Evaluating an Actively Caring for KIDS Process: A Behavioral-Community Program to Reduce Child Safety-Seat Misinformation and Misuse

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(ABSTRACT)

The "Actively Caring for KIDS Process," a multi-component program that taught retail store sales associates to act as behavior-change agents for child passenger safety, was implemented at a nationwide-chain discount store and evaluated with an interrupted time series design and a similar control site for comparison. Key components of the KIDS Process included a) training of sales associates to act as behavior-change agents at the point-of-purchase, b) the use of in-store awareness and supportive materials such as posters and sales associate buttons, and c) incentives for participation in checkpoints. Safety-seat checks (n = 31) were held in store parking lots, where caregivers' safety-seat installations (n = 241) were recorded as safe or at-risk for a variety of criteria and then the seats were reinstalled correctly. Research assistants posing as child caregivers visited the retail stores (n = 156) with the purported objective of obtaining information about selecting and installing a safety seat. Information given by sales associates was systematically recorded as safe or at-risk on a checklist. A 2 (Store) x 2 (Phase) ANOVA on sales associates' percent safe information scores revealed a significant interaction and no main effects. The Control store did not differ across the two phases, but scores at the intervention store were significantly higher after the intervention than during pre-intervention and when compared to the Control store during post-intervention. The training of sales associates resulted in an average 65% increase in percent safe scores. At the parking lot checks, 93 percent of seats checked were misused in one or more ways, with an average of four errors per seat. ANOVA and Chi-square analyses indicated that the intervention failed to have an impact on child safety-seat misuse observed or on the number of participants attending the checkpoints. This is likely a result of few parents attending the checkpoints who had talked to our trained associates. To target more parents, this intervention might be better placed at well-baby checkups.

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The youngest vehicle passengers are the most vulnerable in collisions because their bodies have not fully developed. A child safety seat is designed to either bear the majority of the crash forces (for a rear-facing infant) or distribute the crash forces over the strongest parts of a toddler's body (National Highway Traffic Safety Administration, NHTSA, 2001b). When *correctly* installed and used, child safety seats reduce the risk of fatal injury by as much as 71 percent for infants and 54 percent for toddlers (NHTSA, 2001a). However, small mistakes in safety-seat installation can stop the seat from preventing injury in the event of a vehicle crash, and recent national studies have shown that at least four out of five safety seats are unintentionally misused (Decina & Knoebel, 1997; National Safe Kids Campaign, 1999a; NHTSA, 1996, Partners for Child Passenger Safety, PCPS, 2000).

Motor vehicle crashes are the leading cause of death for children from birth to 14 years of age (Centers for Disease Control and Prevention, CDC, 2000). In 2000, there were 529 occupant fatalities among children under five years of age (NHTSA, 2001a). In these crashes, 219 children (41%) were killed while riding in child safety seats. In 1998, 30,500 children were injured while riding in child safety seats (NHTSA, 1999b). Child safety experts believe it is likely the majority of these safety seats were installed improperly (Karp, 1999; NHTSA, 2001a). It is estimated that partial misuse of a seat cuts its effectiveness against severe and fatal injuries in half (Carlsson, Norin, & Ysander, 1991; Decina, Temple, & Dorer, 1994).

Transporting Children Properly

Because safety belts are designed to fit the bodies of adults, safety belts alone are not sufficient for preventing injuries to small children (Arbogast, Moll, Morris, & Winston, 2001;

NHTSA, 2001b; Shellness & Charles, 1975). The shoulder strap often falls across a child's face or neck, and small children have pelvises that have not developed the iliac crest, a part of the hip bone that aids in keeping an adult safety belt correctly positioned low on the hips (NHTSA, 2001b). To improve both comfort and safety, an infant or toddler should always ride in a safety seat and small children in a belt-positioning booster (Arbogast et al., 2001; Safety Belt Safe USA, 1999).

An infant's head is relatively large and heavy (comprising 25% of total body weight), and the neck and back are weak (Karp, 1999; Zagaroli, 1999). Therefore, national safety experts advise that children less than one year of age and weighing under 20 pounds ride reclined at a 45-degree angle in a rear-facing seat that will cocoon around a baby's head and bear the majority of crash forces (Arbogast et al., 2001; Karp, 1999; NHTSA, 2001b; Zagaroli, 1999). Toddlers weighing between 20 and 40 pounds should ride in a forward-facing seat equipped with a harness system (NHTSA, 2001b). The harness straps must be routed according to instructions and positioned snugly (i.e., does not allow any slack but does not press into the child's body), with the retainer clip positioned at armpit level. The safety seat should be installed with the safety belt locked tight in position so that the seat will not move more than an inch when pulled from side to side or from the front (NHTSA, 2001b).

Once small children have outgrown their safety seats, and until approximately eight years of age and 85 pounds, they are safest in booster seats used in conjunction with the vehicle lap and shoulder belt. The booster's primary function is to raise the child higher so the vehicle belt system fits correctly, with the lap portion low on the hips and the shoulder belt snug across the chest and shoulder (NHTSA, 2001b).

Common Safety Seat Misuse and Its Consequences

Child safety-seat use rates in the U.S. are 85% for infants and 60% for children ages one to four (Centers for Disease Control and Prevention, 1999b; National Safe Kids Campaign, 1999b). However, studies have shown that 80 to 85% of parents are not aware of the precision it takes to install their children's safety seats correctly (Decina & Knoebel, 1997; National Safe Kids Campaign, 1999a; NHTSA, 1996; PCPS, 2000). Parents are not only securing safety seats incorrectly in their vehicles, they are securing their children incorrectly in their seats.

Certain installation problems may seem like minor adjustments to parents, but they are vital for preventing ejection and for distributing crash forces across the strongest points of children's bodies. The three most common errors parents make when installing their children's seats are failure to (a) attach the seat tightly to the vehicle, (b) fasten the harness tightly, and (c) use the chest clip or position it correctly (PCPS, 2000).

When a chest clip is placed too low or the harnesses are fastened too loosely in crash tests, the crash dummies often fly completely out of the seat (Mundell, 1998). Also, routing harness straps incorrectly can result in either the straps coming loose or the plastic shell of the seat breaking apart in a crash (NHTSA, 2001b).

Failure to secure a child seat tightly and properly to the vehicle permits excessive movement of the restraint in a crash and often results in head injuries as the child contacts parts of the vehicle's interior (NHTSA, 2001b). In a study of trauma following a crash, *properly restrained* children were discovered to have been injured more by vehicle parts contacting them in the crash (i.e., intrusion) than by the children hitting the interior of the vehicles. On the other hand, injuries to children who were *improperly restrained* were determined to be caused more by the child striking the vehicle interior than by the vehicle's interior intruding on the child (Agran,

Dunkle, & Winn, 1985). The majority (64%) of children significantly injured in crashes suffer injuries to their heads and brains (PCPS, 2000, 2001).

Legislation and Enforcement

Child passenger safety laws are enacted and enforced at the state level, and all focus on *use* (as opposed to *misuse*). Contrary to their knowledge of correct use specifications, caregivers generally have a fair understanding of child seat-use laws (Eby, Kostyniuk, & Christoff, 1997). The first law requiring the use of child safety seats went into effect in Tennessee in 1978. While this law had considerable flaws, such as allowing a parent to hold an infant, it generated widespread media attention and other states followed (NHTSA, 1997). By 1985, all states, the District of Columbia, and Puerto Rico had passed child passenger safety laws (NHTSA, 1997). Most child restraint laws currently require children up to four years of age and less than 40 pounds to be protected by a child safety seat (NHTSA, 1999a). However, the age and weight stipulations, fines for violations, and vehicle placement stipulations (i.e., front seat vs. back seat) vary widely from state to state (Centers for Disease Control and Prevention, 1999b). Unfortunately, several state laws allow the substitution of safety belts for safety seats (NHTSA, 1998b). Currently, national emphasis is placed upon eliminating such loopholes (NHTSA, 1999a).

Restraint misuse, however, is not currently enforced. While some state laws use the wording "*properly secured* safety seat" (NHTSA, 1999a), police officers do not commonly issue citations for the incorrect use of restraints (L. McMahon, personal communication, April 22, 1999). This is not to dismiss police involvement, as many officers who are trained in the proper installation of safety seats have become advocates of the cause, volunteering at safety seat checkpoints and correcting misuse whenever they encounter it in their daily duties. NHTSA and

the International Association of Chiefs of Police have even created a series of special courses called "Operation Kids," ranging in time commitments from four hours to two days and aimed at training officers in the correct installation of safety seats (NHTSA, 1998a,c). Many police departments even sponsor their own safety-seat checks in local business parking lots.

Misuse Research and Prevention Efforts

There are currently more than 100 different models of child safety seats, about 300 models of passenger vehicles, and at least 27 different seat-belt systems. Therefore, it is not surprising that fitting a safety seat in a vehicle is often confusing to parents (Karp, 1999). Perhaps because safety-seat misuse was relatively unknown to the general public until recently, misuse is quite common and probably caused by a number of factors.

While numerous studies have focused on the predictors and motivators of child safety seat *use* (for a review of interventions to increase use, see Zaza et al., 2001), there are few such studies of variables related to child safety-seat *misuse*. Perhaps because targeting misuse with an intervention is a relatively new emphasis area, the vast majority of studies have been aimed at quantifying misuse. Most published interventions to decrease misuse have been government or community educational programs where rigorous evaluation of program effectiveness is lacking.

Assessing misuse. While misuse has just recently become a highly recognized concern, correct installation and proper positioning have been the exception rather than the rule, even as far back as 1975 (NHTSA, 1996; Shellness & Charles, 1975). Early studies of misuse throughout the 1980s found misuse rates of 76.8% (Bulger, 1983), 74% (Bull, Stroup, & Gerhart, 1988), 65% (Cynecki & Goryl, 1984), and 81% (Shellness, 1984).

More recently, a 1996 NHTSA study involving 5,900 children in four states found that 79% of parents incorrectly installed their children's seats (Decina & Knoebel, 1997; NHTSA,

1996). Further, a recent national study of more than 17,500 children found that 85% of the car seats observed were misused in some way, with an average of two errors per seat (National Safe Kids Campaign, 1999a). To gather these data, both studies established mobile roadside or parking-lot stations where researchers physically inspected the positioning of children and installation of safety seats in the vehicles of volunteer caregivers. These mobile checks are generally referred to as "safety-seat checkpoints," and are currently the most widely used method of assessing and intervening on misuse. Such "hands-on" inspection represents the *only valid way* to observe most types of misuse (NHTSA, 2001b).

The National Safe Kids Campaign study (1999a) found common misuse problems to include: (a) safety belt not holding the seat in tightly (63% misuse), (b) incorrect use of locking clip (17% misuse), (c) safety belt not in locked mode (11% misuse), (d) harness straps loose (33% misuse), (e) harness straps routed incorrectly (20% misuse), (f) harness retainer clip not at armpit level (19% misuse), and (g) children turned to face forward at too young an age (11% misuse). The NHTSA study (Decina & Knoebel, 1997; NHTSA, 1996) found similar problems, with incorrect use rates of 72% for locking clip misuse, 17% for safety-belt misuse, 46% for harness strap misuse, 59% for harness retainer-clip misuse, and 10% for facing the incorrect direction. Partners for Child Passenger Safety (PCPS) identified the top three mistakes parents make as: (a) failure to install the seat tightly, (b) failure to fasten the harness tightly, and (c) failure to position the chest clip correctly (Durbin et al., 2001; PCPS, 2000).

These findings are consistent with other misuse studies which have used a hands-on method of data collection and have uncovered overall incorrect-use rates of 80% (n = 87, Centers for Disease Control and Prevention, 1998), 85.5% (n = 87, Eby, Kostyniuk, & Christoff, 1997; Eby & Kostyniuk, 1999), 86% (n = 87, Mundell, 1998), 90% (n = 392, Sheese, 1996), 94% (n =

23,000, Karp, 1999), 97% (*n* = 345, Karp, 1999), and 98% (*n* = 1,500, James, 1998). According to NHTSA, informal checkup events held across the U.S. consistently record 90% to 95% incorrect use rates (NHTSA, 2001b). Variability in misuse percentages could be the result of differences in location, state or local enforcement focus, or varying thresholds for observations to be termed "misuse."

Correlates of misuse. Factors found to correlate with a greater number of misuse errors are: (a) an unbelted driver (Cynecki & Goryl, 1984; NHTSA, 1996), (b) installing the seat without instruction (Cynecki & Goryl, 1984), (c) narrow or deeply contoured vehicle seats (NHTSA, 1996), (d) the use of convertible seats that can be used both rearward- and forward-facing (Centers for Disease Control and Prevention, 1998), (e) receiving the seat as a gift (Cynecki & Goryl, 1984), (f) younger age of child (Eby et al., 1997), (g) lower education and awareness level of parents (Cynecki & Goryl, 1984; Eby et al., 1997), and (h) lower socioeconomic level (Cynecki & Goryl, 1984). However, given the high rates of misuse *overall*, it can be concluded that misuse is a potential problem for virtually all types of caregivers, regardless of social class, educational level, or ethnic group (NHTSA, 2001b).

Prevention efforts. Recently, the U.S. has made great strides toward safer car-seat regulations. Top-tethers, an additional attachment requirement in Canada and Australia that decreases a safety seat's movement in a crash by four inches (Zagaroli, 1999), are now required to come with all forward-facing safety seats made in the U.S. after September 1, 1999 (Johnson, 1999; NHTSA, 2001b; Ritter, 1999).

Also, after nearly a decade of planning, U.S. safety experts have created LATCH, a simple universal anchorage system. The Lower Anchors and Tethers for Children (LATCH) system is a three-point universal safety-seat attachment mechanism currently being phased in as

standard equipment on all new passenger vehicles and safety seats manufactured in the U.S. (NHTSA, 2001b). Allowing parents to simply "click" the safety seat in place, the LATCH system combats one of the most common installation errors, failing to attach the safety seat tightly to the vehicle. However, only those caregivers with *both* a new vehicle and a new safety seat will benefit from the mechanism, and the LATCH system does not address the many other errors that can occur when positioning a child in a safety seat, such as placing the retainer clip too low, routing the harness straps incorrectly, securing the harness straps too loosely, or facing an infant forward. Due to the many opportunities for errors and the apparent simplicity of buckling a child in a seat, these installation problems are often more common (Eby et al., 1997; Eby & Kostyniuk, 1999). Indeed, in their survey of 87 parents, Eby and colleagues (1997) found that while 71% referred to the instructional manual for installing the seat in a vehicle, 0% referred to it for guidance on positioning their child, claiming the steps for securing their child in the seat were "obvious" (p. 10).

One of the most widely recognized and successful government campaigns is the "Air Bag Safety Campaign" (National Safety Council, 1996). Through this and other campaigns, such as "Patterns for Life," "Safe and Sober," and "Buckle Up America," NHTSA and the Department of Transportation have been very involved in misuse education. "Occupant protection research" is also one of the NHTSA funding priorities. For example, an extensive community project in Oregon funded by NHTSA resulted in a significant improvement in children under age one who were properly restrained, with an increase from 31% to 59% by project end (Parker, 1994). Parker established a toll-free telephone assistance line and provided training and technical assistance to medical providers, law enforcement personnel, and loan program personnel. A

similar NHTSA funded project in California observed increases in correct restraint use from 5% in 1995 to 69% (for ages 1 to 3 years) and 75% (for infants) in 1997 (Trombrello, 1998).

Among the private sector, there are a number of community educational campaigns, including: “All Kids Safe” (Allstate & American Academy of Pediatrics, 1998), “Fasten Sense” (USAA, 1996), “Precious Cargo” (General Motors Corporation, 1997), “Safe and Sane Road Trips” (“Alliance to promote,” 1998), “Buckle Up with Sesame Street” (Ford Motor Company, 1998), and “Quest for Safety” (“Nissan Announces,” 1998). The most beneficial private sector efforts have come from agencies that include child safety-seat misuse prevention as one of their main objectives. For instance, the National Safe Kids Campaign (1997) is a national organization started in 1988 with currently over 200 regional coalitions in all 50 states. These coalitions work to train professionals in their respective communities about the installation of safety seats, and coordinate and co-sponsor the majority of child safety-seat checkpoints. The Safe Kids Coalitions worked as a team in 1998 to collect the largest nationwide sample of misuse to date (National Safe Kids Campaign, 1999a).

Partners for Child Passenger Safety (Durbin et al., 2001; PCPS, 2000, 2001), a research collaboration between State Farm Insurance, The Children’s Hospital of Philadelphia, and the University of Pennsylvania, has recently emerged as a major force in misuse prevention efforts. With its creation of the first large-scale, child-focused motor vehicle crash surveillance system in the U.S., PCPS has begun to turn their research into action. PCPS recently launched an aggressive educational campaign to alert consumers, advocacy groups, industry officials, government leaders, insurance companies, and healthcare professionals about misuse and the results of PCPS research. Their methods include community presentations, television and print news media coverage, collaboration with advocacy groups and the motor vehicle industry,

informing and impacting federal and local policy, hosting national conferences, professional education and outreach, an informative website, and numerous research publications and public information brochures (PCPS, 2001).

The release of each of the PCPS interim reports has drawn massive media coverage, and PCPS is credited with bringing national attention to the need for booster seats for children between the ages of four to eight (PCPS, 2000, 2001). Their research revealed that 83% of these children are being inappropriately graduated to an adult seat belt, and as a result, are suffering significant injuries in even minor crashes (particularly head, spine, abdominal, and brain injuries).

Why is Misuse so Widespread?

Despite the recent increase in educational efforts, additional intervention programs are certainly called for, as four out of five seats are still being misused. A number of hurdles need to be overcome before correct child safety-seat use can be practiced on a large scale. These include (a) addressing the apparent ineffectiveness of instruction manuals, (b) educating a large number of poorly informed physicians and day-care providers, (c) educating uninformed retailers, (d) finding the four million seats under manufacturer recall that have yet to be brought in by caregivers for repair or replacement, (e) providing community locations for concerned caregivers to turn for advice and feedback, and (f) convincing caregivers of the need to attend a safety-seat checkup event (Karp, 1999; Katz, England, & Geller, 2001; Mundell, 1998; Will & Geller, 2001). Two of these issues, misinformation and poor parental participation, are particularly challenging.

The problem of misinformation. Compounding the problem of safety seat misuse is the general lack of safety-seat knowledge among individuals who *should* be well informed. Not only

are parents not getting correct answers to many of their occupant protection questions, they are getting incorrect and conflicting messages from multiple sources—from their pediatricians, sales associates, friends, and manufacturer labels. For instance, previous researchers have indicated that incorrect information given at health care facilities and at retail stores selling safety seats may actually *contribute* to misuse (Bailer, 1998; Campbell, MacDonald, & Richardson, 1997; England, Lea, & Geller, 2000; England, Olson, Weidner, & Geller, 1999; Halpern, 1990; Karp, 1999; Katz, England, & Geller, 2001; McKay & Curtis, 2002; Mundell, 1998). Indeed, these individuals often give erroneous safety-seat advice or "misinformation" to caregivers.

McKay and Curtis (2002) assessed physicians' safety-seat knowledge prior to training about safety seats and found that their basic fund of knowledge was poor with a mean pretest score of 54%. Katz and colleagues (2001) surveyed day care staff, pediatricians, and family practitioners ($N = 37$) regarding their recommendations for parents of a ten-month-old who outweighed her safety seat. Results indicated that 52% of the respondents gave incorrect advice regarding the direction to face the child and 76% failed to give the information needed to purchase a correct seat for the child (Katz, England, & Geller, 2001).

Further, a preliminary assessment of nine retail stores in southwestern Virginia indicated that sales associates gave incorrect safety information or omitted crucial safety information on 100% of the visits ($n = 53$; England et al., 1999; England, Lea, & Geller, 2000). More specifically, 87% of the associates made five or more specific errors when talking to our research associates who purportedly were interested in purchasing a child safety seat. Clearly, an intervention that raises the amount of correct information available to parents is needed.

Poor parental participation at checkpoints. Another challenge is the lack of parental participation in available safety intervention programs. "Hands-on" inspection at child seat

checkup events represents the best way to observe and correct most types of misuse (NHTSA, 2001b). However, parental participation rates in these safety-seat checkpoints are disappointingly low, far below the needs shown by high rates of misuse. Since 80 to 90 percent of seats are still being misused, spreading the word about the misuse of child safety seats and holding countless checkpoints is not working. It seems most caregivers do not believe they need a child-seat inspection.

The problem of low participation at safety-seat checkpoints was evident during a field study at five daycare centers in spring 1999 (England, Olson, & Geller, 2000). The number of caregivers who by-passed a *free* five-minute check in their daycare parking lot was disheartening. Participating in the check earned the child a lollipop and stickers. In addition, safety seats were replaced on the spot (*free* of charge) if they were discovered to be: (a) incorrect for the child, (b) over ten years old, (c) under a manufacturer recall, or (d) secondhand with an unknown crash history. The situation was a win-win opportunity for caregivers, but despite much publicity at the daycare centers, only about 20 percent of parents participated.

Then, the researchers took a more proactive approach by politely *inviting* the parents to participate as they exited the daycare. This interpersonal approach made little difference, as 75 percent of caregivers continued to disregard the safety-seat check. Numerous parents would not spend five minutes at a checkpoint to ensure their child's safety. However, labeling these caregivers as uncaring does not make sense. And attributing the poor participation to hurried lifestyles also seems unreasonable, as the checkpoints were held in the evening when most parents were heading home.

Reasons given for not wanting to participate suggested a key barrier. The most common decline responses are typified by: "I read the instructions," "I already know how to use the seat,"

and "My child's seat is fine." Apparently most caregivers saw *no need* to attend the check, despite research evidence that at least 80% of them *did need* to have their seats checked (National Safe Kids Campaign, 1999a; NHTSA, 1996).

This hypothesis that caregivers misperceive their risk of safety-seat misuse was supported by field research. Offering a free toy as an incentive to participate in a checkpoint survey, Eby and colleagues found that 97% of the 87 caregivers approached believed at pre-inspection they had installed their seat and child correctly, but only 14.5% had actually done so (Eby & Kostyniuk, 1999).

Objectives and Theoretical Support of the Current Research

Given the high rates of misuse nationwide, the additional problems of misinformation and low participation rates, and the few interventions that have been implemented to date, this research had three overarching aims: (1) to add to the body of research identifying rates of misuse, (2) to document the amount of incorrect safety-seat information distributed at a popular national-chain retail store, and (3) to develop and evaluate a community intervention that combats both misinformation about and misuse of safety seats, as well as aims for maximum parental participation through the creation and use of risk-awareness materials and strategies.

Following Azrin's (1977) outcome-oriented methodology for applied research, this study developed and tested an intervention package consisting of numerous components. Azrin's 1976 American Psychological Association award address (Azrin, 1977) argued that a focus on scientific understanding of treatment effects had led to a proliferation of tests of ineffective research programs that employed only one intervention component. Instead, Azrin wished to shift the initial focus of applied research from *understanding* to clinical *outcome.* He argued that once a successful intervention was discovered, then subsequent research could tease apart the

utility of its various components.

Thus, while this intervention research incorporated several components, individual effects of components were of secondary importance to finding support for a successful intervention package. The following sections review research supporting the intervention and its various components.

Behavior-Focused Intervention

The antecedent-behavior-consequence model of applied behavior analysis has been used successfully over recent years to develop primary prevention programs. Indeed, behavior analysis has a great deal to offer the field of injury control by enhancing prevention specialists' understanding of the determinants of at-risk behavior and guiding the development of effective behavior change strategies for individuals unaffected by policy and mandates; and avoiding the problems associated with overjustification (Lepper, 1981; Lepper & Green, 1976; Lepper, Green, & Nisbett, 1973).

For example, behavior-based intervention researchers have used: (a) participative education to increase the use of vehicle safety belts (Cope, Smith, & Grossnickle, 1986; Geller, 1989b; Geller, Rudd, Kalsher, Streff, & Lehman, 1987; Lehman & Geller, 1990a,b; Ludwig & Geller, 1991; Weinstein, Grubb, & Vautier, 1986), (b) incentives/rewards to increase the use of safety belts (Campbell, Hunter, & Stutts, 1984; Geller, 1988; Roberts, Fanurik, & Wilson, 1988) and child safety seats (Roberts & Turner, 1986), (c) behavioral feedback to reduce driving speed (Van Houten & Nau, 1983) and increase safety-belt use (Grant, 1990), (d) promise-card commitments to increase safety-belt use (Geller & Lehman, 1991; Geller, Kalsher, Rudd, & Lehman, 1989), and (e) modeling to increase safety-belt use (England et al., 1999; England, Olson, & Geller, 2000; Geller, 1988, 1990).

A behavior-based approach to injury control was chosen for the current project because this approach: (a) can be administered by individuals with minimal professional training, and (b) can reach people in the setting where a certain problem occurs such as the community, school, or workplace (Baer, Wolf, & Risley, 1968, 1987; Daniels, 1989; Geller, 1998). In addition, research has shown this approach to be cost effective, primarily because behavior-change techniques are straightforward and relatively easy to administer (e.g., Daniels, 1989; Geller, 1996, 2001; Geller, Winett, & Everett, 1982; Sulzer-Azaroff & de Santamaria, 1980).

The Use of Indigenous Personnel as Behavior-change Agents

In tune with social diffusion theory, whereby key individuals in already established physical or social networks inform other individuals in the network about innovations (Bandura, 1986, 1997; Rogers, 1971, 1995; Winett et al., 1995), an intervention for child safety-seat misuse requires the use of natural agents who are normally in contact with caregivers in everyday life (Kazdin, 1984). For example, in two studies using indigenous personnel as behavior-change agents, bartenders were successfully motivated to intervene for the safety of their bar patrons (Russ & Geller, 1987; Geller, Russ, & Delphus, 1987).

The use of many behavior-change agents throughout a community increases participant involvement through a change in the intervention agent-to-participant ratio and therefore makes it possible to implement more intensive interventions needed for those uninfluenced by widespread information campaigns (Geller et al., 1990). Increased “participant involvement” is also one of five factors proposed by Geller for increasing intervention impact (Geller, 1994, 1998; Geller et al., 1990).

Retailers selling safety seats have a unique opportunity to regulate caregivers’ misuse behavior because they are in the position to intervene at the point-of-purchase. It is reasonable to

assume that parents who have concerns about child safety seats will most likely seek assistance at the point-of-purchase (at retail stores) or at their pediatrician's offices. Thus, teaching sales associates *proper* safety-seat knowledge seemed vital for misuse reductions, and represented a major component of this intervention package.

Communicating Rationale

Teaching indigenous personnel (and via these personnel, caregivers) the *logic* behind the desired changes in behavior also seemed important, as many misuse behaviors that appear to be minor adjustments, such as placing a harness retainer clip lower than armpit level, can have detrimental effects in a crash. A similar "rehearsal-plus" technique that pairs elaborative rehearsal and behavioral skills training with a focus on understanding the *rationale* behind the desired behavior has been shown to result in better maintenance of safety-related behaviors (Jones & Randall, 1994; Randall & Jones, 1993; Saladin, Jones, & Schulman, 1993). This is consistent with the notion advocated by Geller (1996, 1998, 2001) that *education* of principles and theory should precede *training* of specific procedures.

Point-of-Purchase Interventions

A key social marketing principle ("place") dictates that special attention be paid to "arranging for accessible outlets which permit the translation of motivations into actions" (Kotler & Zaltman, 1971, p. 11). Intervention components will be most effective when delivered in close proximity to opportunities for emitting behaviors, such as at the point of purchase (Campbell et al., 1997).

Behavioral community research has shown point-of-purchase interventions for altering shoppers' behaviors to be quite effective (Geller, Farris, & Post, 1973; Mayer, Dubbert, & Elder, 1989; Winett et al., 1991; Winett, Kramer, Walker, Malone, & Lane, 1988). For instance, Geller and

colleagues found that a prompt requesting the purchase of soft drinks in returnable bottles was more effective at the point-of-purchase than at the store entrance (Geller et al., 1973). Also, Winett and colleagues were successful at increasing supermarket shoppers' nutritional purchases with a supermarket-based interactive information system (Winett et al., 1988; Winett et al., 1991). Consistent with these examples, this intervention research incorporated point-of-purchase interventions through the use of posters and behavior-change agents.

Modeling

Modeling refers to the actual demonstration of specific behaviors that need to be learned by observers (Bandura, 1969; 1977b). Modeling is critical for learning most correct-use behaviors, and was used in the current research. Hands-on demonstrations and modeling are hallmarks of the safety-seat checkpoint. In addition, the personnel training program implemented in this research provided hands-on troubleshooting of seat installation and role-play demonstrations for helping customers and clientele. Indigenous personnel were encouraged to model correct use behaviors for their customers.

Behavioral Feedback

Behavioral feedback entails presenting information to an individual or a group of individuals about one or more target behaviors (Geller, 1998). It can be public or private, and is sometimes combined with congratulatory recognition for success or corrective comments for less than desired performance.

Successful maintenance of a target behavior has been achieved by combining feedback with: (a) education regarding the benefits of using hearing protection and the costs of hearing loss to increase the use of earplugs (Zohar, Cohen, & Azar, 1980); (b) positive and corrective feedback to improve housekeeping (Sulzer-Azaroff & de Santamaria, 1980); and (c)

training/education and participative goal-setting to eliminate hazards at a commercial shipyard (Saarela, 1990) and improve the safety of fork-truck driving (Cohen & Jensen, 1984).

It is thought that personalized feedback is vital for caregivers to recognize and correct the particular misuse behavior they are exhibiting. Therefore, the current research delivered individual behavioral feedback to caregivers at safety-seat checkpoints.

Commitment and Goal Setting

Commitment and goal-setting strategies "request verbal or written statements from individuals or groups that they will perform certain behaviors" (Geller, 1990, p. 257). At-risk behaviors are supported with consequences of comfort, convenience, or faster performance. In contrast, safe behaviors are often inconvenient and uncomfortable and often require support by some type of extrinsic (or external) intervention. This could include participative or mandated goal setting (Ludwig & Geller, 1997), commitment strategies (Geller & Lehman, 1991; Streff, Kalsher, & Geller, 1993), or consequence procedures, including either reward or punishment techniques. In a comprehensive review of 28 employer-based programs to motivate safety-belt use, Geller and colleagues (1987) found reward strategies to be more effective than punishment strategies, and more effective in the short-term than commitment strategies. However, commitment strategies were most effective in maintaining long-term behavior change.

Commitment strategies gain their effectiveness because of peoples' desire to maintain consistency between their cognitions and their behaviors (Cialdini, 2001; Festinger, 1957). Consistency is a valued quality in our society. Commitment strategies are more effective when they are freely chosen, public, and require a moderate amount of effort (Cialdini, 2001). A commitment in the form of a pledge or promise-card has been used successfully in large-scale

behavior change (Geller, 1996, 2001; Geller & Lehman, 1991; Katzev & Pardini, 1987; Ludwig & Geller, 1997).

For instance, Streff and colleagues (1993) used a promise-card commitment strategy to increase the use of personal protective equipment (PPE). After a group meeting where line employees discussed the importance of using PPE, they were asked to make a voluntary personal commitment to use safety glasses, gloves, and earplugs (the target behaviors) on the job for two months by signing a promise card. The voluntary commitment presumably empowered employees and was effective in increasing the target behaviors over the pledge period. In addition, these investigators reported response generalization to safety-belt use. Specifically, safety-belt use by the employees who signed promise cards to use safety glasses, gloves, and earplugs increased from 12.8% on 654 occasions before the intervention to 35.1% on 166 occasions after the promise-card intervention.

Given the success of commitment and goal-setting strategies, it seemed feasible to give sales associates in the current study the opportunity to "promise" to use the knowledge learned to better assist customers and clientele. Specifically, sales associates were given the opportunity to sign a promise card stating they would apply their safety-seat expertise to help their youngest customers ride safety in motor vehicles. In addition, these same personnel were encouraged to ask caregivers to promise to attend an upcoming checkpoint (in order to receive behavior-based feedback).

Incentives/Rewards

Incentive/reward programs alter response-consequence contingencies and thus change outcome expectancies for engaging in a specific behavior (Bandura, 1997). A recent review of

interventions for increasing the *use* of child safety seats found education programs that included incentives to be among the most effective (Zaza et al., 2001).

The current intervention research informed retail stores of the possible rewards for participating in the intervention program. These rewards included increased business and in-store awareness materials that put the business and its employees in a positive light. Special rewards for employee participation were incorporated as well. Caregivers were given coupons to exchange at checkpoints for free toys, activities, and food items at local restaurants.

There is one caveat for the use of contingent rewards. Research has suggested that interventions that do not use extrinsic rewards are *more effective* over the long term (Geller, 1989b; Geller et al., 1987; Lehman & Geller, 1990a,b; Roberts, Fanurik, & Layfield, 1987; Roberts & Turner, 1984). Nonetheless, proper structuring of reward expectations can increase personal responsibility toward a safety process (Dose & Klimoski, 1995). They should be just sufficient to get the behavior started but not enough to compensate the behavior completely (Lepper & Green, 1976).

Special Opportunities

A non-material consequence that can be applied in misuse research to motivate behavior is the opportunity to engage in certain behaviors. For instance, the opportunity to use a preferred parking space is a consequence that has been applied in environmental interventions (Geller, 1989a). For participating businesses in the current research project, special opportunities were created for employees who participated in the intervention program. Store attendants were recognized publicly as specialists in safety-seat sales and installation. In addition, children were given the opportunity to have their names displayed inside the store as being “buckled right.”

Increasing Caregivers' Perception of Risk

As discussed earlier in this document, one of the greatest challenges in the battle against safety-seat misuse may be convincing caregivers they might have made a mistake when buckling up their child in a safety seat. Prior experience working with caregivers has led this author to propose that many caregivers are aware of misuse problems, but do not believe they are personally at-risk or do not believe misuse poses much of a real danger (Will & Geller, 2001). These caregivers may comprise what is potentially the largest group of misusers and are the least likely to recognize the need to attend checkpoints and seek help with installation. While situational obstacles (e.g., the lack of a central location for caregivers to turn for "expert" correct-use advice) are believed to influence *actual adoption* of a protective behavior, perceptions of vulnerability are crucial for a person's *decision* to take precautionary action (Weinstein, Rothman, & Sutton, 1998). Therefore, an effective behavioral intervention must *also* raise caregivers' perceptions of risk in order to have the most impact.

Research on risk perception (Covello, Sandman, & Slovic, 1991; Sandman, 1987a,b, 1989, 1994; Sandman, Miller, Johnson, & Weinstein, 1993; Sandman, Weinstein, & Hallman, 1998; Sandman, Weinstein, & Miller, 1994; Slovic, 1991; Slovic, Fischhoff, & Lichtenstein, 1985; Weinstein, Lyon, Sandman, & Cuite, 1998; Weinstein & Sandman, 1992) offers several potential techniques for raising the perception of risk. One of these techniques, the use of memorable stories, was applied to safety-seat misuse in the current behavioral intervention.

The use of memorable stories. Research has shown that while lay persons can assess annual fatalities when asked (and produce population estimates somewhat similar to technical estimates), they consider other factors, such as catastrophic potential, when arriving at judgments of personal risk (Slovic, 1991; Slovic et al., 1985). For instance, rare causes of death may be

overestimated because they happen over a brief period of time to a large group, which makes them dramatic and sensational and therefore likely to be highly publicized (Slovic et al., 1985). On the other hand, common causes of death may be underestimated and not as publicized because they are dispersed in time and space as they claim one victim at a time (Slovic et al., 1985).

Most likely, the average caregiver cannot recall any specific instances of children being hurt or injured from the misuse of a safety seat, as the media exposure to date has failed to include individual negative consequences with the statistics they publicize. That is, the media has publicized the high frequency of misuse, but typically has not accompanied these reports with specific examples of misuse and the resultant injuries. And when instances of injury and death are reported, they are dispersed over time and space, and therefore unlikely to be recalled or even noticed.

Sandman's (1989, 1994) tactics for increasing risk perception involve framing the information in terms consistent with characteristics of those hazards that generate the most outrage in the public. For example, instead of citing national statistics, Sandman suggests one can publicize local statistics and case stories the public can relate to and are more likely to remember.

Personal stories have power, as people feel sympathy for the victim and put themselves in the same situation and form a motivating mental image and verbal script (Geller, 1996, 2001, 2002). Indeed, in two studies using between-subjects designs, individual versus group statistics were manipulated in news stories to simulate either "high outrage" or "low outrage" (Sandman et al., 1993, 1998). This manipulation had a significant impact on the dependent variable in both studies. For 1,402 homeowners who read varied stories about radiation exposure (Sandman et al.,

1998) and 595 homeowners who read varied stories about a chemical spill (Sandman et al., 1993), those who read a high-outrage story using individual statistics saw the risk as more important, serious, and worrisome than did those who read low-outrage stories using national statistics.

As a case in point, the five-daycare study the author and colleagues (England, Olson, & Geller, 2000) conducted in spring 1999 had an extraordinarily high rate of participation at one of the daycare centers, compared to very low turnout at the other checkpoints. A possible reason for the high turnout became evident. One of the mothers came up to the senior author and said, "Have you seen my story board?" This mother and her child had been in a potentially fatal car crash just after she had been to another safety-seat checkpoint. She had made several errors in installation, and all were corrected. The crash totaled the car and nearly killed the mother, requiring her to be hospitalized for several weeks. Her baby, however, was safe in the back seat without a scratch on her. This mother then made it a personal challenge to share her story with everyone in the daycare by posting a storyboard with photographs and newspaper clippings of the crash.

Fear appeals. The use of memorable stories may be considered a type of fear appeal. Therefore, a discussion of the controversy over the use of fear appeals that spans four decades is warranted (Witte, 1998). Researchers have had difficulty explaining how fear appeals work (Sternthal & Craig, 1974), and some widely cited studies found absolutely no support for their use (e.g., Janis & Feshbach, 1953; Robertson et al., 1974). Critiques of these studies have noted weaknesses (Duke, 1967; Winett, 1987), however, and more recent research supports the use of fear appeals designed in *specific* ways (Witte, 1998; Witte & Allen, 2000).

For instance, the length of the high fear message used in the Janis and Feshbach (1953) study to encourage dental hygiene was 44 percent longer than the low and moderate fear messages. Perhaps the fear appeal was less effective because participants became bored with the message (Duke, 1967). Also, in a critique of a widely cited study (Robertson et al., 1974) that found that fear appeals did not increase safety-belt use, Winett (1987) noted that this intervention might have failed because only fear messages were included. That is, behavioral modeling and discussion about the protection and ease of use of safety belts was not included and is essential for a media message to generate change in a health behavior (Winett, 1987).

The original logic of fear appeals was simple: scare tactics induce change via motivating a viewer to decrease the fear emotion (Leventhal, Safer, & Panagis, 1983). However, this logic was apparently too simple. Several techniques and models hypothesizing both linear and curvilinear relationships were proposed to explain the impact of fear appeals, all with inconsistent research support (Witte, 1998). Some of these included: the parallel process model (Leventhal et al., 1983), emotional role playing (Janis & Mann, 1965, 1977), and protection motivation theory (Rogers, 1975; Maddux & Rogers, 1983). Protection motivation theory was the first to isolate the components of fear appeals.

The most recent fear appeal model is the extended parallel process model (Witte, 1998; Witte, Berkowitz, Cameron, & McKeon, 1998), which integrates and expands upon previous perspectives. According to the extended parallel process model, if threat is perceived, then self-efficacy and efficacy of the recommended response is appraised, and influences motivation to either control the *danger* (adaptive response) *or* control the *fear* of the threat (maladaptive response). Self-efficacy consists of people's beliefs in their capabilities to produce desired effects by their actions (Bandura, 1977a, 1986, 1997). Response-efficacy consists of a person's

beliefs that the recommended actions will work, and outcome expectations are determined by whether an individual values the outcome achieved by the recommended actions (Bandura, 1997).

If a threat is perceived and self- and response-efficacy are high, then danger control processes are performed. On the other hand, fear control processes are used when a threat is perceived and either self- or response-efficacy is low. A danger control response is adaptive, resulting in the viewer following the recommended response. A fear control response is maladaptive and results in the viewer ignoring the message.

Research has applied the extended parallel process model to understand how fear appeals work for such health threats as breast cancer, tractor safety, genital warts, HIV/AIDS, and skin cancer (see Witte, 1998 for a review). In fact, a recent meta-analysis of fear-appeal research indicated that strong fear appeals with high-efficacy messages produce the greatest behavior change (Witte & Allen, 2000).

Although more research is needed, the use of fear appeals for safety-seat interventions seems feasible given that: a) caregivers have high rates of self-efficacy for installing the seat correctly (this can be argued since efforts are needed to *raise* perceptions of risk), b) intervention recommendations have high face validity for being protective in a crash (response efficacy), and c) caregivers certainly want to protect their children from injury in a vehicle crash (outcome efficacy).

After considering the research supporting effective risk communication techniques and fear appeals, it was decided that this intervention package would not be complete without components designed to raise caregivers' perceptions of risk. Therefore, additional components of this intervention included the use of (a) memorable case stories and (b) fear appeal posters

incorporating local statistics and wording aimed at generating caregivers' personal identification with the message.

Project Overview

This project developed and evaluated a community-based intervention with the following components: (a) the use of indigenous personnel, (b) placement of intervention components at the point-of-purchase, (c) in-store awareness and supportive materials, (d) modeling, (e) behavioral feedback, (f) personal commitment, (g) incentives and rewards, (h) fear appeals, and (i) memorable stories. This intervention package was named the "Actively Caring for KIDS Process," KIDS being an acronym for "**K**eeping **I**ndividuals **D**riving **S**afely."

In response to the objectives of *Healthy People 2010* (U.S. Department of Health and Human Services, 2000), the KIDS campaign was created to specifically benefit the safety of children riding in motor vehicles. The focus was to create a community-based system whereby caregivers and their children received pertinent motor vehicle safety information at a place where they could be expected to be particularly receptive to receiving such information. The project taught child motor vehicle safety to retail-store sales associates. These individuals were in special positions to act as behavior-change agents for KIDS on a daily basis.

To accomplish the project objectives, the following major aspects of the community-based intervention plan were implemented: (1) Retail store sales associates were trained to give proper safety-seat and safe-ride recommendations. (2) Parents were taught how to install child safety seats correctly. (3) Posters and verbal messages that use memorable stories and local statistics were used to increase caregivers' perception of risk. (4) In-store awareness and supportive materials for "Actively Caring for KIDS" were developed and instated.

Hypotheses

The KIDS Process intervention was implemented and evaluated with an interrupted time series design (i.e., pre-post) and a similar control site for comparison. The primary dependent variables were percent safe use for caregivers' seat installations, percent safe information for verbal assistance given by sales associates, and the number of participants at checkpoints.

Based on the information cited, it was hypothesized that: (1) The intervention will result in an increase in percent safe use and percent safe information for the intervention store compared to Baseline and to the Control store. (2) Trained personnel's safety-seat knowledge will be greater after the intervention was implemented, compared to their own pre-intervention scores and those of non-trained personnel. (3) Point-of-purchase-trained caregivers' percent safe use will be higher than non-trained caregivers. (4) A greater number of participants will attend checkpoints in the Intervention condition than in Baseline or at the Control store. (5) Percent safe use for specific behaviors targeted by fear appeal posters will be higher in the Intervention condition than in Baseline or at the Control store. (6) In the Intervention condition, point-of-purchase training will generate the most participants at checkpoints and the highest percent safe use scores compared to other methods of learning about a checkpoint. (7) At the Intervention store, percent safe information scores will differ across children's developmental periods (i.e., whether the sales associate was providing information for a newborn, infant, toddler, or small child) during Baseline, but not during Intervention.

Method

Participants and Settings

Two large discount stores of the same popular nationwide chain participated in the study. The stores were located in neighboring counties in southwest Virginia and were approximately

25 miles apart. A coin toss determined which store served as the intervention site and which served as the control site.

Store personnel participants included 59 retail store sales associates working mainly in the apparel and baby (i.e., "soft line") departments of the two stores. At the time of the study, Store 1 employed 23 apparel and baby area associates and Store 2 employed 19 apparel and baby area associates. Retail sales associates were estimated to range in age from 17 years to 65 years, with mean ages of 37.6 years and 38.5 years for the Intervention and Control stores, respectively. Sixteen sales associates from the intervention store attended a KIDS behavior-change agent training session. A total of 156 misinformation observations were conducted across both stores and both phases by project end. Table 1 presents the gender and department make-up of all sales associates sampled from the two stores. Table 2 presents the number of sales associates represented in the sample by store and numbers of times queried.

Table 1
Percentage of Sales Associates in Demographic Subgroups by Store

Demographic Category	Intervention Store (n = 91)		Control Store (n = 65)		Total Sample (n = 156)
	Baseline	Intervention	Baseline 1	Baseline 2	
Men	5%	8%	7%	5%	6%
Women	96%	92%	93%	95%	94%
Soft Line Area	81%	81%	41%	53%	66%
Other Area	8%	11%	16%	5%	10%
Area Unknown	11%	8%	43%	42%	24%

A total of 31 checkpoints were held in store parking lots, during which a total of 241 children's seat installations were inspected. Caregivers participated on a voluntary basis. Table 3 presents the demographics of children and their caregivers who participated at the checkpoints, as well as the types of safety seats inspected.

Table 2
Number of Sales Associates Represented in Queries by Store.

Sample Subgroup	Intervention Store *n*	Control Store *n*	Total Sample *n*
Total Queries	91	65	156
Number of Queries Phase 1	53	44	97
Number of Queries Phase 2	38	21	59
Number of Different Associates Sampled	33	26	59
Number of Associates Sampled More than Once	17	17	34
Number of Associates Sampled in both Phase 1 and 2	12	8	21
Number of Trained Associates Sampled in both Phase 1 and 2	9	--	--

Sales associate training was held during normal business hours, and the Intervention store compensated their employees with their normal hourly wages for the two hours spent in training. Additional special opportunities and incentives, to be discussed below as part of the intervention strategy, were awarded to employees for participation in the training. Caregivers and their children were given small incentive/rewards, as discussed below, for their participation at checkpoints during Intervention.

Table 3
Demographics for Checkpoint Participants by Store and Phase

	Intervention Store (n = 148)		Control Store (n = 93)		
Descriptor	Baseline	Intervention	Baseline 1	Baseline 2	Total Sample (n = 241)
Type of Safety Seat					
Infant	25%	18%	21%	27%	23%
Convertible	47%	60%	55%	42%	52%
Booster combo	12%	14%	13%	23%	14%
High Back BPB*	10%	4%	10%	8%	8%
Low Back BPB	4%	0%	0%	0%	1%
Shield Booster	0%	2%	0%	0%	0.5%
Safety Belt	1%	0%	1%	0%	0.9%
Special Needs	1%	2%	0%	0%	0.5%
Caregiver Category					
Mother/Stepmother	63%	64%	83%	69%	70%
Father/Stepfather	32%	18%	15%	23%	23%
Grandparent	5%	18%	2%	8%	7%
Ethnicity Percentages					
Caucasian	89%	100%	98%	86%	94%
Other	11%	0%	2%	14%	6%
Means for Children					
Age	22 mos.	22 mos.	20 mos.	19 mos.	21 mos.
Weight	26 lbs.	26 lbs.	25 lbs.	24 lbs.	25 lbs.
Height	32 in.	30 in.	29 in.	29 in.	30 in.

*BPB = Belt Positioning Booster.

Materials

Behavior-change agent training. A key intervention component of this project was the development and implementation of a no-cost training program, the KIDS Certification Course, for sales associates at the Intervention store. It is reasonable to assume that parents who have concerns about child safety seats will most likely seek assistance at the point-of-purchase. Therefore, having

the right knowledge available at the Intervention store was considered vital to reducing the misuse of child safety seats. At the Intervention store, only those associates who frequently worked in the child safety-seat section participated in the training. Specifically, 16 sales associates participated in the training. As detailed in Table 2, nine of these trained associates were sampled in both pre- and post-intervention phases.

The personnel training program was administered by the author, a nationally certified child passenger safety technician. In addition to education about proper selection and use of safety seats, the training provided hands-on troubleshooting with seat installation and role-play demonstrations for helping customers. Indigenous personnel were encouraged to model correct usage behaviors for customers. The dialogue was condensed to a two-hour training session, because it was unrealistic to expect site personnel to be permitted to participate if training lasted longer.

The presentation slides used in the training are included in Appendix A. During the training, sales associates were provided copies of the slides and space to take notes if desired. Child passenger safety illustrations created by Virginia Commonwealth University's Transportation Safety Training Center (Breitenbach, Carnes, Hammond, & Saunders, 1999), live demonstrations using actual safety seats and safety belts, role-play demonstrations, and supportive case stories and discussion also accompanied the slides.

The training program not only taught child motor vehicle safety recommendations and step-by-step behaviors for proper installation of safety seats, it also provided training on presenting risk in ways that increased perceptions of personal vulnerability. More specifically, all participating agents were told case stories of safety-seat misuse and its consequences, and they were encouraged to provide these stories as part of the rationale when explaining how to use a safety seat.

For example, the story of "Jacob" from Texas explained how the failure to place a

newborn's seat at a 45-degree recline resulted in the infant's death as his airway became occluded during the car ride. The story of "Ally" from Michigan illustrated how a booster-age child can sustain multiple injuries from the vehicle safety belt if not riding in a belt-positioning booster seat when a crash occurs. An anecdote about "Erica" from Louisiana helped explain to sales associates that the harness straps of a safety seat can rip completely out of a seat in a crash if they are not properly placed in the top slots when the child is facing forward. Finally, the story of "Hannah" from Hawaii illustrated the dangers of placing a child over 40 pounds in a low-back shield booster. Since she was too heavy to be supported by the seat, "Hannah" did not survive the head, neck, and spine injuries she sustained when the seat allowed for excessive head excursion in the crash.

Consistent with "Hannah's" story, the training program was designed to motivate sales personnel to teach parents about what safety advocates call "best practice." The Cosco Grand Explorer Low-Back Shield Booster, and others like it, is one of the most popular booster seats. Recently the Centers for Disease Control and Prevention (1999a) advised that, based on new crash tests (see NHTSA, 2001b), the use of the booster seat with the shield for children *over* 40 pounds allows for too much head excursion. Therefore, new shield booster labels advise using the shield up to 40 pounds and then removing it and using the seat as a belt-positioning booster. However, "best practice" dictates that children *under* 40 pounds should not be riding in a shield booster seat at all. Rather, they should be riding in a seat equipped with a five-point harness system. Giving this information to parents at the point-of-purchase could assist them in choosing a more appropriate seat, such as a high-back booster with a removable five-point harness system.

The training program encouraged sales personnel to be proactive and offer pertinent information spontaneously, as simply "waiting" for parents to ask questions is reactive. Recommendations for information to emphasize when explaining what safety seats to purchase and

how to use them included (a) identifying age- and weight-appropriate seats, (b) installing the safety seat *tightly* in the vehicle, (c) tightening harness straps, positioning the chest clip appropriately, (d) reading instructions, and (e) encouraging attendance at a checkpoint. Sales associates were encouraged to provide as much information as possible and to use memorable case stories to support their information.

Sales associates' program kit and training support materials. To foster enthusiasm for the project and enhance the successful implementation of the KIDS process, participating sales associates were provided a number of incentives/rewards and special opportunities, as well as a program kit and the opportunity to sign a promise card. These materials are presented in Appendix B.

The incentives/rewards and special opportunities, as detailed below, included (a) a KIDS course certificate, (b) public recognition on a special picture poster (if desired), and (c) the chance to win a $25 gift certificate to a local restaurant. Sales associates were alerted of these incentives/rewards through personal communication when the author introduced herself and when the program was reviewed individually to each associate in the weeks prior to the training.

Trained associates were recognized as specialists in safety-seat sales and installation with the presentation of a KIDS course certificate. The framed, signed certificate read "Recognition of KIDS Course Certification" and "Thank you for Actively Caring for your youngest customers." Each certificate was personalized with the sales associates' names. The framed certificates were handed out at the end of the training sessions.

At the *end* of the study, a 24" X 36" picture poster recognizing trained associates was suspended from the store's ceiling in the baby section. The poster read "We Actively Care for KIDS—Ask Us About Car Safety Seats" and included names and pictures of the sales associates

who had completed the KIDS training course (*n* = 16). Three associates were not pictured due to personal preference, but their names were included on the poster. Although the poster would have been an excellent way to alert customers of the sales associates who were trained in the KIDS process, the poster was hung at the end of the intervention phase in order to avoid alerting research assistants of exactly which sales associates had been trained. Note that this picture poster was the *only* poster that was not hung during the intervention period.

At each training session, sales associates in attendance entered their name in a raffle for a $25 gift certificate to one of three restaurants located in close proximity to the intervention store. Because each of the three training sessions had a small number of associates in attendance, the chance to win the raffle was high. An associate's name was drawn at the end of the training and the gift certificate was awarded immediately.

The program kit included (a) a special KIDS Process button, (b) a reference sheet of KIDS talking points to be used in conversations with customers, and (c) special checkpoint coupons to give to customers. The program kit was provided in order to support the successful implementation of the program in the Intervention store. Because the program kit was only available to associates completing the training, it was also a reward for going through the training process.

The KIDS button. Each associate was given a button they were encouraged to wear as part of their uniform. The 3.5" diameter yellow button displayed the blue KIDS Process logo and read, "Ask me about safety seats!" Associates were asked not to share their buttons with non-trained employees. Of course, the buttons identified trained associates to our researchers, and thus observers were not blind to condition if a sales associate wore the button. However, there was the chance that a trained sales associate would not wear the button. Thus, although research assistants were not truly

blind to condition, the picture poster was not displayed until the end of the study because, if displayed, it would remove all uncertainty regarding which sales associates were trained.

Talking points. To aid associates in remembering key information to provide when talking with customers about safety seats, a reference sheet was given to each associate at the end of the training. The laminated 3.25" X 3.75" reference sheet was printed front and back and allowed for easy storage in a pocket. Titled "KIDS Talking Points," the reference sheet presented bulleted information in sections for all children, infants and newborns, toddlers, and small children. Extra copies of the reference sheet were left at the fitting room desk, located near the baby area.

Checkpoint coupons. After completing the KIDS process training, each sales associate was given an abundance of checkpoint coupons. The brightly colored 5.5" X 8.5" cardstock coupons read, "I was trained by a caring [store] sales associate," and contained text explaining that the coupon was redeemable for a valuable prize at an upcoming child safety-seat checkpoint in the store parking lot. The dates for the checkpoints were listed as well. Sales associates were asked to encourage each customer to attend a checkpoint with the question, "will you please attend a checkpoint?" Research on commitment has shown that by simply answering this question with an affirmative response, individuals may be more likely to comply (Cialdini, 2001). Sales associates were asked to not leave the coupons on a counter or in the safety-seat aisle, or to give them to other associates who were not trained in the KIDS process. Extra coupons were left in a box behind the work desk at the fitting room, with a label on the box that read, "To be given out by KIDS-Certified associates only, please." All sales associates and baby area managers were provided the rationale for the restriction.

The restriction was necessary because these checkpoint coupons were used to distinguish those caregivers who had been helped by the trained sales associates from those who heard about

the checkpoint in other ways. The sales associates were instructed to give one of these coupons to each customer they helped regarding safety seats and to point out that the coupon had the dates listed for upcoming checks and was redeemable for a free prize package at the checkpoint.

Commitment from sales associates. To promote commitment to the program, sales associates were given the opportunity to "promise" to use the knowledge learned to better assist their customers. Specifically, at the end of the training sessions, sales associates were provided 3.5" X 4.5" promise cards they could sign and deposit in a box as they exited. All associates except one signed and returned the card.

Program awareness and supportive materials. Caregivers lack established places to turn when seeking safety-seat expertise. Therefore, the store where personnel were trained in the intervention components was identified using various program awareness and supportive materials, including in-store poster displays. An Actively Caring for KIDS Process program logo was created that adorned all program materials and 24 X 18 inch store entrance displays at the intervention store. See Appendix C for the store entrance display and program logo.

A brochure explaining the KIDS Process was made available for interested customers at the customer service counter and the fitting room. The brochure is included in Appendix D. The checkpoint coupons and sales associate buttons (as described above) also served to promote awareness about the program. Paper cutouts (see Appendix E) with the title "I'm buckled right" and the names of children whose parents participated at checkpoints were displayed in the lobby and fitting-room area of the intervention store. These cutouts were intended to promote attendance at checkpoints as a social norm and served as special recognition for caregivers and their children.

Checkpoint incentives and awareness materials. Each parking lot checkpoint was

promoted with five 2-foot by 6-foot banners situated at the two entrances to the store, the two main entrances to the parking lot, and the portion of the parking lot sectioned off for the checkpoint. The banner displayed the words “Free Child Safety Seat Check Today.” In addition, research assistants, positioned at each of the store entrances, held 18” X 24” signs with the same verbal message and the added words, “9 out of 10 Parents Install Them Wrong!” Parking lot recruitment materials were identical for Control and Intervention conditions and are presented in Appendix F.

An incentive for caregivers participating in checkpoints during Intervention phase was a prize package that included coupons for a free meal at Chik-Fil-A, a free dessert at Dairy Queen, and a free game of bowling at the local bowling alley. A prize package was given to caregivers following their participation at an Intervention store checkpoint during the Intervention phase. Because of the abundance of incentive coupons obtained from local businesses, the prize package was given to all checkpoint participants at the Intervention store during post-intervention, regardless of whether or not they had a checkpoint coupon. (The checkpoint coupons advertised that the prize packages were available.) Kites featuring “Snoopy” were also obtained, but because the kites were in limited supply, they were only given to caregivers with checkpoint coupons. Thus, caregivers with checkpoint coupons received the prize package and a kite.

Posters. During baseline, six 18” X 24” posters announcing the upcoming safety-seat checkpoints were posted in the checkout areas, entrances, and child safety-seat aisles of both the Intervention and Control stores. Six copies of the standard control poster were displayed in the Control store throughout the study. The control poster is depicted in Appendix G.

During Intervention phase, fear appeal posters were displayed inside the store that

promoted the program and child passenger safety. After the intervention was implemented, four types of posters were displayed in 12 strategic locations in the Intervention store. The posters were designed to educate about proper safety-seat use, increase perception of risk for particular misuse behaviors, and notify customers of the days, times, and locations of the checkpoints. As depicted in Appendix H, the 18" X 24" posters were printed front-and-back, were colorful with large print, and were suspended from the ceiling just above eye level so they were out of customers' reach. One of the 12 posters (three copies of four designs) was displayed in close proximity to the following purchase items or areas at the Intervention store: (a) child safety seats, (b) bakery/deli/produce, (c) milk/juice/McDonald's entrance, (d) baby diapers, (e) baby food and formula, (f) cereal, (g) checkout (2 posters), (h) toys/electronics, (i) pharmacy, (j) children's clothing, and (k) baby clothing/accessories.

Each of the posters was designed to increase one of four specific safe behaviors: (a) participating in checkpoints; (b) using a booster seat for booster-age children; (c) installing the safety seat tightly; and (d) positioning harness straps tightly. All posters included verbal messages detailing proper use and the dates of upcoming safety-seat checkpoints. Local statistics (England et al., 1999; England, Olson, & Geller, 2000) and the word "you" were incorporated in the posters to help increase personal connection to the misuse and to raise perceptions of risk. Memorable stories that change agents were told and encouraged to tell customers corresponded with the dangers illustrated in the posters.

Critical behavior checklist for safety-seat use. An observation checklist was created to break misuse objectively into successive components in a response chain, as included in Appendix I. Termed a critical behavior checklist (Geller, 1996, 2001), this tool delivered a "percent safe" score for each safety seat inspected at safety-seat checkpoints. An overall percent

safe score was determined by dividing the number of safe checkmarks by the total number of safe plus at-risk checkmarks. (This simple mathematical calculation is outlined at the bottom of the checklist in Appendix I.)

Percent safe scores were also determined for individual misuse behaviors by examining that behavior across a number of checklists (between subjects). Again, these scores were determined by dividing the number of safe checkmarks for a particular behavior by the total number of safe plus at-risk checkmarks for that particular behavior. Low percent safe scores for specific behaviors provided direction for areas of misuse the intervention agents targeted with memorable stories following baseline.

Critical behavior checklist for information. An additional observation checklist, as provided in Appendix J, was created to break safety-seat information into its component parts. Research assistants were sent to the participating retail stores posing as child caregivers with the purported purpose of purchasing a safety seat. During these "covert queries," the critical behavior checklist was used to evaluate information given to research assistants (posing as child caregivers) as safe or at-risk. The checklist allowed for the calculation of percent safe scores for each "covert query" and for individual misinformation behaviors. These percent safe scores were calculated in the same manner as percent safe scores for the checklist for use. That is, an overall percent safe score was determined by dividing the number of safe checkmarks by the total number of safe plus at-risk checkmarks. The percent safe scores for individual behaviors provided specific feedback for the information provided in the KIDS training process.

Bogus babies. To aid in completing successful *covert,* standardized, and realistic queries of retail stores, a list of "bogus babies" was developed as given in Table 4. This table was derived from a chart of average development (Dacey & Travers, 1994) and specified the safest

seat for each child. Bogus babies were simply fictional babies for whom the sales associates were asked to recommend a seat and provide advice.

The ages and sizes of the bogus babies were selected to represent developmental periods when misinformation and misuse potentials are high. For example, a small five-year-old child should always ride in a belt-positioning booster, but 83 to 95 percent of booster-age children ride at-risk in safety belts alone (NHTSA, 2001b; PCPS, 2000, 2001). Likewise, an infant who is ten months old and weighs 24 pounds should still face the rear of the vehicle due to age, yet many parents are erroneously advised to face the baby forward due to his/her weight. Many safety seats do not accommodate such a high weight when rear-facing, so this baby would also need a type of seat that has a high rear-facing weight limit.

Table 4

List of bogus babies and their safest seats/positions

Bogus Baby Category	Weight[a]	Height	Safest Seat(s)	Position in Car
Newborn, < 1 month	7 pounds	20 inches	Infant-only seat, no tray shield	rearward
Infant, 10 months	24 pounds	29 inches	"Big baby" convertible [b]	rearward
Toddler, 3 ½ years	38 pounds	38 inches	Convertible, forward-toddler, or HBB[c] with harness, never shield booster	forward
Small child, 5 years	50 pounds	41 inches	BPB[d] with lap/ shoulder belt	forward

[a] Weight and height columns were taken from a table of average development in *Human development across the lifespan* (Dacey & Travers, 1994).
[b] Rear-faces to 30 pounds
[c] High-back booster
[d] Belt-positioning booster

Tape recorders. The use of concealed tape recorders was approved by the institutional review board and used to aid in data collection. Specifically, a small Dictaphone-style tape recorder was placed in a zippered wallet/organizer jacket. Several different 4" by 3" wallet/organizer jackets were used in the study, all of which appeared to the average observer to be nothing more than a hand-carried wallet typically used by many consumers. The tape recorder was concealed in this manner because pilot research showed voices to be muffled and inaudible when recorders were concealed in pockets or purses.

The tapes were used mainly as a memory aid for the observer when completing the checklist following the query. Also, the tapes served as a record of the query when the observer needed guidance from the author in coding specific information given. However, because so much of the sale was *visual* in nature (i.e., the sales associates often pointed to seats), the tapes were mainly an aid to the observer and were not particularly useful as a reliability index for the observers' records. Nonetheless, researchers labeled tapes with the date, store, and associates' names, and turned the tapes in with the data sheet after the query. At the end of the study, all tapes were destroyed.

Procedure

Experimental design. The KIDS process was implemented at a nationwide-chain discount store and evaluated with an interrupted time series design (pre-post) and a similar control site for comparison. The quasi-experimental field study can be represented by a factorial of: 2 Store X 2 Phase. Baseline data collection spanned approximately five months (March, April, September, October, and November), with approximately three months of data collection following the implementation of the Intervention (February, March, and April). Due to shortages in research staff, data collection was suspended during school breaks. Table 5 presents the

general project activities and materials by store and phase.

Table 5
Project Activities and Materials by Phase and Store

Phase	Intervention Store	Control Store
Baseline	Behavioral Data Collection: • Checkpoints • Queries Materials: • Control Poster • Parking lot banners and signs advertising Checkpoints	Behavioral Data Collection: • Checkpoints • Queries Materials: • Control Poster • Parking lot banners and signs advertising Checkpoints
Treatment Implemented (Week of 1/28/01)	No Data Collection Sales Associate Training Occurred • Program Materials Distributed • KIDS Certificates Distributed • Opportunity to Sign Promise Card Given • Gift Certificate Raffle Held Intervention Posters Hung	No Data Collection
Intervention	Behavioral Data Collection: • Checkpoints • Queries Materials/Components: • 4 Intervention Posters • Parking lot banners and signs advertising Checkpoints • KIDS-trained Sales Associates • KIDS Store Entrance Displays • Checkpoint Coupons • KIDS Buttons • KIDS Talking Points • Buckled Right Cutouts • Checkpoint Incentives	Behavioral Data Collection: • Checkpoints • Queries Materials: • Control Poster • Parking lot banners and signs advertising Checkpoints

Pre-data collection activities. This research was reviewed according to university human subjects guidelines and was approved by the Institutional Review Board for Research Involving

Human Subjects. Prior to the start of baseline data collection, potential stores were contacted and invited to participate. A meeting was held with store managers to explain the project, during which the author presented a summary of the program detailing the stores' potential benefits. At this time, the managers were permitted to inspect the posters and all other program materials. The KIDS summary detailing store benefits is presented in Appendix K. Two stores of the same nation-wide chain were selected based on willingness to participate and their status as popular shopping venues in neighboring communities. The managers of each store obtained approval from their corporate office. A coin toss determined each store's status as Intervention or Control.

In order to schedule the training at the most convenient times and to print the KIDS course certificates, the Intervention store manager provided the names and schedules of the associates working in the "soft-line" department. In both stores, the soft-line staff worked in the apparel and safety-seat sections.

Extensive training was necessary for researchers assisting the author at safety-seat checkpoints and conducting covert queries of the retail stores. In order to collect objective data, research assistants were required to complete a minimum of eight hours of project-related safety-seat training. Their training followed NHTSA guidelines and included education about types of safety belts and safety seats, and specific safety-seat issues such as proper fit, proper installation, and common usage mistakes. The author conducted all training sessions, which included hands-on exercises and a post-training "field test" to check for readiness.

Following training in child passenger safety, research assistants were trained in the checkpoint protocol and covert query (i.e., information observation) protocol. Training continued throughout the project as new research assistants joined the team and child passenger safety updates were needed. All research assistants remained "in training" until they demonstrated their

observations were at least 80% reliable with the records of an independent observer.

To help the research assistants become comfortable with pretending to shop for a "bogus baby," they were instructed to go to the toy section and ask for help buying a toy for a fictional child. Researchers also practiced acting out their "cover stories" with the author, which included detailing their relation to the baby (e.g., mother, father, sister, babysitter, aunt, etc.), whether it was a boy or girl, and the name of the baby to use if asked. Test runs were conducted using the query protocol, which led to minor revisions in project procedures.

Baseline. Prior to implementing the training program at the Intervention store, baseline observations of safety-seat information and use were collected for five months at both stores until a relatively stable baseline was achieved and a representative number of soft-line sales associates were queried from each store. Baseline checkpoints were advertised in both stores using the standard control poster, banners in the parking lot, a recruiter at the door, and periodic loud speaker announcements inside the stores (about every 30 minutes). Information and use data collection continued throughout the project to monitor changes in these behaviors. These data collection procedures are described below.

Information data collection procedure. In accordance with the safety-seat information observation methods tested in England et al. (1999), research associates posed as child caregivers to conduct covert queries at the Intervention and Control stores. That is, they pretended to need assistance purchasing a safety seat for a particular type of child (see Table 4).

During the queries, research assistants were given the latitude to choose to be any relation to their baby that was comfortable for them. As a result, when conducting the queries, the observers pretended to be aunts or uncles (on 34% of the queries), parents (12%), babysitters (20%), friends of parents (12%), cousins (15%), and siblings (7%).

The store personnel (including management) were blind to the existence of the covert query observations, in order to (a) maintain the "covert" nature of the queries, (b) minimize the chances employees would enhance their level of assistance if they thought they were being queried for research purposes, and (c) minimize the fear of the program jeopardizing employment. Furthermore, research assistants were not informed of which sales associates had attended a training session (as some soft-line associates were not trained). As discussed above, observers were not blind to the experimental condition if a sales associate wore the button. However, there was the chance a trained sales associate would not wear the button. Thus, uncertainty about trained status was present when an associate was not wearing a button.

Over the course of the study, 44 different research assistants conducted 156 covert queries at the two stores. The data collection schedule was designed to achieve a representative sample of sales associates. The sales associates' typical shifts were 9:00 a.m. to 4:00 p.m. and 2:00 p.m. to 9:00 p.m. Researchers signed up to collect data during the day shift (9:00 a.m. to 2:00 p.m.) or night shift (4:00 p.m. to 8:00 p.m.). Early in the process, the hours from 2:00 to 4:00 p.m. were excluded because the small group of nightshift employees was being over-sampled.

Because a greater number of sales associates worked the day shift, more schedule sign-ups were available during the day shift. Schedule sign-ups were available Sunday through Saturday, with an average of 3.3 queries per week at the Intervention store and 2.2 queries per week at the Control store. All days of the week were represented by the queries, with percent of observations conducted ranging from 7% on Saturdays to 23% conducted on Thursdays. Proper spacing of the queries across time was necessary to maintain their covert nature. Bogus babies (see Table 4) were assigned to the sign-up schedule using a Latin-square method that ensured

representation across the four baby categories. As discussed above, bogus babies were simply fictional babies (created to make queries more standardized and realistic) for whom the research assistants asked for help in choosing a seat. To allow for calculations of interobserver agreement, 22 percent of the retail store data were collected by two independent observers.

As detailed in the protocol provided in Appendix L, research assistants were instructed to ask a soft-line sales associate for help in purchasing a safety seat for their "bogus baby." In the initial weeks of data collection, it became apparent that a targeted method of querying the large number of soft-line sales associates was necessary in order to avoid over-sampling a small subset of the soft-line associates who frequently staffed the safety-seat sections. According to the managers, all soft-line associates were responsible for helping customers in the safety-seat sections when needed. However, certain sales associates were frequently scheduled to provide the majority of coverage in the safety-seat sections.

Because only the names of the Intervention store sales associates were known in advance (in order to print certificates), and because the control store staffed the baby area with a greater number of different associates, the procedure for deciding which sales associates to approach was slightly different at the two stores. All other procedures for the queries were identical.

At the Intervention store, research assistants carried in their pocket a mock "grocery list" containing the names of sales associates we still needed to query. Once inside the store, researchers looked for anyone on the list working in the soft-line area. At the beginning of each phase, the list contained the names of all soft-line sales associates and managers. Once any research assistant queried a sales associate, *all* researchers crossed the person's name off their lists. Research assistants were required to check the current grocery list postings prior to collecting data, and to update the postings following data collection. In this manner, we avoided

over-sampling a small number of associates and achieved a more representative sample of the soft-line associates at the Intervention store.

For the Control store, researchers did not have a grocery list of names (since the names of all soft-line associates were not known), but a list of associates who had already been queried was posted at the research lab and researchers began the process of elimination by looking for sales associates *not* on the list but working in the soft-line section. Researchers were required to check the posting prior to data collection and to update the posting after data collection. As in the Intervention store, this provided for a representative sample of soft-line associates in the Control store.

It is important to note that the process above describes whom the researchers aimed to *approach* for a query. However, on many occasions the researchers were offered assistance before they could choose a person to approach. In both stores, researchers were permitted to query a sales associate who approached them if they had not queried him or her before *and* the person was not on the list of people *not* to query because they had been queried too many times. Any sales associate who had been queried four times in a phase was put on our list of people we were no longer querying for the phase. Again, this was necessary to avoid over-sampling, and it helped maintain the covert nature of the queries. Because the researchers queried some associates who approached them, some of the queries were of associates who did not work in the soft-line area. When an associate's area was known to be outside of the soft-line section (because the sales associate mentioned it during the query), this was recorded on the checklist.

As detailed in Appendix L, researchers were instructed not to go directly to the child safety-seat aisle when entering a store for the query. Pilot tests had shown this to produce over-sampling of the small number of sales associates who frequently worked in the child safety-seat

section. Rather, in both stores the research assistants were instructed to browse in the greater soft-line section and look for a sales associate who could be targeted for a query.

Once a target associate was located, the observers first asked a simple question about the items the associate was near (e.g., men's apparel, women's apparel, etc.). Then the observers slowly made their way to the child safety-seat section and waited until the section was clear of associates. Then they went back to the first associate who answered their question and asked if he/she would help in the baby area, as no one was over there.

Sometimes, the associate resisted and said it was not his/her area (7%, n = 12). Research assistants noted this on the checklist but still marked at-risk for the items since the managers of the stores believed safety seats *were indeed* part of their area. If another associate was paged, the research assistant could query this person if he/she had not queried him or her before *and* if the person was not on the list of associates who were not to be queried. The observers were careful to ask for assistance in the "baby area" rather than the "child seat area" so they could ask a simple question about strollers, baby bottles, or something else besides safety seats if a sales associate who was not to be queried was paged. The research assistants were instructed to memorize the face and name of associates they had queried and to always be ready with an alternate scenario of questioning if needed.

Once an associate was available for querying, the research assistant began with an opening question such as, "I'm looking for a car seat and don't know what to get." The observer purposefully did not provide any information about the bogus baby in the opening statement. The research assistant then waited for spontaneous questioning and information from the sales associate. Thus, the observer's statements and guiding questions beyond the opening statement were directed by the flow of the conversation, so the query mimicked a real shopping experience

and did not seem unnatural and arouse suspicion. The researcher observed the information given by the sales associate and mentally evaluated this information as safe or at-risk while talking with the associate.

Most items on the checklist were considered *vital* safety-seat information (as explained to the sales associates in their training) and thus were considered at-risk when omitted by the sales associate. For example, a sales associate who failed to ask the weight of the customer's child was judged *at-risk* for this item because the weight of the child was *vital* in choosing a correct safety seat. Also, the KIDS training stressed offering information to parents spontaneously because parents rarely know the questions they need to ask. Research assistants were instructed to wait for spontaneous information and only ask questions as needed to get a non-talkative associate to talk. Asking a series of questions could provoke suspicion because it did not mimic the typical parent's shopping experience.

Once research personnel left the store, the information was recorded systematically on the critical behavior checklist as discussed above and provided in Appendix J. The researcher completed the checklist immediately (i.e., prior to leaving the parking lot of the store), and referred to the tape recording of the conversation when needed to verify a checklist observation.

While aggregate percent safe scores for information across sales associates provided most data for the evaluation, specific sales associates' percent safe scores were also tracked over time to enable an examination of repeated measures per individual sales associate. Therefore, the research assistants recorded the associate's hair color, eye color, estimated age, and name from their nametag so repeated observations of individual associates could be matched over multiple observations before and after the intervention. This also enabled the author to keep track of the number of different associates queried.

Observations of safety-seat use. To observe actual use of child safety seats, observations were conducted in accordance with methods tested in England et al. (1999). Child safety-seat checkpoints were held in parking lots of both the Intervention and Control stores. On the day of each checkpoint, the opportunity to receive critical information about safe rides for children was advertised via posters, signs, periodic loud-speaker announcements, and banners at the site promoting a "Free Safety Seat Check." The method for advertising checkpoints in the parking lots was identical for the control and treatment phases and stores, but the posters inside the store differed. Specifically, the standard control poster (see Appendix G) advertised the checkpoint inside the stores during the Baseline phase at the Intervention store and throughout the project at the Control store. Intervention posters, as depicted in Appendix H, advertised checkpoints inside the Intervention store after treatment was implemented.

By project end, a total of 31 checkpoints were held. The checkpoints were always held on weekends from 12:00 p.m. (noon) to 4:00 p.m., with setup from 11:00 a.m. to noon. Saturday and Sunday checkpoints were counterbalanced across the two stores by alternating days each weekend. The checkpoints were scheduled back-to-back so when a checkpoint was held at one site on Saturday, another was held at the other site the following day. Checkpoints were not held on weekends when Virginia Tech hosted home football games, because of the influx of thousands of out-of-town sports fans. Occasionally the checkpoints were canceled due to heavy snow or heavy rain ($n = 4$), but they were usually held as scheduled in extreme temperatures.

The research protocol for checkpoints is provided in Appendix M. Interested parents drove up to the checkpoint area and signed the consent form (see Appendix N). Researchers asked and noted how the caregiver heard about the checkpoint and whether the caregiver brought a KIDS coupon. After recording demographic, vehicle, and safety-seat information, the

researchers checked the caregiver's positioning of the child and installation of the child safety seat, and recorded these observations on a checklist as safe or at-risk (see Appendix I). Then the researchers informed the parents of any errors.

Regardless of the phase (pre-intervention or intervention), corrective action was taken at the checkpoint. Specifically, the researchers educated and showed parents the correct way to install their seats. Seats deemed unsafe were replaced with new seats purchased with grant funds awarded by the Cambridge Center for Behavioral Studies, the Virginia Department of Motor Vehicles and the National Highway Traffic Safety Administration. During the Intervention phase at the Intervention site, parents were then given the opportunity to write their children's names on the "I'm buckled right" cutouts to be displayed in the store (see Appendix E). Participants from the Intervention store were also given a prize packet. To allow for interobserver agreement calculations, 61 percent of the checklist observations were recorded by two independent observers.

As a whole, caregivers only attended a checkpoint once. However, on a few occasions a parent did participate twice. While inspecting such installations would have been informative, on every occasion the parents who returned came with a newly purchased seat for us to install and thus their installation could not be observed. Thus, repeat participants were not included in the data set.

Preparation for treatment implementation. Once stable baselines of use observations at checkpoints were achieved and a representative number of different soft-line sales associates had been queried (at least 65% from each store), the author worked with the store manager at the Intervention store to schedule three two-hour training sessions and coordinate hanging the intervention posters from the ceiling. In the weeks prior to the intervention, the author spoke with each soft-line sales associate individually about the program, its rationale, and about how the associates were in key positions to make a difference. During each of these informal discussions, the

associate was given an opportunity to ask questions while the program's benefits (i.e., incentives and life-saving potentials) were detailed.

The associates were told the program would not affect their employment, but that managers had graciously offered to pay them their normal wages for attendance at a training session. With their consent, photographs for the picture poster were taken during these informal meetings.

Also in preparation for treatment, the author visited numerous local businesses and requested "giveaway" items for checkpoint participants during the Intervention phase. In addition to a verbal description of the program, the author presented the businesses with a standard letter about the KIDS process and a brochure, as depicted in Appendices O and D, respectively. Coupons for free meals, desserts, or activities were obtained from Chik-Fil-A, Dairy Queen, and the local bowling alley. Met-Life kites featuring "Snoopy" were also obtained from a Met-Life insurance company in Virginia Beach, Virginia.

Treatment implementation procedures. Checkpoint data collection was suspended for approximately two months (December and January) while posters were hung and the training was implemented over the course of a school break. Query data collection was suspended over the course of the school break (mid-December to mid-January) and during the week that posters were hung and the training was implemented. Training was implemented the last week of January 2001. Holiday season schedule conflicts with the Intervention store and a change in management delayed treatment implementation from the original target date of October to January. (For this reason, some of the intervention materials were printed listing checkpoint dates in November and December; however, these dates had already passed when materials were distributed/displayed.)

The training sessions occurred at times to accommodate all child-safety area associates

and managers at the Intervention store. As discussed above, the KIDS training sessions lasted two hours and were facilitated by the author. When the training sessions were held, all soft-line associates who were on duty were required to attend. Sixteen Intervention store soft-line associates attended one of the training sessions. After Intervention store associates were trained in the KIDS process, they were given certificates, buttons, talking points, and checkpoint coupons. The site was also adorned with the various KIDS process window displays and posters (see Appendices C and H). Although the author requested permission to hold additional training sessions for new associates if needed, additional training was not needed as turnover rates were low in the soft-line sections. After data collection was complete, the poster recognizing trained associates was suspended from the ceiling in the safety-seat section and a copy of the training slides were provided for the manager.

Results

In accordance with the project's seven hypotheses, the overall purpose of the analyses performed was two-fold. The first objective was to determine the impact of the KIDS training program on sales associates' ability to help customers purchase and use an appropriate child safety seat. The second objective was to examine the effects of the intervention on child safety-seat use observed at checkpoints, as well as parental participation at checkpoints. Analyses pertaining to each overall objective are presented separately below.

Information Observations

Interobserver reliability. Two observers independently completed a data sheet on the same query for 22% (n = 34) of the observations. When collecting reliability data, two observers traveled to the store together and listened to the sales associate together; however, only one member of the team engaged in conversation with the sales associate while the other member

listened. The two individuals then completed their checklists independently once leaving the store.

Percent agreement for *each critical behavior* was computed for at-risk and safe checks separately. For both the safe and at-risk calculations, percent agreement for a specific critical behavior was calculated by examining interobserver agreement for *that critical behavior* across all the queries where two observers independently completed checklists.

Computing safe and at-risk agreements separately is a conservative estimate of reliability when the data set contains variables that have a low base rate for being safe or for being at-risk. For example, if a critical behavior was typically recorded as safe, the data could seem quite reliable when computing overall reliability but actually be only reliable when observers checked safe, and be quite unreliable when observers checked at-risk. Given the relative fewer overall occurrences of at-risk checks, disagreement for at-risk checks would fail to have a great impact on the overall reliability percentage. Thus, calculating percentages of at-risk and safe agreements separately minimizes the chances for erroneously inflated reliability estimates.

To calculate percent agreement for at-risk checks for each critical behavior, the number of times two data collectors agreed that the sales associate gave at-risk information was divided by the number of times they both agreed the information was at-risk plus the number of times they disagreed. This was then followed by a similar calculation for number of times two data collectors agreed the sales associate gave safe information regarding the critical behavior. The number of safe agreements was then divided by the number of times they both agreed the information was safe plus the number of times they disagreed. The primary observers' recording was used as a basis for determining whether disagreements counted against the at-risk or safe reliability calculation. Specifically, when the primary observer recorded safe, the disagreement

counted against safe reliability, and when the primary observer recorded at-risk, the disagreement counted against at-risk reliability.

When the observers checked at-risk, mean percent agreement between two independent observers across all critical behaviors was 95 percent. Percent at-risk agreement ranged from 83% to 100% for all critical behaviors. Moreover, interobserver agreement was 100% for six of the 19 critical behaviors when checking at-risk.

When the observers checked safe, mean percent agreement between two independent observers across all critical behaviors was 93 percent. Percent safe agreement ranged from 83% to 100% for all critical behaviors. Furthermore, interobserver agreement was 100% for seven of the 19 critical behaviors when checking safe.

Sample description and mean percent safe. By project end, a total of 156 information observations were conducted across both stores and both phases. These 156 observations represent information from 59 different retail store associates at the two stores. Table 6 presents mean percent safe information scores by gender and department for each of the two stores by phase.

The maximum number of times a single associate was queried within a phase was four, with three exceptions. Specifically, due to 48-hour lags in updating the associate lists as data were collected over the weekends, two associates were queried five times in post-intervention. Early in the project, one associate was queried seven times; this experience led to the decision to limit queries to four per phase. No associate was queried on more than eight occasions across the two phases. Table 2 (presented earlier) depicts the number of sales associates represented in the sample by store and numbers of times queried.

Table 6
Mean Percent Safe Information Score at Each Store, Classified by Phase, Gender of Sales Associate, Area, and Bogus Baby Category.

	Intervention Store (*n* = 91)		Control Store (*n* = 65)		
Subgroup	Baseline	Intervention	Baseline 1	Baseline 2	Total Sample (*n* = 156)
Overall Mean	31%	47%	40%	33%	38%
Gender [a]					
Men	45%	42%	32%	0% [b]	34%
Women	31%	47%	41%	35%	38%
Area					
Soft Line Area	32%	50%	47%	38%	41%
Other Area	36%	38%	45%	53%	42%
Area Unknown	25%	23%	32%	25%	28%
Bogus Baby					
Newborn	29%	39%	48%	31%	37%
Infant	33%	41%	36%	9%	33%
Toddler	31%	55%	44%	48%	44%
Small Child	30%	52%	36%	32%	37%

[a] Gender of Sales Associate
[b] *N* for cell = 1

Between-subjects effects by trained status. A one-way analysis of variance (ANOVA) was conducted to compare percent safe scores by trained status within the Intervention store. For this analysis, each observation was treated as a "subject" and trained versus untrained status was compared regardless of phase. That is, observations of sales associates who would later receive training were in the untrained group prior to training and in the trained group after training. Two observations were excluded from the analysis because the associates observed were not wearing their nametag post-intervention and thus their trained status could not be determined. Eighty-nine Intervention store observations remained for the analysis.

Results of this analysis revealed a significant effect for training status, F (1, 87) = 10.52,

$p < .01$. As depicted in Table 7, percent safe scores for observations of trained associates ($n = 22$) were significantly higher than percent safe scores for observations of untrained associates ($n = 67$). Mean percent safe scores were 33.8% ($SD = 20$) and 49.5% ($SD = 18$) for untrained and trained associates, respectively.

Table 7
Mean Percent Safe Information Scores by Training Status at the Intervention Store

	Untrained ($n = 67$)		Trained ($n = 22$)	
	M	*(SD)*	*M*	*(SD)*
Percent Safe Information	33.8	20	49.5*	18

* $p < .01$

Table 8
Mean Percent Safe Scores Before vs. After Nine Associates were Trained at the Intervention Store

	Pre-Intervention ($n = 9$)		Post-Intervention ($n = 9$)	
	M	*(SD)*	*M*	*(SD)*
Percent Safe Information	30.4	10	50.2*	14

* $p < .01$

Within-subjects effects pre- vs. post-training. At the Intervention store, nine sales associates who attended the KIDS training course were observed pre-intervention and post-intervention. A paired samples (dependent) t-test was performed to compare mean percent safe scores for these nine associates within subjects before and after training. The comparison revealed that percent safe scores increased significantly within subjects after training, $T(8) = -4.75$, $p < .01$. As shown in Table 8, the associates' mean percent safe information scores

were 30.4% (*SD* = 9.8) and 50.2% (*SD* = 14.0) for pre- and post-intervention, respectively.

Percent safe scores across time for sales associates. To view the effects of training over time, percent safe scores for the sales associates who received training (i.e., change agents) and who were sampled both pre- and post-intervention (*n* = 9) were graphed according to week of data collection. Figure 1 presents the weekly means for the trained sales associates pre- and post-intervention. Figure 2 presents individual percent safe scores for the nine trained sales associates across weeks of data collection. Data markers sharing the same shape in Figure 2 represent observations of the *same* sales associate.

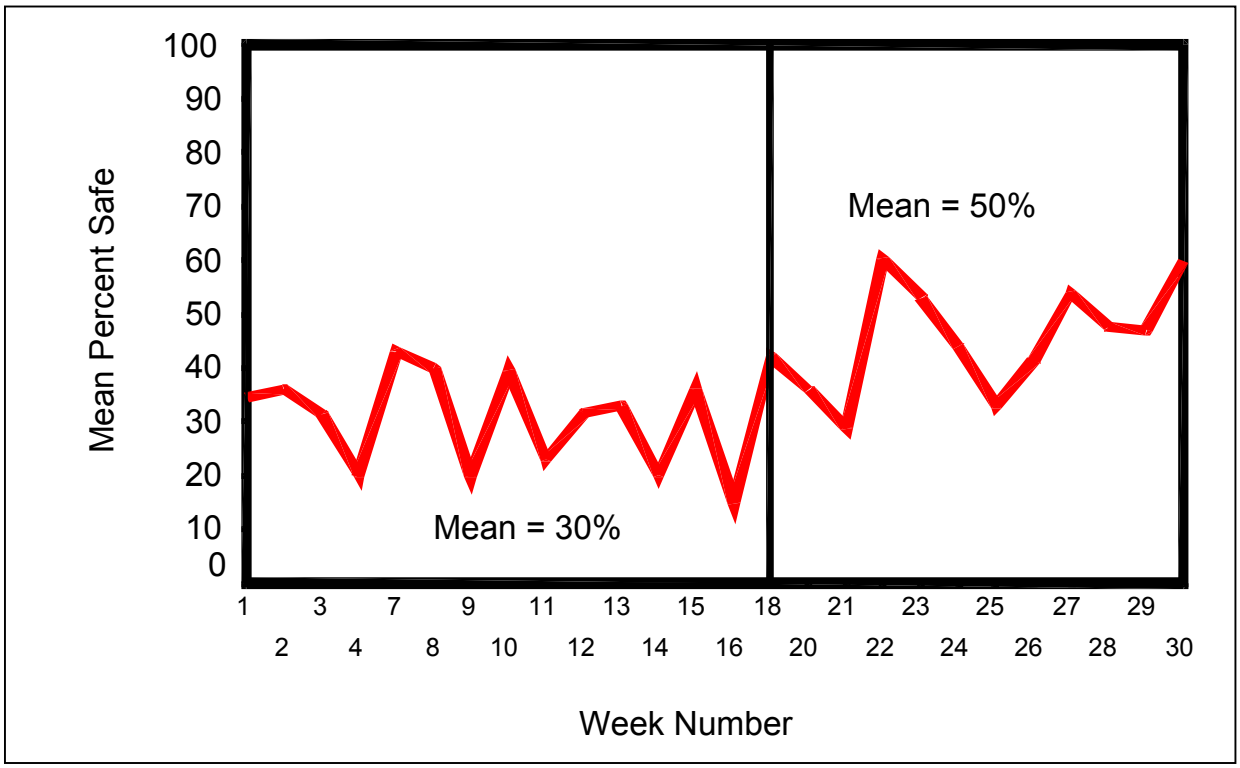

Figure 1. Weekly mean percent safe scores for sales associates (*n* = 9) before vs. after training.

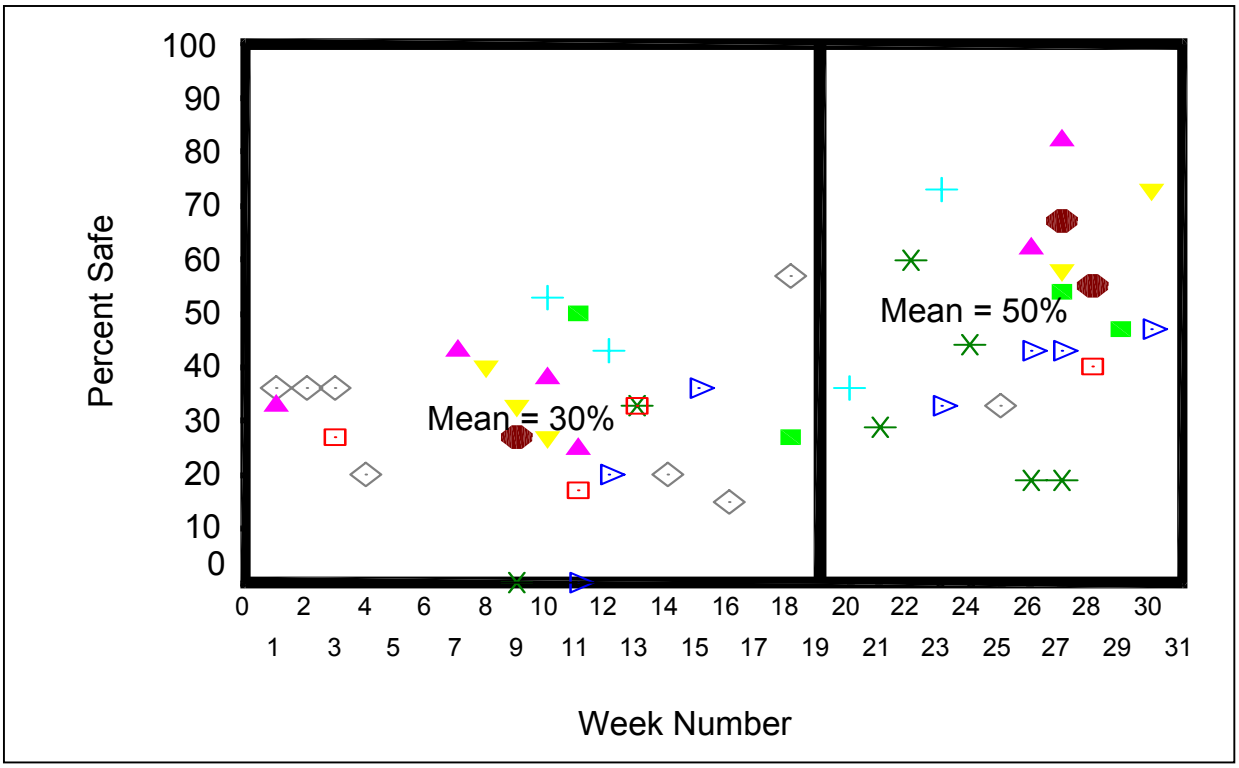

Figure 2. Scatter plot for percent safe scores over data collection weeks for the nine sales associates who received training.

Examining effects between sites. In order to examine change in percent safe information scores by store and phase, a 2 (Store) X 2 (Phase) ANOVA was calculated on mean percent safe information scores with each observation treated as a "subject" in the analysis. The intent of this analysis was to check for a change in "culture" after the intervention, as anecdotal reports from research assistants had indicated the trained sales associates at the Intervention store were sharing their knowledge with untrained associates. Thus, all 156 observations were entered in this analysis, including observations of sales associates known to work in areas other than the soft-line section. The ANOVA did not reveal a main effect for Store or Phase (p's > .10), but did reveal a significant Store X Phase interaction, F (1, 155) = 9.12, p < .01. The interaction is depicted in Figure 3.

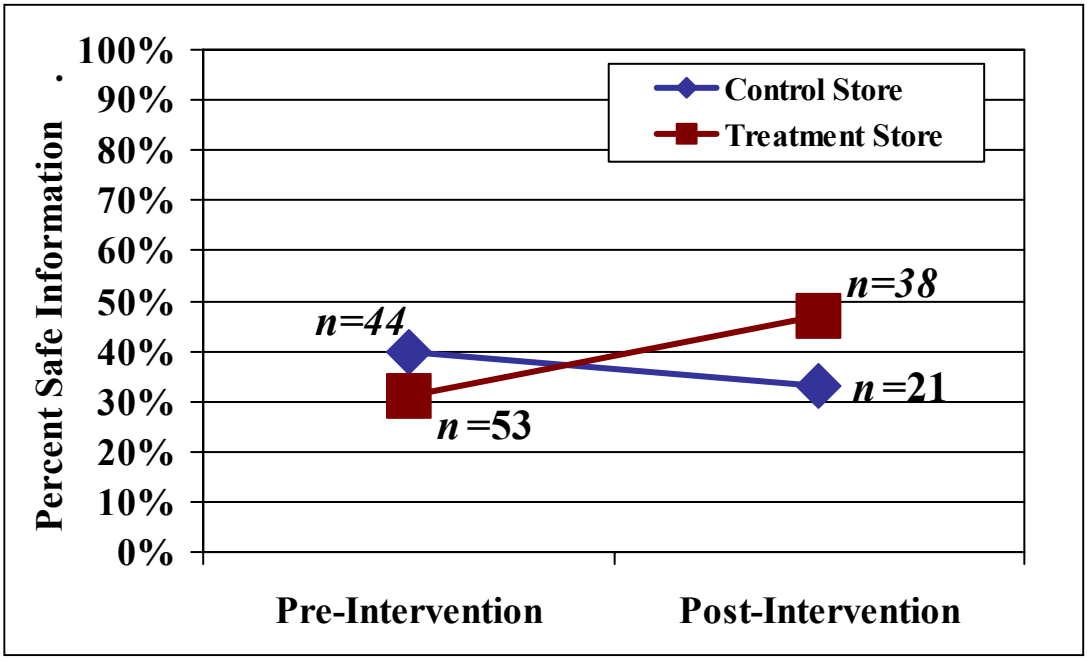

Figure 3. Mean percent safe information scores by store and phase.

To investigate the interaction, the effects for the Intervention store alone were first analyzed, comparing Baseline and Intervention Phase observations with a one-way ANOVA. At the Intervention store, percent safe information scores post-intervention were significantly higher than were percent safe information scores during Baseline, F (1, 89) = 15.48, $p < .01$. In a separate one-way ANOVA comparing the two Baseline phases at the Control store, there was no difference in mean percent safe information scores between the two Baseline phases ($p > .15$).

A one-way ANOVA comparing mean percent safe information scores for the two stores during the pre-intervention phase revealed that the two stores differed, F (1, 95) = 5.54, $p < .05$. Specifically, mean percent safe information scores at the Control store were significantly higher than were scores at the Intervention store. Means for Phase 1 were 30.8 (SD = 16.5) and 40.2 (SD = 22.4) for the Intervention and Control stores, respectively.

A final one-way ANOVA compared mean percent safe information scores for the two

stores during the post-intervention phase, and revealed that the stores continued to differ, F (1, 57) = 4.83, $p < .05$. However, during Phase 2, percent safe information scores were higher at the Intervention store than at the Control store. Means for Phase 2 were 46.8 (SD = 22.4) and 33.3 (SD = 23.1) for the Intervention and Control stores, respectively.

Comparisons between subjects for critical behaviors. Table 9 depicts the percentage of safe scores per individual checklist behaviors, calculated separately per phase. To investigate differences between the two stores pre- and post-intervention, Chi Square statistics were computed separately for individual critical behaviors on the checklist. Specifically, Chi Square statistics compared the frequency of checks in at-risk columns versus safe columns. Because the majority of critical information behaviors were considered at-risk if not addressed by the sales associate, the inclusion of frequencies for "not applicable" rendered most Chi Square tests impossible because NA cells had expected counts less than 5 (a condition which distorts the result of the Chi Square computation). Therefore, Chi Square tests were performed on at-risk versus safe frequencies only.

In some instances, Chi Square tests still could not be performed due to at-risk or safe cells having expected counts less than 5. The critical information behaviors for which analyses could not be performed because some at-risk or safe cells had expected counts less than 5 included: (a) mention of locking clip, (b) positioning of retainer clip, (c) recommending after-market products, (d) recommending a tray shield for a newborn, (e) mentioning fit between vehicle seat and car seat, (f) recommending a shield booster, (g) mentioning need to read the vehicle owner's manual, (h) referring customer to helpful resources, and (i) offering to help the customer try the seat in the car.

Table 9
Percent Safe Information Scores for Critical Behaviors on the Checklist by Store and Phase.

	Intervention Store (n = 91)		Control Store (n = 65)		Total Sample (n = 156)
Critical Behavior	Baseline	Intervention	Baseline 1	Baseline 2	
Gave Spontaneous Information	55%	78%	70%	38%	63%
Asked Child's Category (if age was not asked)	53%	56%	56%	36%	52%
Asked Child's Age	71%	79%	83%	53%	75%
Asked Child's Weight	40%	61%	56%	45%	51%
Mentioned Importance of Safety Belt Configurations	17%	44%	25%	23%	26%
Mentioned Importance of Fit between Car and Seat	6%	13%	7%	5%	8%
Informed about Locking Clip	6%	18%	17%	10%	12%
Informed of Correct Direction to Face Child	36%	55%	41%	33%	42%
Mentioned Installing Seat Tightly	11%	46%	23%	29%	25%
Mentioned Positioning Harness Straps Tightly	8%	26%	16%	24%	17%
Mentioned Proper Placement of Harness Clip	6%	9%	8%	24%	10%
Recommended Safe Seat	59%	75%	75%	62%	68%
Did not Recommend After-market Products	79%	87%	77%	81%	80%
Referred Customer to Vehicle Owner's Manual	0%	5%	0%	0%	1%
Recommended Reading Instructions	34%	40%	43%	24%	37%

Table 9 (continued)
Percent Safe Information Scores for Critical Behaviors on the Checklist by Store and Phase.

Referred to Helpful Resources [a]	11%	29%	11%	5%	15%
Offered to help try in car? [a]	0%	0%	0%	0%	0%
Did not Recommend a Tray Shield for a Newborn Bogus Baby [b]	0%	60%	75%	50%	42%
Did not Recommend a Shield Booster for a Toddler or Small Child and When Seat was Discussed [b]	17%	43%	0%	75%	33%

[a] Critical behavior was marked safe when offered, but NA when not offered.
[b] Critical behavior was marked NA when it did not apply to the bogus baby.

Considering variables for which tests could be performed, Chi Square tests of independence comparing the two stores within each phase were nonsignificant (all p's > .05) for all critical behaviors except for whether or not the information was given spontaneously, which was significantly different between the stores at Phase 2, χ^2 (1) = 8.98, $p < .01$, but was not significantly different at Phase 1 ($p > .10$). Specifically, more safe observations than expected were recorded at the Intervention store during Phase 2 and less safe observations than expected were recorded at the Control store at Phase 2.

Chi Square tests of independence comparing the two phases within each store were significant for whether or not the information was given spontaneously, which was significantly different between the phases for both the Intervention store, χ^2 (1) = 4.82, $p < .05$, and for the Control store, χ^2 (1) = 6.20, $p < .05$. At the Intervention store, more safe observations than expected were recorded during Phase 2 and less safe observations than expected were recorded during Phase 1. At the Control store, however, less safe observations than expected were

recorded during Phase 2 and more safe observations than expected were recorded during Phase 1.

Chi Square tests of independence comparing the two phases within each store were significant for three additional critical behaviors at the Intervention store, and for no additional behaviors at the Control store (all p's > .05). At the Intervention store, percent safe observations increased as a function of the intervention for (a) recommending a tight seat installation, χ^2 (1) = 13.30, $p < .01$; (b) recommending tight positioning of harness straps, χ^2 (1) = 5.99, $p < .05$; and (c) mentioning the importance of safety-belt configurations for proper installation, χ^2 (1) = 8.01, $p < .01$. Figure 4 depicts mean percent safe scores by phase for selected critical behaviors at the Intervention store.

Comparisons for bogus baby categories at the Intervention store. It was hypothesized that percent safe information scores at the Intervention store would differ for specific types of babies during Baseline, but not during the Intervention phase. A 2 (Phase) X 4 (Baby Category) ANOVA was calculated on mean percent safe information scores at the Intervention store. As expected from the previous analyses, the effect for phase was significant, F (1, 89) = 14.61, $p <$ .01; however, the ANOVA did not show a significant effect for baby category, nor was the interaction term significant (p's > .15). Mean percent safe scores by bogus baby category were presented earlier in Table 6.

Manipulation checks. In an effort to monitor the implementation of intervention components, researchers posing as customers observed whether the sales associate (a) was wearing the KIDS button, (b) gave them a checkpoint coupon, and (c) encouraged them to go to a checkpoint. During the post-intervention phase, the trained sales associates were observed wearing their buttons during 18% of the queries, gave the researcher a checkpoint coupon during

32% of the queries, and encouraged a checkpoint during 41% of the queries.

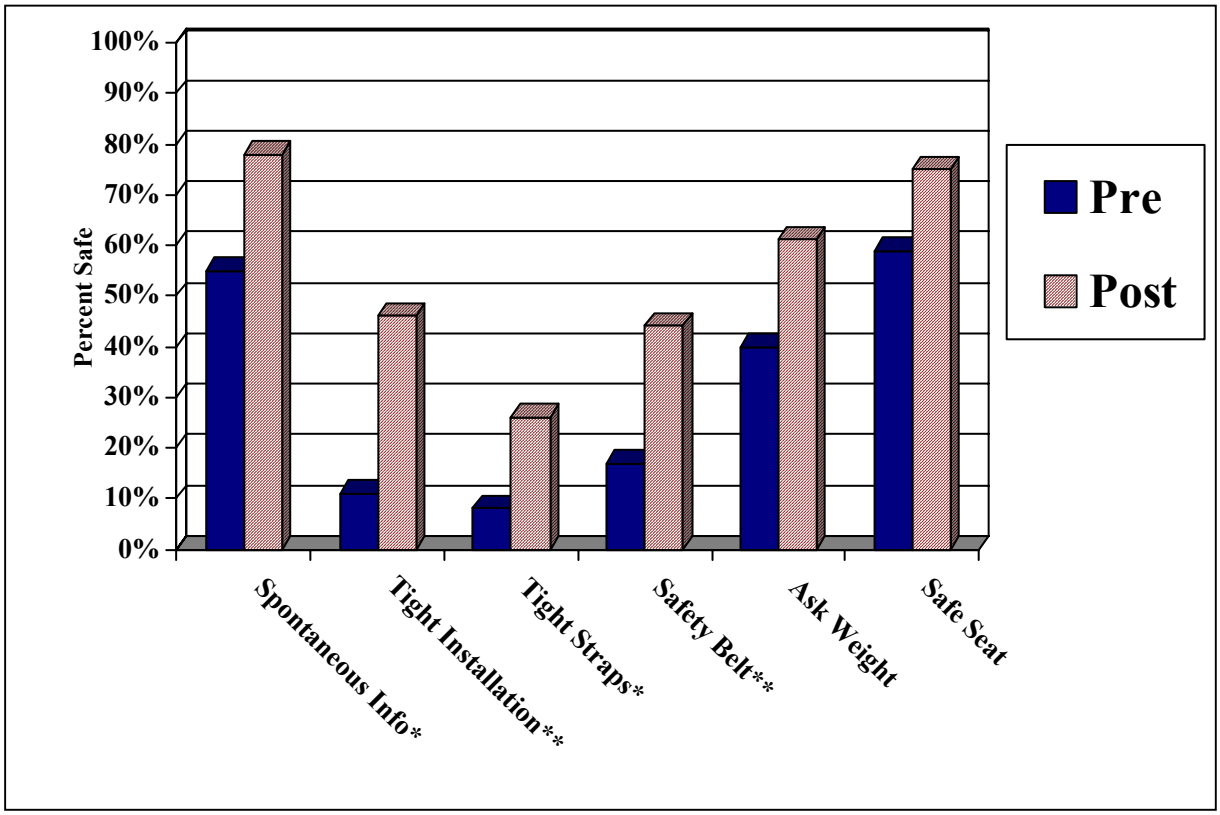

Figure 4. Percent safe scores by selected critical behaviors for the Intervention store. Starred categories significantly differed by phase, ** $p < .01$, * $p < .05$

To investigate whether the percent safe scores differed for sales associates who wore buttons, gave coupons, or encouraged checkpoints, three one-way ANOVAs were performed on post-intervention scores at the Intervention store, with button use, coupon use, or encouragement of checkpoints entered as the independent variable. The ANOVA for encouragement of checkpoints indicated that percent safe scores for sales associates who encouraged checkpoints were significantly higher than they were those for sales associates who did not encourage checkpoints, $F(1, 32) = 6.07$, $p < .05$. Mean percent safe scores were 39.4% and 59.0% for those

not recommending and recommending checkpoints, respectively. The comparisons for button use and coupon distribution were not significant (all p's > .10).

Use Observations at Checkpoints

Interobserver reliability. Two observers independently completed a data sheet on the same safety seat for 61% (n = 148) of the observations. When collecting reliability data, two observers independently checked the caregiver's installation of the safety seat and completed separate checklists independently. Following completion of the checklists, the observers worked together to inform the caregiver of errors found and to reinstall the seat correctly.

As for the information observations, percent agreement for *each critical behavior* was computed for at-risk and safe checks separately in order to minimize the chances for erroneously inflated reliability estimates. For both the safe and at-risk calculations, percent agreement for a specific critical behavior was calculated by examining interobserver agreement for *that critical behavior* across all the use observations where two observers independently completed checklists.

It is important to note that the critical behavior checklist for safety-seat use was designed to accommodate all possible combinations of safety seats, vehicles, and children we might have encountered at the checkpoints. For these reasons, some of the critical behaviors on the checklist were not observed for every child, as they did not apply to every child. Hence, for some rarely observed critical behaviors a low sample size was observed for some cells (i.e., either at-risk or safe columns). This is taken into account in the following discussion of reliability.

When the observers checked the at-risk category, mean percent agreement between two independent observers across all critical behaviors was 92 percent. When considering 27 critical behaviors for which the number of at-risk observations being compared was greater than ten,

percent at-risk agreement ranged from 80% to 100% for all critical behaviors except retainer clip use for toddlers, which was 78%, and locking clip used correctly, which was 65%. However, five variables that had an extremely low number of at-risk observations to compare had less than desirable levels of reliability. Specifically, when checking at-risk for these variables, observers were: (a) 67% reliable for seat in front of an airbag (at-risk *n* for checks in the at-risk category on primary sheet = 1), (b) 50% reliable for belt routed correctly (at-risk *n* = 3), (c) 75% reliable for harness strap being double-looped (at-risk *n* = 3), (d) 73% reliable for whether the seat was positioned upright (at-risk *n* = 8), and (e) 67% reliable when determining if a toddler's straps were at the correct height (at-risk *n* = 4). Interobserver agreement was 100% for 11 of the critical behaviors when checking at-risk.

When the observers checked safe, mean percent agreement between two independent observers across all critical behaviors was 89 percent. When considering 34 critical behaviors for which the number of safe observations being compared was greater than ten, percent safe agreement ranged from 75% to 100% for all critical behaviors except for the tightness of the seat (68%), using the locking clip when needed (63%), tightness of the harness straps (65%), and infant retainer clip positioning (73%).

Three variables that had an extremely low number of safe observations to compare had less than desirable levels of reliability. Specifically, when checking safe for these variables, observers were: (a) 69% reliable for harness strap being double-looped (safe *n* for checks in the safe category on primary sheet = 9), (b) 54% reliable for locking clip used correctly (safe *n* = 7), and (c) 67% reliable for height of seat back for low-back boosters (safe *n* = 2). Interobserver agreement was 100% for four of the critical behaviors when checking safe.

Number of participants at checkpoints. By project end, a total of 241 seats were

inspected at 31 checkpoints held across both stores and both phases. A total of 206 different vehicles visited a checkpoint to participate in the study. In order to determine whether the intervention had an impact on the number of participants at checkpoints, the mean number of vehicles stopping at checkpoints per day was analyzed using a Chi Square statistic. The number of vehicles stopping at checkpoints per day ranged from 0 to 15 ($M = 8$), with the number of seats inspected ranging from 0 to 19. The mean number of seats inspected per checkpoint was ten. Comparing across both stores pre- and post-intervention, the Chi Square statistic showed no significant difference in number of vehicles per checkpoint, χ^2 (1) = 2.47, $p > .10$.

Sample demographics and mean percent safe for safety-seat use. Ninety-four percent of the participants were Caucasian and the mean age of the children observed was 21 months. Table 10 presents mean percent safe use scores by safety-seat type and ethnicity for each of the two stores by phase. The overall mean percent safe across all seats was 78%, with an average of four errors per seat. Considering seats that had at least one error versus seats with no errors, the misuse rate was 93 percent. The majority of the seats installed correctly were belt-positioning boosters, and 52% of the seats inspected were convertible infant/toddler seats.

Among all caregivers at the checkpoints, parent's most common mistakes were: (a) installing the seat loosely (19% safe); (b) positioning the harness straps loosely (16% safe); (c) positioning the retainer clip low (34% safe); (d) using the locking clip incorrectly (35% safe); and (e) not reclining infants at 45 degrees (44% safe). Percent safe scores were determined for individual misuse behaviors by examining each behavior across a number of checklists (between subjects) and are presented in Table 11 for each store by phase.

Table 10
Mean Percent Safe-Use Scores for Ethnicity and Safety Seat Type by Store and Phase.

	Intervention Store (n = 148)		Control Store (n = 93)		Total Sample (n = 241)
Subgroup	Baseline	Intervention	Baseline 1	Baseline 2	
Ethnicity					
Caucasian	79%	80%	78%	82%	79%
Non-Caucasian	74%	--	79%	82%	76%
Safety Seat Type					
Infant	76%	86%	79%	77%	79%
Convertible	76%	80%	79%	79%	78%
Booster combo	85%	81%	73%	87%	81%
High Back BPB*	94%	100%	88%	89%	92%
Low Back BPB	94%	--	--	--	94%
Shield Booster	--	69%	--	--	69%
Safety Belt	44%	--	0%	--	22%
Special Needs	13%	38%	--	--	25%

* BPB = Belt-positioning booster seat.

Effects for point-of-purchase trained caregivers. Hypothesis 3 predicted that caregivers who were trained at the point-of-purchase by a KIDS-trained sales associate would have higher percent safe scores than caregivers who were not helped at the point-of purchase by a KIDS-trained sales associate. Unfortunately, only three checkpoint participants presented checkpoint coupons and no other participants reported talking to our sales associates when asked. With only three participants bearing coupons, a coupon by non-coupon comparison was not possible. Percent safe scores for the three participants bearing coupons (i.e., those who were helped by our KIDS-trained sales associates) were 75%, 81%, and 87%, and were not seemingly different from the overall mean for other participants.

Table 11
Percent Safe Use Scores for Critical Behaviors on the Checklist by Store and Phase.

	Intervention Store (n = 148)		Control Store (n = 93)		Total Sample
Critical Behavior	Baseline %	Interv. %	Baseline 1 %	Baseline 2 %	% (n = 241)
General (all ages)					
Seat with known history?	93	95	100	100	95
Seat has never been involved in crash?	93	93	98	96	95
Seat labeled & FMVSS Certified?	93	98	97	100	94
Seat is not on the recall list?	93	96	95	100	95
Seat <6 years old?	87	95	89	96	90
Seat is not in front of/next to air bag? [a]	98	100	98	100	99
Child/seat in the back seat? [a]	97	100	97	100	98
Seat in middle of back seat? [a]	73	75	77	40	71
Safety belt routed correctly? [a]	93	100	92	96	95
Seat secured tightly? (1 inch test) [a]	22	22	15	13	19
Locking clip used if needed? [a]	33	75	58	70	55
Locking clip used correctly if used? [a]	30	36	30	50	35
Child secured tightly? (finger test) [a]	21	8	17	13	16
Straps free of marks/tears/twists?	76	78	69	77	75
Tether strap used correctly if used?	100	67	67	0	71
After-market products not used?	85	83	89	81	85
Heavy clothing/blankets not used?	93	90	88	100	92
If LATCH system, used correctly?	100	--	100	--	100
Safety Seat Used for Infant					
Seat facing the rear? [a]	85	90	80	100	86
Child w/in seat's weight/height range? [a]	80	100	88	83	88
Seat at 45-degree angle? [a]	34	39	46	100	44
Harness back-buckle double-looped?	40	100	83	100	80
Straps at or below shoulders?	61	85	74	50	69
Retainer clip locked, at armpit level? [a]	32	54	37	0	36
Tray-shield not used for tiny baby?	95	100	100	100	98
Safety Seat / High-back Combo Booster With Harness Used for Toddler					
Child w/in weight/height range? [a]	93	90	97	100	94
Seat back above ears?	97	96	100	100	98
If convertible, positioned upright?	97	84	76	50	82

Table 11 (continued)
Percent Safe Use Scores for Critical Behaviors on the Checklist by Store and Phase.

Critical Behavior	Intervention Store (*n* = 148) Baseline %	Intervention Store (*n* = 148) Interv. %	Control Store (*n* = 93) Baseline 1 %	Control Store (*n* = 93) Baseline 2 %	Total Sample % (*n* = 241)
Safety Seat / High-back Combo Booster With Harness Used for Toddler (continued)					
If convert., straps above strength bar? [a]	68	72	58	60	66
Straps at or above shoulders?	88	79	96	80	87
Facing forward? [a]	100	100	97	100	99
Retainer clip locked, at armpit level? [a]	42	17	29	30	31
Belt-positioning Booster Seat (Low or HB) Used For Child					
Child w/in weight/height range? [a]	100	100	80	100	94
If LB, is vehicle seat back above ears?	100	--	--	--	100
Used with lap/shoulder belt combo? [a]	100	100	80	100	94
Shoulder belt correctly positioned?	78	100	75	--	79
Shield Booster Used for Toddler					
Child between 35-40 pounds?	100	0	--	--	67
Shield fitting close to body?	100	100	--	--	100
Shield removable?	100	0	--	--	67
Lap/shoulder belt not available?	50	0	--	--	33
Safety Belt Used for Child					
Child over 70 pounds?	0	0	0	--	0
Knees bent at edge of vehicle seat?	0	0	0	--	0
Lap/Shoulder combo used?	50	100	50	--	60
Lap belt low on hips?	0	0	0	--	0
Shoulder belt at shoulder, not face?	0	0	0	--	0

[a] Serious misuse errors for which the average percentages by store and phase are depicted in Figure 5.

Examining effects between sites. In order to examine change in percent safe use scores by store and phase, a 2 (Store) X 2 (Phase) ANOVA was calculated on mean percent safe use scores for the 241 seats inspected. The ANOVA did not reveal any significant main effects for

Store or Phase, nor did it show a significant Store X Phase interaction (all *p*'s > .10). Mean percent safe use scores across all critical behaviors for the Intervention store were 78.1% (*SD* = 14.7) and 80.8% (*SD* = 11.4) for pre- and post-intervention, respectively. Mean percent safe use scores across all critical behaviors for the Control store were 77.3% (*SD* = 15.7) and 80.8% (*SD* = 10.5) for Baseline 1 and Baseline 2, respectively.

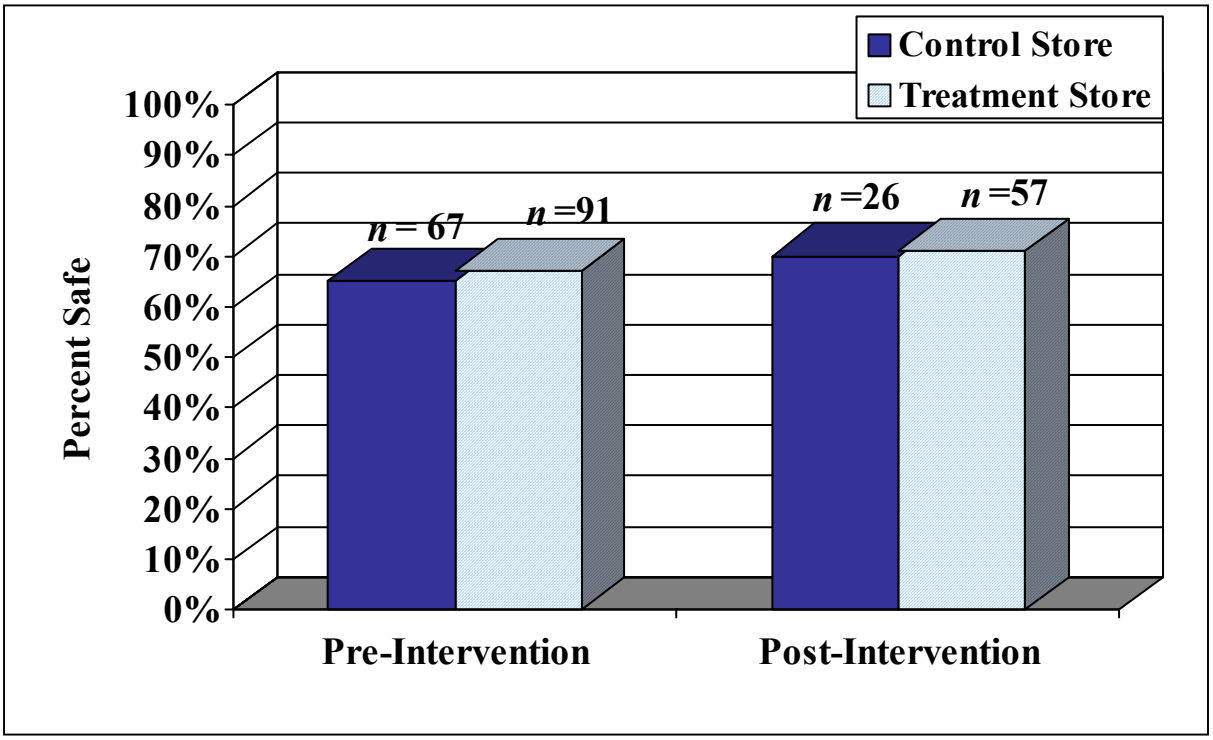

Figure 5. Mean percent safe use scores for serious misuse errors by store and phase.

Average percent safe scores for the misuse errors that are most clearly linked to crash injuries (i.e., always represent serious misuse, NHTSA, 2001b) are depicted by store and phase in Figure 5. The critical misuse behaviors that are averaged for Figure 5 are noted in Table 11 by the table's footnote. Errors in the use of shield boosters and safety belts alone are indeed serious misuse errors that amount to great risk for injury; however, these errors are not included in the

averages presented in Figure 5 because these restraint types were not observed in one or more phases at the control store. Mean pre-intervention percent safe use scores for serious errors represented in Figure 5 were 66.7% and 65.3% for the Intervention and Control stores, respectively. Mean post-intervention percent safe use scores for serious errors represented in Figure 5 were 71.0% and 69.7% for the Intervention and Control stores, respectively.

Effects of posters on specific critical behaviors. Hypothesis 5 predicted that percent safe use scores for specific behaviors targeted by intervention posters would be higher in the Intervention condition than in Baseline or the Control condition. Chi Square statistics were computed separately for these individual critical behaviors on the checklist. Specifically, Chi Square statistics compared the frequency of checks in at-risk columns versus safe columns for the following critical behaviors: (a) positioning the harness straps tightly, (b) installing the seat tightly, (c) positioning the retainer clip correctly for infants, and (d) positioning the retainer clip correctly for toddlers.

Results indicate that differences were not significant (all p's > .05) for all behaviors targeted by the posters except positioning the retainer clip correctly for toddlers, which was significant but in the unexpected direction. Specifically, at the Intervention store, percent safe scores for positioning of retainer clips on toddlers were lower in the Intervention phase than during Baseline, χ^2 (1) = 3.89, $p < .05$.

Discussion

This quasi-experimental field study tested the efficacy of a multi-component program that taught retail store sales associates to act as behavior-change agents for child passenger safety. Overall, the interobserver reliability of the data collected was at an acceptable level, with overall mean percent agreement ranging from 89% to 95% for at-risk and safe recordings of

information and correct safety-seat usage. However, a few of the critical behaviors on the checklist for parking-lot checkpoints, especially those with small sample sizes, had low to modest percent agreement.

The main hypothesis of the study was partially supported, in that post-intervention percent safe information scores increased compared to Baseline and to the Control store, but percent safe use scores (at parking lot checkpoints) did not differ by store or phase. Conclusions pertaining to the two basic objectives of the analyses are discussed separately below.

Conclusions from sales associate queries. The comparison of sales associates' percent safe information scores across store and phase revealed that while the Control store remained unchanged across the two phases, information scores at the intervention store improved significantly after the intervention and when compared to the Control store during post-intervention.

This is a substantial finding, as the analysis of information scores across store and phase compared Control store observations to *every* observation at the Intervention store, including queries of sales associates from areas other than the soft-line area and of sales associates who were not trained post-intervention. The aim of this analysis was to explore whether a change in "culture" had occurred at the Intervention store as a result of the treatment. Anecdotal reports from research assistants had indicated the trained sales associates at the Intervention store were sharing their knowledge with untrained associates.

For instance, a sales associate from the fishing department was noted to tell a research assistant that while he "did not know much," an associate who had went to a "special class here" had told him about the importance of installing the seat tightly in the vehicle. Such sharing of information learned in the KIDS training indicated a diffusion of innovation (Bandura, 1986,

1997; Rogers, 1971, 1995) inside the Intervention store. The comparison of percent safe scores across store and phase provided evidence that the intervention did result in a change of culture, at least when considering information shared with customers about safety seats.

Hypothesis 2 was supported, as the training of sales associates resulted in an average 65 percent increase in percent safe scores (or 19.8 percentage points) when compared within subjects pre- and post-intervention. Furthermore, percent safe information observations of trained associates were an average 46 percent higher (a 15.7 percentage-point difference) than observations of untrained associates. This indicates that training of indigenous individuals in the community can work to combat misinformation, as the individuals receiving the training will then use their newly obtained knowledge to better assist clientele. Considering that previous research has indicated that incorrect information given at health care facilities and at retail stores may actually *contribute* to misuse (Bailer, 1998; Campbell et al., 1997; England, Olson, Weidner, & Geller, 1999; Halpern, 1990; Karp, 1999; Katz et al., 2001; McKay & Curtis, 2002; Mundell, 1998), providing training to health care and retail store staff may be a first step in combating misuse.

It is troublesome that, even after training, sales associates' mean percent safe score reached only 50 percent. This is perhaps due to a number of factors. First, time constraints placed on sales associates by management to complete their daily duties may have limited the amount of information they shared with customers. Second, it is possible that expecting a sales associate to mention all the behaviors on the checklist when conducting a sale was too lofty a goal. The process of providing safety information to customers does, after all, fall outside of the typical duties for a *sales* associate.

Future point-of-purchase interventions may be enhanced by providing correct-use

brochures for sales associates to distribute to customers at the time of the sale. Used in tandem with the sales associates' verbal advice regarding correct use, these brochures could ensure that the customer receives comprehensive safety information at the point-of-purchase, even when the sales associate's time is limited or memory of the many discussion points is non-optimal.

The finding that percent safe information scores were significantly higher for those sales associates who also encouraged the customer to attend a checkpoint is intriguing. Encouraging a checkpoint may be an indicator of the level of commitment the sales associates felt toward the program, as encouraging a checkpoint went above and beyond merely handing the customer a coupon or wearing the button (which may have only been worn to gain management approval).

It is promising that the critical behaviors for which information increased significantly post-intervention were key behaviors when considering parents' most common installation mistakes. Moreover, all percent safe information scores at the intervention store post-intervention were in the expected direction even if not significantly different. Also, the information scores that did increase significantly were for critical behaviors that apply to every child and thus could target a wide range of caregivers.

Hypothesis 7 predicted that percent safe information scores at the Intervention store would differ across children's developmental periods (i.e., by bogus baby category) during Baseline, but not during Intervention. It was postulated that sales associates would have a more difficult time making safe recommendations for a high-weight infant and a small child than for a newborn or toddler during baseline, but that this difference would disappear after gaining knowledge from the KIDS training. Instead, sales associates were equally at-risk in their recommendations for the four bogus babies at pre-intervention. At post-intervention, mean percent safe scores increased for all four bogus babies, but did not differ by baby category.

Conclusions from checkpoints. At the parking lot checks, the intervention's impact on child safety-seat misuse observed among parent participants was not testable. This is certainly disappointing, because the main objective of the KIDS intervention was to affect positive change on parents' misuse behaviors. After all, a successful intervention in the field of injury control must translate into a change in injury risk. Unfortunately, it is difficult to ascertain whether the KIDS training program itself failed in this regard, because only three parents who had been helped by our change agents participated at a checkpoint. Consequently, the hypothesis that stated the percent safe-use scores for caregivers trained at the point-of-purchase would be higher than non-trained caregivers (Hypothesis 3) was not testable, and there was no way to connect the main intervention component to the main injury-risk outcome measure. In other words, low participation among caregivers who were trained at the point-of-purchase prevented an evaluation of whether sales associate training (main intervention component) resulted in safe child-seat installations (main injury-risk outcome measure). Similarly, Hypothesis 6 was not supported, as point-of-purchase training generated few participants at checkpoints.

There was no indication that those parents without a coupon had talked to our trained associates. This is likely due to the fact that only parents purchasing a new seat would have reason to talk to our trained associates. The vast majority of parents participating at checkpoints were recruited via our parking lot banners and store entrance recruiters—or through methods that were identical across stores and phases. Thus, one would expect little difference in mean percent safe scores among the samples of parents.

It is disappointing that the number of participants attending checkpoints did not increase during the Intervention condition (Hypothesis 4). Regardless of being helped by our trained associates, it was presumed that the added in-store awareness materials (including the store-

entrance displays, brochures, sales associate buttons, intervention posters displayed in strategic locations, and displayed Buckled Right cutouts) would generate a greater awareness of checkpoints and would raise caregivers' perception of risk for misuse, leading to more participation at checkpoints. Beyond the caregivers who were recruited via the standard procedures of erecting banners and signs at a checkpoint site, few additional caregivers were recruited by the added program materials.

There are at least two possible reasons in-store awareness materials did not translate into more checkpoint participation. First, the chain of stores chosen for the study adorns its interior space with copious signage. The average customer is perhaps overwhelmed with banners and signage touting low prices and special deals. Research has indicated that, in order for antecedents such as posters to be effective, they must be salient to the viewer (Geller, 2001). Thus it's possible the customers did not even notice the intervention posters, store entrance displays, and Buckled Right cutouts within the context of a massive amount of other signage. Moreover, manipulation checks indicated that trained associates were observed wearing KIDS buttons during only 18% of the queries. This seems too infrequent to amount to any increased awareness. Future research may need to explore more salient antecedents, such as flyers distributed at the store entrances (Geller, 2001).

A second reason the intervention could have failed to produce more participation in checkpoints is that it did not adequately communicate risk in ways that promote personal vulnerability to misuse (Sandman, 1989, 1994). While the posters were intended to raise perceptions of risk, as they incorporated local statistics (England et al., 1999; England, Olson, & Geller, 2000) and the word "you" to help increase personal connection to the misuse, they did not contain *potent* fear messages or images. Indeed, in order to obtain approval to hang the

posters in the store, the posters could only contain rather weak fear messages. Meta-analysis research has indicated that strong fear appeals coupled with high-efficacy messages produce the greatest behavior change (Witte & Allen, 2000).

Additionally, the posters depicted local statistics, not memorable case stories. While local statistics are more personal than national numbers, memorable stories are perhaps the best means for getting people to view a low-outrage risk such as safety-seat misuse as catastrophic and real (Sandman, 1989, 1994). Memorable case stories were provided as examples in the KIDS training, and sales associates were encouraged to use them when talking with customers, but none of the memorable case stories were told to a research assistant when sales associates were explaining how to use a seat.

The design drawbacks of the posters (as cited above) and the overall lack of an intervention effect on correct safety-seat use may explain why Hypothesis 5 was not supported. Hypothesis 5 predicted that percent safe use for specific behaviors targeted by fear appeal posters would be higher in the Intervention condition than in the Baseline phase at the Intervention store or at the Control store. Results indicated no differences for all of these specific target behaviors except positioning of the retainer clip correctly for toddlers, which was in the unexpected direction. The fact that percent safe scores for toddler retainer clip use were lower post-intervention strengthens the assumption that the intervention components had no effect on actual child safety-seat misuse.

Parking-lot checkpoints add to the literature, suggesting the majority of parents unintentionally misuse their children's safety seats, as 93 percent of seats checked were misused in one or more ways. There was an average of four errors per seat, and parent's most common installation errors were consistent with findings from other national studies (National Safe Kids

Campaign, 1999a; NHTSA, 1996; PCPS, 2000). Specifically, parent's most common mistakes were: (a) installing the seat loosely (19% safe); (b) positioning the harness straps loosely (16% safe); (c) positioning the retainer clip low (34% safe); (d) using the locking clip incorrectly (35% safe); and (e) not reclining infants at 45 degrees (44% safe).

Limitations

Future applications of point-of-purchase intervention for child passenger safety should consider several limitations of the present study. The first and most critical weakness was the number of different sales associates represented in the queries. While tracking repeated observations of the same sales associates pre- and post-intervention provided a direct test of the effects of the training on sales associates in attendance at a training session, research assistants were helped by 59 different associates at the two stores. The number of associates queried in *both* Phase 1 and Phase 2 was less than desirable, at 12 and 8 for the Intervention and Control stores, respectively. Comparisons across the two phases by the two stores, therefore, were threatened by inflated error as observations of different people made up the majority of the observations being compared.

A contributing factor to the number of associates observed is that perhaps the discount store chosen for the intervention is simply too large for this intervention. In the best case scenario, every employee in a store should be trained, as associates outside of the soft-line area often helped our research assistants. While the store was chosen in an effort to reach as many customers as possible (as the chain of stores is quite popular nationwide), future research should explore tests of the intervention in a smaller store where more control is possible and every associate can participate in the training sessions.

Another weakness of the study is that information scores for the two stores differed

significantly during Baseline. Indeed, the mean percent safe information score at the Control store was significantly higher than the mean at the Intervention store during Baseline. This brings into question the similarity of the two stores, and thus the appropriateness of Store 2 as a "control," as the sample populations differed from the start in their child safety-seat knowledge shared with customers.

However, comparisons during Phase 2 indicated that, while the Control store mean information score did not change, the Intervention store's mean information score had improved to such a degree that it was significantly *higher* than the Control store's mean. An argument for regression to the mean fails to explain this finding, as the Intervention store's mean surpassed the Control store's score for both Baseline 1 and Baseline 2. The fact that the Intervention store's mean percent safe information score increased significantly compared to its Baseline percentage provides further evidence that accurate safety-seat information shared with customers increased as a function of the intervention.

Due to the store display of program materials, research assistants were not blind to store condition and this could have produced possible experimenter expectancy effects (Rosenthal, 1966) when conducting the covert queries. Only the picture recognition poster identifying trained associates was held for display until the end of the study. Thus, the research assistants were readily aware of which store was the Intervention store.

Also, while attempts were made to keep researchers blind to those who had received training at the intervention store (by only displaying the sign recognizing trained associates at the end of the study), other indicators often informed research assistants of an associate's trained status. Clearly, if an associate wore the KIDS button, the observer knew the associate had participated in the training. Also, associates who indicated that the baby area was not his or her

area provided evidence against training participation. Nevertheless, percent safe scores did not differ for sales associates who wore their button from those who did not.

It is of course troubling that manipulation checks indicated that few trained sales associates wore their buttons (18%) or handed out checkpoint coupons (32%), and none used memorable stories when talking to our research assistants posing as customers. Moreover, checkpoints were encouraged during only 41% of the queries from the trained sales associates. The combined use of buttons, checkpoint coupons, encouragement of checkpoints, and memorable stories would have been ideal, as customers who had a low perception of risk regarding personal vulnerability to safety-seat misuse might have been persuaded to attend a checkpoint if these intervention components were used in full. Therefore, a lack of compliance with the use of these intervention components may explain why so few parents who had talked to our trained sales associates attended checkpoints.

Another reason so few parents with checkpoint coupons attended our checkpoints is that only parents buying a new seat would have encountered the trained sales associates. This limited the potential impact the sales-associate training could have, as most parents already have a seat and thus would have no reason to seek assistance at the point-of-purchase. To reach a larger number of caregivers across a variety of children's developmental periods, this intervention may be better placed at well-baby checkups at pediatrician or family practitioner offices.

Sales associates' mediocre compliance with intervention components may be due, in part, to lack of commitment to the program. As discussed previously, providing safety information to customers is not a typical duty for a sales associate. Another reason is that, while management obtained corporate approval for the program and assisted in setting up the training sessions and hanging the posters, the managers were relatively uninvolved once the program was running.

Surely this was perceived by sales associates, and given competing contingencies of completing required work or complying with the aspects of the program, associates may have chosen to focus on completing their work.

Evidence from research in industry intervention suggests that, “whatever upper management really pushes and supports will happen,” and “whatever upper management does not push and does not support will fail” (Geller, 2001, p. 446). Future applications of point-of-purchase interventions should strive for maintaining management involvement and making management support as public as possible, while simultaneously avoiding the fallacy of making the program “required.”

It is also possible that sales associates grew suspicious of the existence of the covert query observations. Although extensive care was taken to avoid suspicion, it is possible that merely *asking for help* with questions regarding safety seats made the queries unnatural. Furthermore, the fact that most of the research assistants were young and fit the “typical college student” description may have made them less convincing as caregivers. However, if sales associates were suspicious, they did not indicate this during any of the many interactions with the author. But if some suspicion existed, it could have invoked reactance and decreased participation by the sales associates. On the other hand, suspicion could actually have increased participation from some associates, as they may have wanted to play the "good subject” or to manage fear of retaliation on the part of management.

Another limitation of this field study is that it is difficult to ascertain whether the intervention posters and trained sales associates did more good than is known. Their effects are difficult to ascertain given our outcome measures. For instance, there is no way to know how many customers our trained sales associates talked to if a parent was helped by a sales associate

but did not attend a checkpoint. Similarly, it is possible customers read the posters and learned from the displayed safety messages, but the study's outcome measures were not sensitive to this beneficial change. Perhaps future research with such posters should include a follow-up survey of customers' recall of seeing such promotional materials.

Ideally, this study would include a replication. A replication would have provided greater support for the effects of the training on percent safe information scores. The option of being a wait-list control was offered to the Control store, but was rejected due to resistance to donating time on the part of the manager at the Control store. This manager's resistance brings into question the ease of partnering with businesses to implement this intervention program on a large scale. The external validity of this intervention is perhaps limited by the willingness of businesses to participate. Opportunities for replication will vary greatly by management's level of concern and commitment to safety, and perceptions of the cost/benefit ratio.

A final but important limitation of this research is the lack of diversity in its samples. The checkpoint sample consisted of volunteers from a rural area who were mostly Caucasian and who were all discount chain shoppers. The sales associates sampled were mostly women and mostly Caucasian as well. Moreover, the sample is from a rural area, and the literature suggests rural areas generally practice poorer compliance with motor vehicle safety standards (NHTSA, 2001a). Thus, generalization of the samples are necessarily limited, as these samples cannot be assumed to be representative of the population at large.

Future Directions

It is disappointing that the current intervention's impact on correct safety-seat use observed at checkpoints was not testable. Future research is certainly needed in search of an intervention that results in safe installations of safety seats, as 80 to 90 percent of parents are

unknowingly placing their children at-risk with improperly installed safety seats.

As discussed previously, this intervention may be better placed at well-baby checkups. Partnering with pediatricians and family practitioners seems feasible and needed, as research has indicated that doctors are also guilty of distributing incorrect information to clientele (Katz et al., 2001). Intervening at well-baby checkups would likely reach a greater number of parents, as the methodology would avoid limiting the caregivers to only those purchasing a new seat. Also discussed previously, a smaller, more controlled setting (such as a doctor's office) would be ideal for testing the effects of this intervention.

Perhaps future tests of this intervention could avoid waiting for customers who had talked to trained clientele to attend a checkpoint by decreasing the customer's effort required. For instance, customers (either at a retail store or doctor's office) could sign a list as they check out (or while in the waiting room) expressing interest in having their seat inspected. Research assistants could then arrange a private inspection at the caregivers' convenience. Such personal tailoring may require great effort, but when compared to several months of checkpoints with only three point-of-purchase-trained caregivers in attendance, it may actually amount to time better spent.

An optimal time to arrange private safety-seat inspections is when newborns leave the hospital. Due to liability concerns, most hospitals are resistant to assisting caregivers with safety-seat installations. However, new parents could express interest in having hospital research partners contact them for an inspection/installation session. Researchers could also tap into hospital-administered birthing classes to schedule an inspection/installation *before* the child is born.

Another advantage of providing personalized inspections at the caregivers' convenience

is that such methodology would provide an opportunity to re-check the seat's inspection at a later date. Little is known regarding the maintenance of correct use once a caregiver leaves a checkpoint. Caregivers are provided instruction regarding correct installation at checkpoints, but with repeated movement of the seat from one vehicle to another and given parents' hurried lifestyles, it is uncertain whether safe use would be maintained. Future research needs to investigate the longevity of training at checkpoints, since methods for motivating maintenance may be indicated if parents slip back into at-risk use over time (Geller, 2001).

To combat the continual reliance on a volunteer sample of parents, researchers may consider partnering with local police to conduct mandated roadside checkpoints. Such an intervention is likely to invoke resistance from the community, given the inconvenience placed on caregivers stopped in their travels. However, mandated checkpoints are widely accepted as an appropriate method for intervening on intoxicated drivers and non-use of safety belts. Perhaps police checkpoints could "let parents off with a warning" to increase acceptance. Police mandated checkpoints may ultimately be one of the few ways to reach caregivers who have a low perception of personal risk for misusing their children's safety seats.

Perhaps most importantly, researchers need to develop a better understanding of how to motivate parents to participate in child-safety interventions. A better understanding of how to increase caregivers' sense of personal vulnerability is vital for having a positive effect on this public safety problem. More research is called for that investigates the proper design of posters and antecedents that communicate risk effectively. The design of antecedents should be guided by research on fear appeals (Witte, 1998; Witte & Allen, 2000) and on framing risk in ways that generate the most outrage in the public (Sandman, 1989, 1994).

Furthermore, in order to be noticed posters and other antecedents should be salient to the

public (Geller, 2001). This may mean a poster in the midst of a great deal of signage inside a business simply will not work. Experimenting with other means of alerting the public may be necessary, such as distributing flyers at the door or at checkout. Research has indicated, for instance, that adding hangtags to the outside of boxes (such as safety seats) increases compliance with warnings (Conzola & Wogalter, 1999).

The use of memorable case stories, as noted previously, translates generic risk into something real and catastrophic for the general public, but more research is needed to investigate *how* personal stories can be incorporated into an effective intervention tool. Merely encouraging sales associates to share memorable stories with customers simply did not work. Therefore, a more aggressive approach is needed to motivate potential change-agents to incorporate personal stories. Role playing of story telling during training to increase the trainees' self-efficacy may be useful, and convincing the participants of the relevance of the story telling may increase response efficacy.

The use of memorable case stories can be incorporated into the design of posters and perhaps even radio and television commercials, but the effectiveness of this approach for communicating risk requires more research. Specifically, research is needed to guide the proper design of antecedents incorporating individual case stories.

The "story board" that was discovered in the five-daycare study conducted by the author and colleagues (England, Olson, & Geller, 2000) may provide insight for proper design. As discussed previously, a mother at one of the daycare centers constructed a bulletin board of high-fear crash photographs and newspaper clippings of her near-fatal crash. The board drew attention to the fact that her daughter was not injured despite the car being totaled and the mother being nearly killed. Most importantly, the board attributed the daughter's injury-free survival to the

mother's recent participation in a safety seat checkpoint, during which several installation errors were discovered and corrected.

This mother's static display likely gave credence to the story she shared verbally with other parents at the daycare. Our research team was overwhelmed with participants at this daycare center's checkpoint and we had to turn parents away when it became dark. Perhaps the old adage that "a picture is worth a thousand words" describes the potential value of visually displayed case stories in tandem with verbal ones. Again, more research is needed in this area.

The greatest challenge for researchers in child passenger safety is getting parents to see the risks and to take time to be trained on proper installation. Clearly, the foremost need for research is in this area, as the majority of parents continue to *choose* not to participate in child passenger safety interventions. It was hoped that promoting the KIDS program inside the store with the various program materials would certainly raise awareness, and thus participation. However, this was not the case. Indeed, while we anticipated being overwhelmed by caregiver participants during intervention phase, we were often sitting idle at the checkpoints. Perceptions of personal vulnerability are crucial for personal decisions to take precautionary action (Weinstein, Rothman, & Sutton, 1998). Therefore, safety advocates' critical task is to develop methods for increasing personal vulnerability for misuse of safety seats.

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Appendix A:

Presentation Slides Used During Sales-Associate Training Sessions

Slide 1

KIDS Certification Course

Actively Caring for KIDS Process

Instructor: Kelli England, M.S.,
NHTSA-Certified CPS Technician
Center for Applied Behavior Systems
Virginia Tech

Sponsored by NHTSA, VA DMV, SOPHE, & Cambridge Center for Behavioral Studies
Illustrations by VCU's Transportation Safety Training Center

Slide 2

Why Are We Here?

- Motor vehicle crashes are the leading cause of death for children ages 0-14.
- When installed correctly, safety seats greatly reduce the risk for injury and death.
- However...9 out of 10 parents install their children's safety seats wrong.
- Sadly, parents often don't realize this until it's too late.

Kelli England, Virginia Tech

Slide 3

Parent's Top 3 Mistakes

- Failure to secure the seat tightly
- Failure to secure harness straps tightly
- Incorrect positioning of the chest clip

Kelli England, Virginia Tech

Slide 4

How Do These and Other Mistakes Make a Crash Worse?

- Forces exerted during a crash
  Force = Body Weight X Acceleration/Deceleration (in G's)
- Example: 10 lb. baby in 30 mph crash
  - 30 mph crash exerts about 20 G's of deceleration on the vehicle
  - 10 lbs. X 20 G's = 200 lbs.
- End result: The seat has to hold a 200 pound baby tightly at the moment of impact

Kelli England, Virginia Tech

Slide 5

How Can Sales Associates Help?

- You hold the key to making a difference:
  - Everybody shops at Wal-Mart.
  - You work with caregivers daily.
  - One of the best times to reach people is at the point-of-purchase.
  - There are 20 of you, only one of me.
- By offering a few helpful suggestions to your customers, you could save a child's life!

Kelli England, Virginia Tech

Slide 6

What You Get in Return

- KIDS Course Certificate
- Recognition as Actively Caring for KIDS
  - Picture poster
- "Ask Me" button
- KIDS Talking Points "cheat sheet"
- Special coupons to give to customers
  - Give only to those you help with safety seats
- Chance to win a prize
- Promise cards
- You become a child seat expert!

Kelli England, Virginia Tech

Slide 7

Part 1: The Basics

Slide 8

Parts of a Seat

- Shell
- Harness Straps
- Harness retainer (or Chest) Clip
- Belt path(s)
- Recline adjustment (convertibles only)
- Strap adjuster
- Crotch strap
- Base (infant seats only)

Kelli England, Virginia Tech

Slide 9

Basic Seat Types

- Infant (approximately 5-20 lbs., 26 in.)
  - with or without base
- Convertible (approximately 5-40 lbs.)
  - Some have high rear-facing weight limits (up to 30 lbs.)
- Boosters (approximately 30-80 lbs.)
  - High back
    - with harness (30-40 pounds)
    - without harness (above 40 pounds)
  - Low back with shield (NOT recommended)
  - Low back without shield (over 40 lbs.)
- All-in-one seats (5-80 lbs.)
- Special needs seats (e.g., preemies & car beds)

Kelli England, Virginia Tech

Slide 10

Role Play 1: The Confused Parent

A typical parent tries to sort through all the types of seats to choose the right one…and has trouble getting answers at the point of purchase.

Slide 11

The 2-Step Process

- The safety seat must be properly and firmly attached to the vehicle
- The child must be properly secured in an age- and weight-appropriate safety seat

Kelli England, Virginia Tech

Slide 12

Basic Rules for Putting Safety Seats in Vehicles

- Tight installation
  - Put weight in seat while buckling
  - One inch test
- Safety-belt locked (details later)
- BACK SEAT FOR KIDS UNDER 13
  - Middle of back seat is best (shoulder belt necessary for older kids)
  - Air bags injure and kill children
- Rear-facing and reclined at 45 degrees until 1 year old AND 20 lbs.
- Forward-facing and upright after 1 year & 20 lbs.

Kelli England, Virginia Tech

Slide 13

Basic Rules for Putting Babies in Seats

- Tight harness straps
  - One finger test at shoulder
- Chest clip locked and at armpit level
- Use harness straps up to 40 pounds
- Use lap & shoulder belt with booster seat for approximately 40-80 pounds

Kelli England, Virginia Tech

Slide 14

Part 2: Specific Rules for Specific Babies

Slide 15

Newborns and Infants

- Options: Infant seat, convertible, or all-in-one
- Face rear until at least 1 yr old AND 20 lbs.
- 45 degree angle, pool noodles are helpful
  - Story of Jacob in Texas
- Use rolled receiving blankets to take up space around newborn (or cut backing out of marketed head supports)
- Straps at or below shoulders
- Handle down when traveling
- Infant seat for newborns (No tray shields)
- With or without base but with base is more convenient for parent
- NEVER in front of an air bag

Kelli England, Virginia Tech

Slide 16

The "Big Baby"

- An infant by age (under 1 yr.) but weighs over 20 pounds and/or longer than 26 inches
  - Very common problem
  - Outgrown infant carrier
  - Still MUST FACE THE REAR
- Solution: A convertible seat that REAR-FACES to 30 pounds

Kelli England, Virginia Tech

Slide 17

Toddlers

- Seat options: Convertible, High-back booster with harness, All-in-one
- Can forward-face after 1 yr old and 20 lbs.
- Stay in harness system until 40 lbs., then booster with lap/shoulder belt
- Position convertible seats upright
- Straps in TOP slots on convertibles
  - Story of Erica in Louisiana
- Beware of low-back shield booster
  - Story of Hannah in Hawaii

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Slide 18

Small children

- Seat options: High-back or Low-back booster used with lap/shoulder belt
  - Boosters cannot be used with lap belts alone
  - Belt does not have to be locked anymore
  - NO Shield booster
- Kids aren't ready for safety belts alone until around 80 pounds
  - Story of Ally in Michigan
  - Shoulder belt should fit at shoulder, not face or neck
  - Lap belt should fit low on hips, not stomach
  - Knees should bend at edge of seat when sitting all the way back

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Slide 19

Part 3: Loose Ends

Slide 20

Locking the Belt

- Safety belts are made for the comfort of adults and only lock in emergencies
  - Exceptions: Most center position lap belts and belts in older vehicles
- For child seats, safety belts need to be locked for pre-crash positioning
- Two main ways to lock the belt:
  - Pull the belt all the way out to "switch it"
  - Attach a locking clip

Kelli England, Virginia Tech

Slide 21

Miscellaneous Details

- Tethers and Universal Child Safety Seat System
- Safety seats expire after 6 years
- Rubber shelf liner ONLY under seats
- After-market products not recommended
  - Head supports
  - Strap pads
- Cold weather gear
- Customers should always read seat instructions and vehicle owner's manual
- Attending a checkpoint is an eye-opener!

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Slide 22

Part 4: Suggestions for Working with Customers

Slide 23

Step 1: Approach

- Don't wait for customers to come to you--they don't know they should have questions.
- Actively care by taking advantage of opportunities to offer helpful suggestions to all caregivers--not just those purchasing safety seats.

Kelli England, Virginia Tech

Slide 24

Step 2: Ask Questions

- Parents don't know what information to give or what questions to ask.
- Start with the basic question:
  - How old is your child and how much does he/she weigh?

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Slide 25

Step 3: Pile on the Information

- Give as much information as you can, using your "Talking Points" for guidance
- Certainly mention the "Big Three"
  - Tight installation
  - Tight straps
  - Chest clip at armpit level
- Remind to read instructions & vehicle owner's manual

Kelli England, Virginia Tech

Slide 26

Step 4: Encourage Checkpoint

- Encourage the customer to come to one of our checkpoints
- Don't forget to give them a coupon
  - Dates for checkpoints
  - Redeemable for free prizes
  - Important link for our study

Kelli England, Virginia Tech

Slide 27

Role Play 2: The Caring Sales Associate

A typical parent tries to sort through all the types of seats to choose the right one…and gets all the answers she needs.

Slide 28

Step 5: Smile...

- You may have just saved a life!

Kelli England, Virginia Tech

Appendix B:

Sales Associates' Program Kit and Training Support Materials

Used to Foster Enthusiasm and Enhance Program Implementation

A picture poster giving public recognition to trained associates was suspended from the ceiling in the child safety section of the store.

RECOGNITION OF
KIDS COURSE CERTIFICATION

awarded to

Sales Associate Name

Thank you for Actively Caring for your youngest customers.

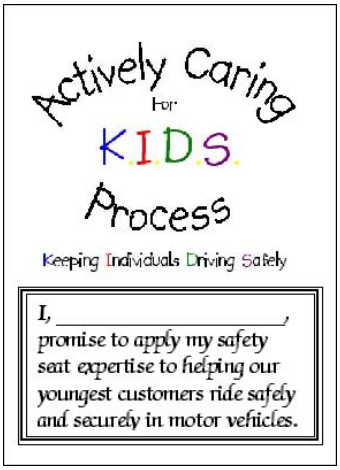
Actively Caring for KIDS Process

presented by
The Center for Applied Behavior Systems
Virginia Tech

Wednesday, January 31, 2001

Kelli England, M.S. E. Scott Geller, Ph.D.

Certificate recognizing trained associates' expertise.



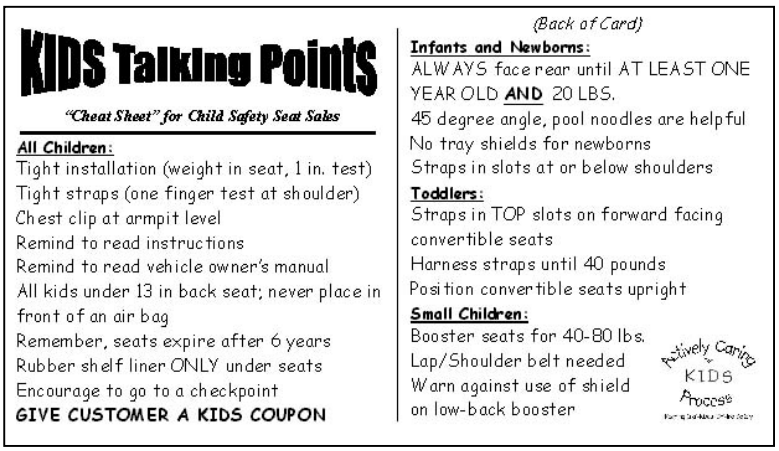
Actively Caring For KIDS Process

Keeping Individuals Driving Safely

I, _____,
promise to apply my safety seat expertise to helping our youngest customers ride safely and securely in motor vehicles.

Sales associates were given the opportunity to sign a promise card.

Sales associates inspect their program kits at the training.



KIDS Talking Points

"Cheat Sheet" for Child Safety Seat Sales

All Children:
Tight installation (weight in seat, 1 in. test)
Tight straps (one finger test at shoulder)
Chest clip at armpit level
Remind to read instructions
Remind to read vehicle owner's manual
All kids under 13 in back seat; never place in front of an air bag
Remember, seats expire after 6 years
Rubber shelf liner ONLY under seats
Encourage to go to a checkpoint
GIVE CUSTOMER A KIDS COUPON

(Back of Card)

Infants and Newborns:
ALWAYS face rear until AT LEAST ONE YEAR OLD **AND** 20 LBS.
45 degree angle, pool noodles are helpful
No tray shields for newborns
Straps in slots at or below shoulders

Toddlers:
Straps in TOP slots on forward facing convertible seats
Harness straps until 40 pounds
Position convertible seats upright

Small Children:
Booster seats for 40-80 lbs.
Lap/Shoulder belt needed
Warn against use of shield on low-back booster

Actively Caring for KIDS Process

A pocket reference sheet used by trained associates when assisting customers.

I was trained by a caring Wal-Mart Sales Associate

Redeem this coupon for a FREE personalized safety seat check and a VALUABLE PRIZE. Visit one of our upcoming checkpoints between 12:00 and 4:00 in Wal-Mart's parking lot:

Nov. 11	Feb. 10	Feb. 24	Mar. 24	Apr. 21
Dec. 3	Feb. 18	Mar. 18	Apr. 8	Apr. 29

Actively Caring for KIDS Process
Keeping Individuals Driving Safely

Sponsored by: The Center for Applied Behavior Systems at Virginia Tech, Wal-Mart, Virginia Department of Motor Vehicles, the National Highway Traffic Safety Administration, and the Cambridge Center for Behavioral Studies

Trained associates distributed these coupons advertising checkpoints.

Photograph showing the materials associates received at the training: a) framed certificate, b) coupons, c) reference sheet, d) promise card, and e) button.

Design for the button worn by trained associates.

Appendix C:

Store Entrance Display and Program Logo

Used to Generate Program Awareness

This Wal-Mart participates in the

Actively Caring
For
K.I.D.S.
Process

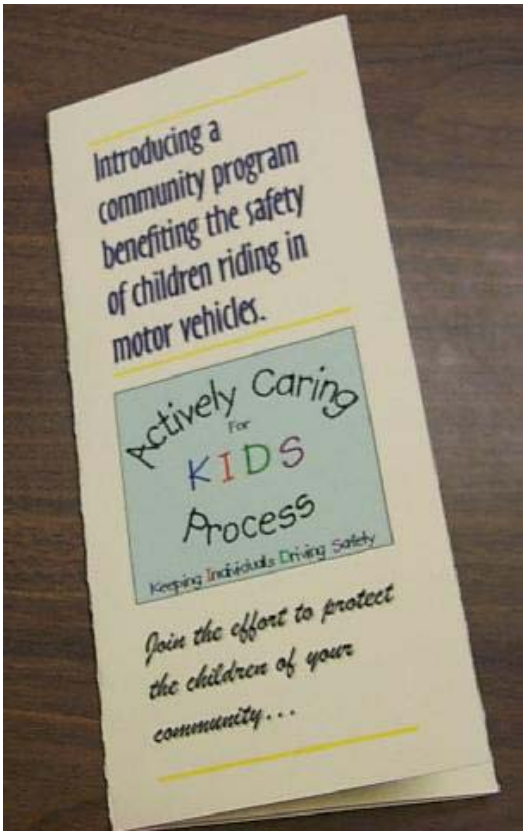
Keeping Individuals Driving Safely

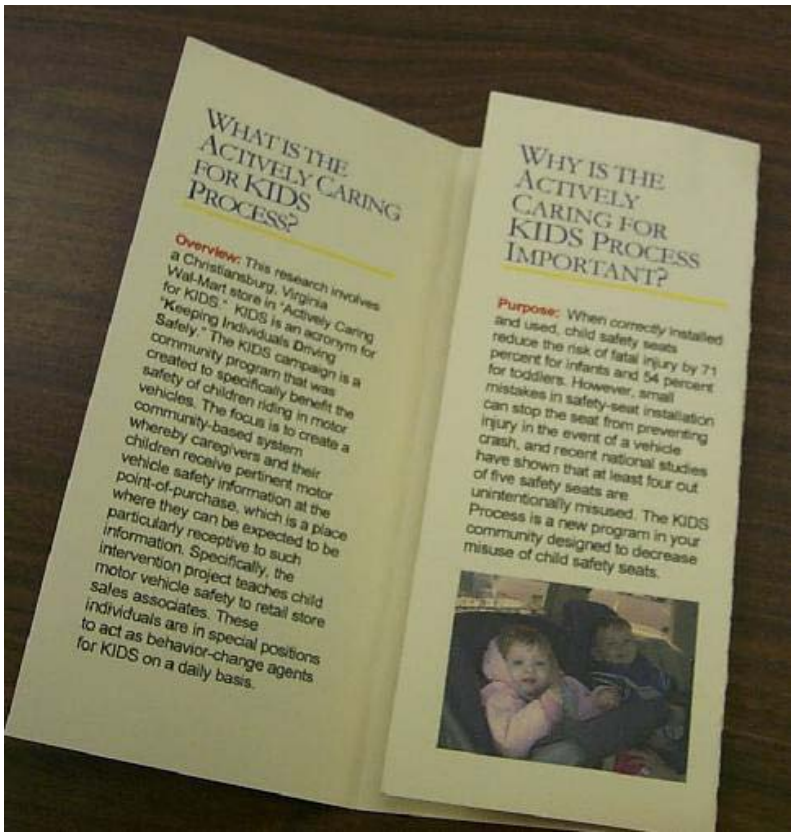
A community program benefiting the safety of children riding in motor vehicles.

Sponsored by the Center for Applied Behavior Systems at Virginia Tech, the Virginia Department of Motor Vehicles, the National Highway Traffic Safety Administration, and the Cambridge Center for Behavioral Studies.

Appendix D:

KIDS Process Brochure Provided for Interested Customers at the Intervention Store



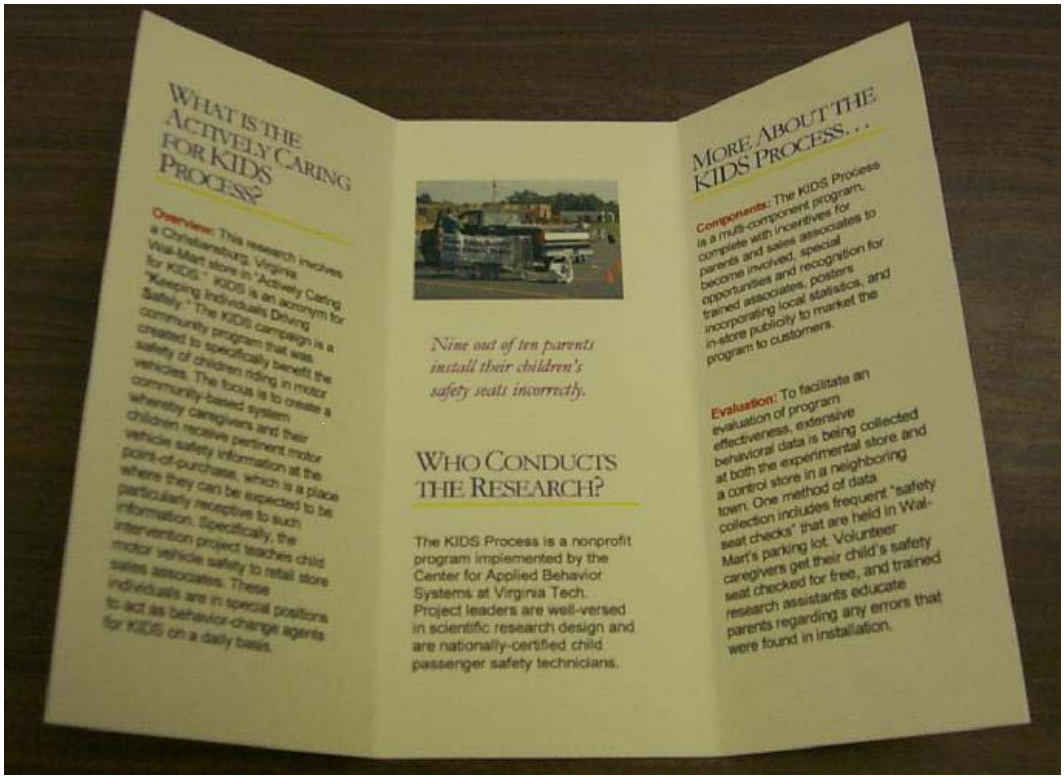


What is the Actively Caring for KIDS Process?

Overview: This research involves a Christiansburg, Virginia Wal-Mart store in "Actively Caring for KIDS." KIDS is an acronym for "Keeping Individuals Driving Safely." The KIDS campaign is a community program that was created to specifically benefit the safety of children riding in motor vehicles. The focus is to create a community-based system whereby caregivers and their children receive pertinent motor vehicle safety information at the point-of-purchase, which is a place where they can be expected to be particularly receptive to such information. Specifically, the intervention project teaches child motor vehicle safety to retail store sales associates. These individuals are in special positions to act as behavior-change agents for KIDS on a daily basis.

Why is the Actively Caring for KIDS Process Important?

Purpose: When correctly installed and used, child safety seats reduce the risk of fatal injury by 71 percent for infants and 54 percent for toddlers. However, small mistakes in safety-seat installation can stop the seat from preventing injury in the event of a vehicle crash, and recent national studies have shown that at least four out of five safety seats are unintentionally misused. The KIDS Process is a new program in your community designed to decrease misuse of child safety seats.



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Nine out of ten parents install their children's safety seats incorrectly.

Who Conducts the Research?

The KIDS Process is a nonprofit program implemented by the Center for Applied Behavior Systems at Virginia Tech. Project leaders are well-versed in scientific research design and are nationally-certified child passenger safety technicians.

More About the KIDS Process...

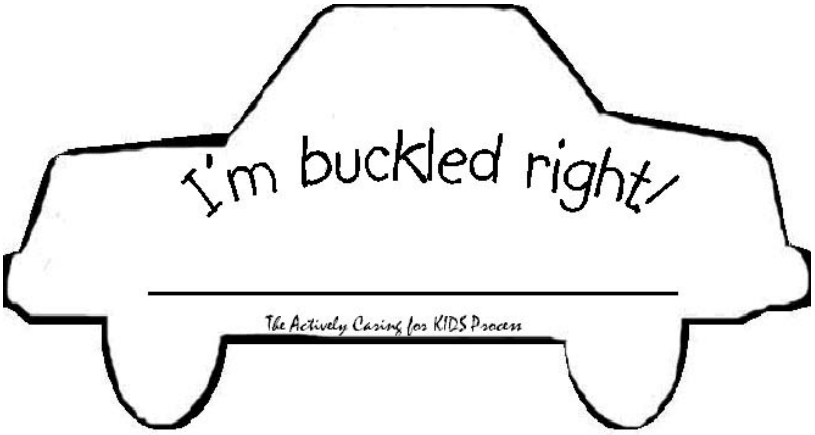
Components: The KIDS Process is a multi-component program, complete with incentives for parents and sales associates to become involved, special opportunities and recognition for trained associates, posters incorporating local statistics, and in-store publicity to market the program to customers.

Evaluation: To facilitate an evaluation of program effectiveness, extensive behavioral data is being collected at both the experimental store and a control store in a neighboring town. One method of data collection includes frequent "safety seat checks" that are held in Wal-Mart's parking lot. Volunteer caregivers get their child's safety seat checked for free, and trained research assistants educate parents regarding any errors that were found in installation.

Appendix E:

Buckled Right Cutout Used to Recognize Children

Participating in Checkpoints at the Intervention Store



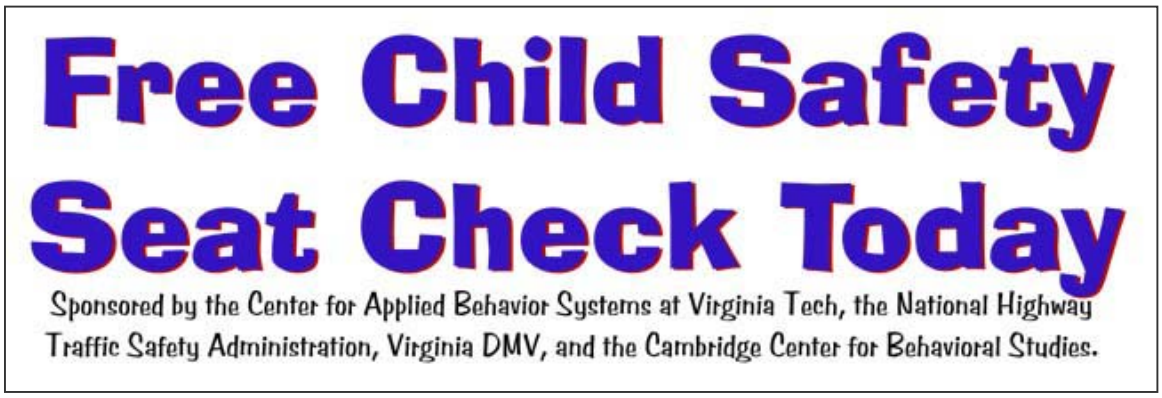
With this cutout design, caregivers and their children had the opportunity to display their children's names in the store after participating in a checkpoint.

Buckled Right cutouts were displayed throughout the store, including at the fitting room (pictured here).

Appendix F:

Parking Lot Recruitment Materials used to Promote

Checkpoints Across both Phases at both Stores



Five 2-foot by 6-foot banners with this design were situated in the parking lot on checkpoint days.

Researchers recruited at the store entrance on checkpoint days.

Appendix G:

Standard Poster Used to Advertise Checkpoints during Baseline and at the Control Store

A standard poster that advertised checkpoint dates was used during baseline and at the control site.

The control poster was positioned at store entrances, near checkout, and in the safety seat aisle (pictured here).

Appendix H:

Intervention Posters Designed to Educate the Public about Proper Safety-Seat Use, Increase Perception of Risk, and Notify of Checkpoints

This intervention poster targeted attendance at a checkpoint.

This intervention poster targeted proper positioning of harness straps.

This intervention poster targeted booster seat use.

This intervention poster targeted tight installation of the safety seat in the vehicle.

Intervention posters were suspended from the ceiling and strategically located in places such as the safety seat aisle (pictured here).

This intervention poster was strategically located near the milk and juice aisle and the entrance to the in-store McDonald's restaurant.

Appendix I:

Critical Behavior Checklist for Safety-Seat Use

Child Safety Seat Checkpoint Critical Behavior Checklist

Primary:	**Reliability:**		***(Circle your name)***
Location: _____ **Vehicle Make:** _____ **Vehicle Model**: _____ **Vehicle Year:** _____ **Air Bags?** Pass / Side / None	**Date:** _____ **Child Age:** _____ **Child Weight:** _____ **Child Height:** _____ **Ethnicity:** _____	**Senior checker init.:** _____ **Make of Seat:** _____ **Model No:** _____ **Date of Manufacture:** _____ **Original Seat Owner?** Yes / No	**Restraint:** Lap / LS **Latch Plate:** Locking / Sliding / Fixed / Switchable **Retractor:** ALR / ELR / Switchable / None
Consent: Mom / Dad / Step-mom / Step-dad / Grandparent / Other relative / Parent's Sign. Other / Babysitter / Other			
Seat Type: Infant / Convertible / Combo HBB & Harness / Shield / HB Belt Pos. Boost / LB Belt Pos. Boost / Belt / Special			
Way caregiver heard of checkpoint? Poster at site / Personnel at site / Other: _____			**KIDS coupon?** Y N

Critical Behaviors: **General (all ages)**	**N/A**	**(x)** **Safe?**	**(x)** **At-risk?**	**Additional Comments** **If at-risk, YOU MUST describe action taken.**
Seat with known history?				
Seat has never been involved in crash?				*At-risk if don't know.*
Seat labeled & FMVSS Certified?				
Seat is not on the recall list?				*NA if no labels.*
Seat <6 years old?				
Seat is not in front of/next to air bag?				
Child/seat in the back seat?				*NA if no back seat.*
Seat in middle of back seat?				*NA if 2+ kids or belt-pos. booster.*
Safety belt routed correctly?				
Seat secured tightly? (1 inch test)				*NA if belt-pos. booster.*
Locking clip used if needed?				*NA if not needed.*
Locking clip used correctly if used?				*NA if not used or needed.*
Child secured tightly? (finger test)				
Straps free of marks/tears/twists?				
Tether strap used correctly if used?				*NA if not used.*
After-market products not used?				
Heavy clothing/blankets not used?				*NA if 70 degrees or above.*
If LATCH system, used correctly?				*NA if no LATCH system.*
Safety Seat Used for Infant (0-1 years AND under 20 pounds)				
Seat facing the rear?				
Child w/in seat's weight/height range?				*NA if no labels.*
Seat at 45-degree angle?				
Harness back-buckle double-looped?				*NA if no back-buckle.*
Straps at or below shoulders?				
Retainer clip locked, at armpit level?				
Tray-shield not used for tiny baby?				*NA if big baby.*
Safety Seat / HB Booster WITH HARNESS Used for Toddler (approximately 20-40 pounds, ages 1-4)				
Child w/in weight/height range?				*NA if no labels.*
Seat back above ears?				
If convertible, positioned upright?				*NA if not convertible.*
If convert., straps above strength bar?				*NA if not convertible.*
Straps at or above shoulders?				
Facing forward?				
Retainer clip locked, at armpit level?				
Belt-positioning Booster Seat (Low or HB) Used For Child (approximately 40-70 pounds)				
Child w/in weight/height range?				*NA if no labels.*
If LB, is vehicle seat back above ears?				*NA if HB.*
Used with lap/shoulder belt combo?				
Shoulder belt correctly positioned?				*NA if used with lap belt.*
Shield Booster Used for Toddler (35-40 pounds)				**NOTE: Action should always be taken with a shield.**
Child between 35-40 pounds?				
Shield fitting close to body?				
Shield removable?				
Lap/shoulder belt not available?				
Safety Belt Used for Child (by law over 40 pounds & over age 4, but preferably determined by proper fit)				
Child over 70 pounds?				
Knees bent at edge of vehicle seat?				
Lap/Shoulder combo used?				
Lap belt low on hips?				
Shoulder belt at shoulder, not face?				*NA if lap belt only.*

Totals: $\underset{A}{\_\_\_\_} + \underset{B}{\_\_\_\_} = \underset{C}{\_\_\_\_}$ ***% Safe*** $= \frac{A}{C} = \boxed{}$

Appendix J:

Critical Behavior Checklist for Information Observations During Retail Store Queries

RETAIL STORES CRITICAL BEHAVIOR CHECKLIST

Primary: _____ **Reliability:** _____ *(Circle your name.)*

Wal-Mart Store Visited (CITY): _____

Day: Su M Tu W Th F Sa **Date:** _____ **Time:** _____ a.m.? p.m.?

***Bogus Baby* Category**_____ **Baby Weight & Age**: _____

You are _____*(Relation)* **to your *Bogus Baby*.** **Browse only?** Y N

Page ____ **Seek & Find** ____ **Approached** ____ **Browsed & left** ____ *(Always wait 10 min.)*

NAME if wearing tag: _____

Associate's gender: M F **Sales associate's area? (If known):** Y N Unknown

Associate's: hair color: _____ **eye color:** _____ **Estimate associate's age:** _____

Associate wearing "Ask me about safety seats" button? Y N

Did associate give you a checkpoint coupon? Y N **Encourage you to go to a checkpoint?** Y N

Posters hanging in safety seat section? Y N **In front lobby?** Y N

Critical behavior	**N/A**	**(x) Safe**	**(x) At-risk**	**What the person says—Write the question asked or information given:**
Is info offered spontaneously?				
Ask child's category?				*Note: N/A if age is asked instead.*
Ask child's age?				
Ask child's weight?				
Ask or say anything about safety belts as an important issue for proper installation?				
Ask or say anything about car/vehicle seat types as affecting proper positioning?				
Know about locking clip?				
Tell correct direction to face?				
Tell to put seat in car tightly?				
Tell to put child in seat tight?				
Tell to put retainer (chest) clip at armpit level?				
Recommend safe seat type?				
Push after-market products?				
Refer you to vehicle owner's manual?				
Refer you to safety seat instructions?				
Refer you to helpers?				*Note: N/A if they didn't say. Safe if offered.*
Willing to help try in car?				*Note: N/A if they didn't say. Safe if offered.*
Rec. tray shield for tiny baby?				*Note: N/A if bogus baby is not a newborn.*
Rec. Shield booster w/ shield?				*Note: N/A if infant/ newborn or seat not discussed.*
Other				

Totals: $\frac{\quad}{A} + \frac{\quad}{B} = \frac{\quad}{C}$ ***% Safe =*** $\frac{A}{C} = \boxed{}$

Appendix K:

KIDS Summary Used to Recruit Stores to Participate

Virginia Tech
CENTER FOR APPLIED BEHAVIOR SYSTEMS

The Problem:

- At least 85% of child safety seats are installed incorrectly. Improper installation can stop the seat from preventing injuries in the event of a crash.
- Most sales associates are unaware of the steps to take to install a seat correctly. However, with proper education, the information sales associates can give at the point-of-purchase may be instrumental in decreasing the prevalence of misuse.

The Actively Caring for KIDS Process:

- KIDS is an acronym for "**K**eeping **I**ndividuals **D**riving **S**afely."
- The KIDS process is a community program benefiting the safety of children riding in motor vehicles.
- KIDS is created and implemented by the Center for Applied Behavior Systems, Virginia Tech. (Contact persons: Kelli England, M.S. or E. Scott Geller, Ph.D.)
- Research funded by the Virginia Department of Motor Vehicles, the National Highway Traffic Safety Administration, and the Cambridge Center for Behavioral Studies.

Your store's benefits:

- Sales associates will be specially trained to help customers with safety seats.
- Special KIDS Process Certification for sales associates.
- Several safety seat check-ups will be held in your parking lot. (Brings in business!)
- Puts forth an image that your store especially cares and has excellent customer service.
- So that you can continue the KIDS process once the study is over, your store will be provided with a KIDS associate training manual.

Our requests:

- We would need to come into your store and conduct a 2 hour training for all child seat sales associates. We ask that we be notified of new associates hired during the study, so that we may train them.
- We would like to hold several check-ups in your parking lot.
- We would like to place posters about child safety in your store (lobby and child areas).
- We ask that the trained sales associates to wear "Ask me about safety seats" buttons.
- We ask that the trained sales associates (and ONLY trained sales associates) give special KIDS coupons to the customers they help. If there is any possibility for your store to donate items that the coupons could be redeemable for, it would be appreciated.

Actively Caring For KIDS Process
Keeping Individuals Driving Safely

5100 DERRING HALL • BLACKSBURG, VA • 24061-0436
PHONE: (540) 231-8145 • FAX: (540) 231-3652

Appendix L:

Research Protocol Detailing Covert Query Data Collection Procedures

COVERT QUERY PROTOCOL—CHILD SAFETY SEAT PROJECT

1. When you sign-up for data collection, be sure to note the day, time, store, and bogus baby specifications. Pick up a checklist, tape recorder, and a new tape no sooner than 24 hours prior to your data collection time. Be sure to sign the recorder out.

2. Go to the store you are scheduled to go to at the time you are scheduled. Leave the tape recorder in the organizer book and hand-carry the organizer in. Make sure that the microphone portion of the tape recorder is facing towards the sales associate. Putting the recorder in your pocket may muffle the conversation. Be sure the tape is rewound to the beginning and press record ***prior to entering the store***. Make sure the volume is turned all the way up. *LEAVE YOUR CHECKLIST IN THE CAR.* Before you approach a sales associate, plan out your "cover story" (e.g., what is your relation, is the baby a girl or a boy, etc.) so that you can answer questions and talk about your baby on the spot.

3. ***Method for Approaching Sales Associates:***

Intervention Store Approach:

a. You will be signing up for day or night shift timeslots, and will use your "grocery list" of sales associates to determine whom we need to query. Each time you pick up a tape recorder, be sure to update your list by crossing off anyone whom we no longer need to query.
b. You are to go to look for a sales associate on the grocery list during your time slot. If you don't find a target sales associate after thirty minutes, leave.
c. DO NOT GO DIRECTLY TO THE CHILD SEAT AISLE! Instead, linger around in the "softlines" section, pretending to shop, but looking for a target sales associate on the grocery list. Softlines includes Men's Apparel, Women's Apparel, Children's Apparel, Safety Seats, and anything in or immediately around these sections (purses, etc.). (If it's on the carpet, it's softlines.)
d. Once you spot a target sales associate, ask him/her a question about AN ITEM IN THE SECTION THEY ARE WORKING IN. Thank them, and then slowly work your way to the child seat area.
e. If possible, wait until no other sales associate is around in the child seat area. THEN, GO BACK TO YOUR TARGET SALES ASSOCIATE AND ASK HIM/HER IF THEY WOULD ALSO HELP YOU IN THE BABY AREA (OR BABY SECTION). Try not to say safety seat section because they are less likely to follow you to the section. If they resist, tell them no one is over there.
f. If they still refuse to help you or say, "it is not my section," then this is worth knowing. Wal-Mart managers think safety seats ARE their section, but the employees think they are not if they are mostly scheduled in other parts of soflines. Therefore, fill out a data sheet anyway on the sales associate. ***Mark at-risk for all items (except in some cases where N/A is an option).*** WRITE IN THE COMMENT SECTION OF "INFORMATION SPONTANEOUS?" THAT THE SALES ASSOCIATE SAID "NOT MY AREA" AND DIDN'T HELP AT ALL. This way, we can identify those sheets that are at-risk for this reason.
g. If they send someone else to help you, YOU CAN also query this person, UNLESS IT IS ONE WE HAVE SAID NOT TO QUERY. CHECK OUR LIST OF PEOPLE *NOT TO QUERY* EVERY TIME YOU PICK UP A TAPE RECORDER. If you need to abort mission because you've queried the person before or it is someone we are no longer querying, ask something quick about strollers, cribs, car seats, etc., and then leave. Once you leave the store, fill out the data sheet.

Control Store Approach:

a. In Radford, you will be signing up for day or night shift time slots and working without a grocery list, since we don't know all the sales associates' names. Also, pilot data shows we are having better luck getting a variety of sales associates at Radford.
b. DO NOT GO DIRECTLY TO THE CHILD SEAT AISLE! Instead, linger around in the "softlines" section, pretending to shop. Softlines includes Men's Apparel, Women's Apparel, Children's Apparel, Safety Seats, and anything in or immediately around these sections (purses, etc.).
c. Ask a sales associate in softlines a question about AN ITEM IN THE SECTION THEY ARE WORKING IN. Thank them, and then slowly work your way to the child seat area.

d. If possible, wait until no other sales associate is around in the child seat area. THEN, GO BACK TO THAT SAME SALES ASSOCIATE AND ASK THEM IF HE/SHE WOULD ALSO HELP YOU IN THE BABY AREA (OR BABY SECTION). Try not to say safety seat section because they are less likely to follow you to the section. If they resist, tell them no one is over there.
e. If they still refuse to help you or say, "it is not my section," then this is worth knowing. Wal-Mart managers think safety seats ARE their section, but the employees think they are not. Therefore, fill out a data sheet anyway on the sales associate. Mark at-risk for all items (except in some cases where N/A is an option). WRITE IN THE COMMENT SECTION OF "INFORMATION SPONTANEOUS?" THAT THE SALES ASSOCIATE SAID "NOT MY AREA" AND DIDN'T HELP AT ALL. This way, we can identify those sheets that are at-risk for this reason.
f. If they send someone else to help you, YOU CAN also query this person, UNLESS IT IS ONE WE HAVE SAID NOT TO QUERY. CHECK OUR LIST OF PEOPLE *NOT TO QUERY* EVERY TIME YOU PICK UP A TAPE RECORDER. If you need to abort mission because you've queried the person before or it is someone we are no longer querying, ask something quick about strollers, car seats, etc., and then leave. Fill out the data sheet after you leave.

4. When an associate you can query (i.e., you haven't queried him/her before and he/she is not one on our list of those not to query) comes over, begin with general open-ended questions to assess the associate's "spontaneous" information, and lead into more specific questions as needed to gather information. Some examples of questions are below, however, the wording and order should be varied to help avoid suspicion. ***ALL OF THE ITEMS ON THE CHECKLIST DO NOT NEED TO BE COVERED. GET THE INFORMATION YOU CAN WITHOUT SEEMING SUSPICIOUS. THE INFORMATION ON THE CHECKLIST SHOULD ALWAYS BE GIVEN FOR A SAFE SALE, SO MARK AT-RISK IF NOT GIVEN SPONTANEOUSLY (Exceptions are the items with N/A notes in last column.)***

General opening question:
I'm looking to buy a seat and don't know what kind to get. *Note: DO NOT offer your bogus baby's weight/age/category—wait to see if the associate asks.*

Guiding questions (use only as needed to gather information from a non-talkative associate):
What's the difference between this seat and that seat?
How do I know which way to face him/her in the car?
Do all these fit all cars?
Which seat do you think is best?
Add questions as needed that flow with the conversation—the key is to seem REAL!
Another tactic is to point out a seat you know is wrong for your bogus baby and act as if you like it for whatever reason (price, color, size, longer use…). Note if the associate advises you against it and tells you why.

5. **MAKE SURE YOU GET THE ASSOCIATE'S NAME. LOOK AT NAME TAG**! Memorize his or her face, as you'll need to remember him or her in the future in order to know not to query him or her again. After you've gotten all the information you can get, say something to excuse yourself or the associate. (Thanks…maybe I'll think about it while I do my shopping; maybe I'll come back with ___; etc.)

6. Return to your car and fill out your checklist immediately, using your tape recording as needed. ***Refer to the attached sheet for explanations of how to record individual variables.***

7. Within *24 HOURS* of your data collection, you MUST return the tape recorder, tape, and data sheet. Be sure to check off that you returned the recorder. ***On the clipboard in the lab, check off (or write) the name of the sales associate that you queried so that others can update their "grocery lists."*** Also write the associate's name, the date and time of your query, and the store on the tape jacket and place it in the **USED TAPE box.**

OPERATIONAL DEFINITIONS OF VARIABLES

Note: For most critical behaviors, you should be checking at-risk if the sales associate didn't perform the safe behavior and safe if the behavior is performed. (Regardless of whether or not you explicitly asked the associate about the item.) Only those with YES in the "N/A an option?" column below can have N/A. Any exceptions you make to this rule should be explained fully in the comments column (i.e., N/A because I accidentally told the associate my baby's age before she asked).

Critical behavior	Is N/A an option?	Explanation of Scoring for variable:
Is info offered spontaneously?	NO	Do you feel like you have to *pull* the info out of the associate? Or is the info mostly spontaneous? If spontaneous, mark safe.
Ask child's category?	**YES**	Does the associate ask whether you have an infant, toddler, etc.? If so, mark safe. If age is asked, mark N/A because category can be inferred.
Ask child's age?	NO	Does the associate ask how old your child is? If so, mark safe.
Ask child's weight?	NO	Does the associate ask how much your child weighs? If so, mark safe.
Ask or say anything about safety belts as an important issue for proper installation.	NO	Does the associate say anything about safety belt type in your car having to do with correct installation? If so, safe.
Ask or say anything about car/vehicle types as affecting proper positioning?	NO	Does the associate say that not all seats fit all cars or talk about your specific car type? If so, mark safe.
Know about locking clip?	NO	Does the associate tell you about the importance of a locking clip? If so, mark safe.
Tell correct direction to face?	NO	Does the associate tell you the correct direction to face your child? If so, mark safe.
Tell to put seat in car tightly?	NO	Does the associate tell you to put weight to make sure you get the seat in tightly, or tell you to put weight (knee) in the seat when buckling it in? If so, mark safe.
Tell to put child in seat tightly?	NO	Does the associate tell you to tighten the harness straps snugly? If so, mark safe.
Tell to put retainer (chest) clip at armpit level?	NO	Does the associate tell you to put the plastic harness retainer clip (AKA chest clip) at armpit level? If so, mark safe.
Recommend safe seat type?	NO	Does the seat type match the one(s) on the bogus baby list? If so, mark safe.
Push after-market products?	NO	Does the associate try to sell you after-market products? If not, mark safe.
Refer you to vehicle owner's manual?	NO	Does the associate tell you to read your vehicle owner's manual? If so, mark safe.
Refer you to instructions?	NO	Does the associate tell you to read directions to help install the seat? If so, mark safe.
Refer you to helpers?	**YES**	Does the associate tell you that you can call the police, safe-kids, etc. for help installing? If so, safe. N/A if not offered. Not at-risk if not offered.
Willing to help try in car.	**YES**	Safe if offered to go out to your car and help. N/A if not offered.
Rec. tray shield for tiny baby?	**YES**	If you have a newborn, does the associate recommend a tray shield? If so, mark at-risk. If not, mark safe. Mark N/A if your bogus baby is not a newborn.
Rec. Shield booster w/ shield?	**YES**	Does the associate warn you against using the booster WITH a shield? If not, at-risk. If your baby is a newborn or infant and/or shield booster is not discussed as a potential seat, mark N/A.

Appendix M:

Research Protocol Outlining Checkpoint Procedure

Checkpoint Protocol—Child Safety Seat Project

1. Child seat checkpoints will be coordinated with participating sites in advance and will be publicized via posters and word of mouth. The research coordinators will take care of these arrangements.

2. Research assistants who have signed up for the checkpoint are to meet in the lab (5100 Derring) ON TIME at the time indicated on the sign-up sheet. We will all travel to the site together.

3. The checkpoint location will be set up in the parking lot of site. A section of the parking lot will be marked off with orange cones. Next to this section, a large sign or banner will read "Free Child Safety Seat Check."

4. As *volunteer* caregivers drive up to the checkpoint area, research assistants will direct cars into spaces marked with cones.

5. Research assistants will work in teams to collect data:

   One individual will work on getting caregiver's consent and explaining the procedure. This person will also ask the caregiver about the child (height, weight, etc.) and the seat (history). This person will also ask and record on the checklist how the caregiver learned about the checkpoint, and whether or not the caregiver turned in a coupon. Once this information is collected, this individual will look to see if the seat is on the recall list.

   While the baby is still in the seat, 2 member(s) of the team (primary and reliability) will *independently* check all items on the checklist that pertain to how the baby is positioned in the seat.

   Once these are checked, the caregiver will remove the baby from the seat and the remaining checklist items will be checked by two observers *independently*. All "YES" answers on the checklist are "SAFE."

6. After the checklist is completed, the assistants will then correct the misuse, explaining to the caregiver as you do. If the seat itself is the problem, then the caregiver will be given a replacement seat (we will have these available at the checkpoint), and their seat will be taken. All errors should be noted on the checklist and all at-risk checks MUST HAVE A COMMENT DESCRIBING ACTION TAKEN. ***DOCUMENT EVERYTHING.*** After the checklist is complete, the caregiver will be informed of all misuse and corrections made. KELLI OR ANOTHER NATIONALLY CERTIFIED INDIVIDUAL PRESENT AT THE CHECK MUST CONDUCT THE FINAL CHECK ON ALL SEATS. After the nationally certified individual ***initials*** the checklist, the carbon copy (yellow form) of the checklist and informed consent is given to the caregiver.

7. After the treatment is implemented, you will also invite the caregiver (or child) participants at the intervention store to fill out an "I'm buckled right" cutout that we can display inside the store/office. At the intervention store, give each caregiver a prize packet (coupons, etc.) upon completing the check. Thank the caregiver for actively caring about motor vehicle safety!

Appendix N:

Informed Consent Form for Checkpoint Participants

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
INFORMED CONSENT FORM—CHILD SAFETY SEAT CHECKPOINTS

PURPOSE: You are invited to participate in a study of child safety seat use in the community.

PROCEDURES: Your child safety seat will be inspected for proper fit with child and car, proper installation, and existing recalls. Any problems will be communicated to you with instructions for correction.

RISKS: There are no known discomforts or risks associated with this research.

BENEFITS: It is expected that your participation will grant you an increased knowledge about child passenger injury prevention.

ANONYMITY OF PARTICIPANTS: The data from this study is collected in a manner that will allow your identity to remain anonymous. At no time will the researchers release your results to anyone without your written consent. A number code will be assigned to data collected from you, so that in the event that you want your information released we may go back to match the data to your identity. Other than the Principal Investigator, the linked number-code will not be accessible to anyone, including the other researchers.

COMPENSATION: There is no direct compensation associated with participation in this research.

FREEDOM TO WITHDRAW: You have the right to withdraw from this study at any time for any reason.

USE OF RESEARCH DATA: The information from this research may be reported in group format for scientific or educational purposes. It may be presented at scientific meetings and/or published and reproduced in professional journals or books, or used for any other purpose that Virginia Tech's Department of Psychology considers proper in the interest of education, knowledge, or research.

APPROVAL OF RESEARCH: This research project has been approved by the Human Subjects Committee of the Department of Psychology and by the Institutional Review Board of Virginia Tech.

PARTICIPANT'S RESPONSIBILITIES AND PERMISSION:
I understand and agree that the sole purpose of this program is to help reduce the incidence of the improper installation of child safety seats; that this program cannot fully evaluate the quality, safety, or condition of my car safety seat or any component of my vehicle, including the seats or safety belts; and that this program cannot guarantee my child's safety in a vehicle collision. However, I understand that a properly used child safety seat can reduce fatal injury by 69% for infants and by 47% for toddlers (NHTSA, 1998). For these reasons, I hereby release the researchers, Virginia Tech, and the establishment where this checkpoint is held from any present or future liability for any injuries or damages that may result from a vehicle collision or otherwise.

I have read and understand this informed consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this study. I understand that if I participate I may withdraw at any time without penalty.

_____ _____
Signature **Date**

Should you have any questions about this research or its conduct, you may contact:

Principal Investigator:	Kelli England, M.S.	231-8145
Faculty Advisor:	E. Scott Geller, Ph.D.	231-6223
Chair of Human Subjects Committee	David W. Harrison, Ph.D.	231-4422
Chair of Institutional Review Board:	David Moore	231-4991

Appendix O:

Letter to Businesses Requesting Checkpoint Giveaway Items

CENTER FOR APPLIED BEHAVIOR SYSTEMS
5100 Derring Hall, Virginia Tech, Blacksburg, VA 24061-0436

November 7, 2000

To Whom It May Concern:

I'd like to take just a minute of your time to tell you about a project designed to benefit the safety of young children in your community. We're currently seeking donations of giveaway items for this project and we'd like to get your input on whether your organization might be interested in contributing.

This project involves a Christiansburg, Virginia Wal-Mart store in "Actively Caring for KIDS." KIDS is an acronym for "**K**eeping **I**ndividuals **D**riving **S**afely." The KIDS campaign is a community program that was created to specifically benefit the safety of children riding in motor vehicles. The focus is to create a community-based system whereby caregivers and their children receive pertinent motor vehicle safety information at the point-of-purchase, which is a place where they can be expected to be particularly receptive to such information.

Specifically, the intervention project teaches child motor vehicle safety to retail store sales associates. These individuals are in special positions to act as behavior-change agents for KIDS on a daily basis. Another method of intervention includes frequent "safety seat checks" that are held in Wal-Mart's parking lot. Volunteer caregivers get their child's safety seat checked for free, and trained research assistants educate parents regarding any errors that were found in installation.

Your organization's contributions will be greatly appreciated, and will be used as incentives for parents to participate in safety seat checkpoints. The KIDS Process is a nonprofit program implemented by the Center for Applied Behavior Systems at Virginia Tech. Project leaders are well-versed in scientific research design and are nationally-certified child passenger safety technicians.

Thank you for your consideration,

E. Scott Geller, Ph.D.
Professor and Director
Center for Applied Behavior Systems

Appendix P:

Curriculum Vita

CURRICULUM VITA

Kelli England Will

CONTACT INFORMATION

4513 Clyde Street, Virginia Beach, VA 23455
Home Phone: (757) 460-3367
Office Phone: (757) 437-7589
FAX: (757) 437-7596
E-mail: kjenglan@vbcps.k12.va.us

EDUCATION

May 2002 **Ph.D.** - Clinical Psychology. Specialization Area: Clinical Health Psychology. Virginia Polytechnic Institute and State University, Blacksburg, VA. Cumulative GPA: 3.93

August 1998 **M.S.** - General/Experimental Psychology. Old Dominion University, Norfolk, Virginia. Cumulative GPA: 3.94

May 1995 **B.S.** - Psychology, Magna Cum Laude. Old Dominion University, Norfolk, Virginia. Academic Honors Program, Cumulative GPA: 3.78. Minor: English

HONORS AND AWARDS RECEIVED

- College of Arts and Sciences Outstanding Graduate Student Award, *Virginia Tech (2001)*
- Fellowship in Unintentional Injury Prevention, *Centers for Disease Control and Prevention & Society for Public Health Education (2000-2001)*
- Bill Applegate Applied Graduate Paper Award, *Virginia Applied Psychology Academy, Virginia Psychological Association (2000)*
- Eastern Virginia Medical School Summer Student Scholarship *(Summer 2000)*
- Virginia Tech Graduate Student Assembly Travel Awards *(2000 and 2001)*
- Honorable Mention for Student Fellowship in Unintentional Injury Prevention, *SOPHE/CDC (1999)*
- Certificate of Appreciation for Outstanding Community Service, *Montgomery County Sheriff (1999)*
- Who's Who Among Students in American Colleges and Universities *(1994-1995)*
- The National Dean's List *(1994-1995)*
- Magna Cum Laude Graduate, *Old Dominion University (1995)*
- Honors in Psychology Graduate, *Old Dominion University (1995)*
- Academic Honors Program Graduate, *Old Dominion University (1995)*
- College of Sciences Certificate of Excellence, *Old Dominion University (1995)*
- National Honor Society, *Princess Anne High School (1990)*

RESEARCH EXPERIENCE

Internship Research. *(7/01 to present). Virginia Beach City Public Schools and the Center for Pediatric Research.* As a Pre-doctoral Psychology Intern in the Public Health Track of the Virginia Beach City Public Schools' APA-accredited internship, 50 percent of my time is devoted to large-scale intervention research in the school system. Project PRAISE (Promoting Responsible Actions through Intervention and School-wide Education), a multi-year program funded by the U.S. Department of Education, is an intense school-wide positive behavioral management intervention designed to increase behavioral compliance and academic functioning among students at one Virginia Beach school. Project SHARE (School Health and Academic Resilience for Everyone) is an 18-month Virginia Department of Education grant designed to develop better communication between practitioners and the schools in the treatment and diagnosis of students with Attention Deficit/Hyperactivity Disorder. Research duties include planning and managing behavioral data collection and entry, observing classrooms and providing constructive feedback, consulting with teachers and school staff, and leading weekly parent training groups. Both projects are coordinated by the Behavioral Sciences Section of the Center for Pediatric Research in Norfolk, Virginia. **Supervisors:** *Clifford Hatt, Ed.D. and Gretchen LeFever, Ph.D.*

Dissertation Research, Co-Principal Investigator. *(10/99 to 4/02). Clinical Health Psychology, Virginia Tech.* Wrote and received a Federal Section 402 grant from the National Highway Traffic Safety Administration and the Virginia Department of Motor Vehicles to fund my dissertation research. Applied for and received supplementary funds from the Cambridge Center for Behavioral Studies. The project was a behavioral-community intervention that aimed to prevent the misuse of child safety seats via the training of behavior-change agents. Retail store sales associates in special positions to intervene at the point of purchase were trained in the proper use of safety seats. The participating (i.e., experimental) store was identified as "Actively Caring for KIDS." KIDS is an acronym for "Keeping Individuals Driving Safely." Data were collected from February 2000 to May 2001, and the intervention was evaluated using an interrupted time series design and a similar control site for comparison. Duties as Project Manager included: project conceptualization and implementation; training and scheduling research assistants; collecting, entering, and managing raw data; running analyses; creating graphs and reports; designing and creating educational materials, fear appeal posters, and window displays; working with area police officers, site personnel, safety advocates, and caregivers; training site personnel; coordinating and running child safety seat checkpoints; and manuscript preparation. This project earned me recognition as the 2000-2001 Fellow in Unintentional Injury, a national honor bestowed jointly by the Centers for Disease Control & Prevention and the Society for Public Health Education. **Co-Principal Investigator and Committee Chair:** *E. Scott Geller, Ph.D.;* **Committee Members:** *Jack W. Finney, Ph.D.; Russell T. Jones, Ph.D.; Thomas H. Ollendick, Ph.D.; & Richard A. Winett, Ph.D.*

Research Supervisor. *(1/01 to 5/01). Department of Psychology, Virginia Tech.* Mentored and supervised an Undergraduate Research (Psyc 4994) student, Meredith Katz, as she implemented a survey study of pediatricians and day care center staff regarding their knowledge of child passenger safety. Guided study design, data collection, data analysis, manuscript preparation,

and presentation at the Virginia Psychological Association's Spring Convention. Meredith's project was awarded the VPA Student Poster Award, an award given annually to the best student poster at the association's spring convention. **Faculty Sponsor:** *Kent E. Glindemann, Ph.D.*

Graduate Research Assistant. *(8/99 to 5/00). Center for Applied Behavior Systems, Virginia Tech.* Co-leader for a project that aimed to develop, evaluate, and market an inter-vehicular communication system designed to reduce road rage. Duties included subject recruitment, data collection and interpretation for a social validity assessment, co-author of grant proposal (NIH), and selection and order of marketing materials. **Supervisor:** *E. Scott Geller, Ph.D.*

Preliminary Examination. *(Date of defense: October 14, 1999). Clinical Health Psychology, Virginia Tech.* Wrote and defended a manuscript that proposed a theoretical framework to guide the design of interventions for preventing the misuse of child safety seats. The framework integrates the techniques of large-scale applied behavior analysis with research on risk communication. It was argued that an understanding of risk perception and the use of risk communication techniques are necessary to reach a large proportion of caregivers who are naïve to their own susceptibility for misuse of their children's seats. **Committee Chair:** *E. Scott Geller, Ph.D.*

Project Site Manager. *(5/99 to 10/99). Center for Applied Behavior Systems, Virginia Tech.* Acted as a site manager for a 3-city, 3-university longitudinal survey study of driver histories, behaviors, and attitudes. Duties included subject recruitment, data collection, and database management. **Supervisors:** *Thomas H. Berry, Ph.D.; E. Scott Geller, Ph.D.; and Bryan E. Porter, Ph.D.*

Graduate Research Assistant. *(5/99 to 8/99). Center for Applied Behavior Systems, Virginia Tech.* Graduate assistant to the principal investigator for a Department of Motor Vehicles grant for the implementation of a community-wide designated driver program. Duties included data collection and management. **Supervisor:** *E. Scott Geller, Ph.D.*

Project Director. *(1/99 to 5/99). Center for Applied Behavior Systems, Virginia Tech.* Developed and implemented a baseline study of child safety seat misuse and misinformation in the community. Roadside child safety seat checkpoints were held in coordination with area daycare centers. Researchers assessed baseline misinformation by posing as shoppers at local retailers that sell child safety seats. In addition, focus groups were held to discuss intervention strategies. Trained, scheduled, and managed about 20 research volunteers to collect data and assist with data entry for the project. Created and managed database and performed data analysis and interpretation. Wrote and received a research grant of $1,500 from the Department of Motor Vehicles for the project. **Supervisor:** *E. Scott Geller, Ph.D.*

Graduate Research Assistant. *(12/98 to 5/99). Center for Applied Behavior Systems, Virginia Tech.* Graduate assistant to the principal investigator for a federally funded (NIAAA) grant for alcohol intervention research targeting fraternities. Duties included data collection, database creation and management. **Supervisor:** *E. Scott Geller, Ph.D.*

Graduate Research Assistant. *(8/98 to 12/98). Center for Applied Behavior Systems, Virginia*

Tech. Miscellaneous research duties on a variety of projects at the Center, including data collection, database creation, database management, and web site creation and management. **Supervisor:** *E. Scott Geller, Ph.D.*

Project Director. *(10/97 to 5/98). Behavioral Community Psychology, Old Dominion University.* Developed and implemented a study of risky behaviors in prime time television, including risky driving, risky sex, drug and alcohol use, and violence. Trained, scheduled, and managed over 16 undergraduate research volunteers to collect and assist with data entry for the project. Managed database and performed data analysis and interpretation. Compared results longitudinally with two similar studies conducted at Virginia Tech. Portions of the project presented at the Southeastern Psychological Association Conferences in March 1999 and April 2000. Recipient of the Bill Applegate Applied Graduate Paper Award in April 2000. Manuscript is in progress. **Supervisor:** *Bryan E. Porter, Ph.D.*

Research Associate. *(1/97 to 8/98). Behavioral Community Psychology, Old Dominion University.*

Research Grants: Research assistant to the Principal Investigator for two separate Section 402 federal grants from the National Highway Traffic Safety Administration. Assisted in the development, implementation, evaluation, and scholarship of two extensive community traffic safety programs targeting the reduction of red light running and other risky intersection behaviors. Over the course of my employment, I trained, scheduled, and managed over 40 undergraduate research volunteers to collect and enter data for both projects. Managed raw data (over 50,000 observations total), ran analyses, and created graphs and reports from the data. Designed layout, wrote text, and assisted in the creation of the study's web site. Worked with marketing companies who designed and created educational materials and collateral (e.g., bumper stickers, cups, license plate frames, litter bags) for our programs. Worked with many area businesses to distribute these materials. Developed working relationships with area police officers, traffic engineers, and the Department of Motor Vehicles. Assisted with running focus groups of at-risk drivers through a driver education program and at O.D.U.

Polling: Wrote a telephone survey to assess the community outreach of the first traffic safety campaign and worked closely with a polling firm to carry out the survey. Co-authored a grant proposal (declined) to the AAA Foundation for Traffic Safety to fund a nationwide telephone survey of driver perceptions in Summer 1998.

Supervisor: *Bryan E. Porter, Ph.D.*

Master's Thesis. *(Date of defense: July 20, 1998). Cognitive Developmental Psychology, Old Dominion University.* Conducted research investigating cognitive and motivational differences between traditional-age college women and nontraditional-age women returning to college. Recruited 124 participants through the psychology department's subject pool, by posting announcements throughout campus, and by working with various women's organizations on campus. Trained two assistant experimenters. Coordinated subject appointments and ran subjects under study design. Trained an assistant to help score scales and enter data. Managed raw data and performed data analyses, interpretation, and manuscript preparation and defense. **Committee Chair:** *Elaine M. Justice, Ph.D.*

Graduate Research Assistant. *(6/96 to 8/96). Cognitive Developmental Psychology, Old Dominion University.* Conducted research at area day-care centers investigating 4-, 6-, and 8-

year-old children's metamemory. Recruited participants through correspondence with day-care and summer camp programs and parents. Coordinated subject appointments, trained three fellow experimenters, assisted with data entry and analysis.
Supervisor: *Elaine M. Justice, Ph.D.*

Graduate Research Assistant. *(1/96 to 6/96). Clinical Psychology, Old Dominion University.* Carried out literature searches, logged educational videos, proctored exams, entered data, acted as a blind rater. **Supervisor:** *Robin J. Lewis, Ph.D.*

Graduate Independent Research. *(8/95 to 5/96). Cognitive Developmental Psychology, Old Dominion University.* Completed a first year Master's research project investigating 4- and 6-year-old children's understanding of the causal link between strategy use and recall performance, and the relationship between this understanding and the child's actual performance. Recruited participants through day-care centers and after-school programs for the two-session study. Trained two assistant experimenters. Coordinated subject appointments and ran subjects under study design. Managed raw data and performed data analysis, interpretation, and manuscript preparation. Poster presentation at the Society for Research in Child Development Conference, 1997. **Supervisor:** *Elaine M. Justice, Ph.D.*

Undergraduate Senior Honors Thesis. *(8/94 to 5/95). Old Dominion University.* Investigated professors' views of various scientific fields, focusing on the public image of psychology. Seventy-two professors of all non-science academic fields were interviewed via telephone using a Likert-type questionnaire. Recruited subjects and conducted the interviews, managed raw data, performed data analysis, interpretation, and manuscript preparation. Defended to thesis committee of five psychology professors. Received $1000 research grant to support activities to conduct research. Presented at National Conference of Undergraduate Research, 1995. Published in Professional Psychology: Research and Practice, 29, 140-143. **Supervisor:** *Louis H. Janda, Ph.D.*

Undergraduate Independent Research. *(1/94 to 8/94). Old Dominion University.* Investigated students' views of various scientific fields, focusing on the public image of psychology specifically. Student participants completed Likert-type questionnaires. Recruited and ran subjects through experimental design, managed raw data, performed data analysis, interpretation, and manuscript preparation. **Supervisor:** *Louis H. Janda, Ph.D.*

RESEARCH PRODUCTIVITY AND GRANTSMANSHIP

Grants, Scholarships, and Fellowships Received

Geller, E. S. "Inter-vehicular Communication to Prevent Road Rage." A Small Business Innovation Research Grant from the National Institutes of Health. *(Co-author, $99,999).*

England, K. J. "Promoting the Proper Use of Child Safety Seats: A Behavior-Change Agent Approach." Student Fellowship in Unintentional Injury Prevention, Centers for Disease Control and

Prevention and the Society for Public Health Education. *($1200, 2000 – 2001).*

England, K. J. "Using behavior-change agents to reduce the misuse of child safety seats: An Actively Caring for KIDS Process." Cambridge Center for Behavioral Studies. *($1000, January 2000 – December 2000).*

Geller, E. S., & England, K. J. "The Actively Caring for KIDS Process: A behavioral-community program to reduce child safety seat misuse and misinformation." Department of Motor Vehicles (Federal Section 402 funds). *(Co-principal investigator and author, $6000, October 1999 – October 2000).*

England, K. J., & Geller, E. S. "Curbing child safety seat misuse through hands-on intervention with parents." Virginia Department of Motor Vehicles. *(Co-principal investigator and author, $1,500, January-September 1999).*

England, K. J. "Through the intellectuals' eyes: A survey of college professors' attitudes towards psychology." Old Dominion University Undergraduate Research Award, 1994-95. *($1,000, 1994)*

Grant Proposals and Research Scholarship Submissions

Geller, E. S. "Optimizing Child Passenger Safety: Do Incentives Help?" Submitted to the National Institutes for Child Health and Human Development in July 2001. *($1,001,473, Co-author and project manager on first submission in June 2000, co-author and consultant on second submission; Second submission received a priority score of 206; Third submission pending.)*

England, K. J. "Preventing the misuse of child safety seats: A behavior-change agent approach." Submission in October 1999 to the Society for Public Health Education and Centers for Disease Control and Prevention Student Fellowship in Unintentional Injury Prevention. *($1200, Honorable Mention).*

Geller, E. S. "Community intervention to empower children to ride safe." Submitted to the Centers for Disease Control and Prevention in July 1999. (*Co-author and project manager, $721,522, declined).*

Porter, B. E., & England, K. J. "An assessment of average drivers' perceptions of intersection safety norms, problems, and solutions." Submitted to the AAA Foundation for Traffic Safety in January 1998. *(Co-author, $30,898, declined).*

Publications

England, K. J. (2001). Can traditional clinical training make room for community psychology? The Community Psychologist, 34 (2), 8.

England, K. J., Olson, T., & Geller, E. S. (2000). Behavioral observations find unsafe use of child safety seats. Behavior Analyst Digest, 12, 11-12.

Porter, B. E., & England, K. J. (2000). Predicting red-light running behavior: A traffic safety study in three urban settings. Journal of Safety Research, 31, 1-8.

England, K. (1999). An everyday use of information processing theory: Sign and label design. In H. K. Chandler and J. W. Finney (Eds.), Exploring Introductory Psychology: A reader and workbook (pp. 405, 415-416). New York: McGraw-Hill, Inc.

Janda, L. H., England, K. J., Lovejoy, D., & Drury, K. (1998). Attitudes toward psychology relative to other disciplines. Professional Psychology: Research and Practice, 29(2), 140-143.

England, K. J. (1996). Through the intellectuals' eyes: A survey of college professors' attitudes towards psychology. The Old Dominion Undergraduate Review.

Published Abstracts

England Will, K., Geller, E. S., Sharp, W. S., Moroge, J., Anderson, E. J., Cincotta, A., Giovenco, M., & Taggi, A. (2001, October). Promoting the proper use of child safety seats: A behavior-change agent approach. Proceedings and abstracts of the 52nd annual meeting of the Society for Public Health Education, 44.

England, K. J., Porter, B. E., & Geller, E. S. (2000). Is primetime television a health and safety hazard? An analysis from a vicarious learning perspective. [Bill Applegate Applied Graduate Paper Award.] The Virginia Psychologist, 44 (Summer), 31.

Porter, B. E., Berry, T. D., & England, K. J. (1999, April). Road rage and aggressive driving: An action plan to identify and reduce these risky driving behaviors. Proceedings and abstracts of the annual meeting of the Eastern Psychological Association, 70, 8.

England, K. J., & Janda, L. H. (1995). Through the intellectuals' eyes: A survey of college professors' attitudes towards psychology. National Conference of Undergraduate Research 1995 Program and Abstract Book, 2-198.

Manuscripts under Review

England, K. J., & Geller, E. S. (under review). Increasing the safety of children's vehicle travel: From effective risk communication to behavior change. Health Education Research: Theory and Practice.

England, K. J., Porter, B. E., Geller, E. S., & DePasquale, J. P. (accepted pending revisions). What is television teaching its viewers? A cross-sectional analysis of risky behaviors on primetime television. Journal of Applied Social Psychology.

Manuscripts in Progress

Porter, B. E., England, K. J., Berry, T., & Hebert, K. L. (in progress). The "Intersection Connection" program to reducing crashes: Public-education, engineering, and enforcement solutions.

Hebert, K., Porter, B. E., & England, K. J. (in progress). Self-reported changes in red light running behavior and perceptions after a community intervention program.

England, K. J., & Justice, E. M. (in progress). Why do older students excel? Predicting GPA for nontraditional aged college women.

Professional Presentations

Katz, M. A., Will, K. E., Sharp, W. S., & Peterson, M. D. (2002, April). Child safety seats: Who knows about proper installation and usage? Paper presented at the Spring Convention of the Virginia Psychological Association, Virginia Beach, Virginia.

England Will, K., Geller, E. S., Sharp, W. S., Moroge, J., Anderson, E. J., Cincotta, A., Giovenco, M., & Taggi, A. (2001, October). Promoting the proper use of child safety seats: A behavior-change agent approach. Paper presented at the Society for Public Health Education 52nd Annual Meeting, Atlanta, Georgia.

Katz, M., England, K. J., & Geller, E. S. (2001, April). Is the advice parents receive always accurate? A field study of pediatricians and day care centers concerning usage of child safety seats. Poster presentation at the Spring Convention of the Virginia Psychological Association, Roanoke, Virginia. Recipient, Best Student Poster Award.

Fox, L. D., Chandler, H., Whiteley, J. A., Williams, C. D., England, K. J., Dula, C., & Eisler, R. M. (2001, July). Effects of a manualized cognitive-behavioral anger management program on pre-post changes in self-reported cognitions and behaviors. Paper presented at the Association for the Advancement of Behavior Therapy World Conference, Vancouver, British Columbia.

England, K. J., Lea, B. N., Katz, M., Malvasio, J., & E. Scott Geller. (2001, May). The Actively Caring for KIDS Process: A point-of-purchase intervention for child passenger safety. In E. S. Geller (Chair), Behavioral community analysis and intervention for public health and safety. Paper presented at the 2001 Association for Behavior Analysis Conference, New Orleans, LA.

England, K. J., & Geller, E. S. (2001, April). Maximizing participation in child passenger safety interventions: From effective risk communication to behavior change. In B. E. Porter (Chair), Traffic

and transport psychology in the community: Behavior-based survey, observation, and communication studies. Symposium presented at the 2001 Eastern Psychological Association Conference, Washington, D.C.

Keeney, R. C., England, K. J., & Geller, E. S. (2001, April). An innovative approach to increasing positive driving experiences and reducing road rage. In B. E. Porter (Chair), Traffic and transport psychology in the community: Behavior-based survey, observation, and communication studies. Symposium presented at the 2001 Eastern Psychological Association Conference, Washington, D.C.

England, K. J., Lea, B. N., & Geller, E. S. (2000, November). Sales associates' knowledge of child safety seats: Implications for intervention. Paper presented at the Fall Convention of the Virginia Psychological Association, Williamsburg, Virginia.

Butterfoss, F. D., & England, K. J. (2000, September). Injury prevention coalitions: Evaluating community change. Workshop conducted at the University of North Carolina Injury Prevention Research Center in conjunction with the State and Territorial Injury Prevention Director's Association (STIPDA) 7th Annual Conference, Chapel Hill, North Carolina.

England, K. J., Click, R. D., Farley, E., & Beasley, J. L. (2000, May). The Road Rage Reducer: An inter-vehicular communication system. In E. S. Geller (Chair), Road rage: Defining, understanding, and solving a national epidemic. Symposium conducted at the Association for Behavior Analysis Conference, Washington, D.C.

Click, R. D., England, K. J., Jackson, A., & Geller, E. S. (2000, May). From Dr. Jekyll to Mr. Hyde: Is vehicle travel detrimental to demeanor? In E. S. Geller (Chair), Road rage: Defining, understanding, and solving a national epidemic. Symposium conducted at the Association for Behavior Analysis Conference, Washington, D.C.

Jackson, A. R., Click, R. D., England, K. J., Farley, E. J., Geller, E. S., & Beasley, J. L. (2000, May). Intervening to reduce road rage: A social validity assessment. Poster presented at the Association for Behavior Analysis Conference, Washington, D.C.

England, K. J., Porter, B. E., & Geller, E. S. (2000, April). Is primetime television a health and safety hazard? An analysis from a vicarious learning perspective. Paper presented at the Spring Convention of the Virginia Psychological Association, Tyson's Corner, Virginia. Recipient, Bill Applegate Applied Graduate Paper Award.

Click, R. D., Geller, E. S., & England, K. J. (2000, March). The Road Rage Reducer: An innovative approach to reducing road rage. Paper presented at the Safety Performance Solutions Users' Conference, New Orleans, Louisiana.

Click, R. D., England, K. J., Geller, E. S., & Beasley, J. (2000, March). Reducing road rage: Developing and testing an inter-vehicular communication system. In K. Glindemann (Chair), Applying behavioral science to improve road safety. Symposium conducted at the 46th annual meeting of the Southeastern Psychological Association, New Orleans, Louisiana.

England, K. J., Olson, T., Weidner, M. E., & Geller, E. S. (1999, October). Child safety seat misinformation and misuse: A preliminary assessment. In K. Glindemann (Chair), Applications of behavior analysis: From the laboratory to the real world. Symposium conducted at the Fall Convention of the Virginia Psychological Association, Richmond, Virginia.

England, K. J., & Geller, E. S. (1999, May). Applying the techniques of behavior analysis to child safety seat misuse. In E. S. Geller (Chair), Behavior analysis hits the road. Symposium conducted at the Association for Behavior Analysis Conference, Chicago, Illinois.

Olson, T. M., England, K. J. Buscemi, N. V., & Johnson, M. (1999, April). Predicting negative outcomes from measures of high-risk drinking: Is binge drinking a useful measure? Paper presentation at the Spring Convention of the Virginia Psychological Association, Virginia Beach, Virginia.

Porter, B. E., Berry, T. D., & England, K. J. (1999, April). Road rage and aggressive driving: An action plan to identify and reduce these risky driving behaviors. Poster presented at the Eastern Psychological Association Conference, Providence, Rhode Island.

England, K. J., & Justice, E. M. (1999, April). Why do older students excel?: Predicting GPA for traditional and nontraditional aged college women. Poster presented at the Society for Research in Child Development Conference, Albuquerque, New Mexico.

England, K. J., Porter, B. E., DePasquale, J. P., & Geller, E. S. (1999, March). A longitudinal analysis of risky behaviors on primetime television. Poster presented at the Southeastern Psychological Association Conference, Savanna, Georgia.

Porter, B. E., & England, K. J. (1998, August). The "Intersection Connection": A "Year 2" assessment of multimedia and enforcement programs to reduce intersection crashes. Poster presented at the 24th International Congress of Applied Psychology, San Francisco, California.

England, K. J. (1998, May). [Roundtable discussion facilitator]. Rage Behind the Wheel on Land and Water: An Intermodal Conference on Aggressive Behaviors, Virginia Beach, Virginia.

Porter, B. E., & England, K. J. (1997, November). Evaluation of a safe driving campaign: Targeting red-light runners in Virginia. Paper presented at the American Evaluation Association Conference, San Diego, California.

England, K. J., & Porter, B. E. (1997, July). Intersection Connection program. Paper presented at State Farm Insurance Port Cities Meeting, Chesapeake, Virginia.

Justice, E. M., England, K. J., Hamshar-Klein, G., & Averette, C. M. (1997, April). Young children focus on recall level, not strategy use, in judging memory performance. Poster presented at the Society for Research in Child Development Conference, Washington, DC.

England, K. J., & Janda, L. H. (1995, April). Through the intellectuals' eyes: A survey of

college professors' attitudes towards psychology. Paper presented at the National Conference of Undergraduate Research 1995, Schenectady, New York.

CLINICAL EXPERIENCE

Pre-Doctoral Clinical Internship. *(7/01 to present). Virginia Beach City Public Schools Psychological Services, Virginia Beach, Virginia.* Currently completing an APA-Approved Pre-doctoral Psychology Internship in the Virginia Beach City Public Schools. My specialty internship track in public health is provided in conjunction with the Center for Pediatric Research in Norfolk, Virginia. Responsible for all psychological service delivery in one elementary school (of approximately 745 students), arena assessment of developmental delays and program planning in the district's citywide Preschool Assessment Center, and large-scale intervention research in the schools through the activities of two major research grants: Project SHARE and Project PRAISE (see Research Section for additional information). In addition to implementing and managing school-wide (systems-level) programs in the schools, duties include providing comprehensive psychological services to both regular education and special education students. These services include assessment for special education or program planning, development of individual education and 504 plans, development of educational and behavioral interventions, consultation with parents, teachers and staff, group and individual counseling and therapy, parent training, staff in-services, service on the school's student support team, service on the school's special education committee, assistance in determining appropriate special education placement, and providing educational recommendations. **Supervisors:** *Clifford V. Hatt, Ed.D. & Gretchen B. LeFever, Ph.D.*

Clinical Practicum. *(8/00 to present). Virginia Tech Psychological Service and Child Study Centers, Blacksburg, Virginia.* Direct clinical service sessions with both child and adult clients with an array of clinical problems. Co-therapist and co-coordinator of an Anger Management Therapy Group for court-referred clients. Supervision of two graduate clinicians, each with an average weekly caseload of four clients. Scientist-practitioner model was advocated at the clinic, and empirically supported treatments were used when available and appropriate. Team discussion and observation of clinical services. Responsible for keeping patients' charts current, which included diagnosis, writing progress notes, intake reports, discharge reports, and corresponding with courts, schools, or other health professionals about cases as appropriate. Other duties included case presentations and administration of assessment instruments. **Supervisor:** Richard Eisler, Ph.D.

Clinical Externship. *(5/00 to 8/00). Center for Pediatric Research, Eastern Virginia Medical School & The Children's Hospital of the King's Daughters, Norfolk, Virginia.* Worked as a pre-doctoral intern in the Health Promotion and Disease Prevention division of the Center for Pediatric Research, a joint program of the Children's Hospital of the King's Daughters and Eastern Virginia Medical School. The Center employs specialists in epidemiology, psychology, biostatistics, outcomes research, health education, health services research, and program evaluation who work together to assess community health needs, design supportive intervention strategies, and assess their effectiveness. Summer research projects included a coalition effectiveness evaluation of the Hampton Roads Safe Kids Coalition, assistance with the establishment of a car seat program at the Children's Hospital of the King's Daughters, work

with the School Health Initiative for Education (SHINE) Coalition, development of a survey of Virginia School Principals concerning ADHD and behavior/discipline issues in their schools, and collaboration on several research projects and publications related to child health. **Supervisors:** *Frances D. Butterfoss, Ph.D.; Gretchen B. LeFever, Ph.D., Debra Major, Ph.D., & Ardythe Morrow, Ph.D.*

Clinical Practicum. *(8/99 to 5/00). Virginia Tech Psychological Service and Child Study Centers, Blacksburg, Virginia.* Direct clinical service sessions with both child and adult clients with an array of clinical problems (kept at least four active cases at all times; average 15 hrs/wk). Scientist-practitioner model was advocated at the clinic, and empirically supported treatments were used when available and appropriate. Team discussion and observation of clinical services. Responsible for keeping patients' charts current, which included diagnosis, writing progress notes, intake reports, discharge reports, and corresponding with courts, schools, or other health professionals about cases as appropriate. Other duties included case presentations and occasional administration of assessment instruments, such as the Wechsler Intelligence Scale for Children-III, Wechsler Adult Intelligence Scale-III, and Wechsler Memory Scale-III. **Supervisor:** *Thomas H. Ollendick, Ph.D.*

Clinical Practicum. *(8/98 to 5/99). Virginia Tech Psychological Service and Child Study Centers, Blacksburg, Virginia.* Team discussion and observation of clinical services to children, adults, and families with a variety of clinical problems. Performed on-going direct clinical service sessions with children and their families. **Supervisor:** *Russell T. Jones, Ph.D.*

Psychometrician. *(8/96 to 10/97). Fairfield Psychological Associates, Virginia Beach, Virginia, and Larkspur Psychological Associates, Virginia Beach, Virginia.* Psychological assessment of adults and children, including administration and scoring of the Wechsler Adult Intelligence Scale-Revised (WAIS-R), Wechsler Intelligence Scale for Children-III (WISC-III), the Bender Visual Motor Gestalt Test, Wechsler Memory Scale-Revised (WMS-R), and recording of behavioral observations. Learned about interpretation and diagnosis. Observation and videotaping of children with ADHD in group therapy. **Supervisor:** *Robin J. Lewis, Ph.D.*

Practicum. *(8/96 to 10/97). Eastern Virginia Medical School (EVMS)/Children's Hospital of the King's Daughters (CHKD), Norfolk, Virginia.* Assisted in development, planning, and implementation of a research study investigating quality of life and smell dysfunction in children with cystic fibrosis. Received training at EVMS/CHKD and at San Diego State University in San Diego, California. Development of study apparatus (actual smell test), administration and interpretation of smell tests and questionnaires, recruitment of children and their parents. Trained both another doctor and practicum student interested in smell testing. **Supervisor:** *David H. Darrow, M.D.*

Teaching Experience

Adjunct Instructor. *(1/02 to 5/02). Psychology Department, Old Dominion University.* Taught a 400/500 level Community Psychology course at Old Dominion University's Virginia Beach Center. Planned course syllabus and chose textbook and additional required readings. Student enrollment was 40. **Supervisor:** *Barbara Winstead, Ph.D.*

Graduate Teaching Assistant. *(1/01 to 5/01). Psychology Department, Virginia Tech.* Taught a 4000 level senior seminar restricted to Psychology majors with senior class standing. The course was titled "Community Health" and focused on large-scale health and safety promotion. Student enrollment was 27. Average overall student evaluation was 3.9 on a 4-point scale. **Supervisor:** *Jack W. Finney, Ph.D.*

Mentor for Psych 4994: Undergraduate Research. *(1/01 to 5/01). Psychology Department, Virginia Tech.* Mentored and supervised an Undergraduate Research student as she planned and implemented an independent research project. **Faculty Sponsor:** *Kent E. Glindemann, Ph.D.*

Graduate Teaching Assistant. *(1/01 to 5/01). Psychology Department, Virginia Tech.* Group leader for a two research groups of eight students each from a Research Methods course. **Supervisor:** *E. Scott Geller, Ph.D.*

Graduate Teaching Assistant. *(8/00 to 12/00). Psychology Department, Virginia Tech.* Taught two 2000 level Social Psychology courses for undergraduate students. One course was restricted to psychology majors. Student enrollment in the two classes was 35 and 75. Received average overall student evaluations of 3.8 and 3.9 on a 4-point scale. **Supervisor:** *Jack W. Finney, Ph.D.*

Graduate Teaching Assistant. *(1/00 to 5/00). Psychology Department, Virginia Tech.* Taught a 2000 level Social Psychology course for undergraduate students. Student enrollment was 80. Average overall student evaluation was 3.9 on a 4-point scale. **Supervisor:** *Jack Finney, Ph.D.*

Graduate Teaching Assistant. *(8/99 to 12/99). Psychology Department, Virginia Tech.* Taught a 2000 level Social Psychology course restricted to psychology majors only. Student enrollment was 50. Average overall student evaluation was 3.8 on a 4-point scale. **Supervisor:** *Jack W. Finney, Ph.D.*

Child Passenger Safety Instructor. *(10/99). Roanoke Regional Safe Kids Coalition, Roanoke, Virginia.* Co-taught the 2nd day of a 2-day child passenger safety workshop for local health care workers. **Sponsor:** *Safe Kids Coalition*

Child Passenger Safety Instructor. *(5/99). Roanoke Regional Safe Kids Coalition, Roanoke, Virginia.* Co-taught an 8-hour child passenger safety workshop to local health care professionals, educators, and social workers. **Sponsors:** *Virginia Department of Motor Vehicles, Easter Seals Society, and Safe Kids Coalition*

Graduate Teaching Assistant. *(8/98 to 5/99). Psychology Department, Virginia Tech.* Taught two recitation (lab) companion classes to the Introductory Psychology course per semester. Each class had approximately 30 students enrolled. Received average overall student evaluations of 3.7, 3.7, 3.8 and 3.9 on a 4-point scale for the four classes respectively. **Supervisor:** *Jack W. Finney, Ph.D.*

Graduate Teaching Assistant. *(1/99 to 5/99). Psychology Department, Virginia Tech.* Group leader for a research group of six students from a Research Methods course. **Supervisor:** *E.*

Scott Geller, Ph.D.

Guest Lecturer. *(various dates from 9/96 to 8/98). Psychology Department, Old Dominion University.* Guest lectured for courses, including Community Psychology, Psychology of Testing, Honors Developmental, and Adolescent Psychology.

Graduate Teaching Assistant. *(8/96 to 12/96). Psychology Department, Old Dominion University.* Worked as a teaching assistant to the coordinator of the Psychology Department's Learning Communities for undergraduate psychology students. **Supervisor:** *Robin J. Lewis, Ph.D.*

SERVICE

Professional Memberships and Honor Societies:

- American Psychological Association *(Student Member since 1996)*
- Society for Public Health Education *(Student Member since 2000)*
- Association for Behavior Analysis *(Student Member since 1999)*
- Swedish Association for Behavior Analysis *(Virtual Member since 1999)*
- Virginia Psychological Association *(Student Member since 1999)*
- Southeastern Psychological Association *(Member since 1999)*
- APA Division 5: Evaluation, Measurement, & Statistics *(1996-1998)*
- APA Division 7: Developmental Psychology *(1996-1998)*
- APA Division 27: Society for Community Research and Action: The Division of Community Psychology *(1996-1998)*
- Psi Chi - National Psychology Honor Society *(since 1994)*
- Phi Kappa Phi - National Honor Society *(since 1994)*
- Golden Key - National Honor Society *(since 1993)*
- Omicron Delta Kappa - National Leadership Honor Society *(since 1993)*

Campus and Vocational Involvement:

- Center for Pediatric Research and Virginia Beach City Schools Psychology Journal Club *(2001)*
- Child Safety Seat Program Committee, Eastern Virginia Medical School & the Children's Hospital of the King's Daughters *(Summer 2000)*
- Student Representative to the Master's Program in Psychology Committee, O.D.U. *(1996-1998)*
- Graduate Association of Psychology Students, Old Dominion University *(GAPS, 1995-1998)*
- Psi Chi - National Psychology Honor Society *(1995 to present)*
- Student Ambassador *(8/92 to 5/95).* Hosted official visitors to O.D.U.'s campus. Worked directly under University President. Fundraising Chair *(1994-1995)*. Granted "Double Digit Award" for acquiring 18 service event points in one semester *(1995)*.
- Alpha Phi Sorority *(1993 to present).* Corresponding Secretary *(1994)*. Pledge Chaplain *(1993)*. Pledge Scholarship Chair *(1993)*. Best GPA *(1993, 1994, 1995)*. Scholarship award *(1994)*.
- Academic Honors Association *(8/91 to 12/92)*.
- Commuter Leadership Association *(1991)*

Community Service and Involvement:

- School Health Initiative for Education (SHINE) Coalition, Hampton Roads, VA *(member since 2001)*
- Nationally Certified NHTSA Child Passenger Safety Technician *(since 1998, recertification yearly)*
- Roanoke Regional Safe Kids Coalition Child Passenger Safety Committee Member, Roanoke, VA *(4/99 to 5/01)*
- Child Safety Seat Checkpoint Coordinator and Volunteer, held 30 checkpoints in Blacksburg and Radford, VA *(9/00 to 5/01)*
- Child Safety Seat Checkpoint Coordinator and Volunteer, held 12 checkpoints in Blacksburg and Radford, VA *(3/00 to 5/00)*
- Child Safety Seat Checkpoint Volunteer, Virginia Beach, VA *(5/00)*
- Child Safety Seat Checkpoint Volunteer, Blacksburg, VA *(12/99)*
- Child Passenger Safety Community Workshop Instructor, Roanoke, VA *(10/99)*
- Child Safety Seat Checkpoint Volunteer, Radford, VA *(10/99)*
- Child Safety Seat Checkpoint Volunteer, Roanoke, VA *(10/99)*
- Child Passenger Safety Community Workshop Instructor, Roanoke, VA *(5/99)*
- Child Safety Seat Checkpoint Coordinator and Volunteer, held 5 checkpoints in Blacksburg, Christiansburg, and Roanoke, VA *(3/99 – 4/99)*
- Child Safety Seat Checkpoint Volunteer, Christiansburg, VA *(9/98)*
- Child Safety Seat Checkpoint Volunteer, Norfolk, VA *(7/98)*
- Child Safety Seat Checkpoint Volunteer, Virginia Beach, VA *(6/97)*
- Concerned Citizens Advocating Traffic Safety *(CCATS, 1997-1998)*
- Chrysler Museum, *Volunteer (5/94 to 8/94)*
- Aids Walk for Life, *Walker (1993, 1994)*
- American Diabetes Association Walktoberfest, *Walker (1994)*
- The Group for Women Bowling League, *Team Captain (1991-1992)*
- Harborfest Volunteer *(1990)*
- Princess Anne High School Peer Counselor *(1989-1991)*
- Princess Anne High School "Openline" Hotline Volunteer *(1990)*

PROFESSIONAL CONFERENCES AND WORKSHOPS ATTENDED

- Child Passenger Safety Update/Refresher Course—Smithfield, VA *(4/02, 1 day)*
- The New and Changing World of ADHD—Virginia Beach, VA *(11/01, Dr. Julian Haber, 1 day)*
- Society for Public Health Education Annual Convention – Atlanta, Georgia *(10/01, 3 days)*
- Intelligence Testing for the 21st Century: PASS Theory and the Cognitive Assessment System—Virginia Beach, Virginia (*9/01, Jack A. Naglieri, Ph.D., 1.5 days)*
- Testing Diverse Populations with the Nagieri Nonverbal Ability Test—Virginia Beach, Virginia *(9/01, Jack A. Naglieri, Ph.D., ½ day)*
- Prevention, Intervention, and Crisis Response Approaches for Troubled Students and Concerned Schools—Virginia Beach, VA *(8/01, Dr. Howard Knoff, 2 days)*
- Comprehensive Assessment of Achievement Using the Wechsler Individual Achievement Test—2nd Edition—Virginia Beach, Virginia *(8/01, Amy Gabel, Ph.D., 1 day)*
- Nonverbal Assessment of Intelligence: Introduction to the Universal Nonverbal Intelligence Test—

Virginia Beach, Virginia *(8/01, Bruce Bracken, Ph.D., ½ day)*
- Intelligence: Theories, Application, and Psychometric Considerations—Virginia Beach, Virginia *(8/01, Bruce Bracken, Ph.D., 1 day)*
- Cross-Battery Test Interpretation—Virginia Beach, Virginia *(8/01, Bruce Bracken, Ph.D., ½ day)*
- Association for Behavior Analysis Conference – New Orleans, Louisiana *(5/01, 4 days)*
- Virginia Psychological Association Fall Convention – Roanoke, Virginia *(4/01, 2 days)*
- Eastern Psychological Association Conference – Washington, DC *(4/01, 3 days)*
- Virginia Psychological Association Fall Convention – Williamsburg, Virginia *(11/00, 2 days)*
- University of North Carolina Injury Prevention Research Center Evaluation Workshop, State and Territorial Injury Prevention Director's Association (STIPDA) – Chapel Hill, NC *(9/00, 2 days)*
- Association for Behavior Analysis Conference – Washington, D.C. *(5/00, 4 days)*
- Virginia Psychological Association Spring Convention – Tysons Corner, Virginia *(4/00, 3 days)*
- Virginia Psychological Association Fall Convention – Richmond, Virginia *(10/99, 3 days)*
- Association for Behavior Analysis Conference – Chicago, Illinois *(5/99, 4 days)*
- Southeastern Psychological Association Conference – Savanna, Georgia *(3/99, 4 days)*
- NHTSA National Standardized Child Passenger Safety Class – Norfolk, Virginia *(7/98, 4 days)*
- Rage Behind the Wheel on Land and Water: An Intermodal Conference on Aggressive Behaviors – Virginia Beach, VA *(5/98, 2 days)*
- Liberty Venture 2000: Working Conference in Traffic Safety – Williamsburg, VA *(5/98, 2 days)*
- Going for the Gold: Winning Funds through Effective Grant Writing – Richmond, VA *(4/98, 1 day)*
- Federal and State Grant Writing Workshop – Virginia Beach, Virginia *(2/98, 1 day)*
- Military Civilian Transportation Safety Workshop - Fort Eustis, Virginia *(11/97, 1 day)*
- Society for Research in Child Development - Washington, DC *(4/97, 4 days)*
- Injury Prevention Seminar - Virginia Beach, Virginia *(3/97, 1 day)*
- Training for Olfactory Testing in Children (Private) - San Diego State University *(9/96, 2 days)*
- Human Development - Birmingham, Alabama *(3/96, 4 days)*
- Southeastern Psychological Association - Norfolk, Virginia *(3/96, 4 days)*
- National Conference of Undergraduate Research - Schenectady, New York *(4/95, 4 days)*

MEDIA APPEARANCES PERTAINING TO RESEARCH

- "Misuse of child safety seats," New River Valley News, *Feature story, 3 minute local cable news segment airing 2/2/00 in Radford, 2/3/00 in Blacksburg, and 2/4/00 in Roanoke*
- "Traffic-light runners caught red-handed," The Virginian Pilot, *Front-page story, June 8, 1998*
- "Traffic-light runners caught red-handed," The Daily Press, *Front-page story, June 15, 1998*

ACADEMIC SCHOLARSHIPS (NOT PERTAINING TO RESEARCH)

- Eastern Virginia Medical School Summer Student Scholarship *($2,500, Summer 2000)*
- Virginia Beach Sports Club Scholarship *($1,600, 1991)*
- Old Dominion University Alumni Awards Scholarship *($2,500, 1991*)
- Old Dominion University Academic Honors Program Stipend *($1,600 to $1,000 yearly, 1991-1995)*

GRADUATE COURSEWORK

- APA-Accredited Pre-doctoral Clinical Internship
- Behavior Management in Large-Scale Systems
- Ethics in Psychology
- Substance Use and Abuse
- Clinical Externship
- Child Psychopathology
- Introduction to Clinical Psychology: Personality and Intellectual Assessment
- Health Psychology
- Behavioral Assessment and Treatment
- Clinical Epidemiology
- Clinical Practicum
- Clinical Neuropsychology
- Organizational Psychology
- Quantitative Methods I, II, and III
- Research Methods I and II
- SAS - Introduction to Data Handling
- Advanced Developmental Psychology
- Learning and Cognition
- Advanced Social Psychology
- Perception
- Psychopathology
- Advanced Physiological Psychology
- Practicum in Psychology

COMPUTER EXPERTISE

- **Website Creation:** HTML text, FrontPage Express, Netscape Composer
- **Data Analysis:** SAS, MS Access, SPSS
- **Data Management:** MS Excel, MS Access, SAS, SPSS, Filemaker Pro, Lotus
- **Documents:** MS Word, WordPerfect
- **Presentations:** MS PowerPoint, Harvard Graphics
- **Images:** Adobe Photoshop, Kai's Power Goo, Plustek Flatbed Scanner, Paint Shop Pro