Guidance to Promote Family Rules and Workplace Policies to Reduce Cell Phone Use While Driving and Promote Engaged Driving

Task 1 Report

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1 INTRODUCTION

Distracted driving is a concern in the field of traffic safety. Distraction includes any activity that takes the driver's attention away from the task of driving (National Highway Traffic Safety Administration [NHTSA], 2019a). While there are many activities that could divert attention away from driving, the use of mobile cell phones is one common distraction for drivers. Cell phones are often used to communicate with others, and drivers may feel social pressure to answer calls or respond to texts. For example, research has shown that youth, even when told not to use their cell phones while driving, feel compelled to answer their cell phones when their parents call them (LaVoie, Lee, & Parker, 2016). Similarly, some workplaces have expectations that drivers are to respond to work-related calls or participate in conference calls while driving (Richardson & Benbunan-Fich, 2011). These examples demonstrate social expectations that impact decisions about distractions and reveal potential opportunities to reduce distracted driving and increase traffic safety.

Cultural-based strategies seek to change the behaviors of individuals by connecting their social identity to nested layers of relationships. Relationships between family members (e.g., parent to parent, parent to child) or employers and employees provide opportunities to engage people who are not in the vehicle to influence the behavior of a driver with whom they are communicating. Thus, family rules about not using a cell phone while driving need to apply to everyone in the family and on both sides of a conversation (in and out of the vehicle). Research has shown that parent modeling and expectations influence adolescent cell phone use while driving (Carter, Bingham, Zakrajsek, Shope, & Sayer, 2014). A similar strategy can be applied to workplaces; research has shown that policy interventions can be effective at impacting employee safety-related behaviors (Sinelnikov & Wells, 2017). These approaches leverage strategies aligned with proactive traffic safety (explored in the Pooled Fund's previous research: See https://www.mdt.mt.gov/research/projects/trafficsafety-cc-tools.shtml).

The focus of this project is to design tools and strategies that address distracted driving and foster engagement by families and workplaces. To design these tools and strategies, a literature review of published research is needed. This report summarizes Task 1 of this project. The purpose of Task 1 is to conduct a literature review of published research:

- To understand what current interventions and strategies are being used to address distracted driving within families and workplaces.
- To understand common elements found in interventions designed to change behavior.
- To inform the design phase of tools created for families and workplaces to reduce distracted driving.
- To inform the design of the surveys for this project.

2 BACKGROUND

Distraction negatively impacts safety and is a major contributing factor in crashes. In a recent naturalistic driving study, it was found that distraction is a factor in approximately 68% of crashes (Dingus et al., 2016). A driver's odds of crash involvement nearly double when engaging in any form of cell phone use and more than double when they are texting (Owens et al., 2018). Further, a meta-analysis of 16 studies on cell phone use and driving performance concluded that there are "clear costs to driving performance when drivers are engaged in cell phone conversations" (Horrey & Wickens, 2004, p. 2304).

Cell phone use and text messaging may be the most commonly discussed driving distractions; however, researchers have also studied other distracting behaviors such as dealing with children or animals, eating and drinking, changing the radio station, or using a navigation device (Hurwitz et al., 2016; Dingus et al., 2016). Table 1 shows crash risk based on major distraction subcategories observed in crash and baseline events using naturalistic driving data.

Table 1. Major distraction subcategories (observed in crash events)

Distraction Subcategories	Risk
In-vehicle device (radio, climate control, other)	Moderate Risk
Cell handheld (dialing, texting, talking)	High Risk
Reading/writing (includes tablet)	High Risk
Eating	Moderate Risk
Drinking (non-alcohol)	Moderate Risk
Personal hygiene	Moderate Risk
Reaching for an object (non cell phone)	High Risk
Dancing in seat to music	Moderate Risk
Extended glance duration to external object	High Risk

*Risk based on Odds Ratios (O.R 1.0 – 3.0 = Moderate Risk, O.R. 3.1 or greater = High Risk). Modified from Dingus et al., 2016.

Most drivers believe that talking on a cell phone and texting while driving is dangerous; however, despite these beliefs, many people report they engage in these behaviors (AAA Foundation for Traffic Safety, 2019). In the past month, approximately 52% of drivers talked on a hand-held cell phone while driving, 41% of drivers read a text message or email while driving, and 32% of drivers typed or sent a text message or email while driving (AAA Foundation for Traffic Safety, 2019). Despite recognizing the dangers and risks of talking or texting on a cell phone while driving, these behaviors are prevalent and concerning.

Distracted driving is a concern among families. Distracted driving is a major cause of motor vehicle crashes among young novice drivers (Klauser et al., 2014). Young drivers (ages 15 to 19) have the highest occurrence of distraction at the time of fatal crashes (National Center for Statistics and Analysis, 2019). In addition to being inexperienced drivers, young drivers believe they are less susceptible than others to distraction, and they "disproportionately believe that they are effective drivers even when distracted or using a cell phone" (Aguilar & Shoji, 2013, p. 4). Carter et al. (2014) found that risk perception is a predictor of distracted driving among

adolescent drivers. Beck and Watters (2016) found that college-aged texting drivers "perceived less risk in texting and driving and felt more immune to traffic risks" (p. 119).

There is concern in workplaces as well. A leading cause of workplace death is motor vehicle crashes, and it is estimated that approximately one-quarter of these crashes involve cell phone use (Occupational Safety & Health Administration, 2019). A non-fatal injury crash costs over $90,000 in direct monetary costs, and there are other significant costs of a crash-related injury such as lost work time, lower productivity, and decreases in employee health and wellbeing (National Safety Council, 2019). Engelberg, Hill, Rybar, and Styer (2015) found one's obligation to take work calls and over confidence in one's ability to drive while talking/texting were associated with higher scores on the distracted driving scale. Swedler, Pollack, and Gielen (2015) found that the management culture around safety and the organizational norms surrounding distracted driving influence the decisions of drivers. Addressing distracted driving is a necessary focus as it is increasingly becoming an expectation that safety is a priority and a responsibility of workplaces.

3 MATERIALS AND METHODS

To obtain research articles for this review, a keyword search was conducted using the TRID Transport Research International Documentation) database and Montana State University Library search engines "Academic Search Complete," "EBSCO," and "CatSearch." Word search and phrase combinations included: "behavior change theory," "behavior change strategies," "distracted driving and workplace," "distracted driving and families," "distracted driving interventions," "distracted driving strategies," and "traffic safety and distracted driving." Once articles were reviewed for relevance, additional key words were used in combination to narrow the search. Additionally, the reference lists of relevant articles were also reviewed for other potentially relevant articles that may have been missed with the key word searches.

4 RESULTS

This literature review explores interventions to reduce distracted driving among families and within workplaces. The literature review also focuses on common elements found in interventions designed to change behavior and identifies strategies that can increase these intervention elements to support the behavior change process. The identified elements and strategies can inform the design of tools to address distracted driving and foster engagement by families and workplaces.

4.1 Distracted Driving Interventions Targeting Families

Common interventions to reduce distracted driving within families include laws that prohibit distracted driving behaviors, information dissemination and educational tools, and technology innovation.

Laws about distracted driving have been implemented by states across the country (Governors Highway Safety Association [GHSA], 2019). However, distracted driving laws vary slightly from state to state; some states are more restrictive than others about what is considered illegal. According to the Governors Highway Safety Association, 21 states and D.C. prohibit all drivers from using hand-held cell phones while driving, and thirty-nine states and D.C. have a ban on all cell phone use by novice drivers. Additionally, 48 states and D.C. ban text messaging for all drivers (GHSA, 2019). Distracted driving laws are an intervention that has gained popularity and has research efficacy for reducing distracted driving behaviors (Rudisill & Zhu, 2017; Rudisill & Zhu, 2015; Qiao & Bell, 2016).

Media campaigns and education tools are common distracted driving interventions targeting families. For example, the National Highway Traffic Safety Administration (NHTSA, 2019b) and the Ad Council partnered to develop the "StopTextsStopWrecks" campaign. This texting and driving prevention campaign highlights that all distracted driving is dangerous (NHTSA, 2019b). There are many other distracted driving campaigns like the "SHIFT to Engaged Driving" campaign by the Idaho Department of Transportation; the "Just Drive" campaign founded by a non-profit organization in Colorado, which focuses on bringing awareness to drivers about the consequences of distracted driving (Just Drive, n.d.); and the "U Drive. U Text. U Pay" campaign by NHTSA (2019a) to name a few. Public service announcements like the National Safety Council's, "Calls Kill" and American Automobile Association's (AAA) commercial "Distracted Driving" are other examples of distracted driving media. In a review of media messages about distracted driving, Hood, Kowalczyk, Hopkins, and Padgett (2017) found many of the messages focus on facts and figures about distracted driving and consequences to self and others. Media campaigns and public service announcements are common ways to reach families.

Additionally, many organizations like the U.S. Department of Transportation, NHTSA, AAA, and the National Safety Council have created educational tools to promote intervention strategies designed for families. One tool that is often promoted is pledges/agreements. For example, the United Services Automobile Association (USAA) and AT&T have partnered together to start a movement called "It Can Wait" that promotes pledging to drive distraction free. NHTSA (2019a) has a "Stay Safe Pledge" focused on never texting or using a phone while driving and speaking

up when seeing others who are distracted. USAA also has a "Parent and Teen Safe Driving Agreement" that asks teens to agree to abide by a variety of safe driving practices including not texting while driving, not using a cell phone while driving, and not engaging in other distracting behaviors like eating, grooming, or adjusting the radio while driving. These parent/teen driving agreements capitalize on the essential role parents play in influencing the behaviors of their children. Research evidence supports that parenting practices like family rules influence adolescent health behaviors (de Looze et al., 2014; Goldberg-Looney et al., 2015; Bylund, Baxter, Imes, & Wolf, 2010).

Technology, especially in the form of cell phone applications, is an increasingly popular strategy to reduce distracted driving among families. These technologies have the capability to disable incoming text sounds or calls to a cell phone while driving; to disable phone applications that have the potential to be distracting like social media, gaming, and cameras; and to send automatic messages and notifications that a person is driving. Further, technological applications are now being used to also track speed, braking, and time of trips when driving. For example, Allstate Insurance uses the technology (Drive Wise®) to promote safe driving behaviors and gives incentives if a driver is within the "safe" range parameters (Allstate, 2019). While this type of technology doesn't focus directly on driver distraction, quick braking may occur because of distraction, and the use of this technology could prevent engagement in distracting behaviors.

4.2 Distracted Driving Interventions in the Workplace

Policy is the most common response to reduce distracted driving in workplaces. There are ample resources from trusted safety organizations like the Centers for Disease Control and Prevention (CDC), Network of Employers for Traffic Safety (NETS), and NHTSA that have published information about how to create workplace polices. However, it is a growing discussion that policy alone is not enough to address distracted driving in the workplace (Farrell, 2015).

Workplaces are encouraged to go beyond the implementation of a distracted driving policy to include other strategies that reduce risk and increase safety (National Institute for Occupational Safety and Health [NIOSH], 2015; Farrell, 2015). For example, the CDC and the National Institute for Occupational Safety and Health (NIOSH) recommend that workplaces consider implementing a Motor Vehicle Safety Program. In addition to policy implementation, the program includes other strategies to support employee safety like having company leaders committing to road safety, creating policies to guide everyone's actions to promote road safety, driver selection, training and evaluation, and processes and procedures for making sure company vehicles are safe and well maintained (NIOSH, 2015, pp. 2-4). The combination of workplace policies about distracted driving along with other strategies to support those policies such as education, processes, and procedures to monitor compliance, address violations, and reinforce positive behaviors are increasingly suggested for workplaces (Farrell, 2015).

Technological software is another intervention that workplaces are implementing to reduce distracted driving especially among commercial drivers. Using specially designed software, workplaces can manage mobile devices for commercial drivers and other drivers while at work (TRUCE Software, 2019). In-vehicle devices that use video, GPS, and tap into the vehicle's

computer and then transmit data such as swerving and hard braking are also becoming increasingly popular for commercial fleets (Virginia Tech Transportation Institute [VTTI], 2017). These onboard safety monitoring systems were not specifically designed to reduce distraction; however, workplaces are using the data to coach drivers (VTTI, 2017).

4.3 Common Elements of Interventions Designed to Change Behavior

This literature review also focuses on common elements found in interventions designed to change behavior and identifies strategies that can increase these intervention elements to support the behavior change process. These common elements can inform the design of tools and strategies to address distracted driving and foster workplace and family engagement.

Six common elements discussed in this review include: cognitive engagement, building knowledge and skills, practice, support, motivation, and locus of control. These common elements are supported by behavior change theories and behavior change models. Research suggests that interventions based on a strong theoretical foundation are more likely to produce desired outcomes than interventions that are not (Rimer & Glanz, 2005). Interventions are more likely to be successful when there is a clear understanding of the behavior and the context in which the behavior occurs; theory can inform both the factors that contribute to the behavior and the ways to influence and change the behavior (Rimer & Glanz, 2005).

4.3.1 Cognitive Engagement

A common element in interventions designed to change behavior is to create opportunities for cognitive engagement with the information being presented. Cognitive engagement includes both the effort a person puts toward their learning and the effort expended to encourage learning to take place (Maguire, Egan, Hyland, & Maguire, 2017). Whether the focus of the intervention is among families or with employees in a workplace, finding ways to help people cognitively engage can support the behavior change process.

Cognitive engagement is an active process that includes processing the information given and reflecting on the content in a way that makes meaning of the information. Cognitive engagement could look like a conversation between parents and their children about specific family rules regarding driving distraction free or between employees about the impact of distracted driving in the workplace. Cognitive engagement could look like a parent asking their child for input on a family rule or an employer asking their employees for input about a specific policy, strategy, or practice in the organization.

Research supports that different levels of learning occur from different modes of engagement; engagement behaviors can be categorized as passive, active, constructive, and interactive (Chi & Wylie, 2014). Passive engagement is generally viewed as receiving information without "overtly doing anything else related to learning" (Chi & Wylie, 2014, p. 221). Passive engagement might look like a parent giving their child a handout about the dangers of distracted driving or an employer giving their employee a brochure about distracted driving. In these examples, besides reading the handout or brochure, there is little else required of the child or employee.

Active engagement requires cognitive engagement with the information. It requires that a person gets involved with the information in a more meaningful way (Chi & Wylie, 2014). For example, in addition to being given a handout or brochure about distracted driving, the parent or employer has a conversation about distracted driving and asks their child or employee to think about ways to reduce distracted driving in their specific context. Active engagement is considered superior to passive engagement for learning (Chi & Wylie, 2014).

Constructive engagement builds on active engagement and occurs when a person generates meaning about the information by actively processing the information, reflecting on the information, connecting the information to their previous experiences and knowledge, and asking questions (Chi & Wylie, 2014). Constructive engagement is "generative" and creates a shared context in which to start making meaning about a behavior or issue (Chi & Wylie, 2014, p. 222). Constructive engagement requires "reconstructing the information in such new and personally meaningful ways, they (learners) are far more likely to remember it and apply it in new situations" (King, 1993, p. 30). For example, in a family, constructive engagement could occur if parents and children were talking about how their family rules to drive distraction free could be put into action. In a workplace, constructive engagement could occur if employees in a department were discussing the importance of the workplace distracted driving policy and talking about how the policy will be followed in their department. The discussion might include asking questions about the policy and talking about how the policy will impact their daily work processes.

Interactive engagement builds on active and constructive engagement by adding dialogue and the exchange of ideas as additional elements of engagement that enhance learning (Chi & Wylie, 2014). Interactive engagement is a process of exchanging ideas that generates new ideas and new meaning. Through dialogue, "both parties make contributions to the discussion, asking questions, explaining one's position, elaborating on each other's contributions" (Chi & Wylie, 2014, p. 223). For example, interactive engagement could occur if parents and children co-created family rules where all family members contributed to the discussion about what the family rules are and the consequences for non-compliance. Together, they could co-create a plan for implementing their ideas. Interactive engagement could similarly occur in workplaces. Interactive engagement could look like employees discussing the importance of the distracted driving policy and, through a mutual exchange of ideas, the employees could decide that in their department they could go beyond the basics of the policy. For example, if the policy dictated that employees are not allowed to use hand-held devices while driving, but hands-free devices are still allowed, through the employee's generative discussion of distracted driving and the policy, they could decide to go beyond the policy and co-create a plan to not use hand-held or hands-free devices while driving in their department. In an interactive engagement, the employees are generating new ideas and cocreating what it means to be distraction free while driving for them personally and as a workgroup or team.

Research suggests asking open-ended questions, seeking input, and actively listening are ways to increase cognitive engagement. Open-ended questions are those that "do not invite brief answers" (Miller & Rollnick, 2002, p. 65). Asking open-ended questions invites a conversation

about a topic or issue. Seeking input is another way to increase engagement. Lui and Gal (2011) found that asking for input (specifically asking for advice) builds a sense of relationship and results in increased engagement. Asking for input "creates a social interaction" (Lui & Gal, 2011, p. 242).

Cognitive engagement is also enhanced with active listening. "Effective listening skills are the foundation of learning" (Bond, 2012, p. 61). Active listening can help to make meaning of the topic by seeing how the information is applicable and relevant and can generate additional open-ended questions; while a person might understand what to do, they might not understand fully why they should (Bond, 2012). Grappling with "why" is an important element of behavior change. It is unlikely behavior change occurs without finding some relevance, some "why," for engaging in the behavior.

Learning is enhanced when people engage more interactively with the information they are given (Chi & Wylie, 2014). Cognitive engagement can help a person to "recall, apply, transfer, and co-create information" (Chi & Wylie, 2014, p. 221). Engagement can make learning "more meaningful and permanent" (Deporter, Reardon, & Singer-Nourie, 1999, p. 22). Engagement creates buy-in by helping the person answer the question: "What's in it for me?" (Deporter et al., 1999, p. 22). Cognitive engagement can influence one's beliefs about a behavior, and beliefs are an important construct in many behavior change theories (LaMorte, 2019). Furthermore, cognitive engagement is often done in a social context and, through reciprocal interactions, a person's behaviors are shaped, which is also an important construct supported by behavior change theories (LaMorte, 2019). Finding ways to increase cognitive engagement and personal meaning is an important element to consider when designing interventions and tools to reduce distracted driving behavior among families and in workplaces.

4.3.2 Build Knowledge and Skills

Another common element in interventions that seeks to change behavior is to build knowledge and skills. Building knowledge and skills includes teaching the behavior and conveying the purpose of engaging in that behavior. Building the person's capacity to be successful requires not only that they understand why they should engage in a behavior, but also to understand how to do the behavior that is being asked of them.

Teaching is a common role parents find themselves in with their children. In a family context, building knowledge and skills might look like parents teaching their children about what distracted driving looks like, talking about ways they can reduce distraction, and role playing how they could speak up with a friend who was engaged in distracted behaviors while driving.

Similarly, training and education are common ways to build knowledge and skills in workplaces. In a workplace, building knowledge might look like an employer teaching their employees about the different kinds of distracted driving behaviors and talking about consequences of distracted driving and the prevalence of these behaviors to raise awareness. Engaging employees in implementing a workplace distracted driving policy can also build knowledge. Building skills to reduce distracted driving might look like demonstrating to employees what a conversation looks like in an unsafe situation and role playing with employees about how to speak up if they notice

their coworker is engaged in an unsafe behavior like talking on their cell phone while driving. Investing time and effort into properly training employees can result in benefits to the organization including increasing their ability to "adapt, compete, excel, innovate, produce, be safe, improve service, and reach goals" (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012, p. 74).

Research suggests that behavioral modeling is an effective strategy to build knowledge and skills. Modeling is a construct supported by behavior change theories (LaMorte, 2019). Parents continually model behaviors for their children. Research suggests that parental modeling is an important predictor of risky youth driving behaviors (Schmidt, Morrongiello, & Colwell, 2014). In a study of parental factors that influence youth risky driving behaviors, research shows for distraction specifically, "parents who modeled distracted driving behaviors were more likely to have youth who engaged in these behaviors, were willing to engage in these behaviors, and who expected that they would do so in the future" (Schmidt et al., 2014, p. 48). In addition to modeling, this study also found that parental teaching can influence the likelihood that youth engage in distracted driving behaviors (Schmidt et al., 2014). In organizations, supervisors and leaders can model behaviors and give employees opportunities to observe the skills in action (Grossman & Salas, 2011).

4.3.3 Practice

Newly acquired skills and knowledge must be practiced. The goal of building knowledge and skills is to be able to apply what is learned. Practice is a common element in interventions designed to change behavior. People learn by doing. Practice builds one's self-efficacy, which is an important construct of behavior change theories (LaMorte, 2019).

In a family context, practice time is essential. Children need to practice what they learn. It is through practice that children can apply their new learning and build connections for how their new learning can be used in different contexts and situations (Deporter et al., 1999). In a workplace, employees need practice opportunities where they can make mistakes and receive instruction (Grossman & Salas, 2011). Ensuring employees have time and opportunities to practice is positively associated with being able to apply what they learned (Salas et al., 2012).

Creating a supportive community of people in which to practice newly learned skills and knowledge is a strategy that can support behavior change. Purposefully creating activities that require group cooperation and teamwork can help people retain the information and motivate them to continue to learn (Hoidn, 2017). A supportive community in which to practice allows people to explore, share ideas and insights about what they are learning, and make mistakes in low-risk situations (Hoidn, 2017).

4.3.4 Support

Supporting one's new learning is important to "strengthen neural connections and establish a sense of 'I know I know this!'" (Deporter et al., 1999, p. 92). Support can strengthen skills and build confidence to apply the skills in varied contexts with different people and in different situations and settings (Blume, Ford, Baldwin, & Huang, 2010). Support can look like monitoring the newly learned behavior, providing feedback, and coaching. The social context in

which a behavior is influenced, shaped, and supported is an important focus of behavior change theories (LaMorte, 2019).

Performance-based feedback/coaching is one strategy that has efficacy for influencing behavior change. For example, in a study of teachers implementing a classroom-based intervention with students, Conroy, Sutherland, Vo, Carr, & Ogston (2014) found that professional development training and practice-based coaching (including performance feedback), which included elements of training, modeling, practicing, and feedback were associated with increased use of and fidelity to the specific intervention learned. Aguinis, Gottfredson, and Joo (2012) suggest that strength-based feedback that focuses on a person's strengths and how a person is using their strengths to produce desired behaviors is superior to feedback that is focused on shortcomings or insufficiencies.

In a driving context, parent feedback and communication about safe driving can influence teen risky driving behaviors. In a random-control trial to test the impact of parent feedback and communication on improving in-vehicle feedback systems, it was found that teens' driving behavior improved when parents were providing training to help them give feedback about safe driving (Peek-Asa, Reyes, Hamann, Butcher, & Cavanaugh, 2019). In this random-control trial, the parent training "Steering Teens Safe" was used, which taught Motivational Interviewing skills to help parents "talk, demonstrate, and supervise their teens on 26 safety driving topics" including distraction (Peek-Asa et al., 2019, p. 64).

In a workplace context, various researchers have also suggested that the culture of the work environment contributes to whether or not new knowledge and skills are supported and able to be practiced in one's job (Rouiller & Goldstein, 1993; Grossman & Salas, 2011; Roche, Pidd, & Freeman, 2009; Salsa & Cannon-Bowers, 2001). Employees need to feel supported to apply newly learned skills (Grossman & Salas, 2011). Supervisors can play an important role in creating and maintaining a supportive environment by providing feedback and coaching their employees (Govaerts & Dochy, 2014). In a workplace context, supervisors and leaders could support their employees to reduce distracted driving by encouraging them to practice speaking up when they see a coworker engaged in an unsafe behavior while driving, supporting conversations about distracted driving in a department meeting, or encouraging employees to ask questions and brainstorm ideas about ways to reduce distracted driving. Supervisors can also model the behaviors they are encouraging their employees to engage in by driving distracted free themselves. Similarly, parents can also provide a supportive environment that encourages their children to practice newly developed skills and to apply their learning. Parents can offer their children feedback and coaching when needed and can model the behaviors they are encouraging their children to engage in themselves.

4.3.5 Motivation

Both intrinsic motivation and extrinsic motivation play a role in behavior change. Rewards are a common strategy to build motivation for behavior both within families and in workplaces. However, in a review of research on rewards and motivation, Deci and Ryan (2014) caution that there is research evidence that suggests extrinsic rewards can decrease intrinsic motivation. To avoid having a negative effect on motivation, it has been suggested that in a workplace setting

rewards should not be used to try to motivate or control employees to do their work or engage in a behavior, but should be unexpected, noncontingent, and when given, they "should convey a sense of acknowledgement for performance well done" (Deci & Ryan, 2014, p. 25).

In a family context, recognizing a child's effort and successes grows their motivation to continue to engage in the behavior. Recognition and acknowledgement of effort support a child's desire to succeed (Deporter et al., 1999). When praise is perceived as sincere and honest, it is more likely to positively influence intrinsic motivation (Henderlong & Lepper, 2002). Using specific praise for behavior like, "You did a great job of speaking up when I was distracted in the car this morning" is superior to general praise like, "You're awesome." Praise that promotes autonomy, competence, and provides specific information about standards of excellence or reasonable expectations can also enhance intrinsic motivation (Henderlong & Lepper, 2002).

Another common strategy to increase motivation, especially in workplaces, is to create competition. While it can seem as though competition could foster motivation, research has found contrary results; competition can undermine intrinsic motivation (Deci & Ryan, 2014). Given the impact of competition on intrinsic motivation, it is recommended that strategies designed to foster competition be avoided when designing interventions to reduce distracted driving behavior in families and workplaces.

Offering choices leads to increased intrinsic motivation (Deci & Ryan, 2014). In the context of interventions to reduce distracted driving, offering choices may be helpful to increase motivation for behavior. In a workplace setting, in addition to an organization-wide distracted driving policy, allowing employees to choose from a variety of additional strategies to reduce distracted driving might be helpful. For example, employees could be offered a list of things they could choose to do to reduce distracted driving (like installing a technology app that won't allow calls or texts while driving, creating a voicemail that explicitly states the person won't answer a phone call while driving, agreeing to shut the phone off before driving, etc.). Flexibility and choice can help satisfy one's need for autonomy and, through conversation and collaboration, also satisfy needs for social relatedness (Deci & Ryan, 2014). In a family context, parents could take a similar approach with their children. Providing choices about which strategies children will implement to avoid distracted driving can bolster motivation and buy-in.

4.3.6 Locus of Control

Locus of control includes people's beliefs about their ability to control outcomes. An external locus of control refers to a person's perception that an outcome is a result of "external, uncontrollable, influences, such as luck, fate, and powerful others" (Huang & Ford, 2012, p. 358). An internal locus of control refers to a person's perception that outcomes are influenced by internal and controllable factors; they have a sense of responsibility for the outcomes they experience (Huang & Ford, 2012). Research suggests that increasing internal locus of control and decreasing external locus of control are associated with improvements in safe driving behavior (Huang & Ford, 2012). Training that influences a driver's perceived control over outcomes, provides knowledge about traffic crash prevention and safe driving, and teaches skills to avoid crashes may influence the driving locus of control; offering feedback to a driver about their driving behavior may also be influential (Huang & Ford, 2012). In a study to determine

whether advanced driver coaching would lead to measurable benefits in driver competences (driver attitude was one of the competencies and was measured by a locus of control scale), the researchers found that coaching reduced external locus of control (Stanton, Walker, Young, Kazi, & Salmon, 2007). Finding opportunities to enhance knowledge and skills and influence driver locus of control in tools designed to reduce distracted driving should be considered. In a workplace context, locus of control has also been found to increase compliance with policy (Ifinedo, 2014).

5 CONCLUSIONS

The purpose of the "Guidance to Promote Family Rules and Workplace Policies to Reduce Cell Phone Use While Driving and Promote Engaged Driving Project" is to design tools and strategies to foster engagement by families and workplaces to reduce distracted driving. This is a worthy endeavor given that distracted driving is a major contributing factor in traffic crashes (Dingus et al., 2016; Owens et al., 2018) and can have significant and negative consequences to families and workplaces.

A literature review of published research is the focus of this Task 1 Report. The literature review seeks to understand current interventions and strategies to address distracted driving among families and within workplaces. The most common strategies being used to address distracted driving within families include laws that prohibit distracted driving behaviors, information dissemination and educational tools, and technology innovation. Within workplaces, policy is the most common response to reduce distracted driving, although workplaces are increasingly realizing the importance of additional strategies to support policy as evidenced by the implementation of comprehensive driving safety programs to address traffic safety in the workplace.

The literature review also seeks to identify common elements found in interventions designed to change behavior that could be used to inform the design of tools and strategies to address distracted driving and foster engagement by families and workplaces. Six common elements found in interventions designed to change behavior are included in this literature review. Those six elements include: cognitive engagement, building knowledge and skills, practice, support, motivation, and locus of control. Strategies found to bolster the efficacy of each element are also included. Research shows that interventions based on a theoretical foundation are more likely to produce desired outcomes (Rimer & Glanz, 2005); thus, the common elements identified in this literature review are supported by behavior change theories.

The family and workplace contexts offer two important opportunities to implement cultural-based strategies that seek to reduce distracted driving behavior. However, before developing tools and strategies for families and workplaces, it is important to have an understanding about what strategies are currently being used and what elements are common in interventions designed to change behavior. This Task 1 report contributes to this understanding and can be used to guide the design of tools and strategies to foster family and workplace engagement to reduce distracted driving.

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