med Assoc J, 126*(10), 1163-1168.

46. Vivoda, J. M., Eby, D. W., & Kostyniuk, L. P. (2004) Differences in safety belt use by race. *Accident Analysis & Prevention, 36*(6), 1105-1109.

47. Wagenaar, A. C., Molnar, L. J., & Margolis, L. H. (1988). Characteristics of child safety seat users. *Accid Anal Prev, 20*(4), 311-322.

48. Webb, G. R., Sanson-Fisher, R. W., & Bowman, J. A. (1988). Psychosocial factors related to parental restraint of pre-school children in motor vehicles. *Accid Anal Prev, 20*(2), 87-94.

49. Weinstein, N., & Sandman, P. (1992). A model of the precaution adoption process: Evidence from home radon testing. *Health Psychology, 11*, 170-180.

50. Winston, F. K. (2006). Parent driver characteristics associated with sub-optimal restraint of child passengers. *Traffic Injury Prevention*.

51. Winston, F. K., Durbin, D. R., Kallan, M. J., & Moll, E. K. (2000). The danger of premature graduation to seat belts for young children. *Pediatrics, 105*(6), 1179-1183.

52. Zeelenberg, M. (1999). Anticipated Regret, Expected Feedback and Behavioral Decision Making. *Journal of Behavioral Decision Making, 12*, 93-106.

53. Zempsky, W. T., Isaacman, D. J., Sullivan, K. M., & Sipp, N. (1996). Child restraint device use in patients leaving a children's hospital. *Arch Pediatr Adolesc Med, 150*(12), 1284-1287.

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