Review of Risk Communication Strategies and Existing Occupant Protection Safety Messages: Supplemental Technical Report

DISCLAIMER

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. If trade or manufacturers' names or products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Technical Report Documentation Page

1. Report No. DOT HS 813 500	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Review of Risk Communication Strategies and Existing Occupant Protection Safety Messages: Supplemental Technical Report		5. Report Date September 2023
		6. Performing Organization Code
7. Authors Jennifer S. Zakrajsek, David W. Eby, Lisa J. Molnar, Renée M. St Louis, Nicole Zanier, Sergiu C. Stanciu, & Emma Elliott		8. Performing Organization Report No.
9. Performing Organization Name and Address The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, Michigan 48109		10. Work Unit No. (TRAIS)
		11. Contract or Grant No. DTNH2216-P-00102
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Avenue SE Washington, DC 20590		13. Type of Report and Period Covered Supplemental Technical Report
		14. Sponsoring Agency Code V221

16. Abstract

To improve traffic safety communication campaigns, two related projects were conducted under separate sponsorship. The primary project (sponsored by the Volpe National Transportation Systems Center) was designed to identify promising behavior change theories that can help increase the effectiveness of traffic safety campaigns and provide guidance on how to implement them in communication campaigns. A secondary project (sponsored by NHTSA) took place in conjunction with the primary project and extended the primary project's activities to include the topic of occupant protection (OP) use. OP includes both seat belts and child safety restraints. This report documents the supplemental activities and results. Twenty-nine behavior change theories and 14 OP campaigns were considered. An expert panel reviewed each selected OP campaign and assessed the observed applicability of each theory and its associated constructs in that campaign. The panelists determined that, on average, 2.4 theories were observed in each campaign. "*Think! Seat Belts*" and "*Wear This, Not This/Is Today Your Day?*" both had the most theories observed at 7. The tasks and results included in this supplemental technical report were designed to provide OP specific information that States and other jurisdictions can use to improve existing campaigns and develop more effective campaigns to address behaviors that compromise driving safety. These results suggest that there is an opportunity to improve the effectiveness of OP campaigns by using behavior change theory in the development and implementation of OP campaigns. This project was conducted under the National Cooperative Research and Evaluation Program, a cooperative program between NHTSA and the Governors Highway Safety Association (GHSA). Each year, the States (through the GHSA) identify highway safety research or evaluation topics they believe are important for informing State policy, planning, and programmatic activities.

17. Key Words behavior change theory, media campaign, communication theory, occupant protection, seat belts		18. Distribution Statement This document is available to the public from the DOT, BTS, National Library, Repository & Open Science Access Portal, rosap.ntl.bts.gov	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 43	22. Price

Form DOT F 1700.7 (8-72)   Reproduction of completed page authorized

Table of Contents

List of Tables

Executive Summary

Communication campaigns are commonly used to promote safe driving practices and knowledge of traffic laws (Robertson & Pashley, 2015). To improve traffic safety communication campaigns, two related projects were conducted under separate sponsorship. The primary project was designed to identify promising behavior change theories that can help increase the effectiveness of traffic safety campaigns and provide guidance on how to implement them in communication campaigns. The primary project included a literature review to identify theories likely to affect distracted-driving behavior (DB) and alcohol-impaired driving (ID), the identification of a sample of DB and ID campaigns for review by an expert panel, the convening of an expert panel to assess the applicability of theory in current campaigns to prevent DB and ID, and completion of interviews with representatives of States with DB or ID campaigns or both to gather more information on campaign implementation. These activities and results are documented in a separate technical report (Zakrajsek et al., 2023). A secondary project took place in conjunction with the primary project and extended the primary project's activities to include occupant protection (OP) use. OP includes both seat belts and child safety restraints. Documented here are the supplemental activities and results of the secondary project. Because many of the tasks for the secondary project were the same as the primary project (just with an extended emphasis to include OP), the reader is referred to the Zakrajsek report, the primary project's technical report, for a thorough discussion of methods.

In the primary project, a detailed literature review was conducted to identify non-enforcement-based health and safety communication strategies and behavior change theories that were promising to support campaigns to prevent DB and ID. As the strategies and theories broadly applied to health and safety, this foundational information was relevant to campaigns to promote OP use. Based on information found in the review and discussion with an outside expert, the research team selected the following 29 theories for consideration in the project.

- Associative-propositional evaluation model
- Automaticity theory
- Deterrence theory
- Elaboration likelihood model
- Emotion information management
- Extended parallel process model
- Fuzzy-trace theory
- Health action process approach
- Health belief model
- Implementation intentions
- Information-motivation-behavioral skills model
- Precaution adoption process model
- Precede-proceed model
- Prospect theory
- Protection motivation theory
- Prototype willingness model
- Regulatory fit theory
- Reinforcement sensitivity theory/revised reinforcement sensitivity theory
- Self-determination theory

- Social cognitive theory
- Social judgment theory
- Social learning theory
- Social norms theory
- Theory of bystander intervention
- Theory of interpersonal behavior
- Theory of planned behavior
- Theory of reasoned action
- Theory of self-regulation
- Transtheoretical model/stages of change

The investigators conducted an extensive search for OP campaigns accessible via the internet and implemented by States, local jurisdictions, or non-government entities. After extensive analysis and review, 14 OP campaigns were included in the project.

- *2 Seconds 2 Click* (Network of Employers for Traffic Safety [NETS])
- *Beware of the Beltless* (Colorado Department of Transportation)
- *Buckle Up* (NHTSA), Missouri Department of Transportation, South Carolina Department of Public Safety)
- *Click It or Ticket* (NHTSA, Missouri Department of Transportation, Texas Department of Transportation)
- *Clip Every Trip* (New South Wales Center for Road Safety, Australia)
- *If You Love It, Click It* (Texas Department of Transportation)
- *I'm/They're Counting on You* (New South Wales Center for Road Safety, Australia)
- *Never Give Up Until They Buckle Up* (NHTSA)
- *Seat Belts Are No Accident* (Nebraska Department of Health and Human Services)
- *Secure His/Her Future – Know For Sure* (NHTSA)
- *TAC Buckle Up* (Transport Accident Commission – Victoria, Australia)
- *Think! Seat Belt Use* (United Kingdom Department of Transport)
- *Wear This, Not This/Is Today Your Day?* (Virginia Association of Chiefs of Police)

Each of the campaigns was evaluated at one point in time. Campaigns and websites can change. Campaign information currently available may not reflect the campaign materials reviewed. An expert panel was selected to assess the applicability of each behavior change theory in each OP campaign. The three-person panel included an expert in media, communications, and psychological theory, an expert in health behavior and health education with extensive experience in traffic safety, and an expert in campaign design/implementation and traffic safety.

The panelists determined that, on average, 2.4 theories were observed in each campaign. Of the 29 theories of interest, 17 theories were not observed in any of the campaigns, but 8 of these 17 theories had at least one construct observed in at least 1 campaign. *Think! Seat Belts* and *Wear This, Not This/Is Today Your Day?* both had the most theories observed at 7. In 4 campaigns no theories were observed (*Buckle Up, Buckle Up In Your Truck, TAC Buckle Up, and Seat Belts Are No Accident*).

The extended parallel process model and the information-motivation-behavioral skills model were observed in the most OP campaigns (n=5). The other theories determined to be applicable were implementation intentions (n=4), health action process approach (n=3), health belief model

(n=3), social learning theory (n=3), and the theory of reasoned action (n=3). Several of the more frequently observed theories have constructs in common with one another and the terms used to describe the constructs may differ among theories, but the underlying meaning is often similar. For example, many theories include constructs related to components of risk but use differing language to define the construct (e.g., threat appraisal, risk perception, outcome severity).

The tasks and results included in this supplemental technical report were designed to extend the scope to include OP campaigns that States and other jurisdictions can use to improve existing campaigns and develop more effective campaigns to address behaviors that compromise driving safety. The supplemental work found that behavior change theory was generally observed in OP campaigns (2.4 theories per campaign), but that a lower percentage of theories were observed in OP campaigns than for ID and DB campaigns. These results suggest that there is an opportunity to improve the effectiveness of OP campaigns by using behavior change theory in the development and implementation of OP campaigns.

Introduction

In 2021, there were an estimated 6,102,936 police-reported crashes, resulting in 39,508 fatalities and an estimated 2,497,657 people injured (National Center for Statistics and Analysis, 2023c). Collectively, ID, DB, and lack of OP use are significant factors in motor-vehicle fatalities. In 2021 some 13,384 fatalities resulted from ID (NCSA, 2023d) and there were 3,522 people killed in motor vehicle crashes involving distracted drivers, accounting for 8% of all fatal crashes (NCSA, 2023a). Use of seat belts is low among fatally injured motor vehicle occupants with only 50% of occupants restrained in 2020 (NCSA, 2023b).

Communication campaigns are commonly used to promote safe driving practices and knowledge of traffic laws (Robertson & Pashley, 2015). To improve traffic safety communication campaigns, two related projects were conducted under separate sponsorship. The primary project was designed to identify promising behavior change theories that can help increase the effectiveness of traffic safety campaigns and provide guidance on how to implement them in communication campaigns. The primary project included a literature review to identify theories likely to impact DB and ID, the identification of a sample of DB and ID campaigns for review by an expert panel, the convening of an expert panel to assess the applicability of theory in current campaigns to prevent DB and ID, and completion of interviews with representatives of States with DB or ID campaigns or both to gather more information on campaign implementation. These activities and results are documented in a technical report by Zakrajsek et al. (2023). A secondary project took place in conjunction with the primary project and extended the primary project's activities to include the topic of OP use. OP includes both seat belts and child safety restraints. Here the supplemental activities and results of the secondary project on OP are documented. Because many of the tasks for the secondary project were the same as the primary project (just with an extended topic emphasis to include OP), the reader is referred to Zakrajsek et al., the primary project's technical report, for a thorough discussion of methods and results.

Literature Review

In the primary project, a detailed literature review was conducted to identify non-enforcement-based health and safety communication strategies and behavior change theories that were promising to support campaigns to prevent DB and ID. This information was also relevant for campaigns to promote OP use. A complete description of the literature review and results are in Zakrajsek et al. (2023).

Selection of Theories to Be Considered in the Project

Based on information found in the literature review and discussion with an outside expert, the research team selected the following 29 theories for consideration in the project.

- Associative-propositional evaluation model
- Automaticity theory
- Deterrence theory
- Elaboration likelihood model
- Emotion information management
- Extended parallel process model
- Fuzzy-trace theory
- Health action process approach
- Health belief model
- Implementation intentions
- Information-motivation-behavioral skills model
- Precaution adoption process model
- PRECEDE-PROCEED model
- Prospect theory
- Protection motivation theory
- Prototype willingness model
- Regulatory fit theory
- Reinforcement sensitivity theory/Revised reinforcement sensitivity theory
- Self-determination theory
- Social cognitive theory
- Social judgment theory
- Social learning theory
- Social norms theory
- Theory of bystander intervention
- Theory of interpersonal behavior
- Theory of planned behavior
- Theory of reasoned action
- Theory of self-regulation
- Transtheoretical model/stages of change

Brief summaries of these theories are in Zakrajsek et al. (2023).

Selection of OP Campaigns

The investigators conducted an extensive search for OP campaigns accessible via the internet and implemented by either States, local jurisdictions, or non-government entities. The campaigns included both original campaigns and those adapted from a campaign initially developed by another organization. The investigators first identified websites of organizations known to implement, promote, and develop OP campaigns: State Highway Safety Offices, National Safety Council, AAA Foundation for Traffic Safety, Federal Communications Commission Clearinghouse, the NHTSA's Traffic Safety Marketing website, NHTSA, Governors Highway Safety Association, Mothers Against Drunk Driving, the Centers for Disease Control and Prevention, and the Insurance Institute for Highway Safety. Second, Google was used to allow for the broad discovery of innovative campaigns targeting OP use behaviors. The investigators used Google to conduct searches using terms that fell within three categories: (1) driving (e.g., drive, car, motor vehicle, transport, traffic), (2) OP (seat belts, safety belts, child safety seat, child restraint device, car seat, booster seat, and infant seat), and (3) campaigns (e.g., program, advertisements).

The search identified 104 potential OP campaigns. Each campaign website was analyzed by the research team and a final list was selected based on the following criteria:

- the website must be active (i.e., not cached),
- the campaign must include a message and tagline,
- it must be possible to identify the geographic region for the campaign ("the entire USA" was allowable),
- it must be possible to identify the target audience ("all vehicle occupants" was allowable),
- text and audio must be available in English (but could also use other languages in addition to English), and
- the campaign must have some outreach component (e.g., radio, video, billboard) as opposed to only presenting information on a website.

Each of the campaigns was evaluated at one point in time. Campaigns and websites can change. Campaign information currently available may not reflect the campaign materials reviewed. Fourteen OP campaigns were included in the project. Descriptions of these campaigns are presented below. Note that the project's description of each campaign was limited to the information contained on each campaign's website during the study.

Name: *2 Seconds 2 Click*
Organization: *NETS*
Description: This was a workplace campaign intended to include elected officials, law enforcement, large employers, and media in a community-wide effort. A key campaign tagline was "*2 Seconds 2 Click. Seat belts should never have time off.*" Messaging on the website was centered around the idea that wearing a seat belt is the single most effective thing someone can do to prevent injury in a crash, it only takes 2 seconds, and that is a good return on investment. Campaign material conveyed the severity of unbelted crashes, the benefits of wearing seat belts, and provided several cues to action. The material available on the NETS website included posters and a 6-week campaign toolkit (surveys, "commit to click" pledge cards, sample company policy regarding seat belt use, and activities).

Name: *Beware of the Beltless*
Organization: *Colorado DOT*
Description: The tagline of this campaign, *Beware of the Beltless*, functioned on two levels: (1) to encourage the audience to wear their own seat belt to avoid becoming a projectile and harming fellow passengers in the event of a crash and (2) to encourage the audience to ask others to wear seat belts to protect them (and fellow passengers) from unbelted passengers in the event of a crash. This was conveyed via text on the website and video images of unbelted vehicle occupants during simulated crashes. Material on the campaign website included information and statistics about what happens to unbuckled vehicle occupants (in various seating positions) during crashes and the related outcome, video public service announcements (PSAs), posters, digital graphics, banners, signs/flyers, a social media toolkit, a "Share Your Story" tool, and a list of the campaign's community partners.

Name: *Buckle Up*
Organizations: *NHTSA, Missouri DOT, South Carolina Department of Public Safety*
Description: Like *Click It or Ticket,* this campaign is supported at the national level and is implemented each year in most States, many of whom tailor the messages to their particular needs. NHTSA considers the campaign to be a social norming counterpart to high-visibility enforcement (HVE) and advises States to use it when not engaged in HVE (such as *Click It or Ticket*). The underlying message is to wear a seat belt, every trip, every time. Campaign material is available nationally on NHTSA's Traffic Safety Marketing website, but many States also develop material individualized by State.

Material on the NHTSA website included web videos, posters, radio ads, static website banner advertisements, cinemagraphs, logos, print advertisements, palm cards, decals, and social media infographics. The messaging included general campaign messaging and messaging tailored to Hispanic motor vehicle occupants (versions of the material in Spanish), African American motor vehicle occupants (sample eBlasts for adults and children, sample news release for Black History month, infographics, PowerPoint presentation about African American traffic safety), and the Thanksgiving Weekend (posters and earned media samples).

Material on the Missouri website included information about the State's enforcement campaign (including the dates); statistics about seat belt usage, crash rates, and related injury/fatality rates in Missouri and nationally (via website text and graphics, reports, unbelted crash maps, infographics, and myths versus facts); video PSAs (including testimonials); radio advertisements; posters; and a seat belt emoji caption contest for teens. The Missouri program was targeted toward teens and included the taglines *Give Yourself a Chance* and *Buckle up. It's no joke* in addition to the NHTSA *Buckle Up! Everyone. Every trip. Every time.* tagline. Most material featured only one of the taglines at a time.

The South Carolina program differed from the others in that it conveyed more of an HVE message: *Buckle Up South Carolina. It's the Law and it's Enforced.* Material on the South Carolina website included a description of the State's seat belt and child passenger safety laws (highlighting that South Carolina has a primary enforcement law), video PSAs, and links to seat belt and child passenger safety resources in South Carolina and nationally. Some of the videos were targeted at parents with a *Do it for your family* message and show fathers and sons.

Name: *Buckle Up In Your Truck*
Organization: *Louisiana Highway Safety Commission*
Description: This was a high-visibility enforcement campaign targeted at pick-up truck drivers and passengers with the tagline "Live to truck another day" and the theme *Buckle Up In Your Truck or You Will Get a Ticket*. Material on the campaign website included the campaign dates, information and statistics (Louisiana: seat belt and restraint laws, distribution of vehicle type by county, seat belt use estimates by vehicle type and county, rear passenger seat belt use, child restraint use, and motorcycle helmet use), video PSA, and radio advertisements.

Name: *Click It or Ticket*
Organizations: *NHTSA, Missouri DOT, Texas DOT*
Description: This long-standing campaign is supported at the national level and is implemented each year in most States, many of whom tailor the messages to their particular needs. The campaign is intended to increase seat belt use by conveying the consequences of not using a seat belt, coupled with a high visibility enforcement effort in the State. Campaign material is available nationally on the NHTSA website, but many States also develop individualized material.

Material on the NHTSA website included sample news releases and opinion editorials, fact sheets, logos, media plan, posters, print advertisements, radio advertisements, television advertisements, web videos, animated and static website banner advertisements and infographics, high visibility enforcement training videos, sample media plans, and sample social media messaging. Messaging included general campaign messaging, peak enforcement/mobilization messaging, and messaging tailored to Thanksgiving Weekend.

Material on the Missouri website included information about the State's enforcement campaign (including the dates); statistics about seat belt usage, crash rates, and related injury/fatality rates in Missouri and nationally (via website text, reports, unbelted crash maps, infographics, and myths versus facts); video PSAs; radio advertisements; and a social promotion/contest.

Material on the Texas website included information about the State's enforcement campaign (including dates); a description of the State's seat belt laws; statistics about seat belt usage, crash rates, and related injury/fatality rates in Texas and nationally (via website text); video PSAs; a press release, fact sheet, poster, banner, and billboard; logos; and radio advertisements.

Name: *Clip Every Trip*
Organization: *New South Wales Center for Road Safety – Australia*
Description: This campaign was intended to promote seatbelt use among male, rural drivers in New South Wales, Australia, and primarily used regional television supported by radio, roadside billboards, and print/online advertising. The campaign took a "just do it" approach with little other persuasive messaging to convey that seat belts should be used on every trip. The campaign video included the information that the chances of surviving a crash are doubled when belted and actors modeling proper seat belt use. Material available on the campaign website included information and statistics about seat belt use, crashes, and injuries/fatalities (with a focus on men in rural New South Wales); print and online advertisements; and a radio ad, video PSA, and billboard.

Name: *If You Love It, Click It*
Organization: *Texas DOT*
Description: One component of this campaign was a public awareness campaign aimed at increasing teen seat belt use and the other component was targeted at parents to encourage correct installation and use of car seats and booster seats. Material was distributed via high schools and mass media with a message that encouraged teens to use a seat belt every time they got into a vehicle. The messaging prominently featured the *If You Love It, Click It* tagline along with additional encouragement such as *Every Rider. Every Ride* and *You protect the things you love most. Shouldn't that include you, too?* Material on the website included facts about fatal crash rates and seat belt use for teens, the safety benefits of wearing seat belts, and current seat belt laws; a "Survivor Story" describing how two teens survived a crash because they wore seat belts (with graphic crash photos); three posters (prom, trophy, and guitar); a yard sign with the message *You protect the things you love most. Shouldn't that include you too*?; facts about crashes and seat belt use; a school banner displaying the tagline and the question *Who do you pledge to keep safe this year? Write the name of a person you pledge to keep safe. That should include you, too.*; two audio clips for radio advertisements/school announcements; and four video clips for television advertisements/school websites (two showing a teen telling how she survived a crash because she wore a seat belt, one showing adults and teens fastening the seat belts of people/things important to them, and one showing images of teens fastening seat belts interspersed with images of cute animals).

The other component was targeted at parents to encourage correct installation and use of car seats and booster seats. The tagline was the primary messaging theme. Material on the website included facts about motor vehicle crash fatality rates for children, the number of child safety seats used incorrectly, the safety benefits of correctly using child safety seats, resources in Texas for free safety seat checks and online for comprehensive safety seat information; a video for television advertisements showing parents correctly securing children in safety seats; an audio clip for radio advertisements; the *Bernard in the Backseat* story book featuring the tagline and showing a boy and his teddy bear being buckled into safety seats (and listing the locations and phone numbers of offices providing free safety seat checks); static website banners; an outdoor billboard; a poster; and brochures featuring safety seat options, proper installation and use, and common mistakes.

Name: *I'm/They're Counting on You*
Organization: *New South Wales Center for Road Safety – Australia*
Description: This campaign promoted seat belt use and child car seat safety to parents and caregivers of young children in New South Wales, Australia. The messaging stressed that children were counting on parents to: (1) have the correct car seat, (2) fit and adjust the car seat correctly, and (3) check the car seat properly. Material on the campaign website included a video PSA with a song by the Wiggles that promoted the *They're counting on you* message, a transcript for the video PSA, information/statistics about crash and injury risk for children properly restrained versus not, posters, and the message delivery plan (digital display, outdoor advertising, shopping center advertising, and radio advertising).

Name: *Never Give Up Until They Buckle Up*
Organizations: *NHTSA*
Description: This campaign was targeted at parents, urging them to insist that post-booster seat children wear seat belts. The messaging prominently featured the *Never Give Up Until They*

Buckle Up tagline with additional encouragement such as *Even in the face of a backseat brawl, Even when it's just around the corner, When they're tuning you out*, and the idea that parents must compromise on many things but insisting their children wear seat belts is not negotiable. Material on the NHTSA website included animated and static website banner advertisements, print advertisements, outdoor billboards, outdoor bus shelter advertisements, audio clips for radio advertisements, social media images, and videos for television advertisements. The Ad Council website had an overview of the campaign and the videos, audio clips, and print advertisements.

Name: *Seat Belts Are No Accident*
Organization: *Nebraska Department of Health and Human Services*
Description: The goal of this campaign was to increase seat belt use by reminding motorists of the important people or things they wear seat belts for, and that wearing seat belts prevents injury and death in motor vehicle crashes. Material on the campaign website included fact sheets (seat belt use, crash, and injury data in Nebraska), posters, video PSAs, radio advertisements, print advertisements, web banners, reports, and links to outside resources (NHTSA, CDC, State Farm, Children's Hospital of Philadelphia).

Name: *Secure His/Her Future – Know For Sure*
Organization: *NHTSA*
Description: This campaign was targeted at parents of children in car seats/booster seats, urging them to check that their children are in the correct seat and that the seat is correctly installed/used. The messaging prominently featured the *Secure His/Her Future* tagline with additional encouragement such as *Always seat her/him in the correct seat, Knowledge saves lives,* and that during a crash is *Not the time to check your child's car seat.* The messaging targeted parental values and viewer's roles and self-concepts as parents. Some fear messaging was included and presented the risks to improperly restrained children and the campaign was a clear call to action to parents. Material on the NHTSA website included animated and static website banner advertisements; brochures including information about seat selection; campaign outreach tips; car/booster seat installation checklists; flyers and posters featuring the tagline, messages contrasting the portion of parents that think they're using seats correctly versus those that are using them correctly, and promoting participation in car seat checks; car seat icons in various electronic formats; outdoor billboard and bus shelter advertisements showing seat options and directions to a website for more information; postcards promoting car seat checks; audio clips for radio advertisements, social media images; videos for television advertisements and demonstrating car seat installations.

Name: *TAC Buckle Up*
Organization: *Transport Accident Commission – Victoria, Australia*
Description: This campaign included a series of animated commercials aimed at children. The commercials featured a character called Thingle Toodle who delivers road safety messages to preschool-aged children and their parents using jingles and demonstrations of the recommended behavior. The campaign website included the video *Thingle Toodle Gets Buckled Up*.

Name: *Think! Seat Belt Use*
Organization: *U.K. Department of Transport*
Description: The overall campaign message was that if you crash without wearing a seat belt the risk of severe consequences is high and using a seat belt will reduce that risk. The website included facts about the fatality rates of unbelted vehicle occupants, the belt use and crash rates of drivers/passengers 17 to 34, lower seat belt rates on short trips, and U.K. seat belt laws.

Advice was presented to wear seat belts every trip (even short, familiar trips at low speeds) and to wear seat belts correctly. An unbelted crash simulation game was provided using Adobe Flash Player. Five videos were presented: four showed people in a range of situations and demographic characteristics sustaining fatal injuries in unbelted crashes, one showed a man jumping off a building and equated being beltless to committing suicide, and proper seat belt usage (timing and placement) was portrayed in one of the videos. Two audio clips with comparable messaging and the videos *Think! Always wear a seatbelt* and *Heartbreak* were also provided.

Name: *Wear This, Not This/Is Today Your Day?*
Organization: *Virginia Association of Chiefs of Police*
Description: This campaign was aimed at getting law enforcement officers to wear seat belts. The website provided facts contrasting the low belt use rates of officers with the higher and consistently rising rates of the general population, as well as information about the portion of on-duty injuries and fatalities attributed to officers not wearing seat belts. The website provided a poster showing an officer properly fastening a seat belt ("Wear this…") and an officer's badge/shield with a black ribbon across the front ("Not this…"). The campaign also included a roll-call training video titled *Is Today Your Day*? containing emotional appeals from two important figures in officers' lives, professional partners, and family, discussing the consequences of officers' failures to wear seat belts (strong messaging of regret, guilt, etc.). The video addresses barriers (e.g., ease and speed of unbuckling).

Expert Panel

An expert panel was selected to assess the applicability of each behavior change theory in each OP campaign. The three-person panel included an expert in media, communications, and psychological theory, an expert in health behavior and health education with extensive experience in traffic safety, and an expert in campaign design/implementation and traffic safety.

The expert panel reviewed each OP campaign selected for the study and assessed the observed applicability of each theory (and its associated constructs) in that campaign. The expert panel assessed the campaigns at two levels: (1) theory and (2) construct. Panelists were first asked to determine if a theory was observed in a campaign and then which, if any, of the theory's constructs were used. Most of the campaign websites did not include information about how the campaign was developed or its theoretical underpinnings. Therefore, it was not feasible to ask the expert panel to determine which theories or constructs a campaign was intentionally based upon. Instead, panelists considered a theory or construct observed if it was evident in the campaign, regardless of whether or not they thought it was purposeful or intentional. Panelists also did not necessarily know how the campaigns were implemented and therefore assumed that the target audience was exposed to all material.

Panelists were allowed to complete the campaigns in any order, to save their work and return later, and to revisit completed campaigns to review and edit their responses. Upon completion of their individual assessments, panelists met to discuss their decisions and attempted to reach consensus regarding categorization of theories and constructs as observed or not observed. A study team member experienced in qualitative data collection methods facilitated the meeting. Panelists attempted to avoid evaluating the effectiveness of messages but focused instead on identifying the messages that the campaign communicated from their actual content. Further details on how the expert panel meeting was conducted are in Zakrajsek et al. (2023).

Expert Panel Classification of Campaigns by Theory

The panelists determined that, on average, 2.4 theories were observed in each campaign. Of the 29 theories of interest, 17 theories were not observed in any of the campaigns, but 8 of these 17 theories had at least 1 construct observed in at least 1 campaign. *Think! Seat Belts* and *Wear This, Not This/Is Today Your Day*? both had the most theories observed at 7. In 4 campaigns no theories were observed (*Buckle Up, Buckle Up In Your Truck, TAC Buckle Up*, and *Seat Belts Are No Accident*).

Table 1 shows counts of the OP campaigns to which each theory and construct were observed. The extended parallel process model and the information-motivation-behavioral skills model were observed in the most OP campaigns (n=5). The other theories determined to be observed were implementation intentions (n=4), health action process approach (n=3), health belief model (n=3), social learning theory (n=3), and the theory of reasoned action (n=3). Several of the more frequently observed theories have constructs in common with one another and the terms used to describe the constructs may differ among theories, but the underlying meaning is often similar. For example, many theories include constructs related to components of risk but use differing language to define the construct (e.g., threat appraisal, risk perception, outcome severity).

Table 1. Number of OP campaigns for which theories and constructs were observed (in alphabetical order by theory)

Theories Constructs	OP Campaigns (n=14)
Associative-Propositional Evaluation Model	**0**
Explicit attitudes	0
Implicit attitudes	1
Propositional validation	0
Association activation	0
Automaticity Theory	**0**
Priming	0
Goals	0
Deterrence Theory	**2**
Severity	7
Certainty	2
Celerity	2
Elaboration Likelihood Model	**0**
Peripheral route	0
Central route	0
Emotion Information Management	**0**
Valence	0
Recognition of emotions	0
Regulation of emotions	0
Empathy	3

Theories	OP Campaigns (n=14)
Constructs	
Attitude toward advertisement	0
Behavioral intentions	0
Extended Parallel Process Model	**5**
Self-efficacy	1
Response efficacy	9
Susceptibility	4
Severity	9
Fuzzy-Trace Theory	**0**
Verbatim representation	0
Gist representation	0
Health Action Process Approach	**3**
Risk perception	5
Outcome expectancies	6
Self-efficacy	5
Action planning	4
Coping planning	2
Action	5
Health Belief Model	**3**
Perceived severity	5
Perceived susceptibility	3
Perceived benefits	5
Perceived barriers	2
Modifying variables	1
Cues to action	6
Self-efficacy	2
Implementation Intentions	**4**
Intention	4
Plan of action	6
When	8
Where	7
How	6
Planning obstacles	1
Information-Motivation-Behavioral Skills Model	**5**
Information	13
Motivation	7
Behavioral skills	5
Precaution Adoption Process Model	**0**
Unaware of issue	0
Unengaged by issue	0

Theories	OP Campaigns (n=14)
Constructs	
Deciding about acting	0
Decided not to act	0
Decided to act	0
Acting	0
Maintenance	0
PRECEDE-PROCEED Model	**0**
Predisposing factors	1
Reinforcing factors	0
Enabling factors	0
Behavior	0
Genetics	0
Environment	0
Health	0
Quality of life	0
Prospect Theory	**1**
Risk manipulation	1
Editing	1
Evaluation	1
Response mode	0
Protection Motivation Theory	**2**
Threat appraisal	6
Perceived severity	6
Coping appraisal	4
Response efficacy	8
Self-efficacy	4
Prototype Willingness Model	**0**
Attitudes	5
Subjective norms	3
Behavioral intentions	1
Heuristic processing	0
Risk prototypes	2
Behavioral willingness	0
Regulatory Fit Theory	**0**
Regulatory focus	0
Fit route	0
Fit induction	0
Contextual factors	0
Evaluation	0
Behavioral intention	0

Theories	OP Campaigns (n=14)
Constructs	
Reinforcement Sensitivity Theory/Revised Reinforcement Sensitivity Theory	**0**
Behavioral activation	0
Behavioral inhibition system	0
Flight-fight system	0
Extraversion	0
Self-Determination Theory	**0**
Mastery	0
Autonomy	1
Relatedness	2
Social Cognitive Theory	**0**
Personal factors	12
Environmental influences	1
Behavioral determinants	0
Social Judgment Theory	**0**
Acceptance	0
Non-commitment	0
Rejection	0
Social Learning Theory	**3**
Attention	10
Retention	3
Reproduction	4
Motivation	6
Social Norms Theory	**0**
Misperception of norm	0
Exposure to norm	1
Theory of Bystander Intervention	**0**
Noticing	0
Interpreting	0
Responsibility	0
Efficacy	0
Intervening	0
Theory of Interpersonal Behavior	**2**
Social factors	6
Perceived consequences	6
Intentions	2
Affect	3
Habits	3

Theories	OP Campaigns (n=14)
Constructs	
Theory of Planned Behavior	**1**
Attitudes toward behavior	10
Social norms	7
Self-efficacy	4
Technology inclination	0
Anticipated guilt	5
Empathic concern	2
Self-esteem	0
Theory of Reasoned Action	**3**
Attitudes	9
Subjective norms	6
Outcome expectancies	8
Outcome valuations	3
Theory of Self-Regulation	**0**
Reference value	1
Comparator	1
Input function	0
Output function	0
Impact on environment	0
Disturbance	0
Transtheoretical Model/Stages of Change	**0**
Pre-contemplation	0
Contemplation	0
Preparation	0
Action	0
Maintenance	0
Termination	0

Observed Applicability of Theories in OP Campaigns

This section provides a description of each theory, in alphabetical order, and the constructs that comprise it, followed by a summary of which OP campaigns the expert panel determined displayed the theories/constructs. The theory/construct descriptions utilize text drawn directly from the technical report for the primary project (Zakrajsek et al., 2023). The authors used the combined results of this study and the primary study to create a resource that States and other jurisdictions can utilize to improve existing campaigns and develop more effective campaigns to enhance driving safety. The resource includes examples of theory/construct applicability from the DB, ID, and OP campaigns examined by the expert panel in both studies.

Associative-Propositional Evaluation Model

According to Zakrajsek et al. (2023), the associative-propositional evaluation model:

> is related to attitudes, and states that attitude change is caused by how people judge certain behaviors and that these judgments are based on two kinds of attitudes: implicit and explicit (Gawronski & Bodenhausen, 2006). Implicit attitudes can be directly changed in two ways: by conditioning people to react to something in a new way or by changing the context of the information so that a person can react to it in a different way. Explicit attitudes can be directly changed in three ways: by changing the relevant information regarding the behavior, by changing the automatic reactions and associations (association activation) that a person has toward a behavior, and by changing the judgments that a person has about a behavior to make him or her more logically consistent (propositional validation). (p. 20)

The associative-propositional evaluation model was not directly observed in any OP campaigns considered in this study. However, the concept of implicit attitudes was observed in one campaign (*If You Love, Click It*). The campaign, which is intended to promote correct use of child safety seats, implicitly associated children (and other loved things) with safety in the car.

Automaticity Theory

According to Zakrajsek et al. (2023):

> Automaticity is the ability to automatically perform a behavior or skill without needing to think about it. As described by Bargh and Chartrand (1999), AT is based on the premise that people can be consciously or unconsciously influenced, or primed, by people, places, and things around them to behave or think in certain ways. One can use priming to recall a person's stereotypes concerning other types of people, which can then influence the way that he or she interacts with people who evoke stereotypes and how he or she feels about those interactions. Situational context can also prime people to focus on a particular goal, which can lead to forming habits that unconsciously guide behavior in certain situations. (p. 20)

None of the OP campaigns considered in this study displayed automaticity theory nor any of its constructs.

Deterrence Theory

As stated by Zakrajsek et al. (2023):

> Deterrence theory (Beyleveld, 1979a, 1979b) … focuses on three characteristics of consequences of infractions and on the perception of risk: certainty (consequences cannot be avoided), celerity (consequences will happen quickly), and severity (consequences will be sufficiently undesirable) … behavior change results from appropriate changes in three components of perceived risk – severity ideally should be high, certainty should be high, and celerity should be immediate. The severity of consequences (e.g., crashes, tickets, impacts on families) is easily conveyed, which explains why so many campaigns have used this construct. Certainty is more difficult to convey. Drivers already know that they can drive distracted or impaired on some trips without receiving a ticket or getting in a crash. The key to conveying certainty is to try to increase people's perceived likelihood of these adverse consequences happening if they engage in the illegal behavior, rather than try to convince them that they will always get a ticket or crash. Finally, in terms of traffic safety, celerity is closely linked to the type of outcome. For tickets and crashes, the celerity is immediate – drivers get pulled over or in a crash when they are engaging in the behaviors. There are also secondary consequences that result from crashes or tickets that can be included in campaign messaging, such as litigation, that may occur many months after a crash or ticket, and in these cases, the celerity can be long. (p. 20)

Deterrence theory was observed in 2 OP campaigns (*Think! Seat Belts* and *Click it or Ticket*). These campaigns emphasize the enforcement of seat belt laws and the three constructs were addressed to some degree in each campaign. In addition, the construct of severity was observed in another 5 OP campaigns (*Wear This, Not This/Is Today Your Day?, Secure His/her Future. Know For Sure, Beware of the Beltless, Buckle Up*, and *Buckle Up in Your Truck*). In all cases, these campaigns highlighted the adverse consequences of not using occupant protection devices (or not properly using them).

Elaboration Likelihood Model

According to Zakrajsek et al. (2023):

> this model focuses on attitudes and persuasion, and explains how different ways of processing information can lead to attitude and behavior change (Tam & Ho, 2005). Within this model, there are two major routes to persuasion: the central route and the peripheral route. The peripheral route is used when a person is unable or unwilling to think more deeply about a message. This occurs because people cannot fully engage with every message that they encounter every day. The model proposes that the central route leads to longer lasting attitude and behavior change because it involves deeper thought and more engagement with the persuasive message. (p. 21)

The elaboration likelihood model was not observed in any OP campaign, nor were any of the model's constructs.

Emotion Information Management

As described by Zakrajsek et al. (2023):

> this theory is concerned with how people's ability to manage their emotions influences how they perceive emotional advertising, through three emotion management skills: recognition of emotions, regulation of emotional responses, and empathy (Taute et al., 2011). Advertisements can create positive and negative emotions in people viewing them,

and how they manage those positive and negative emotions influences how much empathy they feel toward the advertisement, which then determines their attitudes and response to the advertisement. (p. 22)

The theory of emotion information management was not observed in any of the OP campaigns considered in this study. However, 3 campaigns (*If You Love It, Click It, I'm/They're Counting on You*, and *Beware the Beltless*) attempted to evoke peoples' empathy to connect with the audience and promote behavior change. For example, the campaign *I'm/They're Counting on You* attempted to get parents and caregivers to feel more responsible for their children's safety because children depend on their parents/caregivers to keep them safe.

Extended Parallel Process Model

According to Zakrajsek et el., (2023):

> the EPPM posits that a fear appeal initiates two appraisals by the recipient: (1) an assessment of the threat and (2) an appraisal of the efficacy of the recommended response (Witte & Allen, 2000).… If people perceive the threat to be low, they will stop processing the message and ignore the fear appeal. If people perceive the threat to be serious and relevant, they will take action by attempting to control the danger (high efficacy), the desired behavior, or control the fear (low efficacy). (p. 23)

The extended parallel process model was observed in 5 OP campaigns (*Think! Seat Belts, Click It or Ticket, 2 Seconds 2 Click, If You Love It Click It,* and *Beware the Beltless*). For example, the campaign *Think! Seat Belts* portrayed a standard fear appeal with a suggested action, that is, if you crash without wearing a belt there will be severe consequences and if you wear a belt that risk will be less. In addition, in 5 other campaigns, at least one of the model's constructs were used, perceived severity (lack of belt use in a crash can lead to significant injury or death) and response efficacy (it is quick and easy to use a seat belt) were observed in 4 campaigns each.

Fuzzy-Trace Theory

As described by Zakrajsek et al. (2023):

> fuzzy-trace theory is a judgment and decision-making model that proposes that exposure to significant information records two types of memory in an individual: a verbatim representation and a representation that is one or more "gists" (or the essential meanings of the information without specific details) (Reyna, 2012). When making decisions, people use both types of representation and the two types of information might lead to ambivalence (competing decisions). Adolescents are more prone to analytical thinking where they evaluate the tradeoff between risks and benefits, and that produces verbatim representations. Adults tend to use an intuitive mode of thinking that results in gist memories and less risk-taking behavior. The theory also predicts that people tend to rely on gist, particularly as they develop more expertise on a topic. (p. 24)

The fuzzy-trace theory was not observed in any OP campaign, nor were any of the theory's constructs.

Health Action Process Approach

According to Zakrajsek et al. (2023):

> As described by Schwarzer (2008), this theory has two phases, or "stages," that people go through when experiencing behavior change: motivational and volitional. The theory was developed to help explain how people move from just intending to perform a behavior to doing the intended behavior. Action self-efficacy, outcome expectancies, and risk perception are part of the process that lead to a behavioral intention. Then, action planning, coping planning, and maintenance self-efficacy form the process that moves people from a behavioral intention to performing the behavior. Finally, once people begin performing a behavior, they enter an action stage made up of three constructs (initiative, maintenance, recovery) that they cycle through when trying to stick to a habit. A third type of self-efficacy, recovery self-efficacy, also influences people's ability to maintain a new behavior. Self-efficacy, a person's confidence in his or her ability to do something, is broken down into three types in this model because each phase of behavior change carries with it different types of challenges. (p. 24)

The health action process approach was observed in 3 OP campaigns examined in this study (*Think! Seat Belts, Never Give Up Until They Buckle Up*, and *If You Love It, Click It.*). For these campaigns, the approach's constructs were observed with the exception of recovery. Most of the campaigns observed with this theory offered concrete strategies to impact behavior change by addressing self-efficacy (e.g., the ease of selecting and using a proper child safety seat). For example, in the campaign *If You Love It, Click It*, risk perception and outcome expectancies were addressed in video testimonials of teens who were in crashes and saved from serious injury because they were using a seat belt, while action planning was presented in the campaign tagline *Every Rider, Every Ride*. In 5 other campaigns, at least one of the approach's constructs were used: risk perception, self-efficacy, and outcome expectancies were observed in 3 campaigns each; and action planning was observed in one campaign.

Health Belief Model

As stated in Zakrajsek et al. (2023):

> According to the HBM (Rosenstock, 1974), the likelihood of a behavioral outcome is predicted by the individual's assessment of susceptibility to and the severity of consequences of the behavior, benefits of taking action, ability to take action, barriers to taking action, cues to take action, and additional modifying factors among those constructs (e.g., age, race, psychosocial variables). (p. 25)

The health belief model was observed in 3 OP campaigns (*Think! Seat Belts; Wear This, Not This/Is Today Your Day?* and *If You Love It, Click It*). In all campaigns there was a strong focus on perceived severity, susceptibility, benefits, and barriers. For example, in the *Wear This, Not This/Is Today Your Day*? campaign, which focused on getting law enforcement officers to always use seat belts, perceived threat and severity was addressed with facts about on-duty automobile crashes, and lack of belt use and perceived barriers and benefits were addressed in a roll-call video with a law enforcement officer discussing the ease with which a belt can be used while performing enforcement duties and the advantages of belt use. Five other campaigns were judged to have included at least one of the model's constructs: cues to action was observed in 3 of those campaigns, perceived severity and perceived benefits were observed in 2 campaigns each, and perceived barriers and self-efficacy were observed in 1 campaign.

Implementation Intentions

As discussed by Zakrajsek et al., (2023) who cite Simpriano et al. (2015):

> II explains how people move from a behavioral intention to performing the behavior. It suggests that people create a strategy in the form of "I intend to do X at time and place Y." Specific plans lead to a greater likelihood of behavior change because having specific details about time and place helps to overcome obstacles associated with changing behavior. (p. 26)

Implementation intentions was observed in 4 OP campaigns (*Think! Seat Belts, Never Give Up Until They Buckle Up, Clip Every Trip,* and *I'm/They're Counting On You*). As an example, the *Clip Every Trip* campaign name and slogan directly presents a specific plan that addresses the behavior (clip your belt) and a time (every trip) and place (car, which is implied). An additional 5 campaigns had at least one of the constructs observed in the campaign material—most often with these campaigns addressing the when, where, and how of belt use or child safety seat use behavior: when was observed in 4 of those campaigns, where was observed in 3 campaigns, plan of action was observed in 2 campaigns, and intention and how were observed in one campaign each.

Information-Motivation-Behavioral Skills Model

As discussed by Zakrajsek et al. (2023):

> The IMB (Fisher & Fisher, 1992) was originally used to describe HIV-related risk behaviors and suggests that the combination of information, motivation, and behavioral skills predict behavior. (p. 27)

Information-motivation-behavioral skills model was demonstrated in 5 OP campaigns (*Think! Seat Belts; Wear This, Not This/Is Today Your Day?; Never Give Up Until They Buckle Up; Secure His/Her Future. Know For Sure*; and *If You Love It, Click It*). For example, in the campaign *Secure His/Her Future. Know For Sure*, which addressed the correct use of child safety seats, the construct of information was observed in many of the campaign material in that several clearly described how to select the correct child safety seat. The construct of motivation was addressed in campaign material that appealed to being a good parent/protecting one's children. Eight other OP campaigns addressed one or more of the model's constructs: information was observed in all 8 of those campaigns and motivation was observed in 2 campaigns.

Precaution Adoption Process Model

As described in Zakrajsek et al. (2023) who cite Baban and Craciun (2007):

> the PAPM is a model of behavior change proposing that behavior change occurs during seven stages:
>
> 1. people are unaware of the behavior;
> 2. people are aware of the behavior but do not care about it;
> 3. people care about the behavior, but are still deciding whether to act to change the behavior;
> 4. people decide not to act to change the behavior;
> 5. people decide to act to change the behavior;

6. people change their behavior, they have begun performing the desired behavior; and
7. people continue performing the behavior, it is maintained. (p. 28)

The precaution adoption process model was not observed in any OP campaign, nor were any of the theory's constructs.

PRECEDE-PROCEED Model

As discussed by Zakrajsek et al. (2023):

> The main purpose of this model is to provide a structure for applying theories and concepts systematically for planning and evaluating health behavior change programs. Overall, four planning stages, one implementation phase, and three evaluation phases, make up the entire model (Gielen et al., 2008). PRECEDE is an acronym for: Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis and Evaluation. PROCEED is an acronym for: Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development and was added to the PRECEDE framework in 1991. (p. 28)

The PRECEDE- PROCEED model was not observed in any OP campaign, and only the construct of predisposing factors was observed in one campaign (*If You Love It, Click It*) where the messaging attempted to leverage the value of parents' existing love for their children to motivate parents to properly restrain them.

Prospect Theory

As discussed by Zakrajsek et al. (2023):

> Prospect theory seeks to explain how people make decisions under risk and uncertainty from a cost-and-benefit perspective (Kahneman & Tversky, 1979). According to this model, people make decisions based on expected gains and losses relative to a mental rule called a reference point, a construct related to risk perception that varies with context and that communication campaigns can address. Decisions result from a two-stage process: (1) people consider possible outcomes, the outcomes are compared to their reference point (i.e., the point at which outcomes are considered equal in value), and outcomes below the reference point are losses while those above the reference point are gains; and (2) people behave as though they were making a mental calculation that sums those losses and gains while also considering the probability of an outcome. An individual's reference point can become biased and it can be manipulated through various framing effects such as editing (people put higher value on certain outcomes over probable outcomes, even if the probable outcome has more gains), evaluation (people are risk averse when considering gains but willing to accept more risk when considering potential losses), and response mode (when making a choice between several alternatives, people tend to ignore what the alternatives have in common and focus on how they differ). This can be irrational if a person is making a series of decisions but is ignoring the fact that decisions made going forward are still based on the results of the decisions that have been made so far. (pp. 28–29)

Prospect theory was observed in one OP campaign (*Wear This, Not This/Is Today Your Day?*). In this campaign, which was designed to increase belt use among law enforcement officers, editing, evaluation, and risk manipulation were observed because the messaging portrayed a comparison of the risk of not wearing seatbelts to other job risks against which precautions are taken.

Protection Motivation Theory

According to Zakrajsek et al. (2023):

> PMT (Rippetoe & Rogers, 1987) provides an understanding of the use of fear appeals in messaging. It posits that people base decisions to protect themselves from health threats on four factors: perceived severity of the threat, perceived probability that the threat will occur, the effectiveness of the target behavior to avoid the threat, and self-efficacy to complete the target behavior. (p. 29)

Protection motivation theory was observed in 2 OP campaigns (*Wear This, Not This/Is Today Your Day?* and *If You Love It, Click It*). For example, the *If You Love It, Click It* campaign which had a component targeted toward parents and the correct use of child safety seats, addressed the constructs related to coping appraisal (perceived response efficacy and perceived self-efficacy) through several such as information about the safety implications of improper use of child safety seats. A focus of this campaign was convincing parents to make sure that they are properly securing child safety seats—these messages addressed the constructs of perceived response efficacy and perceived self-efficacy (coping appraisal). In 7 other campaigns at least one of the constructs of this theory was observed: response efficacy was observed in 6 of those campaigns, threat appraisal and perceived severity vulnerability were observed in 4 campaigns each, and coping appraisal was observed in 2 campaigns.

Prototype Willingness Model

As stated in Zakrajsek et al. (2023) who cite Gerrard et al. (2008), the prototype willingness model:

> proposes that health risk behavior is volitional (i.e., by choice), but not necessarily planned. That is, rather than being premeditated or reasoned, behavioral choices can result from reactions to the conditions that are present with a particular health risk (i.e., "triggers"). The PWM was developed to help understand the risky health behaviors of adolescents. There are two main decision-making processes within the model: analytical processing (a logical process involving attitudes, SN, and behavioral intention) and heuristic processing (a process involving social reactions that involves risk prototypes and behavioral willingness). (p. 30)

The prototype willingness model was not observed in any of the OP campaigns, but some of its constructs were observed in 7 campaigns: attitudes was observed in 5 campaigns, subjective norms was observed in 3 campaigns, risk prototypes was observed in 2 campaigns, and behavioral intentions was observed in one campaign. Notably, subjective norms and risk prototypes were observed via modeling OP use or modeling parents or both, ensuring proper OP for their children. Attitudes was observed where campaign messages included appeals to influence attitudes about the need for and benefit of OP. Behavioral intentions were incorporated via the use of pledge cards to obtain users' commitment to wear seat belts.

Regulatory Fit Theory

According to Zakrajsek et al. (2023):

> RFT is a goal attainment theory that suggests that goal pursuit is strengthened when it aligns with an individual's values and beliefs (Higgins, 2005). This theory posits that people have different emphases when pursuing goals—one can be a promotion focus where goals are represented as aspirations or hopes or both and the other is a prevention

focus where people represent goals as duties or obligations or both. When people pursue goals using strategies that align with their focus (eagerness for a promotion focus and vigilance for a prevention focus), they experience regulatory fit, which makes people more motivated to pursue the goal. When a goal matches a person's strategy, that increases fit, and when a strategy does not match with a person's focus, then that decreases fit. The theory describes many factors that influence a person's regulatory fit toward a goal, such as the person's regulatory focus, how the message attempts to deliver the regulatory fit, the way in which the fit is created, and contextual factors regarding where the fit is created. (p. 31)

The regulatory fit theory was not observed in any OP campaign, nor were any of the theory's constructs.

Reinforcement Sensitivity Theory/Revised Reinforcement Sensitivity Theory

As described by Zakrajsek et al. (2023):

The RST/r-RST is a biological model of individual differences in motivation (Corr, 2004). Three brain-behavior systems are said to underlie individual differences in sensitivity to rewards and punishments: a behavioral activation system, a behavioral inhibition system, and a fight-flight-freeze system. The model also considers the role of personality traits (extraversion and neuroticism) in the reaction to rewards and punishments. (p. 31)

The reinforcement sensitivity theory/revised reinforcement sensitivity theory was not observed in any OP campaign, nor were any of the theory's constructs.

Self-Determination Theory

As stated by Zakrajsek et al. (2023):

SDT focuses on how to get people to increase their self-motivation. According to the theory, self-motivation/self-determination is influenced by the ability and/or need to control outcomes (mastery), the need to be the agent of change in one's own life (autonomy), and the need to be connected to others (relatedness; Ryan & Deci, 2000). The extent to which the three needs are met determines how motivated a person is to act. The ability to sustain motivation varies according to how much control people believe they have over the target behaviors. (p. 32)

Self-determination theory was not observed in any OP campaign, but one of its constructs (relatedness) was observed in 2 OP campaigns (*Click It or Ticket* and *Wear This, Not This/Is Today Your Day?*) and the construct of autonomy was also observed in one of these campaigns (*Click It or Ticket*). Some of the campaign material specifically targeted identity as an autonomous adult (e.g., contrasting with whiny child) and relatedness as a loving parent.

Social Cognitive Theory

As discussed by Zakrajsek et al. (2023):

SCT (Bandura, 2011) focuses on how people develop new behaviors and gain new knowledge. The theory proposes three factors that work over time, and influence each other, to guide behavior change: personal determinants, behavioral determinants, and environmental determinants. Once a person is motivated to change, whether through a physical need, such as hunger or pain, or a cognitive desire, such as imaginable outcomes

of goals, then behavioral determinants determine what actions are available for that person to undertake, and self-efficacy determines a person's belief that he or she can successfully engage in the behavior. The theory posits that people learn behaviors in part through modeling, or observational learning. (pp. 32–33)

Social cognitive theory was not demonstrated in any of the OP campaigns. However, the construct of personal determinants was observed in 12 campaigns – primarily via messaging to promote the person's belief that he/she had the ability to properly use seat belts/child safety seats and reduce injury risk.

Social Judgment Theory

According to Zakrajsek et al. (2023):

> Social judgment theory proposes that the effect of a persuasive message on a person's attitude toward a behavior depends on how that person evaluates the message (Sherif et al., 1965). According to the theory, when people receive a persuasive message whether the message leads to behavior change depends on the person's most preferred position (called his or her "anchor point"), the person's judgment of three alternatives or "latitudes" for the message (acceptance, rejection, or non-commitment), and the person's level of ego-involvement with the issue. If a message falls within a range of ideas that a person objects to, the message is more likely to be rejected. Similarly, if a message falls within a range of ideas that a person finds agreeable, the message is more likely to be accepted. However, even when a message is rejected or accepted, if the message is too similar to the person's current attitude, it is not likely to persuade the person to change his or her attitude or behavior. Therefore, the most persuasive messages would fall within a person's latitude of non-commitment, where the person may moderately disagree with the message, but the message is neither so different from the person's current attitude that the message is rejected nor so similar that it does not suggest the need for attitude change. This theory could be used in the design of campaigns to determine the latitudes of acceptance, rejection and non-commitment for audiences to ensure that messages targeted to them are persuasive and credible. The number, size, and location of those latitudes with respect to the person's current attitude depend on how strongly the person holds his or her current attitude. When a person is persuaded by a message and integrates it into his or her own attitude, the latitudes change to reflect that message. (pp. 33–34)

The social judgment theory was not observed in any OP campaign, nor were any of the theory's constructs.

Social Learning Theory

As described by Zakrajsek et al. (2023), who cite Bandura (1972), social learning theory posits that:

> people learn through observation of other people's behavior, attitudes, and behavioral outcomes. For social learning to occur, people must notice the target behavior by others, remember what they noticed, be motivated to perform the target behavior themselves, and have the ability to perform the target behavior. (p. 34)

Social learning theory was observed in 3 OP campaigns (*Wear This, Not This/Is Today Your Day?, Never Give Up Until They Buckle Up,* and *Click It or Ticket*). For example, the campaign *Never Give Up Until They Buckle Up* was targeted toward parents to encourage them to use booster seats for age appropriate children and then graduate to seat belts for tweens. The campaign helped make the message noticeable to parents by describing common arguments

among parents and children (such as using a phone at the dinner table). These same messages also attempted to motivate the desired behavior by linking the insistence on belt use on every trip for tweens with good parenting. Reproduction and retention were addressed by a series of videos and messages showing behaviors of tweens that might be negotiable and the use of a seat belt which is not. Seven other OP campaigns had constructs for this theory observed in material: the construct of attention was observed in all 7 campaigns, motivation was observed in 3 campaigns, and retention and reproduction were observed in 2 campaigns each.

Social Norms Theory

Zakrajsek et al. (2023) states that:

> SNT posits that people's behaviors are influenced by beliefs regarding how much their peers accept and engage in those behaviors, even though those beliefs are often inaccurate (Perkins, 2003). People believe that others accept and engage in unhealthy behaviors more than they actually do. These beliefs can then lead them to engage in unhealthy behaviors, but if the beliefs are corrected, they can become more likely to resist the unhealthy behaviors. Also, once a person understands that others do not accept the unhealthy behaviors as previously believed, the person will feel more social support for healthy behaviors and engage in those more often. (p. 35)

Social norms theory was not demonstrated in any OP campaign, but one of its constructs (false uniqueness) was observed in 1 campaign (*If You Love It, Click It*) where a teen testimonial was used to expose teens to a norm and challenge misperceptions by teens that they are not susceptible to motor vehicle injury even if unbelted.

Theory of Bystander Intervention

According to Zakrajsek et al. (2023), in the:

> TBI (Darley & Latane, 1968), bystanders go through five stages of processing before they intervene in a possibly dangerous situation. First, they must notice a dangerous situation (noticing). Second, they must interpret the situation as an emergency (interpreting). Third, they must take personal responsibility for the situation (responsibility). Fourth, they must believe that they have the ability to succeed in intervening (efficacy). Fifth, they must decide to help (intervening). There are three psychological processes that act as obstacles to this five-step sequence: diffusion of responsibility (when there are more bystanders in a group, people tend to take less personal responsibility for a situation and bystanders will feel less responsible for the outcome of a situation proportional to how many bystanders are in a group), evaluation apprehension (when others are watching, people feel more self-conscious of their actions and are more afraid of making mistakes and being harshly judged by others), and pluralistic ignorance (people tend to rely on other people's reactions to figure out how they should react to a situation – if no one else is acting like there is an emergency and that something needs to be done, then others are more likely to assume the same). (p. 35)

The theory of bystander intervention was not observed in any OP campaign, nor were any of its constructs.

Theory of Interpersonal Behavior

As discussed by Zakrajsek et al. (2023):

> The TIB (Triandis, 1979) includes similarities to the TPB in that the constructs social factors, affect, and perceived consequences predicting behavior change are included in both theories. However, this theory also considers the role of habits and posits that the influence of habits on behavior increases as the level of consciousness regarding the behavior decreases. (p. 36)

The theory of interpersonal behavior was observed in 2 OP campaigns (*Wear This, Not This/Is Today Your Day?* and *Click It or Ticket*). For example, in the *Click It or Ticket* campaign, social factors (by targeting normative roles and personal-norm beliefs) were addressed in material that stated facts about young driver crashes and use of belts. Affect was conveyed in video testimonials of people whose lives were severely affected by an unbelted crash. Habits and perceived consequences were conveyed in nearly all the campaign material, including linking the campaign name to getting a traffic violation. Seven other campaigns had some of the theory constructs observed: social factors and perceived consequences were observed in 4 of those campaigns; and habits, intentions, and affect were observed in one campaign each.

Theory of Planned Behavior

As discussed by Zakrajsek et al. (2023) who cite Ajzen (1991), the theory of planned behavior posts that:

> the most important factor that determines whether someone will engage in a behavior is behavioral intention. Perceived behavioral control (self-efficacy), attitudes toward the target behavior, and perceptions of important others' beliefs about the target behavior (social norms) combine to predict behavioral intentions. Those constructs can be used to create campaign messages that encourage positive value for a target behavior (low cost, high reward) and negative value for a harmful behavior (high cost, low reward). (p. 37)

The theory of planned behavior was observed in one OP campaign (*Secure His/Her Future. Know for Sure*). In this campaign, which addressed child safety seat use, normative beliefs, and subjective norms were conveyed in material that attempted to link the use of proper occupant restraints with being a good parent. The constructs of control beliefs and perceived behavioral control were the primary foci of the campaign, with some material devoted to helping parents/caregivers select the correct seat for their children. The construct of anticipated guilt was conveyed by the campaign name which implies that a child may not have a good future if correct child safety seats are not used. An additional 10 campaigns had at least one of the theory's constructs observed: the construct attitudes toward behavior was observed in 9 of those campaigns, social norms was observed in 6 campaigns, anticipated guilt was observed in 4 campaigns, self-efficacy was observed in 3 campaigns, and empathic concern was observed in 2 campaigns.

Theory of Reasoned Action

As discussed by Zakrajsek et al. (2023), the theory of reasoned action:

> proposes that behavioral intentions are the most relevant predictor of whether a person will or will not engage in a behavior (Madden et al., 1992). Intentions depend on people's beliefs about what will happen if they engage in a behavior, and those beliefs are divided

into two types: attitudes and SN. The constructs for this model are intention (a person's motivation, or willingness, to try to engage in a behavior), ATB (how much a person values a specific behavior), and SN (a person's feelings or judgment of the opinions of other people around them, such as family and friends). (p. 38)

The theory of reasoned action was observed in 3 OP campaigns considered in this study (*Think! Seat Belts, Wear This, Not This/Is Today Your Day?*, and *Secure His/Her Future. Know for Sure*). For example, *Secure His/Her Future. Know for Sure* addressed attitudes in material focused on changing attitudes, directly and indirectly, by stating that proper restraint use was crucial for child passenger safety. Normative beliefs were addressed by linking the fact that parents will do anything for their children (norm) to the proper use of child safety seats. Eight other campaigns had evidence of at least one of the theory's constructs: the construct of attitudes was observed in 6 of those campaigns, outcome expectancies was observed in 5 campaigns, and subjective norms was observed in 3 campaigns.

Theory of Self-Regulation

According to Zakrajsek et al. (2023):

> The TSR (Baumeister & Voas, 2007) asserts that behavior change occurs when people compare their current situation with a goal or reference situation (what the person is trying to achieve). If there is a discrepancy, then they will act to minimize the discrepancy. (p. 39)

The theory of self-regulation was not observed in any OP campaign, but two of its constructs (reference value and comparator) were observed in one campaign (*If You Love It, Click It*) by representing an ideal self of a caring, good person and presented a specific comparison of behaviors by the ideal self (ensuring that loved ones are properly secured).

Transtheoretical Model/Stages of Change

As discussed by Zakrajsek et al., (2023), the transtheoretical model/stages of change theory:

> suggests that people go through six stages of behavior change before a new behavior is fully established (Prochaska & DiClemente, 1983). People can move forward or backward through the stages. The theory can be useful for targeting an intervention to a specific stage, based on an analysis of the individual needs of members of the target population. The six stages of change are:
> 1. pre-contemplation (no intention to change behavior and may resist change),
> 2. contemplation (aware of problem, but no action is undertaken),
> 3. preparation (beginning to prepare for behavior change),
> 4. action (behavior change has occurred but still at high risk for reverting back to old behavior),
> 5. maintenance (behavior is starting to become a habit), and
> 6. termination (the behavior is firmly established). (p. 39)

The transtheoretical model/stages of change theory was not observed in any OP campaign, nor were any of its constructs.

Comparison of the Theory Classifications for OP and DB/ID Campaigns

A total of 43 campaigns were examined between this study (14 OP campaigns) and the primary study (16 DB campaigns and 13 ID campaigns). Table 2 compares the number of campaigns, by

target behavior (OP, DB, or ID), for which each theory was found to be observed. The information-motivation-behavioral skills model was observed in the highest percentage of campaigns overall, among OP campaigns (where it was tied with the extended parallel process model), and among ID campaigns (where it was tied with social learning theory).

In Table 2, the theories observed in the 5 highest percentages of campaigns within each target behavior are highlighted. The compilation of theories observed in the highest percentages of OP campaigns is most like the compilation of theories observed in the highest percentages of ID campaigns. The leading theories for the OP campaigns examined were extended parallel process model (tied-first), information-motivation-behavioral skills model (tied-first), implementation intentions (third), health action process approach (tied-fourth), health belief model (tied-fourth), social learning theory (tied-fourth), and the theory of reasoned action (tied-fourth). The leading theories for the ID campaigns examined were information-motivation-behavioral skills model (tied-first), social learning theory (tied-first), social cognitive theory (tied-third), theory of reasoned action (tied-third), health action process approach (tied-fifth), health belief model (tied-fifth), and theory of interpersonal behavior (tied-fifth). The leading theories for the DB campaigns examined were health belief model (first), extended parallel process model (tied-second), information-motivation-behavioral skills model (tied-second), deterrence theory (fourth), and health action process approach (fifth).

Table 2. Comparison of the number and percentages of campaigns by target behavior (OP, DB, or ID)* by theories observed

Theory	# (%) of OP campaigns (n=14)	# (%) of DB campaigns (n=16)	# (%) of ID campaigns (n=13)	# (%) of Overall campaigns (N=43)
Associative-Propositional Evaluation Model	0 (0)	0 (0)	0 (0)	0 (0)
Automaticity Theory	0 (0)	0 (0)	0 (0)	0 (0)
Deterrence Theory	2 (14)	7 (44)	5 (38)	14 (33)
Elaboration Likelihood Model	0 (0)	4 (25)	1 (8)	5 (12)
Emotion Information Management	0 (0)	0 (0)	0 (0)	0 (0)
Extended Parallel Process Model	5 (36)	8 (50)	5 (38)	18 (42)
Fuzzy-Trace Theory	0 (0)	0 (0)	0 (0)	0 (0)
Health Action Process Approach	3 (21)	5 (31)	6 (46)	14 (33)
Health Belief Model	3 (21)	9 (56)	6 (46)	18 (42)
Implementation Intentions	4 (29)	3 (19)	5 (38)	12 (28)
Information-Motivation-Behavioral Skills Model	5 (36)	8 (50)	8 (62)	21 (49)
Precaution Adoption Process Model	0 (0)	0 (0)	0 (0)	0 (0)
PRECEDE-PROCEED Model	0 (0)	0 (0)	0 (0)	0 (0)
Prospect Theory	1 (7)	0 (0)	1 (8)	2 (5)
Protection Motivation Theory	2 (14)	1 (6)	3 (23)	6 (14)
Prototype Willingness Model	0 (0)	2 (13)	1 (8)	3 (7)
Regulatory Fit Theory	0 (0)	0 (0)	0 (0)	0 (0)

Theory	# (%) of OP campaigns (n=14)	# (%) of DB campaigns (n=16)	# (%) of ID campaigns (n=13)	# (%) of Overall campaigns (N=43)
Reinforcement Sensitivity Theory / Revised RST	0 (0)	0 (0)	0 (0)	0 (0)
Self-Determination Theory	0 (0)	2 (13)	0 (0)	2 (5)
Social Cognitive Theory	0 (0)	4 (25)	**7 (54)**	11 (26)
Social Judgment Theory	0 (0)	0 (0)	0 (0)	0 (0)
Social Learning Theory	**3 (21)**	4 (25)	**8 (62)**	**15 (35)**
Social Norms Theory	0 (0)	0 (0)	0 (0)	0 (0)
Theory of Bystander Intervention	0 (0)	2 (13)	4 (31)	6 (14)
Theory of Interpersonal Behavior	2 (14)	4 (25)	**6 (46)**	12 (28)
Theory of Planned Behavior	1 (7)	2 (13)	5 (38)	8 (19)
Theory of Reasoned Action	**3 (21)**	2 (13)	**7 (54)**	12 (28)
Theory of Self-Regulation	0 (0)	0 (0)	0 (0)	0 (0)
Transtheoretical Model / Stages of Change	0 (0)	0 (0)	0 (0)	0 (0)

*The theories observed in the 5 highest percentages of campaigns within each target behavior are highlighted. Due to ties more than 5 theories may be highlighted within a column.

Three theories were in the top 5 for all three target behaviors: health action process approach, health belief model, and information-motivation-behavioral skills model. These 3 theories have several features in common. First, they all address the motivation to change behavior either through perceptions of risk, severity, threat, benefits, and/or outcome expectancies. Second, all 3 theories consider the ability to perform (or not perform) the target behavior as defined by self-efficacy, coping planning, perceived barriers, and/or behavioral skills. Finally, these theories acknowledge the importance of information for behavior change such as risk reduction information and cues to action. One theory was in the top 5 for OP and DB, but not ID: extended parallel process model. Two theories were in the top 5 for OP and ID but not DB: social learning theory and theory of reasoned action. No theories were in the top 5 for DB and ID but not OP. One theory was in the top 5 for only OP: implementation intentions. One theory was in the top 5 for only DB: deterrence theory. Two theories were in the top 5 for only ID: social cognitive theory and theory of interpersonal behavior. Notably, 12 of the 29 theories assessed were not observed in any OP, DB, or ID campaign examined.

While the combinations of observed theories were similar across target behaviors, fewer theories were observed in the OP campaigns than in the DB or ID campaigns. This is evident when considering both the percentages of campaigns each theory was observed in, as shown in Table 2, and when considering the average number of theories observed per campaign: 2.4 for OP campaigns, 4.2 for DB campaigns, and 6.0 for ID campaigns.

Interviews With State Highway Safety Office Representatives

After the conclusion of the expert panel, a limited number of telephone interviews were conducted with State Highway Safety Office representatives responsible for administering a small sample of the traffic safety campaigns included in the study to obtain information about the campaigns beyond what was provided on the campaign websites. One interview was conducted for each of five participating States and each was provided the discussion questions in advance. These interviews included discussion of 3 OP campaigns in addition to 6 campaigns on distracted and alcohol-impaired driving. While the interviews asked about specific campaigns, interviewees often spoke collectively across the different types of campaigns, so results were not broken out by type of campaign. The information provided by States about the campaigns (including details about development and decision making, timing, medium, target population, target location, and evaluation) was consistent across ID, DB, and OP campaigns. Further details on the interview methods and results are in Zakrajsek et al. (2023).

Conclusions

The tasks and results included in this supplemental technical report were designed to include OP campaigns that States and other jurisdictions can use to improve existing campaigns and develop more effective campaigns to address behaviors that compromise driving safety. The supplemental work found that behavior change theory was generally observed in OP campaigns (2.4 per campaign), but that most theories were observed in a lower percentage of OP campaigns than ID and DB campaigns. Seventeen of the 29 theories were not observed in OP campaigns.

Thus while this supplemental work found that behavior change theory was generally observed in OP campaigns, it was less so than for ID and DB campaigns. These results suggest that there is an opportunity to improve the effectiveness of OP campaigns by utilizing behavior change theory in the development and implementation of OP campaigns.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Baban, A., & Craciun, C. (2007). Changing health-risk behaviors: A review of theory and evidence-based interventions in health psychology. *Journal of Cognitive and Behavioral Psychotherapies*, *7*(1), 45–66.

Bandura, A. (1972). Modeling theory: Some traditions, trends, and disputes. In R. D. Parke (Ed.), *Recent trends in social learning theory* (pp. 35–61). Academic Press.

Bandura, A. (2011). Social cognitive theory. In P. A. M. van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of social psychological theories* (pp. 349–373). Sage Publications. https://psycnet.apa.org/doi/10.4135/9781446249215.n18

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, *54*(7), 462–479. https://doi.org/10.1037/0003-066X.54.7.462

Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, *1*(1), 115–128. https://doi.org/10.1111/j.1751-9004.2007.00001.x

Beyleveld, D. (1979a). Deterrence research as a basis for deterrence policies. *Howard Journal of Crime and Justice*, *18*(3), 135–149. https://doi.org/10.1111/j.1468-2311.1979.tb00388.x

Beyleveld, D. (1979b). Identifying, explaining and predicting deterrence. The *British Journal of Criminology*, *19*(3), 205–224. https://www.jstor.org/stable/23636520

Corr, P. J. (2004). Reinforcement sensitivity theory and personality. *Neuroscience & Biobehavioral Reviews*, *28*(3), 317–332. https://doi.org/10.1016/j.neubiorev.2004.01.005

Darley, J. M., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, *8*(4, Pt.1), 377–383. https://doi.org/10.1037/h0025589

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin*, *111*(3), 455–474. https://doi.org/10.1037/0033-2909.111.3.455

Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin*, *132*(5), 692–731. http://dx.doi.org/10.1037/0033-2909.132.5.692

Gerrard, M., Gibbons, F. X., Houlihan, A. E., Stock, M. L., & Pomery, E. A. (2008). A dual-process approach to health risk decision making: The prototype willingness model. *Developmental Review*, *28*(1), 29–61. https://doi.org/10.1016/j.dr.2007.10.001

Gielen, A. C., McDonald, E. M., Gary, T. L., & Bone, L. R. (2008). Using the PRECEDE-PROCEED model to apply health behavior theories. *Health Behavior and Health Education: Theory, Research, and Practice*, *4*, 407–433.

Higgins, E. T. (2005). Value from regulatory fit. *Current Directions in Psychological Science*, *14*(4), 209–213. https://doi.org/10.1111/j.0963-7214.2005.00366.x

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, *47*(2), 263–292. https://doi.org/10.2307/1914185

Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and Social Psychology Bulletin*, *18*(1), 3–9. https://doi.org/10.1177/0146167292181001

National Center for Statistics and Analysis. (2023a, May). *Distracted driving in 2021* (Research Note. Report No. DOT HS 813 443). National Highway Traffic Safety Administration. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813443.

NCSA. (2023b, May). *Occupant protection in passenger vehicles: 2021 data* (Traffic Safety Facts. Report No. DOT HS 813 449). National Highway Traffic Safety Administration. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813449

NCSA. (2023c, May). *Quick facts 2021* (Report No. DOT HS 813 454). National Highway Traffic Safety Administration. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813454.

NCSA. (2023d, June). *Alcohol-impaired driving: 2021 data* (Traffic Safety Facts. Report No. DOT HS 813 450). National Highway Traffic Safety Administration. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813450.

Perkins, H. W. (2003). The emergence and evolution of the social norms approach to substance abuse prevention. *In H.W. Perkins (Ed.)*, *The Social Norms Approach to preventing school and college age substance abuse: A handbook for educators, counselors, and clinicians (pp. 3–17)*. Jossey-Bass/Wiley.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change in smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, *51*(3), 390–395. https://doi.org/10.1037/0022-006X.51.3.390.

Reyna, V. (2012). A new Intuitionism: Meaning, memory, and development in fuzzy-trace theory. *Judgment and Decision Making*, *7*(3), 332–359. https://doi.org/10.1017/S1930297500002291

Rippetoe, P. A., & Rogers, R. W. (1987). Effects of components of protection-motivation theory on adaptive and maladaptive coping with a health threat. *Journal of Personality and Social Psychology*, *52*(3), 596–604. https://doi.org/10.1037//0022-3514.52.3.596

Robertson, R. D., & Pashley, C. R. (2015). *Road safety campaigns. What the research tells us*. Traffic Injury Research Foundation.

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, *2*(4), 328–335. https://doi.org/10.1177/109019817400200403

Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), *68–78*. https://doi.org/10.1037/0003-066X.55.1.68

Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*, *57*(1), 1–29. https://doi.org/10.1111/j.1464-0597.2007.00325.x

Sherif, C. W., Sherif, M., & Nebergall, R. E. (1965). Attitude and attitude change: The social judgment-involvement approach. *American Sociological Review*, *31*(2), 283–284. https://doi.org/10.2307/2090931

Simpriano, D. C. A. B., São-João, T. M., & Mialhe, F. L. (2015). Use of the theory of planned behavior and implementation intentions in dentistry: Evidence of literature. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*, 15*(*1), 345–360.

Tam, K. Y., & Ho, S. Y. (2005). Web personalization as a persuasion strategy: An elaboration likelihood model perspective. *Information Systems Research*, *16*(3), 271–291. https://doi.org/10.1287/isre.1050.0058

Taute, H. A., McQuitty, S., & Sautter, E. P. (2011). Emotional information management and responses to emotional appeals. *Journal of Advertising*, *40*(3), 31–44. https://doi.org/10.2753/JOA0091-3367400303

Triandis, H. C. (1979). Values, attitudes, and interpersonal behavior. *Nebraska Symposium on Motivation, 27*, 195–259. University of Nebraska Press.

Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*, *27*(5), 591–615. https://doi.org/10.1177/109019810002700506

Zakrajsek, J. S., Eby, D. W., Molnar, L. J., St. Louis, R. M., Zanier, N., Stanciu, S. C., & Elliott, E. (2023). *Review of risk communication strategies and existing alcohol-impaired and distracted driving safety messages: Technical report* National Highway Traffic Safety Administration.

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

NHTSA