



Examining the relative effectiveness of different message framing strategies for child passenger safety: Recommendations for increased comprehension and compliance



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ABSTRACT

Background: Age-appropriate child restraints and rear seating dramatically reduce injury in vehicle crashes. Yet parents and caregivers struggle to comply with child passenger safety (CPS) recommendations, and frequently make mistakes when choosing and installing restraints. The purpose of this research was to evaluate various methods of framing CPS recommendations, and to examine the relative effectiveness on parents' knowledge, attitudes, and behavioral intentions related to best practices and proper use of child restraints. Emphasis framing is a persuasion technique that involves placing focus on specific aspects of the content in order to encourage or discourage certain interpretations of the content.

Method: A 5 (flyer group) X 2 (time) randomized experiment was conducted in which 300 parent participants answered a pre-survey, viewed one of four flyer versions or a no-education control version, and completed a post-survey. Surveys measured CPS knowledge, attitudes, perceptions of efficacy and risk, and behavioral intentions. The four flyers compared in this study all communicated the same CPS recommendations, but several versions were tested which each employed a different emphasis frame: (1) recommendations organized by the natural progression of seat types; (2) recommendations which focused on avoiding premature graduation; (3) recommendations which explained the risk-reduction rationale behind the information given; or (4) recommendations which were organized by age. In a fifth no-education (control) condition, participants viewed marketing materials.

Results: Analyses of covariance and pairwise comparisons indicated the risk-reduction rationale flyer outperformed other flyers for many subscales, and significantly differed from no-education control for the most subscales, including restraint selection, back seat knowledge, rear-facing knowledge and attitudes, total efficacy, overall attitudes, and stated intentions.

Conclusions: This research provides insight for increasing caregiver understanding and compliance with CPS information. Recommendations for the field include communicating the rationale behind the information given, using behavior-based directives in headers, avoiding age-based headers, and incorporating back-seat positioning directives throughout.

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1. Introduction

Car crashes are the leading cause of death for children over age five, as well as a leading cause of death, nonfatal injury, and

substantial medical spending for all age groups (Bergen et al., 2014; Centers for Disease Control and Prevention, 2014; Sauber-Schatz et al., 2014). Age-appropriate restraints and rear seating dramatically reduce injury in a collision (Arbogast et al., 2009; Durbin et al., 2005; National Highway Traffic Safety Administration, 2010; Rice and Anderson, 2009). Despite national campaigns and media attention to the issue, children continue to travel at risk. Advocates still struggle to combat restraint misuse and error, inappropriate restraint, low booster seat use, and part-time belt use (Decina et al., 2005; Decina et al., 2011; Durbin and Committee on Injury Violence and Poison Prevention, 2011; Eichelberger et al., 2014;

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Macy et al., 2014; Macy and Freed, 2012; O'Neil et al., 2013; Pickrell and Choi, 2014; Sauber-Schatz et al., 2014).

The primary reasons for injuries to children restrained at the time of motor vehicle crashes relate to prematurely turning a child forward, premature graduation from harnessed safety seats to booster seats, premature graduation from booster seats to adult safety belts, misuse of safety restraints and seat belts, and children seated in the front seat of the vehicle (Arbogast et al., 2009; Durbin et al., 2005; Henary et al., 2007; Lennon et al., 2008; Rice and Anderson, 2009). Compared to appropriately restrained children, unrestrained children are 3 times more likely to sustain injury in a crash, and children traveling in inappropriate restraints for their size are at 2 times the risk of injury (Durbin et al., 2005). Rear seating offers independent and additive safety protections in a crash (Durbin et al., 2005; Lennon et al., 2008).

A large number of studies over the past decade have involved some type of intervention to increase the correct use of child restraints, including booster seats and seat belts. Most of these efforts included educational materials and messages as part of the interventions (Dellinger et al., 2007; Dukehart et al., 2007; Ebel et al., 2003; King et al., 2007; Snowdon et al., 2008; Weiss-Laxer et al., 2009; Winston et al., 2007; Zaza et al., 2001). However, very few of the studies identified dealt specifically with an evaluation of the messaging content associated with these interventions. For those studies that looked at messaging content, research suggests that messages that increase parents' feelings of vulnerability to risk and provide succinct and concrete educational messages about the injury prevention benefits of car seats will be most likely to increase correct use of child restraints for children (Will, 2005; Will et al., 2009; Winston et al., 2007). Research also indicates it is important to depict negative consequences in parental safety messages in order to effectively communicate danger and evoke attention and concern (Morrongiello et al., 2013). Combating parents' low perceptions of risk for motor vehicle injury is difficult since the risk of being involved in a crash on any given vehicle trip is very small, which in turn reinforces the perception of minimal risk (Will, 2005; Will and Geller, 2004).

1.1. Project objectives

The objective of this project was to determine how to best communicate child passenger safety recommendations to parents/caregivers, and which information to emphasize. Thus, this study investigated various ways of framing child passenger safety recommendations, and examined the relative effectiveness on parents/caregivers' knowledge, attitudes, and behavioral intentions related to best practices and proper use of child restraints. Specifically, should the recommendations be organized by phase of childhood (e.g., by age, or by progression of younger to older)? Should they focus on key issues, such as combating premature graduation? Should they communicate risk-reduction rationale and consequences of noncompliance? Note that the base child passenger safety recommendations are consistent across conditions in this study, but several versions are tested which each employ a different emphasis frame. Emphasis framing is a persuasion technique that involves placing focus on specific aspects of the content in order to encourage or discourage certain interpretations of the content. Considerable research indicates that varying communication frames can affect attitudes and behaviors, even among two otherwise equivalent statements (Chaiken, 1987; Chong and Druckman, 2007; Kahneman et al., 1982).

It was hypothesized that the varying emphasis frames would have a differential effect on knowledge, attitudes, and behavioral intentions, despite the base CPS recommendations being consistent across conditions. Further, it was hypothesized that all experimental frames would be more effective than the materials

viewed in the control condition, and the frame that explained the risk-reduction rationale behind the recommendations would be most effective at improving knowledge, attitudes, and behavioral intentions.

2. Method

2.1. Study design

A 5 (test conditions) X 2 (time periods) experiment was conducted using a randomized controlled trial design to examine relative effectiveness of parent and caregiver preferences for different methods of framing car seat safety recommendations. Participants were electronically randomized to 1 of 5 test condition groups (4 experimental conditions and 1 control group) and responded to pre- and post-survey questions (2 times).

2.2. Sampling plan

The study took place in the suburbs of Philadelphia, PA (Delaware Valley area) and in the city of Norfolk, VA (Hampton Roads area). These two cities, each in the center of a large metropolitan statistical area (MSA) in Northeastern and Southeastern regions of the US, were selected to increase recruitment from socio-demographically diverse populations and to increase generalizability of the study findings. The Delaware Valley MSA includes 16 counties in four States with a population of over 6.1 million people. The Hampton Roads MSA includes nine independent cities and seven counties in two States (VA–NC), with a population of over 1.7 million. These culturally diverse areas included urban, suburban, and rural concentrations of candidate parents and caregivers. Each site recruited and tested 150 participants each (300 total sample).

2.3. Recruitment and incentives

Each site used various methods to advertise the study to parents or caregivers of children aged birth to 12 years. This age range was chosen because the flyers under study provided occupant protection recommendations for children under age 13. For the Philadelphia site, the team worked with the Safe Kids Chapter of Southeast Pennsylvania to deliver a recruitment flyer to various parent clubs, online parent newspapers, and child care facility organizations. For the Norfolk site, the team used very similar methods, working with child-focused organizations to deliver the recruitment flyer to various groups of parents and child care facilities through their contact networks. Facebook sites were also used to promote the study at both sites. Scheduling of participants was handled through email communications and telephone correspondence. Screening questions ensured participants: (a) were at least 18 years old; (b) were the parent or legal guardian of a child under the age of 13 years; (c) were comfortable reading english-language text displayed on a computer screen; and (d) had transportation to their local study site. Each site had various days and times set up for parents/caregivers to participate in the study in a local computer lab setting. Participants were compensated with a \$50 Wal-Mart gift card for their participation in the study.

2.4. Procedures for participation

Enrolled participants were asked to arrive at a designated computer lab center at their appointment time to participate in the study. A secure web-based study protocol was used for participants who viewed a series of user-friendly screens that automatically led them through an informed consent document (covering logistics of study, duration, rights as a participant, and remuneration for

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