

GUIDANCE ON MESSAGING TO AVOID PSYCHOLOGICAL REACTANCE AND ADDRESS MORAL DISENGAGEMENT

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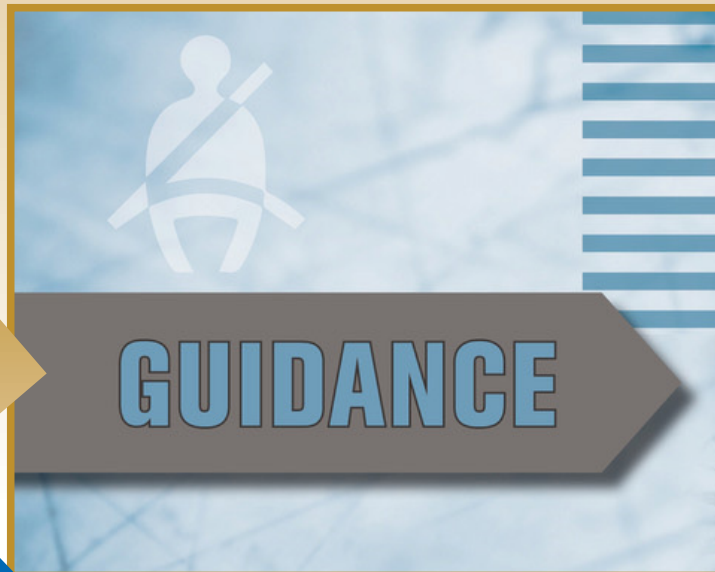
THE U.S. DEPARTMENT OF TRANSPORTATION
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July 2021

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Guidance on Messaging to Avoid Psychological Reactance and Address Moral Disengagement

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16. Abstract The purpose of this project was to determine if the prevalence of psychological reactance and moral disengagement are higher among adult drivers who never or rarely wear their seat belts or who drive aggressively (i.e., speed, follow too closely, and pass excessively) and to identify potential messaging to minimize reactance and overcome moral disengagement regarding seat belt use and aggressive driving. Surveys revealed that those who rarely or never used a seat belt were found to exhibit more situational psychological reactance (in response to two messages about seat belt use) and exhibit more moral disengagement than people who usually or always used a seat belt. No differences in proneness to psychological reactance were found based on seat belt use. Those who frequently drove aggressively were found to exhibit more proneness and situational psychological reactance and exhibit more moral disengagement than people who rarely or never drove aggressively. Recommendations for message content to increase seat belt use and reduce aggressive driving are provided as well as guidance on message components that reduce psychological reactance and moral disengagement. Supportive materials developed included two information sheets, one message brief, presentation slides, and a summary poster.			
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1 INTRODUCTION

Traffic safety is a significant public health issue. In 2019, over 36,000 people were killed on U.S. roadways. In 2016, about half (48%) of passenger vehicle occupants killed were unrestrained (among those crashes with known restraint use). Fatalities in speeding-related crashes increased in 2016 by 4.0 percent from 2015 (National Center for Statistics and Analysis, 2017). However, improvements have been made. In 2019, seat belt use reached an all-time high of 90.7 percent (National Center for Statistics and Analysis, 2019). Nonetheless, a small portion of the population (i.e., about 10 percent) still do not wear a seat belt and regularly speed. Understanding certain characteristics of this small group may provide insight on how to change their behaviors and thereby improve traffic safety.

Two psychological phenomena, psychological reactance and moral disengagement, may influence the decisions of individuals in this smaller portion of the population who engage in risky behaviors. Psychological reactance is “an unpleasant motivational arousal that emerges when people experience a threat to or loss of their free behaviors” (Steindl, Jonas, Sittenthaler, Traut-Mattausch, & Greenberg, 2015, p. 205). Research has found that psychological reactance is often indicated as anger and counterarguing (Rains, 2013). Proneness to reactance has been measured (Reynolds, 2006) and shown to be associated with anger, negative feelings, and less intention to engage in protective behaviors (Dillard & Shen, 2005).

Moral disengagement, originally proposed by Albert Bandura (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996), occurs when “individuals detach themselves from their usual self-regulatory processes or morality in order to behave in ways that run counter to their normal moral standards” (Cleary, Lennon, & Swann, 2016, p. 1). Mechanisms of moral disengagement include cognitively redefining the behavior, attributing blame to others, and reducing the negative impact of the behavior (e.g., “It is OK for me to speed because I won’t crash.”) (Bandura et al., 1996). Research has revealed that moral disengagement may explain aspects of aggressive driving (i.e., following too closely, excessive passing, and speeding) (Swann, Lennon, & Cleary, 2017). If some aggressive drivers are engaging in moral disengagement, messaging that overrides this justification process and reconnects the individuals with their existent, self-regulatory processes may be effective at reducing risky behavior.

The objectives of this project were to:

- Determine if the prevalence of psychological reactance and moral disengagement were higher among adult drivers who never or rarely wear their seat belts or who drive aggressively (i.e., speed, follow too closely, and pass excessively) compared to adults who did not engage in these risky behaviors.
- Identify potential messaging to minimize reactance and overcome moral disengagement regarding seat belt use and aggressive driving.

2 BACKGROUND

2.1 Psychological Reactance in the Context of Traffic Safety

Slogans like American Express's "Don't Leave Home Without It," Subway's "Eat Fresh," L'Oréal's "Because You're Worth it," and Apple's "Think Different" are some of the messages created to persuade us to do or not do, feel or not feel, and think or not think. While many persuasive messages are successful and work as intended, some do not. Some persuasive attempts do not elicit the desired outcome; and worse, some have the opposite effect. These opposite outcomes have been called the boomerang effect (Quick, Shen, & Dillard, 2013).

In traffic safety, one of the ways agencies seek to influence traffic safety-related behaviors is to implement persuasive traffic safety campaigns. These campaigns seek to increase protective behaviors like wearing a seat belt and following the posted speed limit and to reduce risky behaviors like texting while driving and driving after drinking alcohol. The phenomena of psychological reactance (Brehm & Brehm, 1981) can provide insight about why some persuasive attempts achieve their desired results and others fail, and this understanding may help traffic safety professionals create messaging that is more effective, especially with the small group of people engaging in risky traffic safety behaviors and most resistant to change. Strategies to reduce reactance in messaging about smoking, drunk driving, high-risk drinking, and consuming soft drinks have been explored (Shen, 2010; Richards, Banas, & Magid, 2017).

Psychological reactance theory assumes that individuals like to have choices and be able to choose among various options (Quick & Stephenson, 2007). When one's freedom to choose is threatened or lost, for example, by rules or restrictions, reactance is elicited, thereby motivating the individual to reestablish their freedom (Quick & Stephenson, 2007; Dillard & Shen, 2005). Psychological reactance theory (Brehm & Brehm, 1981) explains "how individuals respond when a freedom has been threatened or lost" (Rains, 2013, p. 48). There are four elements in psychological reactance theory: freedom, threat to freedom, reactance, and restoration of freedom (Dillard & Shen, 2005).

Free behaviors include how one acts, feels, and thinks (Brehm & Brehm, 1981). Freedoms include an individual's "beliefs about the ways in which one can behave" (Quick, Shen, & Dillard, 2013, p. 171). Freedoms are defined subjectively, which means that if a person perceives they have a particular freedom and believes they can exercise that freedom, then the freedom exists for that person (Brehm & Brehm, 1981). In traffic safety, examples of free behaviors include individuals believing that they choose when to use their cell phones, when to wear a seat belt, or when to speed.

Anything that is perceived to make it more difficult for an individual to exercise their free behaviors is considered a threat to freedom (Dillard & Shen, 2005). A threat to freedom is typically induced when an individual's autonomy is restricted or there is a perception that it could be restricted or lost. Threats to freedom can include social influences like a friend giving a

disapproving opinion, a parent bribing their child to comply or punishing them for non-compliance, or a television or radio ad seeking to change behavior using a persuasive advertisement (Brehm & Brehm, 1981). Examples of threats to freedom in traffic safety might include being prohibited from using a cell phone while driving, being required to wear a seat belt, being told how fast one can drive, or being stopped by an officer and fined for non-compliance. Being prohibited from or required to do something or feeling forced to feel or think a certain way can arouse reactance (Brehm & Brehm, 1981).

Reactance is a “counterforce motivating the person to reassert or restore the threatened or eliminated freedom” (Brehm & Brehm, 1981, p. 37). Researchers have conceptualized reactance in ways that are more direct and measurable and can help us understand “why and when persuasion fails” (Shen, 2015, p. 975). Dillard and Shen (2005) identified four ways to characterize reactance: as a cognitive process, as an emotion, as both emotion and cognition, and as emotion and cognition intertwined.

As a cognitive process, it is believed that a “persuasive message generates cognitions that can be in agreement or disagreement with the message” (Rains, 2013, p. 49). From a cognitive frame, reactance is operationalized as counter-arguing (Dillard & Shen, 2005). Counter-arguing in traffic safety might look like disagreeing with traffic safety campaign messages, intentions to not engage in the traffic safety behavior being promoted, or intentions to engage in the risky traffic behavior being discouraged (Dillard & Shen, 2005).

Characterizing reactance as an emotion, reactance is operationalized as “varying degrees of anger (e.g., irritation, annoyance, and rage)” (Dillard & Shen, 2005). In traffic safety, emotion might look like honking the horn or making angry gestures.

The third and fourth characterizations of reactance view reactance as both emotion and cognition. While one characterization suggests the effects of cognition and emotion are separate and distinct, the other views reactance as an intertwining of both cognition and emotion where the effects cannot be separated (Dillard & Shen, 2005). In this way, reactance is a “cognitive and affective amalgam” (Dillard & Shen, 2005). Since conceptualizing reactance in these ways, several research studies have supported the intertwined conceptualization where reactance is counter-arguing and anger intertwined (Dillard & Shen, 2005; Rains, 2013; Shen, 2015; Quick & Stephenson, 2007; Quick & Considine, 2008).

When a person’s freedoms are threatened or lost, they experience reactance, which in turn, prompts behaviors, thoughts, emotions, and attitudes that seek to reestablish or restore those freedoms (Dillard & Shen, 2005). In some situations, this may mean the individual does the opposite of what was advocated; this is called a “direct restoration” (Brehm & Brehm, 1981; Dillard & Shen, 2005). For example, in response to a traffic safety campaign that advocates for seat belt use, reactance may prompt an individual to refuse to wear a seat belt. Other, indirect attempts to restore freedom might look like downplaying the need for seat belts, discrediting the traffic safety agencies behind the campaign messages, or deciding to wear a seat belt but

exercising the right to speed (or another freedom) to gain an alternative sense of control over something else (Brehm & Brehm, 1981; Dillard & Shen, 2005; Quick, Shen, & Dillard, 2013).

Psychological reactance has been conceptualized as a “situational response to a specific threat to freedom” (Miron & Brehm, 2006, p. 7). However, researchers have also acknowledged that reactance is a trait and that some people are more prone to reactance than others (Hong & Faedda 1996; Brehm & Brehm, 1981; Dowd, Milne, & Wise, 1991). Researchers exploring psychological reactance proneness have studied its association with other personality variables like self-esteem, trait-anger, depression, life satisfaction, and religiosity (Hong & Faedda, 1996).

Emotional intelligence as an individual difference in one’s propensity for psychological reactance has also been studied. Middleton, Buboltz, and Sopon (2015) found that males with lower behavioral reactance have significantly higher emotional intelligence scores (on subscales: well-being, self-control, and emotionality) (pp. 542-549); however, for females, emotional intelligence was not a factor in their behavioral reactant responses (Middleton et al., 2015).

When and how strong a person’s reactance is to a specific threat varies based on a number of situational factors. One situational factor proposed as a guiding principle by Brehm and Brehm (1981) is that “one’s experience of reactance is a function of how firmly the individual believes that they have a particular freedom or control over an outcome” (p. 5). In traffic safety, for example, when a person is told to follow a specific speeding law, the amount of reactance elicited by this law depends on how much the individual believes that they have the freedom to drive whatever speed they choose.

Another situational factor likely to influence how strong a person’s reactance is in a given situation is the perceived importance of the freedom that is threatened (Brehm and Brehm 1981, p. 5). Essentially, more reactance is aroused when an individual perceives the freedom that is being threatened is important; that is, a freedom perceived to be the only freedom to satisfy a particular need (Brehm & Brehm, 1981). In contrast, lower reactance is aroused when a threatened freedom is perceived to be unimportant (Brehm & Brehm, 1981). For example, if a person believes that texting on a cell phone is a freedom that satisfies their need for connection and relationship, then messages like “Don’t Text and Drive” or laws that prohibit cell phone use while driving are potential threats to this freedom that could elicit reactance.

A third situational factor associated with the amount of reactance that is elicited in a particular situation is related to the number of freedoms that are threatened (Brehm & Brehm, 1981). Essentially, something that threatens a single freedom should arouse less reactance than something that threatens multiple freedoms (Brehm & Brehm, 1981). For example, a person who is told not to ride their bicycle on the highway should experience less reactance than a person who is told they can never ride their bicycle on any roadways.

A fourth situational factor that is associated with how strong a person’s reactance is in a situation depends on the implied threat that occurs (Brehm & Brehm, 1981). When an individual is told to do something (e.g., perform a certain behavior, follow a specific rule, etc.), they may experience

reactance, not because of the single threat to freedom but because the person might infer that future freedoms could be threatened (e.g., “If they tell me I can’t use my cell phone while driving, what’s next?”) (Brehm & Brehm, 1981). The implications for one’s future freedoms can elicit increased reactance (Brehm & Brehm, 1981).

The magnitude of reactance that is elicited in a given situation is dependent on a variety of situational factors. The four factors discussed here may provide insight into why the small group of people engaging in risky behaviors like driving aggressively or not wearing a seat belt may be more reactive to current traffic safety intervention strategies than the large group of people who have responded positively to the current intervention strategies employed by traffic safety professionals. Perhaps these situational factors can be addressed more intentionally in the current traffic safety strategies and would make a difference in behavior.

2.2 Moral Disengagement in the Context of Traffic Safety

A person relies on a set of moral standards they have developed for what is right and wrong to guide and deter their behaviors in everyday life (Bandura, 2002). Normally, individuals behave in ways that are congruent with their set of moral standards (Bandura, 2002). They act in ways that are proactive and foster positive feelings of self-worth and wellbeing (Bandura et al., 1996; Bandura, 2016). In general, a person’s moral standards guide good behavioral choices. However, what has captured the attention of many researchers is behaving in ways that are incongruent with a person’s moral standards. Why, when, and under what circumstances does this happen?

People regulate their thoughts and behaviors through a self-regulation process (Bandura et al., 1996; Bandura, 2016). This self-regulation process consists of self-monitoring, evaluating behaviors and thoughts against a set of internal standards and the context in which the behaviors and thoughts occur, and self-reaction (Bandura, 2002; Bandura, 2016; Bandura et al., 1996). Self-reactions can be positive or negative. Positive self-reactions are judged to be in alignment with a person’s internal set of standards (Bandura et al., 1996). In contrast, negative self-reactions occur when a person judges their behaviors and thoughts to be misaligned with their internal set of standards, and in these situations, a person will apply self-sanctions to regulate their behaviors (Bandura et al., 1996). Self-sanctions for acting in incongruent ways seek to deter future transgressions by evoking feelings of “guilt, remorse, and self-criticism” and can provoke “attempts at restitution” (e.g., “I feel bad for acting this way and I will remember these feelings so I don’t act this way again,” or “I feel bad and will try to make things right”) (Bandura, 2016).

Bandura (2002) proposed that moral self-regulation is a process that can be selectively activated or disengaged. Activated self-regulation motivates moral conduct (Bandura et al., 1996). In contrast, through moral disengagement, “individuals are freed from the self-sanctions and the accompanying guilt that would ensue when behavior violates internal standards” thus allowing individuals to act in ways that are counter to their personal moral standards (Detert, Trevino, & Sweitzer, 2008). In other words, disengaging from one’s self-regulatory process “permits different types of conduct with the same moral standards” (Bandura et al., 1996). Moral

disengagement explains how “good people can behave badly” (Gini, Pozzoli, & Hymel, 2014, p. 57).

People employ different mechanisms to disengage from their moral standards, behave poorly, and at the same time maintain their self-image and sense of moral agency (Bandura, 2002). These mechanisms include moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, dehumanization, and attribution of blame (Bandura et al., 1996; Bandura, 2002).

These disengagement mechanisms operate at four focus areas in the self-regulation process to weaken moral control: behavior (changing the acceptability of the behavior), agency (distorting or minimizing one’s role in the harm), outcome (distorting the consequences of the behavior), and victim (reducing one’s identification with the recipient of the harmful act) (Bandura, 2016; Bandura, 2002; Detert et al., 2008; Gini et al., 2014).

Regarding behaviors, a person changes or restructures the acceptability of a behavior, turning it from a negative or harmful behavior into a positive or good behavior (Bandura, 2016; Bandura et al., 1996; Detert et al., 2008; Gini et al., 2014). Mechanisms in this category include moral justification, euphemistic labeling, and advantageous comparison (Gini et al., 2014; Detert et al., 2008). These mechanisms operate by justifying unacceptable behavior as socially or morally worthy (moral justification), comparing a negative behavior with an even worse behavior to make it appear less concerning (advantageous comparison), or using language that is benign or neutral to diminish the negative behavior (euphemistic labeling) (Bandura et al., 1996; Bandura, 2002; Gini et al., 2014; Detert et al., 2008). In traffic safety, moral justification might look like: “It’s OK for me to speed because I won’t crash”; advantageous comparison might look like “I might speed, but at least I don’t text and drive”; and euphemistic labeling might look like labeling a behavior such as tailgating as “hurrying them along” instead of “driving aggressively.”

At the agency focus, a person distorts their role in the harm of the negative behavior by displacing or diffusing responsibility (Bandura et al., 1996; Bandura, 2002; Detert et al., 2008; Gini et al., 2014). Displacing responsibility happens when a person shifts the blame of their behavior to someone else. For example, “My boss made me do it,” allows a person to avoid taking responsibility for the behavior (Detert et al., 2008). In traffic safety, displacing responsibility might look like, “We don’t have a primary seat belt law, so I don’t have to wear my seat belt.”

In addition to displacing responsibility, a person can also activate moral disengagement by diffusing responsibility (Bandura et al., 1996; Gini et al., 2014). In a group, for example, individuals can blame the group and avoid personal responsibility for joint actions, i.e., “When everyone is responsible, no one really feels responsible” (Bandura et al., 1996). In traffic safety, diffusing responsibility might look like: “Talking on a cell phone while driving isn’t that dangerous because everyone talks on their cell phones while driving.”

Regarding outcomes, a person seeks to minimize or disregard the consequences of the negative behavior (Bandura et al., 1996; Detert et al., 2008; Gini et al., 2014). Selectively misrepresenting

and minimizing the negative harm and consequences associated with a behavior while highlighting the positive impact of a behavior can weaken a person's self-regulatory processes that censure their behavior (Bandura et al., 1996; Gini et al., 2014). In addition to misrepresenting or minimizing the negative consequences of behavior, a person may also seek to “discredit evidence of the harm they cause[d]” (Bandura et al., 1996, p. 366). In traffic safety, an example of minimizing consequences of behavior might be: “Honking the horn at another driver is acceptable because it doesn't cause harm to anyone,” or “Not wearing my seat belt is okay because it doesn't impact anyone else.”

Regarding victims, disengagement practices focus on the recipient of the negative or harmful behavior (Bandura et al., 1996; Detert et al., 2008; Gini et al., 2014). Mechanisms include seeing the recipient as having non-human (dehumanization) qualities and viewing the recipient as someone who provoked the negative behavior (attribution of blame) (Bandura et al., 1996; Gini et al., 2014). Bandura (2002) explained that a “person's moral self-regulatory process and self-censure depends on how the person views the people they mistreat” (p. 108). By turning people into subhuman animals without “feelings, hopes, and concerns,” a person can more easily act in harsh ways and still maintain a sense of self-respect (Bandura, 2016, p. 84). In traffic safety, dehumanization might look like: “Those animals deserve to be honked at.” Attribution of blame might look like: “People who drive too slow deserve to be tailgated.”

Activating these disengagement mechanisms is a gradual process that occurs over time (Bandura, 2002). Initially, a person starts with small transgressions. They act in ways that are slightly incongruent from their internal set of standards and experience mild self-sanctions that are a little uncomfortable but easy to overcome (Bandura, 2002). However, as a person repeatedly engages in negative behaviors that do not align with their set of standards, their self-regulation process is weakened, and bad behaviors become more easily initiated (Bandura, 2002).

Researchers exploring moral disengagement have studied both individual and contextual factors. Individual factors associated with moral disengagement include social and emotional competence, aggression, locus of control, trait cynicism, moral identity, guilt, and shame. Contextual factors such as the situational and social context have also been studied. These factors influence moral disengagement and may be important areas of consideration as traffic safety professionals seek to create and disseminate messages that overcome moral disengagement.

Research exploring moral disengagement and traffic safety-related behaviors is limited. One study found that driving moral disengagement was a significant predictor of driving aggression (Cleary et al., 2016). The authors concluded that one's “tendency to disengage from one's usual moral code or standard of behavior may be an important factor that influences driver decisions about whether to respond aggressively to their frustrations or anger in relation to other drivers' behaviors” (Cleary et al., 2016, p. 13). Swann et al. (2017) developed the Driving Moral Disengagement Scale (DMDS) and found that driving moral disengagement was the strongest significant predictor of driving aggression (pp. 124-136).

2.3 Measuring Psychological Reactance and Moral Disengagement

2.3.1 Measuring Threat to Freedom

To assess perceived threats to freedom, a common four-item scale has been used (Dillard & Shen, 2005; Cho & Sands, 2011; Shen, 2015; Miller, Lane, Deatruck, Young, & Potts, 2007). The items of this scale are found in Table 1.

Table 1. Examples of Items to Measure Perceived Threat to Freedom

Measurement Constructs	Response Formats
The message threatened my freedom to choose.	Four-point scales ranging from (1) strongly disagree to strongly agree (7).
The message tried to make a decision for me.	
The message tried to manipulate me.	
The message tried to pressure me.	

2.3.2 Measuring Emotion

In a meta-analysis, Rains (2013) found self-report and/or thought-listing procedures to measure anger were common. A common four-item, self-report measure (see Table 2) has been used in many research studies to measure anger (Quick & Stephenson, 2007; Quick & Considine, 2008; Miller et al., 2007; Dillard & Shen, 2005).

Table 2. Examples of Items to Measure Anger

Measurement Constructs	Response Formats
To what extent did the message that you just read make you feel... <ul style="list-style-type: none">• angry• irritated• annoyed• aggravated	Four-point scale ranging from (0) none of this feeling to (4) a great deal of this feeling

2.3.3 Measuring Attitude

Rains (2013) indicated that “attitude toward a product or behavior evaluates the impact of the freedom threat on one’s evaluation of a behavior or product” (p. 59). Many researchers use semantic differential scales to assess attitude. Cho and Sands (2011) measured attitudes toward sunscreen behavior with a semantic differential scale comprising three pairs of bipolar adjectives including “bad vs. good,” “negative vs. positive,” and “unfavorable vs. favorable.” The response scale ranged from -3 to +3. Miller et al. (2007) used the seven-item semantic differential attitude scale that was proposed by Dillard and Shen (2005) asking how positive/negative, desirable/undesirable, necessary/unnecessary, and beneficial/unbeneficial the participant felt the activity of physical exercise to be and how bad/good, foolish/wise, and unfavorable/favorable.

Taking a slightly different approach, Shen (2015) measured attitude as a result of a persuasive outcome by assessing advocacy for the message. Attitude toward advocacy of the message was measured by four 5-point Likert items: “I agree with what the message recommends,” “I support what the message advocates,” “I am in favor of the position in the message,” and “I endorse the claims made in the message” (Shen, 2015).

2.3.4 Measuring Perceived Effectiveness and Strength

To assess how persuasive the message is, Quick and Considine (2008) used a two-item scale: “I felt this (weightlifting or group exercise) message was__.” The response choices were on a 7-point continuum ranging from 1 (not at all persuasive) to 7 (very persuasive) and 1 (not at all convincing) to 7 (very convincing).

2.3.5 Measuring Reactance as a Trait

Various researchers have sought to measure reactance proneness. Hong and Page (1989) created the Hong Psychological Reactance Scale (HPRS) (Table 3).

Table 3. Examples of Items to Measure Reactance as a Trait

Measurement Constructs	Response Formats
<p><i>Hong’s Psychological Reactance Scale (HPRS)</i></p> <ul style="list-style-type: none"> • I become frustrated when I am unable to make free and independent decisions. • I become angry when my freedom of choice is restricted. • It irritates me when someone points out things which are obvious to me. • The thought of being dependent on others aggravates me. • Regulations trigger a sense of resistance in me. • I find contradicting others stimulating. • When something is prohibited, I usually think “that’s exactly what I am going to do.” • I resist the attempts of others to influence me. • It makes me angry when another person is held up as a model for me to follow. • When someone forces me to do something, I feel like doing the opposite. • It disappoints me to see others submitting to a society’s standards and rules. • I am content only when I am acting of my own free will. 	<p>5-point Likert Scale (1)=strongly disagree, (3)=neither agree nor disagree, and (5)=strongly agree.</p>

2.3.6 Measuring Moral Disengagement

Many researchers have sought to measure moral disengagement by focusing on the eight mechanisms of moral disengagement. For example, Bandura et al. (1996) created a Mechanisms of Moral Disengagement Scale to measure the disengagement mechanisms to assess the proneness to moral disengagement. Included in this scale were eight mechanisms of moral disengagement and each mechanism had a subset of four items in the scale.

Researchers have adapted previous scales to measure moral disengagement in a driving context. For example, Cleary et al. (2016) adapted Detert, Trevino, and Sweitzer's (2008) scale of moral disengagement to fit within a driving context. Examples of some of the scale items include: "honking the horn loudly is just a way of letting off frustration" (euphemistic labeling) and "overly cautious drivers are a risk to everyone on the road" (attribution of blame). The Driving Moral Disengagement Scale (DMDS) was created to measure moral disengagement in aggressive driving and has undergone preliminary validation (Swann et al., 2017).

2.4 Messaging, Psychological Reactance, and Moral Disengagement

Understanding psychological reactance and moral disengagement in the context of traffic safety has important implications for how traffic safety professionals can seek to adjust traffic-safety messaging to mitigate these phenomena and influence the small group of people engaging in risky traffic behaviors. Many agencies involved with traffic safety use messaging as a means of influencing traffic safety-related behaviors. This section explores persuasive messaging and what has been found in the research regarding components of messaging that decrease psychological reactance and overcome moral disengagement. Exploring "message strategies that make possible directives for behavior that achieve an optimal balance of maximizing behavior change and minimizing reactance" could ultimately improve traffic safety (Rains, 2013, p. 69).

Researchers have proposed a conceptual framework to help traffic safety professionals design and evaluate messages intended to persuade (Lewis, Watson, & White, 2016). The "Step approach to Message Design and Testing" (SatMDT) framework includes four steps that provide guidance on the design, dissemination, and evaluation of persuasive traffic safety messages (Lewis et al., 2016). In addition to this conceptual framework, it is also important to consider what has been learned about messaging to reduce reactance and overcome moral disengagement with a variety of health and risk behaviors. Messaging components including the message's style, structure, content, and delivery can be purposefully designed to reduce psychological reactance and overcome moral disengagement.

2.4.1 Use of Language

Many researchers have highlighted the importance of language choice in persuasive messaging (Dillard & Shen, 2005; Shen, 2015; Miller et al., 2007; Quick & Considine, 2008; Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003). Research has suggested that strong, controlling, forceful, rigid, and explicit language (e.g., "You must do...") may threaten freedom and elicit psychological reactance (Miller et al., 2007; Shen, 2015; Quick & Considine, 2008).

Shen (2015), for example, found that strong and rigid language increases threat to freedom and thus increases reactance in messages about sunscreen. Quick and Considine (2008) found that forceful language in persuasive exercise messages for adults increases threat to freedom and thus reactance. Similarly, in a study of young adults, Miller et al. (2007) found that controlling language like "ought" and "must" in health promotion messages increases perceived threat to freedom and reactance. Language that appears to infringe upon a person's freedoms by directing,

commanding, or controlling a person's behaviors can arouse psychological reactance and ultimately have effects that are counter to what is intended.

In contrast, language that is suggestive, fosters choice, and uses "mild and tentative language with less explicit intent to persuade" has been found in the research to reduce a person's perceived threats to freedom and thus reduces reactance (Shen, 2015, p. 978). Language like: "There is evidence," and "You might want to consider doing..." have been used in persuasive messaging to reduce reactance (Shen, 2015). Other words that are suggestive and convey a person has a choice include: "possibly," "maybe," (Miller et al., 2007) "could," "may," and "if you like" (Moller, Ryan, & Deci, 2006).

Grandpre et al. (2003) found that implicit language emphasizing freedom of choice results in less reactance than using explicit language that is more directive and overt. Specifically, in tobacco messaging, Grandpre et al. (2003) suggested creating implicit messages that do not limit the range of possible options that could lead to the desired outcomes. Messages designed to allow more choice regarding healthy behaviors, perhaps by "stimulating thought about what it means to be healthy, attractive, accepted, and independent" could be beneficial (Grandpre et al, 2003, p. 364).

2.4.2 Use of Narrative

Storytelling as a message delivery strategy generally includes components like: "cause-and-effect, sequential unfolding of events, connectivity among story elements, and the presence of one or more characters" (Gardner & Leshner, 2016, p. 739). Testimonials seeking to engage individuals cognitively and emotionally are a common narrative strategy. It has been proposed that using a narrative message to deliver information can reduce counterarguing and may be helpful to reduce psychological reactance (Rains, 2013; Gardner & Leshner, 2016; Sukalla, Wagner, & Rackow, 2017).

Gardner and Leshner (2016) found that using narrative stories to provide recommendations to adults with diabetes lowered perceived threat to choose, lessened anger and counterarguing, and lessened negative cognitive responses. Further, narrative messages led to more positive attitudes toward the messages and the recommendations. Sukalla et al. (2017) found that narratives reduce ambivalence and reactance in messages about organ donation.

Narratives have also been used to promote prosocial behaviors and inhibit moral disengagement. In a communication campaign to increase intergroup tolerance and moral engagement, McAlister, Ama, Barroso, Peters, and Kelder (2000) used peer modeling in narratives to promote prosocial behaviors and moral engagement.

2.4.3 The Message Frame

Framing a message is generally done in two ways (gain or loss) and can influence psychological reactance and moral disengagement. A gain message frame focuses on the positive outcomes and benefits of complying with the message (Shen, 2015). In contrast, a loss message frame focuses

on the costs and negative losses one might experience by not complying (Shen, 2015). Regarding the influence of message framing on psychological reactance, Shen (2015) found that for skin cancer messages, a loss frame led to stronger psychological reactance than a gain frame. Cho and Sands (2011) concluded that loss message frames were viewed more threatening than gain message frames. Reinhart, Marshall, Feeley, and Tutzauer (2007) found that gain frame messages about organ donation produced more positive reactions and lowered psychological reactance than loss frame messages.

Given that loss frames are more threatening and focus on incurring negative costs, it is possible that these frames may heighten feelings of personal distress. Paciello et al. (2013) found that personal distress affects moral disengagement. Seeking to frame traffic safety messages using a gain versus loss frame may be important both to reduce psychological reactance and moral disengagement.

2.4.4 Behavioral Choices

To mitigate reactance, research suggests that offering choices can reduce psychological reactance (Shen, 2015; Miller et al., 2007; Gollust & Cappella, 2014). Shen (2015) found in a study of skin cancer that providing alternative behavioral options reduces psychological reactance. Miller et al. (2007) found that providing a short postscript message at the end of the main persuasive message that emphasized participants have a choice in how they behave can act as a form of restoration and reduce the perceived threat to freedom posed by the message. In this study of health promotion messaging, postscript messages included such things as: “The choice is yours,” and “You’re free to decide for yourself” (Miller et al., 2007). Bessarabova, Fink, and Turner (2013) followed up the work of Miller et al. (2007) and found that restorative postscripts decreased reactance effects when high threat messages were used but not low threat.

2.4.5 Promote Critical Thinking and Social Regulation

Research on moral disengagement shows that individuals high in moral disengagement are more likely to make unethical choices and act in disruptive ways (Detert et al., 2008; Fida et al., 2016; Bandura et al., 1996). Interventions focused on critical thinking (i.e., “skills that make it possible to question beliefs or justifications that make it easy for people to resort to the moral disengagement process”) and social regulation (i.e., “identify and make visible moral disengagement processes among others and to exert social pressure to stop those processes”) may reduce moral justifications and disengagement (Bustamante & Chau, 2014, p. 52). Social pressure in the form of moral norms may also decrease disengagement. In a study of texting while driving among young drivers, Kim (2018) suggested that perceived moral norms are an important leverage point for discouraging this risky behavior and suggested that “campaigns focused on not texting while driving should emphasize the moral obligation associated with this behavior” (p. 21).

2.4.6 Emphasize Empathy and Prosocial Behaviors

Research has studied the role of empathy in reducing psychological reactance and moral disengagement. Shen (2010) found that empathy-inducing antidrug messages bolstered persuasion by decreasing reactance and improving attitudes toward the message advocacy. Shen (2011) found that empathy inhibits a reactant response in anti-smoking public service announcements.

Similarly, empathy is protective against moral disengagement (Bandura, 2016). Promoting the commonalities shared among drivers can evoke empathy and thus is protective against moral disengagement (Bandura, 2016). Detert et al. (2008) found that people who were increasingly able to empathize with others were less likely to morally disengage. Bussey, Quinn, and Dobson (2015) similarly found that the more students were able to develop an empathic connection with others, “the more difficult it was for them to invoke moral disengagement strategies to weaken the restraints of aggressive behavior” (p. 22). Paciello et al. (2013) found that people who feel high levels of empathy toward others were more likely to engage in prosocial moral reasoning, were less likely to morally disengage, and were more likely to help even when there was a personal cost associated with helping someone else. One way to evoke empathy is to humanize others (Bandura, 2016). Bandura (2016) suggested “people cannot persuade themselves to behave cruelly toward humanized others despite strong social pressure to do so” (p. 446). Essentially, helping people to see others like themselves reduces moral disengagement.

Given these findings, messaging that heightens emotional capacity to be concerned for others may be a promising strategy to reduce psychological reactance, reduce moral disengagement, and foster prosocial helping behaviors. There is a small but promising body of research that has suggested promoting prosocial citizenship behaviors may be an important strategy to improve traffic safety, especially with the small group of road users engaging in risky behaviors (Otto, Finley, and Ward, 2016, p. 96).

2.4.7 Accentuate Perspective Taking

Trying to imagine the world from another person’s point of view, also known as perspective taking, has been shown to reduce reactance (Steindl & Jonas, 2012) and has been found to play a role in a person’s propensity for moral disengagement (Bussey et al., 2015). Thus, traffic safety professionals may want to consider ways of leveraging and promoting perspective taking to reduce psychological reactance and moral disengagement and the negative consequences associated with these phenomena in traffic safety.

Steindl and Jonas (2012) found that when people take the perspective of another person, they experience less psychological reactance than when they do not. Bussey et al. (2015) found that lower levels of perspective taking were associated with higher levels of moral disengagement and overt aggression. In a driving context, Swann et al. (2017) suggested that campaigns emphasizing the “direct impact [one’s behavior has] on others with whom they might identify,

may minimize driving moral disengagement and thus reduce the potential for driving aggression” (p. 134).

Bandura suggested strategies that promote “shared relational experiences that link one’s own well-being to the well-being of others” can reduce moral disengagement (Bandura, 2016, p. 446). Promoting a sense of shared responsibility for the safety of all road users may prove to be a beneficial approach to promote moral agency and reduce disengagement.

2.4.8 Strengthen Self-Regulatory Mechanisms

Various researchers have suggested that connecting people with their internal set of moral standards is a strategy to reduce moral disengagement (Fida et al., 2016; Swann et al., 2017; Cleary et al., 2016). Swann et al. (2017) suggested that “strengthening drivers’ self-regulatory mechanisms may be an effective strategy to keep moral agency activated while driving” (p. 134). They suggested “emphasizing mechanisms like ‘self-pride, self-blame, and anticipated regret’ in traffic safety messaging” should be considered (Swann et al., 2017). Cleary et al. (2016) suggested that “effective interventions should aim to either keep drivers aware of their usual values or morals in relation to other drivers or attempt to prevent the activation of cognitions that lead to disengagement from one’s values/morals while driving” (p. 13). They suggested that “mass education campaigns could thus aim to remind drivers that the driving context is simply one of many everyday contexts, and not somehow exempt from decisions with a value or moral basis” (Cleary et al., 2016, p. 13).

2.4.9 Message Delivery

In seeking to reduce reactance to persuasive messages considering who delivers the message is an important consideration (Song, McComas, & Schuler, 2018). In a study to investigate how modifying the message source enhances or diminishes psychological reactance, it was found that “the more similar and trustworthy participants perceived the source, the less likely the source was to induce freedom threat or reactance” (Song et al., 2018, p. 591). Research has found that “recruiting a source that the audience considers similar to them and trustworthy can help diminish possible reactance response” (Song et al., 2018, p. 611). The authors suggested that

...even when government agencies are the official party first announcing a new policy measure, they do not necessarily need to be the source who carries the message to the relevant audience. By working with organizations representing interests of the key audience and obtaining their cooperation to spread the news about new policies, governmental agencies may see better reception of policy measures that key audiences would otherwise consider controlling or freedom threatening. (Song et al., 2018, p. 611)

2.5 Stages of Change

In the early 1980s, Prochaska and DiClemente introduced the idea that people did not suddenly change their health-related behavior but instead went through stages of change. They identified six stages (Prochaska, Johnson, & Lee, 2009).

1. Precontemplation – when people are not intending to take action in the near future (i.e., next six months).
2. Contemplation – when people are intending to change in the near future but are not ready to take action.
3. Preparation – when people are intending to take action in the immediate future (i.e., next 30 days).
4. Action – when people have taken specific steps or actions to change.
5. Maintenance – when people are working to prevent reverting back to the old behavior (sometimes referred to as a relapse).
6. Termination – when people have no temptation to revert back.

Understanding that people do not go from precontemplation directly to termination is helpful when developing interventions and messaging. Initial efforts to change behavior may be more effective if they focus on moving an individual from one stage to the next (Prochaska et al., 2009).

3 MATERIALS AND METHODS

3.1 Introduction

This project involved three steps:

1. Determining if the prevalence of psychological reactance and moral disengagement were higher among adult drivers who never or rarely wear their seat belts or who drive aggressively (i.e., speed, follow too closely, and pass excessively) compared to adults who did not engage in these risky behaviors.
2. Identifying beliefs associated with seat belt use and aggressive driving to inform potential messaging.
3. Testing potential messages addressing appropriate beliefs while trying to reduce psychological reactance and moral disengagement.

This section reviews the methods used for each of these steps. All three steps used surveys of adult drivers in the U.S. In total, five surveys were implemented: one survey to assess psychological reactance and moral disengagement regarding seat belt use, one survey to assess psychological reactance and moral disengagement regarding aggressive driving, two surveys to test seat belt messages, and one survey to test aggressive driving messages. All surveys were completed by independent samples.

3.2 Assessing Psychological Reactance and Moral Disengagement

3.2.1 Seat Belt Use Survey

Proneness for psychological reactance was measured using Hong's Psychological Reactance Scale (Hong & Page, 1989), which asks the respondent to indicate their level of agreement with 14 statements (Table 4).

Messages were developed to measure situational psychological reactance based on examples provided by Dillard and Shen (2005) and were tested during a pilot of the survey with a small number of respondents (approximately 55). In the pilot test, responses to the two messages were correlated with the proneness scale and seat belt use. The messages were presented one at a time in the order shown below in a larger font on the screen along with the associated questions. The first message was designed to evoke lower levels of reactance; the second message was designed to evoke more reactance.

1. "You model healthy behaviors for the people you care about most. Buckling your seat belt only takes a few seconds, is easy, and models a critical lifesaving behavior for those you care about. Consider buckling up for the people you care about – your family, your friends, and your coworkers."
2. "The truth is that using a seat belt is a lifesaving behavior and the smart and easy thing to do. No matter how much you don't want your life to be regulated by others, everyone

should always use a seat belt. Why be lazy? You can clearly see there is no other choice. Buckle up!”

Table 4. Statements Used to Assess Proneness to Psychological Reactance

1. I become frustrated when I am unable to make free and independent decisions.
2. I become angry when my freedom of choice is restricted.
3. It irritates me when someone points out things which are obvious to me.
4. The thought of being dependent on others aggravates me.
5. Regulations trigger a sense of resistance in me.
6. I find contradicting others stimulating.
7. When something is prohibited, I usually think “that’s exactly what I am going to do.”
8. I resist the attempts of others to influence me.
9. It makes me angry when another person is held up as a model for me to follow.
10. When someone forces me to do something, I feel like doing the opposite.
11. It disappoints me to see others submitting to a society’s standards and rules.
12. I am content only when I am acting of my own free will.
13. I consider advice from others to be an intrusion.
14. Advice and recommendations induce me to do just the opposite.

After each message, the respondent was asked about their perceived threat to freedom (Dillard & Shen, 2005), their emotional reaction (Dillard & Shen, 2005), and the perception of the effectiveness and strength of the message (Zhao, Strasser, Cappella, Lerman, & Fishbein, 2011):

- Perceived threat was measured by asking the respondent to indicate their level of agreement with four statements: “The message threatened my freedom to choose,” “The message tried to make a decision for me,” “The message tried to manipulate me,” and “The message tried to pressure me.” Levels of agreement included seven choices ranging from strongly disagree to strongly agree.
- To assess their emotional reaction, respondents were asked to what extent the message made them feel angry, irritated, annoyed, and aggravated using seven choices ranging from none of this feeling to a great deal of this feeling.
- To assess their perception of the strength and effectiveness of each message, respondents were asked their level of agreement with eight statements (using five choices ranging from strongly disagree to strongly agree).
 1. The message is a reason for using a seat belt that is believable.
 2. The message is a reason for using a seat belt that is convincing.
 3. The message gives a reason for using a seat belt that is important to me.
 4. The message helped me feel confident about how best to use a seat belt.
 5. The message would help my friends to use a seat belt.
 6. The message put thoughts in my mind about wanting to use a seat belt.
 7. The message put thoughts in my mind about not wanting to use a seat belt.
 8. Overall, how much do you agree or disagree with the message?

Moral disengagement was measured by asking about the level of agreement with 16 statements (using seven choices ranging from strongly disagree to strongly agree).

1. Using a seat belt isn't necessary if you are a good driver.
2. It's ok to not use a seat belt if you are in a hurry to get somewhere and forget to buckle up.
3. My heroes don't use seat belts.
4. Not using a seat belt is just a way of letting the government know they aren't in control.
5. I might not use a seat belt, but at least I don't text and drive.
6. Not using a seat belt is no big deal when you consider that others are choosing more dangerous behaviors like drinking and driving.
7. You can't blame me for not using a seat belt; I have more important things to worry about.
8. My friends/family don't use seat belts; why should I?
9. I am not going to use a seat belt because others in the vehicle aren't either.
10. I don't need to use a seat belt because vehicles are so much safer today.
11. Not using my seat belt is okay because it doesn't impact anyone else.
12. We didn't have to use seat belts when I was young, and we turned out just fine.
13. If kids don't use a seat belt, it is their parents' fault.
14. If other people knew how to drive, people would not need to use a seat belt to protect themselves.
15. Telling people they have to use a seat belt is acting like people are stupid.
16. Making someone use a seat belt is treating them like less than a person.

Seat belt use was measured using four questions: "How often do you use a seat belt... a) when you are driving within a few miles of your home? b) when you are driving many miles from your home? c) in general, driving during the day? d) in general, driving at night?" The following were the answer choices: never, rarely, occasionally, sometimes, frequently, usually, and always. The responses to the four questions were averaged to create a single scale.

Several questions were included to better understand who completed the survey including age, sex, race, ethnicity, education attainment, household income, geography (i.e., urban, suburban, rural), and state.

3.2.2 Seat Belt Use Survey Sample

A convenience sample of participants was recruited by Qualtrics to complete the survey online between November 15 and November 30, 2019. To participate in the survey, a respondent had to live in the U.S., be between the ages of 18 and 79, and drive most days or daily. Quotas were used to guarantee diversity: 50% male, 40% indicating using a seat belt rarely or never, and 40% indicating using a seat belt usually or always.

The final sample included 581 respondents living in 45 different states. Ages ranged from 18 to 78 (median: 40 years, mean: 42.8 years, standard deviation: 14.7 years). Education attainment included 28% with a high school diploma or less, 24% with some college, 38% with an

Associate’s or Bachelor’s degree, and 10% with an advanced degree. Less than a third (30%) lived in an urban setting, 48% in suburban, and 22% rural. About one in ten (9.8%) indicated they were Hispanic. Most were white (79%) with 16% African American, 1% American Indian or Alaskan Native, and 4% Asian.

Table 5 summarizes the seat belt use behavior of the respondents. It is important to keep in mind that the sample used for the survey was not representative of the general public as quotas were used to guarantee participation by people who rarely or usually use a seat belt.

Table 5. Summary of Seat Belt Use Behaviors

“How often do you use a seat belt...”	Rarely or Never	Usually or Always
when you are driving within a few miles of your home	31.7%	47.0%
when you are driving many miles from your home	22.4%	56.3%
in general, driving during the day	28.1%	48.0%
in general, driving at night	25.3%	52.2%

N= 581

Table 6 summarizes the scales that measured seat belt use, several measures of psychological reactance, and moral disengagement. Overall, the internal reliability of the scales was strong; all had a Cronbach’s alpha greater than 0.90. Cronbach’s alpha is a measure of internal consistency of several items (three or more) used to measure a construct. It’s value ranges from 0 to 1. It is based on the number of items, the average covariance between the item pairs, and the average variance (Tavakol & Dennick, 2011).

Table 6. Summary of Scales on Seat Belt Use Survey

Scale	Number of Items	Mean	Standard Deviation	Internal Reliability (Cronbach’s alpha)
Seat belt use	4	4.7	2.30	0.969
Proneness to psychological reactance	14	4.1	1.17	0.914
Threat	4	3.1	1.66	0.923
Emotion	4	2.4	1.67	0.955
Perceived effectiveness	8	3.7	0.79	0.913
Moral disengagement	16	2.9	1.57	0.952

N= 581

3.2.3 Aggressive Driving Survey

Proneness for psychological reactance was measured using Hong’s Psychological Reactance Scale (Hong & Page, 1989), which asked the respondent to indicate their level of agreement with 14 statements (Table 4).

Messages were developed to measure situational psychological reactance based on examples provided by Dillard and Shen (2005) and were tested during a pilot of the survey with a small

number of respondents (approximately 200). In the pilot test, responses to the two messages were correlated with the proneness scale and aggressive driving. The messages were presented one at a time in the order shown below in a larger font on the screen along with the associated questions. The first message was designed to evoke lower levels of reactance; the second message was designed to evoke more reactance.

1. “Regardless of how others are driving, choosing to drive safely is a personal value that you and many others share. Driving safely includes behaviors like following the speed limit and keeping a safe distance between your vehicle and the one in front of you. Thank you for making safe driving a priority.”
2. “Think you can speed? You can’t. Passing every vehicle on the road? Not okay! Think you have the right to tailgate someone because they are annoying you? Don’t be a jerk. You share the road with others. Your unsafe driving puts others at risk of serious injuries and even death. You must do your part to keep everyone safe.”

After each message, the respondent was asked about their perceived threat to freedom (Dillard & Shen, 2005), their emotional reaction (Dillard & Shen, 2005), and the perception of the effectiveness and strength of the message (Zhao et al., 2011):

- Perceived threat was measured by asking the respondent to indicate their level of agreement with four statements: “The message threatened my freedom to choose,” “The message tried to make a decision for me,” “The message tried to manipulate me,” and “The message tried to pressure me.” Levels of agreement included seven choices ranging from strongly disagree to strongly agree.
- To assess their emotional reaction, respondents were asked to what extent the message made them feel angry, irritated, annoyed, and aggravated using seven choices ranging from none of this feeling to a great deal of this feeling.
- To assess their perception of the strength and effectiveness of each message, respondents were asked their level of agreement with eight statements (using five choices ranging from strongly disagree to strongly agree).
 1. The message is a reason for not driving aggressively that is believable.
 2. The message is a reason for not driving aggressively that is convincing.
 3. The message gives a reason for not driving aggressively that is important to me.
 4. The message helped me feel confident about how best to not drive aggressively.
 5. The message would help my friends to not drive aggressively.
 6. The message put thoughts in my mind about wanting to not drive aggressively.
 7. The message put thoughts in my mind about wanting to drive aggressively.
 8. Overall, how much do you agree or disagree with the message?

Moral disengagement was measured by asking about the level of agreement with 20 statements (using seven choices ranging from strongly disagree to strongly agree).

1. It’s ok to tailgate if it gets people to realize they are doing the wrong thing.

2. It's ok to yell at other drivers who put the lives of your passengers at risk.
3. Honking the horn loudly is just a way of letting off frustration.
4. Following too closely or cutting someone off is just a way of teaching someone a lesson they need.
5. Tailgating is no big deal when you consider other people are deliberately running red lights.
6. Yelling at other drivers is pretty tame when compared to people that attack other drivers.
7. Speeding a little over the limit is not too serious compared to those that speed a lot over the limit.
8. If a driver is pushed into being rude to other drivers, they shouldn't be blamed for it.
9. People can't be blamed for intimidating another driver if their friend pressured them into it.
10. You can't blame a single driver for going through a yellow light if a whole group does it.
11. It's ok to go over the speed limit if it means you are keeping up with the rest of the traffic.
12. Drivers don't mind being honked at because they know it just means 'hurry up.'
13. Flashing headlights to get someone to move over doesn't really hurt anyone.
14. Tailgating other vehicles when the traffic is heavy isn't really dangerous.
15. If you are getting honked at while driving, you probably deserve it.
16. Overly cautious drivers who are tailgated deserve it because they are a risk to everyone on the road.
17. People who don't know how to drive provoke bad driving in others.
18. It's alright to abuse drivers who are behaving like jerks.
19. A driver who is inconsiderate doesn't deserve to be treated like a normal person.
20. Some drivers deserve to be treated like the idiots they are.

Thirteen of these items (2, 3, 6, 7, 8, 11, 13, 15, 17, 18, 19, 20) were from the Moral Disengagement Driving Scale (Swann et al., 2017).

For this project, aggressive driving included passing other vehicles going about the posted speed limit, following too closely, and speeding. These behaviors were assessed using four questions: "When driving, how often do you... a) pass a vehicle that is going about the posted speed limit? b) drive so close to the vehicle in front that it might be difficult to stop in an emergency? c) drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph? and d) drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?" The following were the answer choices: never, rarely, occasionally, sometimes, frequently, usually, and always. The responses to the four questions were averaged to create a single scale.

Several questions were included to better understand who completed the survey including age, sex, race, ethnicity, education attainment, household income, geography (i.e., urban, suburban, rural), and state.

3.2.4 Aggressive Driving Survey Sample

The sample for the aggressive driving survey was separate from the seat belt use survey. A convenience sample of participants was recruited by Qualtrics to complete the survey online between November 15 and November 20, 2019. To participate in the survey, a respondent had to live in the U.S., be between the ages of 18 and 79, and drive most days or daily. Quotas were used to guarantee diversity: 50% male, 40% indicating driving more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph rarely or never, and 40% indicating speeding on such roads usually or always.

The final sample included 750 respondents living in 49 different states. Ages ranged from 18 to 70 (median: 48 years, mean: 48.5 years, standard deviation: 16.3 years). Education attainment included 24% with a high school diploma or less, 23% with some college, 36% with an Associate's or Bachelor's degree, and 16% with an advanced degree. Just less than a third (31%) lived in an urban setting, 46% in suburban, and 23% rural. Less than one in ten (9%) indicated they were Hispanic. Most were white (83%) with 11% African American, 2% American Indian or Alaskan Native, and 3% Asian.

Table 7 summarizes the aggressive driving behaviors of the respondents. It is important to keep in mind that the sample used for the survey was not representative of the general public as quotas were used to guarantee participation by people who rarely or usually drive aggressively. Table 8 summarizes the scales that measured aggressive driving, several measures of psychological reactance, and moral disengagement. Overall, the internal reliability of the scales was strong; all had a Cronbach's alpha greater than 0.90.

Table 7. Summary of Aggressive Driving Behaviors

"When driving, how often do you..."	Rarely or Never	Usually or Always
pass a vehicle that is going about the posted speed limit	48.1%	13.3%
drive so close to the vehicle in front that it would be difficult to stop in an emergency	77.3%	8.0%
drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph	55.7%	14.1%
drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph	49.2%	16.0%

N= 750

Table 8. Summary of Scales on Aggressive Driving Survey

Scale	Number of Items	Mean	Standard Deviation	Internal Reliability (Cronbach's alpha)
Aggressive driving	4	2.8	1.62	0.920
Proneness to psychological reactance	14	4.0	1.19	0.911
Threat	8	3.0	1.62	0.921
Emotion	8	2.1	1.58	0.962
Perceived effectiveness	16	3.7	0.76	0.908
Moral disengagement	20	3.1	1.31	0.943

N= 750

3.3 Identifying Beliefs Associated With Seat Belt Use and Aggressive Driving

To identify beliefs associated with seat belt use and aggressive driving, a behavioral model was used to inform survey questions. Using a behavioral model to inform messaging follows best practices as noted by Lewis et al. (2016). The behavioral model (Figure 1) was based on the theory of reasoned action (Fishbein & Aizen, 2010), the prototype willingness model (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008), and the role of values (Spates, 1983; Oreg & Katz-Gerro, 2006). Table 9 summarizes the definitions of the components in the behavioral model. When possible, multiple questions are used to assess each component. This section summarizes the questions used on the surveys related to the behavioral model.

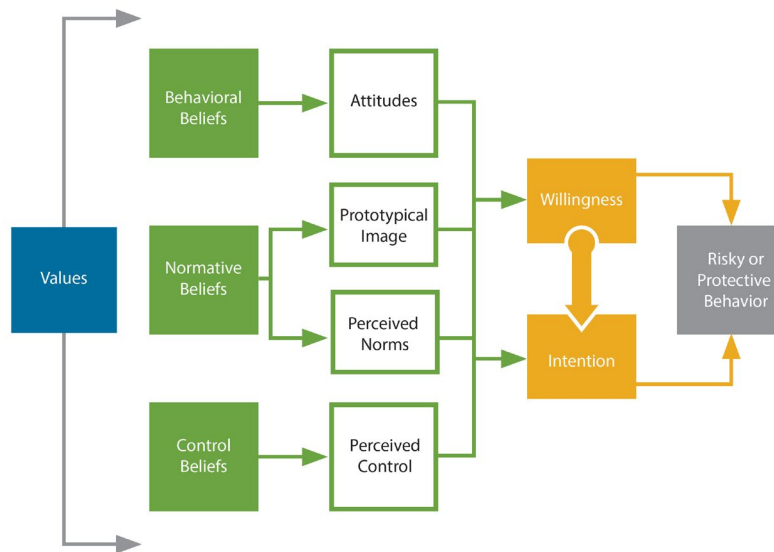


Figure 1. Behavioral Model

Table 9. Definitions of Components Used in Behavioral Model

Values	Ideals to which we aspire that define the goals for our behavioral choices and direct the formation of our belief systems (e.g., “I must protect my family,” “I desire a life without stress”).
Behavioral Beliefs	Expectations about the physical and social consequences of a behavior (e.g., “If I speed, I will likely get an expensive fine,” “If I drink and drive, my friends will exclude me”).
Attitudes	Subjective evaluation of an object or behavior in terms of emotional reaction (e.g., “Speeding is exciting”) and perceived utility (e.g., “Seat belts are useless”).
Normative Beliefs	Beliefs about what behaviors are most common in a group (e.g., “All my friends speed”) and what important people in that group expect (e.g., “My parents expect me to wear a seat belt”).
Perceived Norms	The behavior believed to be common and expected in a given context (e.g., wearing a seat belt when driving with parents).
Prototypical Image	The stereotype of people perceived to typically engage (or not engage) in the behavior (e.g., “People who speed are cool”).
Control Beliefs	Beliefs about an individual’s ability to engage or not engage in the behavior based on factors that are either internal or external to oneself (e.g., “Crashes are determined by fate,” “I am comfortable not speeding even if everyone around me is”).
Perceived Control	Perception of our ability to determine our own behaviors (e.g., “I can choose my own speed in traffic”).
Intention	The deliberate decision to commit a behavior in an anticipated situation (e.g., “I intend to wear my seat belt every time I am in a vehicle”).
Willingness	The predisposition to commit a behavior if an unexpected situation arises (e.g., “I am more willing to speed if everyone else around me is speeding”).

3.3.1 Survey on Seat Belt Use

Seat belt use was measured using four questions: “How often do you use a seat belt... a) when you are driving within a few miles of your home? b) when you are driving many miles from your home? c) in general, driving during the day? d) in general, driving at night?” The following were the answer choices: never, rarely, occasionally, sometimes, frequently, usually, and always.

Questions were included to assess intention, willingness, attitudes, behavioral beliefs, perceived injunctive norms, perceived descriptive norms, normative beliefs, perceived control, and control beliefs about seat belts as well as concern for traffic safety (see Appendix 7.1).

Crash involvement was measured using two questions: “In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault?” and “In the past year, how many vehicle crashes (even minor ones) have you been involved in that you had some fault?” Answer choices included none, 1, 2, 3, 4, 5, 6 or more. Respondents were also asked about how many citations, tickets, or summons they have received for not using a seat belt in the past year.

Several questions were included to better understand who completed the survey including age, sex, race, ethnicity, education attainment, household income, geography (i.e., urban, suburban, rural), and state. The complete survey is included in Appendix 7.1.

Table 10 summarizes the scales that measured the core components of the behavioral model relating beliefs and seat belt use. Overall, the internal reliability of the scales was strong; all have a Cronbach’s alpha greater than 0.80. Relative frequencies of the responses to all questions are included in Appendix 7.2.

Table 10. Summary of Scales on Seat Belt Use Survey

Scale	Number of Items	Mean	Standard Deviation	Internal Reliability (Cronbach’s alpha)
Seat belt use	4	4.3	2.37	0.970
Intention to use a seat belt	3	4.3	2.25	0.886
Willingness to use a seat belt	4	4.6	2.22	0.950
Attitude	5	5.0	1.70	0.863
Perceived injunctive norms	3	5.2	1.47	0.684
Perceived descriptive norms	3	4.8	1.64	0.904
Perceived control	3	5.2	1.54	0.633
Concern	3	5.4	1.48	0.795

N= 746

3.3.2 Survey on Aggressive Driving

For this project, aggressive driving included passing other vehicles going about the posted speed limit, following too closely, and speeding. These behaviors are assessed using four questions: “When driving, how often do you... a) pass a vehicle that is going about the posted speed limit? b) drive so close to the vehicle in front that it might be difficult to stop in an emergency? c) drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph? and d) drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?” The following were the answer choices: never, rarely, occasionally, sometimes, frequently, usually, and always.

Questions were included to assess intention, willingness, attitudes, behavioral beliefs, perceived injunctive norms, perceived descriptive norms, normative beliefs, perceived control, and control beliefs about aggressive driving as well as concern for traffic safety (see Appendix 7.3).

Crash involvement was measured using two questions: “In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault?” and “In the past year, how many vehicle crashes (even minor ones) have you been involved in that you had some fault?” Answer choices included none, 1, 2, 3, 4, 5, 6 or more. Respondents were also asked about how many citations, tickets, or summons they have received for speeding in the past year.

Several questions were included to better understand who completed the survey including age, sex, race, ethnicity, education attainment, household income, geography (i.e., urban, suburban, rural), and state. The complete survey is included in Appendix 7.3.

Table 11 summarizes the scales that measured the core components of the behavioral model relating beliefs and aggressive driving. Overall, the internal reliability of the scales was strong; all have a Cronbach’s alpha greater than 0.75. Relative frequencies of the responses to all questions are included in Appendix 7.4.

Table 11. Summary of Scales on Aggressive Driving Survey

Scale	Number of Items	Mean	Standard Deviation	Internal Reliability (Cronbach’s alpha)
Aggressive driving	4	2.8	1.61	0.897
Intention	4	2.6	1.69	0.929
Willingness to pass	5	2.8	1.74	0.934
Willingness to speed	5	2.7	1.75	0.941
Attitude about passing	6	3.4	1.74	0.915
Attitude about following too closely	6	2.1	1.58	0.931
Attitude about speeding	6	3.4	1.72	0.920
Attitude (combined)	3	3.0	1.43	0.808
Perceived injunctive norm	3	3.2	1.71	0.833
Perceived descriptive norm	3	3.4	1.62	0.903
Perceived control	3	2.6	1.52	0.838
Concern	3	5.7	1.35	0.759

N= 749

3.4 Testing Potential Messages

Three surveys were used to test potential messages (two for testing seat belt messages and one for testing aggressive driving messages). Similar to the previous surveys conducted to assess psychological reactance, moral disengagement, and beliefs, respondents were recruited online (using Qualtrics purchased panels) and screened so that a portion engaged in the risky behavior (i.e., not using a seat belt or aggressive driving) and a portion did not.

To test the messages, respondents were randomly provided one of three “test” messages and one “control” message. The test messages were designed to provide information determined relevant from the analysis of the behavioral models and to reduce psychological reactance. The control message was designed to generate psychological reactance (it was the same message as was used in previous surveys). Each message was provided as written text. Each survey used only one test message to avoid a respondent experiencing any psychological reactance from other messages. This design resulted in three groups of responses (one group for each of the three test messages) with respondents randomly assigned to each group. The control message was used in each group so that the groups could be compared to see if they responded similarly to the same message.

For each message, respondents were asked to rate their reaction based on their perception of how much the message threatened their freedom, how much the message elicited a feeling of anger, and how effective they thought the message would be (Table 12).

Table 12. Items Used to Assess Reactions to Potential Messages

Reaction	Items	Source
Threat to freedom	A. The message threatened my freedom to choose. B. The message tried to make a decision for me. C. The message tried to manipulate me. D. The message tried to pressure me.	Dillard & Shen, 2005; Cho & Sands, 2011; Shen, 2015; Miller, et al., 2007
Emotion	To what extent did the message that you just read make you feel... A. angry B. irritated C. annoyed D. aggravated	Dillard & Shen, 2005
Effective	A. The statement is a reason for _____ that is believable. B. The statement is a reason for _____ that is convincing. C. The statement gives a reason for _____ that is important to me. D. The statement helped me feel confident about how best to. E. The statement would help my friends_. F. The statement put thoughts in my mind about wanting to _____. G. The statement put thoughts in my mind about not wanting to. H. Overall, how much do you agree or disagree with the statement? I. Is the reason the statement gave for a strong or weak reason?	Zhao, Strasser, Cappella, Lerman, & Fishbein, 2011

Stages of change were only assessed on the surveys used to test potential messages. The stage of change was assessed using a single question asking the respondent which statement best described them. The statements to assess the stage of change about using a seat belt were:

1. "I do not currently wear a seat belt, and I have decided I will never wear one."
2. "I do not currently wear a seat belt, and I don't really think about it."
3. "I do not currently wear a seat belt, but sometimes I think about it."
4. "I do not currently wear a seat belt, but I think I should wear one."
5. "I have decided to wear a seat belt, but I only wear it occasionally."
6. "I wear a seat belt every time I am in a vehicle."

For the aggressive driving survey, the respondent was asked to consider three behaviors (passing a vehicle which is driving about the posted speed limit, following so close to the vehicle in front that it might be difficult to stop in an emergency, and driving more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph) and then choose from one of the following statements:

1. "I currently do these driving behaviors, and I have decided I will continue to do them."
2. "I currently do these driving behaviors, and I have not thought about changing."
3. "I currently do these behaviors, but sometimes I think about changing/doing them less."

4. “I currently do these behaviors, but I think I should change/do them less.”
5. “I have decided to not do these behaviors, but I still do them occasionally.”
6. “I don’t do these behaviors.”

3.4.1 Seat Belt Use Message Test Surveys

Two convenience samples of participants were recruited by Qualtrics to complete the two surveys used to test seat belt messages. To participate in the surveys, a respondent had to live in the U.S., be between the ages of 18 and 79, and drive most days or daily. Quotas were used to guarantee diversity: 50% male, 40% indicating using a seat belt rarely or never, and 40% indicating using a seat belt usually or always.

The first sample was recruited online between May 5 and May 28, 2020 and included 315 respondents. Ages ranged from 18 to 78 (median: 40 years, mean: 41.5 years, standard deviation: 12.3 years). Education attainment included 10% with a high school diploma or less, 8% with some college, 53% with an Associate’s or Bachelor’s degree, and 29% with an advanced degree. Most (60%) lived in an urban setting, 31% in suburban, and 9% rural. About one in ten (12%) indicated they were Hispanic. Most were white (89%) with 8% African American, 1% American Indian or Alaskan Native, and 1% Asian.

The second sample was recruited online between November 10 and December 19, 2020 and included 365 respondents. Ages ranged from 18 to 79 (median: 40 years, mean: 42.4 years, standard deviation: 13.4 years). Education attainment included 22% with a high school diploma or less, 16% with some college, 30% with an Associate’s or Bachelor’s degree, and 33% with an advanced degree. About half (45%) lived in an urban setting, 33% in suburban, and 23% rural. About one in ten (12%) indicated they were Hispanic. Most were white (86%) with 11% African American, 2% American Indian or Alaskan Native, and 1% Asian.

The participants each responded to one of three test messages (and one control message). This resulted in the respondents being randomly assigned to one of three groups. Both parametric and non-parametric tests showed no statistically significant differences in the three groups based on age, sex, seat belt use, or proneness to psychological reactance.

3.4.2 Aggressive Driving Message Test Survey

The sample for the survey to test aggressive driving messages was separate from the surveys to test seat belt messages. A convenience sample of participants was recruited by Qualtrics to complete the survey online between November 19 and November 30, 2020. To participate in the survey, a respondent had to live in the U.S., be between the ages of 18 and 79, and drive most days or daily. Quotas were used to guarantee diversity: 50% male, 40% indicating driving more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph rarely or never, and 40% indicating speeding on such roads usually or always.

The final sample included 386 respondents. Ages ranged from 18 to 77 (median: 38 years, mean: 41.1 years, standard deviation: 15.3 years). Education attainment included 15% with a high

school diploma or less, 14% with some college, 30% with an Associate's or Bachelor's degree, and 41% with an advanced degree. More than half (60%) lived in an urban setting, 28% in suburban, and 13% rural. About one in six (14%) indicated they were Hispanic. Most were white (84%) with 9% African American, 2% American Indian or Alaskan Native, and 3% Asian.

The participants each responded to one of three test messages (and one control message). This resulted in the respondents being randomly assigned to one of three groups. Both parametric and non-parametric tests showed no statistically significant differences in the three groups based on age, sex, seat belt use, or proneness to psychological reactance.

3.4.3 Methodological Concerns

This study examined the beliefs and self-reported behaviors of adults in the U.S. about two driving behaviors (seat belt use and aggressive driving) during the period of the COVID-19 pandemic. Due to restrictions put in place to protect public health, many people's normal driving patterns changed during this period. Many people also lost employment. These drastic changes impacted the process of recruiting participants for these studies resulting in much longer recruiting periods (i.e., it was more challenging to find participants who qualified).

Furthermore, this study took place during the peak of the 2020 election campaign. Qualtrics informed us that they were experiencing significantly higher volumes of surveys and that survey fatigue was a concern as they were finding it harder and harder to recruit participants.

The study did not attempt to assess if the messages changed the respondents' beliefs or if the respondents learned anything from the messages (in other words, if the language used in the messages addressed the beliefs identified in the behavioral models from the perspective of the respondents).

4 RESULTS

4.1 Introduction

This section summarizes the analyses used to address the objectives of this project:

1. Determine if the prevalence of psychological reactance and moral disengagement were higher among adult drivers who never or rarely wear their seat belts or who drive aggressively compared to adults who did not engage in these risky behaviors.
2. Identify beliefs associated with seat belt use and aggressive driving to inform potential messaging.
3. Test potential messages addressing appropriate beliefs while trying to reduce psychological reactance and moral disengagement.

4.2 Assessing Psychological Reactance and Moral Disengagement

Correlation analyses and analysis of variance (ANOVA) were used to assess any meaningful relationship between psychological reactance and the risky driving behaviors (seat belt use and aggressive driving) and various demographic variables.

Correlation analyses, t-tests, and analysis of variance (ANOVA) were used to assess any meaningful relationship between moral disengagement and the risky driving behaviors (seat belt use and aggressive driving) and various demographic variables.

4.2.1 Psychological Reactance and Behavior

The seat belt use survey revealed that seat belt use was not statistically significantly correlated with psychological reactance proneness (Table 13). However, seat belt use was meaningfully (and statistically significantly) correlated with the three indicators of situational psychological reactance (i.e., threat, emotion, and perceived effectiveness of the messages). The correlation coefficients ranged in magnitude from 0.28 to 0.51 showing a small to moderate relationship. Therefore, as respondents reported less use of seat belts, they reported a higher perceived threat and had stronger emotional reactions to the messages about seat belt use and perceived the messages as less effective.

Among respondents to the seat belt use survey, crash involvement was statistically significantly correlated with two of the three indicators of situational psychological reactance (threat and emotion). Receiving citations was statistically significantly correlated with proneness for psychological reactance and two of the three indicators of situational psychological reactance (threat and emotion). Therefore, as respondents reported receiving more citations, they had higher levels of proneness to psychological reactance and reported a higher perceived threat and had stronger emotional reactions to the messages about seat belt use. All the associations were weak.

Table 13. Spearman Correlation Coefficients for Seat Belt Use

	C	SB	Ci	P	T	Em	Ef	MD
Crash (C)	1.00	NS	.47	NS	.11	.22	NS	.15
Seat Belt Use (SB)		1.00	NS	NS	-.31	-.28	.51	-.48
Citation (Ci)			1.00	.13	.13	.22	NS	.20
Proneness (P)				1.00	.41	.34	-.14	.35
Threat (T)					1.00	.69	-.54	.64
Emotion (Em)						1.00	-.50	.59
Effective (Ef)							1.00	-.48
Moral Disengage (MD)								1.00

N= 581. NS= not statistically significant (all others significant to $p < .01$). Crash (C) increases with more involvement in crashes. Seat belt use (SB) increases with more seat belt use. Citation (Ci) increases with more citations. Proneness (P) to psychological reactance increases as proneness increases. Threat (T) increases as perceived threat to a message increases. Emotional response (Em) to the message reflects more anger, irritation, annoyance, and aggravation with the message. Effective (Ef) increases with perceived effectiveness of the message. Moral disengagement (MD) increases with more agreement with moral disengagement statements.

The aggressive driving survey revealed that aggressive driving behaviors were meaningfully (and statistically significantly) correlated with psychological reactance proneness as well as the three indicators of situational psychological reactance (Table 14). The correlation coefficients ranged in magnitude from 0.26 to 0.50 showing a small to moderate relationship. Therefore, as respondents reported engaging in more frequent aggressive driving behaviors, they had higher levels of proneness to psychological reactance, reported a higher perceived threat, had stronger emotional reactions to the messages about aggressive driving, and perceived the messages as less effective.

Table 14. Spearman Correlation Coefficients for Aggressive Driving

	C	A	Ci	P	T	Em	Ef	MD
Crash (C)	1.00	.27	.46	.26	.23	.26	NS	.27
Aggressive (A)		1.00	.37	.41	.50	.48	-.26	.51
Citation (Ci)			1.00	.29	.32	.33	NS	.37
Proneness (P)				1.00	.42	.42	-.15	.44
Threat (T)					1.00	.66	-.38	.61
Emotion (Em)						1.00	-.41	.53
Effective (Ef)							1.00	-.29
Moral Disengage (MD)								1.00

N= 737. NS= not statistically significant (all others significant to $p < .01$). Crash (C) increases with more involvement in crashes. Aggressive (A) increases with more aggressive driving behaviors. Citation (Ci) increases with more citations. Proneness (P) to psychological reactance increases as proneness increases. Threat (T) increases as perceived threat to a message increases. Emotional response (Em) to the message reflects more anger, irritation, annoyance, and aggravation with the message. Effective (Ef) increases with perceived effectiveness of the message. Moral disengagement (MD) increases with more agreement with moral disengagement statements.

Among respondents to the aggressive driving survey, crash involvement and receiving citations were meaningfully (and statistically significantly) correlated with reactance proneness and two of the three indicators of situational psychological reactance (threat and emotion). Therefore, as respondents reported experiencing more crashes or receiving more citations, they had higher levels of proneness to psychological reactance, reported a higher perceived threat, and had stronger emotional reactions to the messages about aggressive driving. All the associations were weak.

To further reveal the relationship between psychological reactance and behavior, the respondents were divided into two groups: those who never or rarely engaged in the behavior (either using a seat belt or driving aggressively) and those who engaged in the behavior more often. Table 15 and Table 16 summarize the mean values and relative effect size of the difference for each of the indicators of psychological reactance for the two groups (for seat belt use and aggressive driving, respectively).

For seat belt use, analysis of variance (ANOVA) revealed that the means of the three indicators of situational psychological reactance were statistically significantly different ($p < .001$) between those who rarely or never used a seat belt and those who usually or always used a seat belt (there was no statistically significant difference in proneness). Situational psychological reactance was higher among individuals who reported rarely or never using a seat belt (compared to those who usually or always used a seat belt). The effect sizes of the differences of the means were small (except for perception of message effectiveness, which was moderate).

For aggressive driving, analysis of variance (ANOVA) revealed that the means of the four indicators of psychological reactance were statistically significantly different ($p < .001$) between those who rarely or never drove aggressively and those who drove aggressively more frequently. Psychological reactance was higher among individuals who reported driving aggressively frequently (compared to those who rarely or never drove aggressively). The effect sizes of the differences of the means were moderate (except for perception of message effectiveness, which was small).

Table 15. Comparison of Indicators of Psychological Reactance for Seat Belt Use

Indicator of Psychological Reactance	Mean Rarely or Never (N= 56)	Mean Usually or Always (N= 131)	Effect Size
Proneness	4.1	4.1	none ($\eta^2 = 0.000$)
Threat	3.7	2.6	small ($\eta^2 = 0.086$)
Emotion	2.7	2.0	small ($\eta^2 = 0.035$)
Effective	3.1	4.1	moderate ($\eta^2 = 0.309$)

No statistically significant difference between proneness. All other differences are statistically significant, $p < .001$. Proneness to psychological reactance ranges from 1 to 7 and increases as proneness increases. Threat ranges from 1 to 7 and increases as perceived threat to a message increases. Emotional response to the message ranges from 1 to 7 and reflects more anger, irritation, annoyance, and aggravation with the message. Effective ranges from 1 to 5 and increases with perceived effectiveness of the message.

Table 16. Comparison of Indicators of Psychological Reactance for Aggressive Driving

Indicator of Psychological Reactance	Means Rarely or Never (N= 284)	Means About half the time or more often (N= 204)	Effect Size
Proneness	3.6	4.7	moderate ($\eta^2= 0.198$)
Threat	2.2	4.1	moderate ($\eta^2= 0.307$)
Emotion	1.4	3.3	moderate ($\eta^2= 0.293$)
Effective	4.0	3.5	small ($\eta^2= 0.079$)

Differences are all statistically significant, $p < .001$. Proneness to psychological reactance ranges from 1 to 7 and increases as proneness increases. Threat ranges from 1 to 7 and increases as perceived threat to a message increases. Emotional response to the message ranges from 1 to 7 and reflects more anger, irritation, annoyance, and aggravation with the message. Effective ranges from 1 to 5 and increases with perceived effectiveness of the message.

4.2.2 Psychological Reactance Based on Demographics

To better understand psychological reactance, the indicators were analyzed for associations based on sex, age, education attainment, and geography. Table 17 and Table 18 show the means of the four indicators of psychological reactance for males and females (from the seat belt use survey and aggressive driving survey, respectively).

In the seat belt use survey, the means of three indicators of psychological reactance were very similar for males and females (proneness, threat, and emotion), and one indicator was statistically significantly different (perception of message effectiveness). However, the effect size of the difference was very small.

In the aggressive driving survey, analysis of the variance revealed that the means of two indicators of psychological reactance were very similar for males and females (proneness and perception of message effectiveness), and two indicators were statistically significantly different (threat and emotion). However, the effect sizes of the differences were very small.

Table 17. Comparison of Psychological Reactance for Seat Belt Use Based on Sex

Indicator of Psychological Reactance	Means Males (N= 264)	Means Females (N= 309)	Effect Size
Proneness	4.2	4.0	(no difference)
Threat	3.2	3.1	(no difference)
Emotion	2.6	2.3	(no difference)
Effective*	3.8	3.6	very small ($\eta^2= 0.016$)

*Statistically significantly different, $p = .002$. Proneness to psychological reactance ranges from 1 to 7 and increases as proneness increases. Threat ranges from 1 to 7 and increases as perceived threat to a message increases. Emotional response to the message ranges from 1 to 7 and reflects more anger, irritation, annoyance, and aggravation with the message. Effective ranges from 1 to 5 and increases with perceived effectiveness of the message.

Table 18. Comparison of Psychological Reactance for Aggressive Driving Based on Sex

Indicator of Psychological Reactance	Means Males (N= 369)	Means Females (N= 370)	Effect Size
Proneness	4.0	4.0	(no difference)
Threat*	3.3	2.8	very small ($\eta^2= 0.025$)
Emotion*	2.4	1.9	very small ($\eta^2= 0.022$)
Effective	3.7	3.7	(no difference)

*Statistically significantly different, $p < .001$. Proneness to psychological reactance ranges from 1 to 7 and increases as proneness increases. Threat ranges from 1 to 7 and increases as perceived threat to a message increases. Emotional response to the message ranges from 1 to 7 and reflects more anger, irritation, annoyance, and aggravation with the message. Effective ranges from 1 to 5 and increases with perceived effectiveness of the message.

Correlation analyses were used to explore a relationship between age and psychological reactance. For the seat belt survey, age was statistically significantly correlated with all four indicators of psychological reactance: proneness ($r = -.19$, $p < .01$), threat ($r = -.10$, $p < .01$), emotion ($r = -.15$, $p < .01$), and perception of message effectiveness ($r = 0.13$, $p < .01$). Therefore, older respondents exhibited less psychological reactance than younger respondents; however, the relationship was weak.

For the aggressive driving survey, age was meaningfully correlated with all four indicators of psychological reactance including proneness ($r = -.36$, $p < .01$), threat ($r = -.31$, $p < .01$), emotion ($r = -.31$, $p < .01$), and perception of message effectiveness ($r = .23$, $p < .01$). Therefore, older respondents exhibited less psychological reactance than younger respondents.

Similarly, correlation analyses were used to explore a relationship between education attainment and psychological reactance. For the seat belt survey, education attainment was statistically significantly correlated with one of the indicators of psychological reactance: perception of message effectiveness ($r = .15$, $p < .01$). Therefore, there was some evidence that situational psychological reactance decreased with education attainment; however, the relationship was weak.

For the aggressive driving survey, education attainment was meaningfully correlated with two of the indicators of psychological reactance: threat ($r = .16$, $p < .01$) and emotion ($r = .13$, $p < .01$). Therefore, there is some evidence that psychological reactance may increase with education attainment; however, the relationship is weak.

Analysis of covariance was used to measure a relationship between geography and psychological reactance (while controlling for age). For the seat belt survey, there were no statistically significant ($p < .01$) associations between geography and any of the indicators of psychological reactance.

For the aggressive driving survey, threat and emotion were slightly higher among respondents who indicated they lived in urban settings compared to those in suburban or rural settings (mean threat: 3.3 vs. 2.9 and 2.8, $p = .012$ and $p = .011$, respectively; mean emotion: 2.4 vs. 2.0 and 2.1,

$p = .008$ and $p = .176$, respectively). After controlling for age, two indicators of psychological reactance appeared to be higher among urban populations than among suburban or rural populations (and two indicators showed no difference). The overall differences were very small.¹

4.2.3 Moral Disengagement and Behavior

Correlational analyses were used to explore the relationship between behavior, crash involvement, citations, and moral disengagement (see Table 10 for the seat belt use survey and Table 11 for the aggressive driving survey).

The seat belt use survey revealed that seat belt use behaviors were meaningfully correlated with moral disengagement. The correlation coefficient ($r = -.48$, $p < .01$) showed a moderate relationship. Therefore, as respondents reported using a seat belt less frequently, they reported higher levels of moral disengagement.

Among respondents to the seat belt use survey, crash involvement and receiving citations were statistically significantly correlated with moral disengagement ($r = .15$, $p < .01$ and $r = .20$, $p < .01$, respectively). Therefore, as respondents reported more crash involvement and receiving more citations, they reported higher levels of moral disengagement. The associations were weak.

The aggressive driving survey revealed that aggressive driving behaviors were meaningfully correlated with moral disengagement. The correlation coefficient ($r = .51$, $p < .01$) showed a moderate relationship. Therefore, as respondents reported engaging in more frequent aggressive driving behaviors, they reported higher levels of moral disengagement.

Among respondents to the aggressive driving survey, crash involvement and receiving citations were statistically significantly correlated with moral disengagement ($r = .27$, $p < .01$ and $r = .37$, $p < .01$, respectively). Therefore, as respondents reported more crash involvement and receiving more citations, they reported higher levels of moral disengagement. The associations were weak to moderate.

To further reveal the relationship between moral disengagement and behavior, the respondents were divided into two groups: those who never or rarely engaged in the behavior (either wearing a seat belt or driving aggressively) and those who engaged in the behavior more often. For the seat belt survey, a t-test revealed that the mean of moral disengagement was statistically significantly different between those who rarely or never used a seat belt (mean of moral disengagement = 3.5) and those who usually or always used a seat belt (mean = 2.2) ($t(386) = 9.56$, $p < .001$). Moral disengagement was higher among individuals who reported rarely or never using a seat belt (compared to those who usually or always used a seat belt). Analysis of variance of the means (ANOVA) revealed that the effect size of the difference was small ($\eta^2 = 0.16$).

¹ After controlling for age, the partial η^2 values for the effect size of geography on threat and emotion were 0.015 and 0.012, respectively.

For aggressive driving, a t-test revealed that the mean of moral disengagement was statistically significantly different between those who rarely or never drove aggressively (mean of moral disengagement= 2.5) and those who drove aggressively more frequently (mean= 4.1) ($t(327) = -14.28, p < .001$). Moral disengagement was higher among individuals who reported driving aggressively frequently (compared to those who rarely or never drove aggressively). Analysis of variance of the means (ANOVA) revealed that the effect size of the difference was moderate ($\eta^2 = 0.32$).

4.2.4 Moral Disengagement Based on Demographics

To better understand moral disengagement, associations based on sex, age, education attainment, and geography were explored. In the seat belt survey, t-tests revealed that moral disengagement was not statistically significantly different among males or females ($t(530) = 1.4, p = .155$).

In the aggressive driving survey, t-tests revealed that moral disengagement was statistically significantly higher among males (mean= 3.4) than females (mean= 2.8) ($t(685) = 6.32, p < .001$). Analysis of variance of the means (ANOVA) revealed that the effect size of the difference was small ($\eta^2 = 0.051$).

Correlation analyses were used to measure a relationship between age and moral disengagement. For the seat belt survey, age was not statistically significantly correlated with moral disengagement. For the aggressive driving survey, age was meaningfully (and statistically significantly) negatively correlated with moral disengagement ($r = -.29, p < .01$). Therefore, older respondents exhibited less moral disengagement than younger respondents.

Similarly, correlation analyses were used to measure a relationship between education attainment and moral disengagement. For the seat belt survey, education attainment was not statistically significantly correlated with moral disengagement. For the aggressive driving survey, education attainment was weakly correlated with moral disengagement ($r = .08, p < .05$). Therefore, there was some evidence that moral disengagement may increase with education attainment.

Analysis of covariance (ANCOVA) was used to measure a relationship between geography and moral disengagement (while controlling for age). For the seat belt survey, moral disengagement was not statistically significantly different between urban, suburban, or rural populations. For the aggressive driving survey, moral disengagement was slightly higher among respondents who indicated they lived in urban settings compared to those in suburban or rural settings (mean 3.3 vs. 3.0 and 2.9, $p = .002$ and $p = .001$, respectively). The overall differences were very small.²

² After controlling for age, the partial η^2 value for the effect size of geography on moral disengagement was 0.021.

4.3 Identifying Beliefs Associated With Seat Belt Use and Aggressive Driving

4.3.1 Beliefs Associated With Seat Belt Use

Table 19 summarizes the correlation coefficients between the various constructs related to seat belt use. Intention and willingness were averaged to form a single scale (Pearson correlation coefficient $r = .916$, $p < .001$). Linear regression indicated a significant effect between this combined scale and seat belt use ($F(1, 744) = 4079.38$, $p < .001$, $R^2 = .85$). Multiple linear regression indicated a significant effect between the combined intention and willingness scale and attitude, perceived injunctive norms, perceived descriptive norms, and perceived control ($F(4, 741) = 437.67$, $p < .001$, $R^2 = .70$).³ Examination of the individual belief scales indicated that attitude ($t = 17.45$, $p < .001$), perceived descriptive norms ($t = 13.22$, $p < .001$), and perceived control ($t = 6.29$, $p < .001$) were significant predictors.

Table 19. Spearman Correlation Coefficients for Seat Belt Use Survey

Scale	1	2	3	4	5	6	7	8	9
1. Seat belt use	1.00	.89**	.91**	.73**	.38**	.67**	.61**	.23**	-.08*
2. Intention to use a seat belt		1.00	.93**	.75**	.43**	.67**	.61**	.21**	-.11**
3. Willingness to use a seat belt			1.00	.78**	.41**	.69**	.64**	.25**	-.09*
4. Attitude				1.00	.53**	.59**	.59**	.24**	-.08*
5. Perceived injunctive norm					1.00	.33**	.43**	.26**	0.01
6. Perceived descriptive norm						1.00	.54**	.29**	.09*
7. Perceived control							1.00	.21**	0.05
8. Concern								1.00	.18**
9. Age									1.00

N = 746. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

Attitudes are informed by behavioral beliefs (Fishbein & Ajzen, 2010). Table 20 summarizes agreement with six behavioral beliefs comparing responses between those who rarely/never used a seat belt and those who usually/always used a seat belt. The differences in the levels of agreement with these beliefs were meaningful and inform potential messaging to increase seat belt use.

Perceived descriptive norms indicate people's perceptions of what other people do. Table 21 summarizes how often respondents perceived other people usually or always used a seat belt. About two-thirds of people who rarely or never used a seat belt perceived that their child usually or always did use a seat belt. Connecting an adult's seat belt use to their child's seat belt use may be an opportunity for messaging. Furthermore, significant misperceptions existed for those who rarely/never used a seat belt about the prevalence of seat belt use among others (like their

³ The t statistic is the coefficient from the multiple regression divided by the standard error. It is a general measure of the precision of the coefficient (a larger value indicating more precision). The text shown follows APA guidance for reporting the results of regression.

coworkers and most adults in their community). Messages clarifying the prevalence of seat belt use in workplace and communities may be effective at changing these misperceptions.

Table 20. Summary of Agreement With Behavioral Beliefs About Seat Belt Use

“How do you agree or disagree with the following statements?”	Among Those Who Rarely/Never Used a Seat Belt	Among Those Who Usually/Always Used a Seat Belt	Effect Size (η^2)
“I believe it is important to protect myself by always using a seat belt.”	26%	93%	Large (0.47)
“I use a seat belt because I want to set a good example for my children.”	32%	84%	Moderate (0.30)
“People are less likely to be seriously injured or killed if they always use their seat belt.”	41%	90%	Moderate (0.30)
“I use a seat belt because I don’t want to get a ticket.”	38%	84%	Moderate (0.23)
“It is a driver’s responsibility to comply with traffic laws.”	63%	93%	Moderate (0.15)

N= 745

Table 21. Summary of Perceptions of Prevalence of Usually/Always Using a Seat Belt

“How often do the following people use a seat belt?” Results shown for usually or always.	Among Those Who Rarely/Never Used a Seat Belt	Among Those Who Usually/Always Used a Seat Belt	Effect Size (η^2)
Your spouse or partner (n=583)	39%	92%	Moderate (0.29)
Your children (n=574)	63%	93%	Small (0.13)
Your friends (n=699)	23%	80%	Moderate (0.34)
Your coworkers (n=606)	27%	77%	Moderate (0.29)
Most adults in your community (n=688)	31%	77%	Moderate (0.24)

One aspect of perceived control explored on the survey included family and workplace rules about seat belt use. Table 22 summarizes the prevalence of family and workplace rules. Developing family and workplace rules may be an opportunity to grow beliefs supportive of seat belt use without focusing on compliance with state laws (and thus potentially reducing psychological reactance). It is interesting to note that even among those who indicated usually or always using a seat belt, only six in ten reported their workplace had a rule.

Table 22. Summary of Prevalence of Family and Workplace Rules Using a Seat Belt

	Among Those Who Rarely/Never Used a Seat Belt	Among Those Who Usually/Always Used a Seat Belt	Effect Size (η^2)
Results shown for those indicating “yes.”			
Do you have a family rule about always using a seat belt? (n=561)	24%	88%	Large (0.41)
Do you have a workplace rule about always using a seat belt? (n=475)	21%	61%	Small (0.16)

Analyses in the previous section revealed a statistically significant difference in beliefs associated with moral disengagement based on seat belt use (the effective size was considered small with $\eta^2 = 0.16$). Further examination of individual moral disengagement beliefs revealed three that dominated (Table 23). It is important to note that most people who rarely/never used a seat belt did not agree with these statements. Nonetheless, potential messaging may seek to grow the understanding that not using a seat belt has significant health risks and that getting injured or killed in a crash may have significant impacts on other people.

Table 23. Summary of Agreement With Moral Disengagement Beliefs

“How do you agree or disagree with the following statements?”	Among Those Who Rarely/Never Used a Seat Belt	Among Those Who Usually/Always Used a Seat Belt	Effect Size (η^2)
“I might not use a seat belt, but at least I don’t text and drive.”	50%	19%	Moderate (0.22)
“Not using a seat belt is no big deal when you consider that others are choosing more dangerous behaviors like drinking and driving.”	37%	19%	Small (0.13)
“Not using my seat belt is okay because it doesn’t impact anyone else.”	38%	15%	Moderate (0.20)

N= 644

4.3.2 Beliefs Associated With Aggressive Driving

Table 24 summarizes the correlation coefficients between the various constructs. Willingness to pass and willingness to speed were averaged to form a single scale (Pearson correlation coefficient $r = .91$, $p < .001$). Intention and willingness were averaged to form a single scale (Pearson correlation coefficient $r = .80$, $p < .001$). Linear regression indicated a significant effect between this combined scale and aggressive driving behavior ($F(1, 748) = 3252.47$, $p < .001$, $R^2 = .81$). Multiple linear regression indicated a significant effect between the combined intention and willingness scale and attitude, perceived injunctive norms, perceived descriptive norms, and perceived control ($F(4,732) = 384.44$, $p < .001$, $R^2 = .68$). Examination of the individual belief scales indicated that attitude ($t = 11.93$, $p < .001$), perceived injunctive norms ($t = 10.41$, $p < .001$),

perceived descriptive norms ($t= 10.63, p< .001$), and perceived control ($t= 6.08, p< .001$) were significant predictors.

Table 24. Spearman Correlation Coefficients for Aggressive Driving Survey

Scale	1	2	3	4	5	6	7	8	9
1. Aggressive driving	1.00	.90**	.74**	.66**	.56**	.54**	.53**	-.10**	-.27**
2. Intention		1.00	.77**	.70**	.59**	.55**	.52**	-.14**	-.28**
3. Willingness			1.00	.73**	.63**	.50**	.49**	-.16**	-.39**
4. Attitude				1.00	.59**	.45**	.53**	-.23**	-.30**
5. Perceived injunctive norm					1.00	.48**	.37**	-.17**	-.22**
6. Perceived descriptive norm						1.00	.29**	0.03	-.23**
7. Perceived control							1.00	-.26**	-.19**
8. Concern								1.00	0.05
9. Age									1.00

N= 746. **Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Table 25 summarizes agreement with three attitudinal beliefs and two behavioral beliefs comparing responses between those who rarely/never drove aggressively and those who usually/always drove aggressively. The differences in the levels of agreement with these beliefs were meaningful and inform potential messaging to decrease aggressive driving. In particular, messages may seek to grow understanding that these behaviors are dangerous and that speeding does not save that much time.

Table 25. Summary of Agreement With Behavioral Beliefs About Aggressive Driving

“How do you agree or disagree with the following statements?”	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
“Passing a vehicle which is driving about the posted speed limit feels dangerous.” (n=475)	70%	30%	Small (0.18)
“Driving so close to the vehicle in front that it might be difficult to stop in an emergency feels dangerous.” (n=481)	91%	58%	Small (0.18)
“Driving more than 10 mph over the posted speed limit feels dangerous.” (n=479)	78%	24%	Moderate (0.30)
“Passing a vehicle that is driving about the posted speed limit saves time.” (n=488)	16%	76%	Moderate (0.37)
“Driving closely to the vehicle in front of me is likely to make that driver speed up.” (n=488)	15%	50%	Small (0.18)

Perceived injunctive norms indicate people’s perceptions of what other people consider acceptable or expected behavior. Table 26 summarizes perceptions about the acceptance of aggressive driving behaviors. Many people who drove aggressively perceived that others would consider these behaviors as acceptable. This perception may give aggressive drivers permission to engage in these behaviors. Table 27 summarizes the perceptions of respondents about whether

they thought specific other people believed aggressive driving was acceptable. Many people who engaged in aggressive driving perceived that others around them considered it acceptable. However, this may not be accurate, and encouraging people around them to speak up about these behaviors may be an effective approach to changing beliefs without eliciting psychological reactance.

Table 26. Summary of Perceptions of Acceptance of Aggressive Driving Behaviors

“In your opinion, how acceptable would most people who are important to you feel it is to...”	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
pass a vehicle that is going about the posted speed limit	17%	64%	Moderate (0.27)
drive so close to the vehicle in front that it would be difficult to stop in an emergency	7%	40%	Moderate (0.24)
drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph	12%	61%	Moderate (0.36)

N=488

Table 27. Perceptions of Acceptance of Aggressive Driving Behaviors by Specific Others

“In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit?”	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
Your spouse or partner (n=437)	9%	58%	Moderate (0.34)
Your children (n=445)	8%	46%	Moderate (0.29)
Your friends (n=481)	10%	64%	Moderate (0.37)
Your coworkers (n=448)	7%	58%	Moderate (0.34)
Most adults in your community (n=481)	10%	54%	Moderate (0.29)

Perceived descriptive norms indicate people’s perceptions of what other people do. Table 28 summarizes how often respondents perceived other people usually or always drove aggressively. About one-third of people who drove aggressively perceived that others usually or always drove aggressively. Messages clarifying the prevalence of aggressive driving may be effective at changing these misperceptions.

Table 28. Perceptions of Prevalence of Usually/Always Using a Seat Belt

“In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit?” Results shown for usually or always.	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
Your spouse or partner	4%	33%	Moderate (0.35)
Your friends	2%	31%	Moderate (0.34)
Your coworkers	2%	30%	Moderate (0.32)
Most adults in your community	6%	31%	Moderate (0.26)

N=487

One aspect of perceived control explored on the survey was assessing how likely respondents were to be in situations that may increase aggressive driving. Table 29 summarizes the prevalence of respondents who reported they were likely to be in these situations. Including ways to stay calm, avoid frustration, and accept being late (instead of speeding) may be important components of potential messages to decrease aggressive driving.

Table 29. Prevalence of Being in Situations That May Increase Aggressive Driving

In general, how likely are you to find yourself driving in the following situations?	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
Being late to pick up someone (like children or other family members)	21%	60%	Moderate (0.22)
Being late to an appointment, school, or work	18%	60%	Moderate (0.25)
Feeling frustrated by traffic	46%	78%	Small (0.13)
Just feeling angry	18%	49%	Small (0.17)

N= 488

As revealed previously, analyses showed a statistically significant difference in beliefs associated with moral disengagement based on aggressive driving (the effective size was considered moderate with $\eta^2= 0.32$). Further examination of individual moral disengagement beliefs revealed six types of beliefs that dominated (Table 30). Addressing these beliefs may be challenging using simple messaging as shifting these beliefs may require growing social and emotional skills to help drivers better manage frustration, empathize with other drivers, and increase self-management.

Table 30. Summary of Agreement with Moral Disengagement Beliefs

“How do you agree or disagree with the following statements?”	Among Those Who Rarely/Never Drove Aggressively	Among Those Who Usually/Always Drove Aggressively	Effect Size (η^2)
Moral justification: “It’s ok to tailgate if it gets people to realize they are doing the wrong thing.”	3%	39%	Moderate (0.28)
Euphemistic labelling: “Following too closely or cutting someone off is just a way of teaching someone a lesson they need.”	4%	39%	Moderate (0.25)
Displacement of responsibility: “If a driver is pushed into being rude to other drivers, they shouldn’t be blamed for it.”	10%	37%	Small (0.15)
Diffusion of responsibility: “It’s ok to go over the speed limit if it means you are keeping up with the rest of the traffic.”	26%	67%	Moderate (0.20)
Distortion of consequences: “Drivers don’t mind being honked at because they know it just means hurry up.”	7%	37%	Moderate (0.20)
Dehumanization: “It’s alright to abuse drivers who are behaving like jerks.”	4%	41%	Moderate (0.27)

N= 488

4.4 Stages of Change

Stages of change were not assessed on the original seat belt use and aggressive driving surveys but were assessed on the surveys to assess messages. Table 31 summarizes the prevalence for each stage of change among individuals who reported rarely or never using a seat belt from the survey assessing seat belt messages. While one in five (21%) indicated they had decided to never use a seat belt, most indicated some level of thinking about using a seat belt. Because public health campaigns are challenging and often have limited effect (Elder et al., 2004), it may be prudent to focus on individuals who are somewhat willing to change. More interactive and involved strategies (Fernandez et al., 2008) may be required for individuals who are determined against change (i.e., have decided they will never use one).

Table 31. Stages of Change Among Those Who Rarely/Never Use a Seat Belt

Stage of Change	Frequency
“Which statement best describes you?”	
“I do not currently use a seat belt, and I have decided I will never use one.”	21%
“I do not currently use a seat belt, and I don’t really think about it.”	39%
“I do not currently use a seat belt, but sometimes I think about it.”	34%
“I do not currently use a seat belt, but I think I should use one.”	2%
“I have decided to use a seat belt, but I only use it occasionally.”	5%
“I use a seat belt every time I am in a vehicle.”	0%

N= 130

Table 32 summarizes the prevalence for each stage of change among individuals who reported usually or always driving aggressively from the survey assessing aggressive driving messages. Over half (54%) indicated they had decided that they will continue to do these behaviors. However, many (46%) indicated a level of thinking that may be open to change. More interactive and involved strategies may be required for individuals who are determined against change (i.e., have decided they will continue to drive aggressively).

Table 32. Stages of Change Among Those Who Usually/Always Drive Aggressively

Stage of Change "Considering the following behaviors (passing a vehicle which is driving about the posted speed limit, following so close to the vehicle in front that it might be difficult to stop in an emergency, and driving more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph), which statement best describes you?"	Frequency
"I currently do these driving behaviors, and I have decided I will continue to do them."	54%
"I currently do these driving behaviors, and I have not thought about changing."	15%
"I currently do these behaviors, but sometimes I think about changing / doing them less."	16%
"I currently do these behaviors, but I think I should change / do them less."	10%
"I have decided to not do these behaviors, but I still do them occasionally."	5%
"I don't do these behaviors."	2%

N= 129

4.5 Testing Potential Messages

4.5.1 Messages About Seat Belt Use

Table 33 and Table 34 list the five messages (and one control message) that were tested addressing seat belt use along with the reasoning supporting the content of each message. The use of language that creates a sense of choice by the listener can reduce psychological reactance (Shen, 2015; Miller et al., 2007). Thus, the phrase "choosing to use a seat belt" and questions were used in messages to promote a sense of choice.

Framing messages around benefits and positive outcomes may reduce psychological reactance (Shen, 2015; Cho & Sands, 2011). Therefore, language about protecting oneself was used (as opposed to focusing on the consequences of not using a seat belt).

Evoking empathy (Shen, 2010) and helping people to take the perspective of others (Steindl & Jonas, 2012) also may inhibit psychological reactance. Messages attempted to connect the decision about using a seat belt to other people like relatives, family members, etc.

The first three messages and the control message (Message #6) were tested with one sample. The results of these messages were examined, and a second set of messages were created. As the results of Message #3 were promising, it was repeated in the second wave of testing. Messages

#3, #4, and #5 and the control message were tested with a different sample. These messages sought to address key beliefs (see Section 4.3) and use language that would minimize psychological reactance.

Table 35 and Table 36 summarize the testing results of these messages. In the first sample, Message #1 and #3 seemed to generate less perceived threat and anger and were perceived as more effective than Message #2 among those who rarely/never used a seat belt. Message #3 was re-tested in the second sample. In the second sample, Message #3 was perceived as more effective than Message #4 and Message #5 among those who rarely/never used a seat belt. However, Message #3 generated more perceived threat and anger than Message #4 and Message #5.

The test messages (#1 to #5) did not have significantly different reactions compared to the control message (#6), which was intentionally designed to create reactance. In these tests, the use of choice language and questions did not appear to reduce perceived threat or anger.

Overall, a significant portion of those who rarely/never used a seat belt rated the messages as effective. However, this rating does not necessarily mean that the messages will change their beliefs. It is important to note that the differences measured were small, and most differences were not statistically significant (see Appendix 7.5 for more details). We also examined the differences between the messages for those with high proneness to psychological reactance and found no statistically significant differences. This may be partially the consequence of small sample sizes. We had difficulty recruiting individuals who rarely/never used a seat belt to participate (see Section 3.4.3).

Table 33. Seat Belt Messages and Reasoning (First Sample)

Message	Reasoning
<p>Message #1 Imagine a 30-year-old male voice saying: “So, I used to not always use a seat belt. And then one day, I was taking my grandmother to the doctor, and I wanted her to use a seat belt. And then I started thinking about why I didn't use a seat belt. Why was I choosing not to protect myself? Would my grandma want me to use a seat belt? Could I choose to wear one for her? So, I started using a seat belt more often. Now, I use it all the time. Like most people do. I even use my seat belt if others aren't. For me, it's a choice I make for my grandma. Because she made me feel special when I was young. Announcer says: “Who might you use a seat belt for?”</p>	<ul style="list-style-type: none"> • Focus on beliefs of protecting yourself, important others would want you to use a seat belt, and that most people use seat belts • Extensive use of choice language and showing change over time. • Personal narrative
<p>Message #2 Imagine several different voices saying: “Choosing to use a seat belt is my way of... thinking about my family and protecting myself when I am driving. being a role model for my kids. ...seeing my 25th birthday. ...staying in my seat no matter what happens. ...protecting others in the car. ...doing my job well. ...choosing to control what I can when I know I can't control everything. ...protecting myself from the bad drivers out there. ...not disappointing my Mom.” Announcer says: “Most people choose to use a seat belt. Even if others in the vehicle are not. What's a possible reason for you to always use a seat belt?”</p>	<ul style="list-style-type: none"> • Focus on beliefs of protecting yourself, role modeling for children, not being ejected, and that most people use seat belts (even if others are not) • Choice language, being in control, and asking questions (instead of making a demand)
<p>Message #3 “We play important roles in the lives of many people. We are wives, husbands, partners, girlfriends, boyfriends, fathers, and mothers. And we are good friends...we are people that can be counted on. Who are the important people who count on you in their life? What would it be like to choose to always use a seat belt for them? Did you know most people choose to protect themselves by always using a seat belt? And many people use a seat belt for someone else. Even if others in the vehicle are not. Who might you use a seat belt for?”</p>	<ul style="list-style-type: none"> • Connecting to role with others, importance of protecting yourself, and that most people use a seat belt • Choice language, being in control, and asking questions (instead of making a demand)

Table 34. Seat Belt Messages and Reasoning (Second Sample)

Message	Reasoning
<p>Message #3 “We play important roles in the lives of many people. We are wives, husbands, partners, girlfriends, boyfriends, fathers, and mothers. And we are good friends...we are people that can be counted on. Who are the important people who count on you in their life? What would it be like to choose to always use a seat belt for them? Did you know most people choose to protect themselves by always using a seat belt? And many people use a seat belt for someone else. Even if others in the vehicle are not. Who might you use a seat belt for?”</p>	<ul style="list-style-type: none"> • Connecting to role with others, importance of protecting yourself, and that most people use a seat belt • Choice language, being in control, and asking questions (instead of making a demand)
<p>Message #4 “I want what’s best for my kids. I want them to always wear a seat belt. On weekends we have a lot going on, but our car doesn’t move until everyone has their seat belt on. Even when my family isn’t with me, I make the decision to do what’s best for our family and always wear a seat belt. Whether I am driving home from work or going to the store, I know my family wouldn’t want the car to move until I have my seat belt on. We choose to be safe. We choose to always wear a seat belt.”</p>	<ul style="list-style-type: none"> • Connecting to higher values and role modeling with children, family rules, and using a seat belt on short and long trips • Choice language
<p>Message #5 There are two people having a conversation in a vehicle. Person 1: I notice you always wear your seat belt, even if you are just driving for a few minutes. Person 2: Well, when you think about it, most of the driving we do is just a short distance from home, like driving to school, or work, or to the store. It's just more likely that we'll be involved in a crash within just a few miles from home. Person 1: Most of the vehicles I drive in have a lot of safety features, like airbags or automatic brakes, I sometimes wonder if a seat belt is always necessary. Person 2: Even with all of the safety features, the choices we make, like wearing a seat belt, actually matter the most. Person 1: You know, I used to think that if I was wearing a seat belt and I was in a crash, that I might get trapped. But I know the likelihood of that is extremely small and there’s a lot more benefits. Seat belts can significantly reduce our chances of being seriously injured in a crash. I see why you make the choice to always wear your seat belt.</p>	<ul style="list-style-type: none"> • Providing rationale for using a seat belt even on short trips and even with new safety equipment • Simple dialogue between two people to show change of beliefs • Choice language
<p>Message #6 (Control) The truth is that using a seat belt is a lifesaving behavior and the smart and easy thing to do. No matter how much you don’t want your life to be regulated by others, everyone should always use a seat belt. Why be lazy? You can clearly see there is no other choice. Buckle up!</p>	<ul style="list-style-type: none"> • Direct, strong language seeking to elicit psychological reactance

Table 35. Message Testing Results for Seat Belt Use (First Sample)

Message	Seat Belt Use	n	Perceived Threat	Angry Emotion	Perceived Effective
Message #1	rarely/never	50	32%	18%	52%
	usually/always	26	35%	19%	81%
Message #2	rarely/never	41	39%	32%	32%
	usually/always	31	39%	26%	87%
Message #3	rarely/never	39	33%	15%	64%
	usually/always	34	44%	26%	91%
Message #6	rarely/never	129	36%	25%	41%
	usually/always	91	41%	26%	75%

Table 36. Message Testing Results for Seat Belt Use (Second Sample)

Message	Seat Belt Use	n	Perceived Threat	Angry Emotion	Perceived Effective
Message #3	rarely/never	34	53%	26%	47%
	usually/always	72	53%	35%	97%
Message #4	rarely/never	34	29%	15%	38%
	usually/always	63	48%	40%	92%
Message #5	rarely/never	27	48%	19%	41%
	usually/always	66	53%	45%	94%
Message #6	rarely/never	95	47%	22%	31%
	usually/always	201	52%	39%	91%

4.5.2 Messages About Aggressive Driving

Table 37 lists the three messages (and a control message) that were tested addressing aggressive driving. These messages sought to address key beliefs (see Section 4.3) and use language that would minimize psychological reactance and reduce moral disengagement.

Research has identified several strategies to decrease moral disengagement including promoting critical thinking skills (Bustamante & Chaux, 2014), social regulation and social pressure (Bustamante & Chaux, 2014; Kim, 2018), empathy (Bussey et al., 2015; Paciello et al., 2013), and perspective taking (Bussey et al., 2015; Bandura, 2016).

Critical thinking was promoted by noting that speeding really does not save time and has serious negative potential consequences. Social regulation, empathy, and perspective taking were promoted by challenging perceptions of identity and potential negative consequences to others. Questions were used to increase a sense of choice and motivate reflection and bolster critical thinking.

Table 37. Aggressive Driving Messages and Reasoning

Message	Reasoning
<p>Message #1 I can laugh at myself now, but I used to be that guy – the driver who was always speeding, tailgating others, and passing when I could. I realized I was driving aggressively and that’s not who I am. I realized it’s just not worth it. The potential of being in an accident, getting hurt or hurting someone else, the fines and legal fees – it’s just not worth it. Now if I start to drive aggressively, I take a deep breath, I turn up the music, I think about people I care about. Speeding doesn’t save time. Creating space between vehicles reduces crashes. Not passing excessively reduces crashes. I don’t drive aggressively because that’s not who I am.</p>	<ul style="list-style-type: none"> • Focus on negative consequences of aggressive driving, false belief that speeding saves time, and connect to identity • Provide ways to calm down • Personal narrative of change with a light-hearted tone
<p>Message #2 I’m competitive. ...on the basketball court, opening my chess game, at the gym ...and maybe even getting that last piece of pie at the holiday meal. While being competitive comes with its merits, I would never be competitive if someone could be injured. I know there is no place for being competitive when I drive. It doesn’t matter if I’m running late, in a hurry, or just in a bad mood. Tailgating, passing excessively, and speeding aren’t competitive - they are aggressive driving. Aggressive driving puts pedestrians, people on bicycles and motorcycles, other drivers, and myself at risk. I choose to stay safe behind the wheel and leave being competitive for getting the last donut from the breakroom.</p>	<ul style="list-style-type: none"> • Connect with those who value competition, but establish that aggressive driving is not acceptable and can cause injuries; focus on safety • Reduce moral disengagement by establishing competition is not acceptable if people get hurt • Choice language and being in control
<p>Message #3 Driving is not a competitive sport There is a time and place for everything. Being aggressive is appropriate in some settings and not others. Basketball court – yes Grocery shopping – no Family game night – yes Passing drivers going the speed limit – no Soccer field - yes Following vehicles too closely – no Passing others going the speed limit or following too closely is aggressive. When we are driving, safety is our priority. Aggressive driving is dangerous and leads to more crashes. Are you driving aggressively?</p>	<ul style="list-style-type: none"> • Connect with those who value competition, but establish that driving is not an appropriate context for competition • Reduce moral disengagement by comparing different situations • Use a question to motivate reflection
<p>Message #4 (Control) Think you can speed? You can’t. Passing every vehicle on the road? Not okay! Think you have the right to tailgate someone because they are annoying you? Don’t be a jerk. You share the road with others. Your unsafe driving puts others at risk of serious injuries and even death. You must do your part to keep everyone safe.</p>	<ul style="list-style-type: none"> • Direct, strong language seeking to elicit psychological reactance

Table 38 summarizes the testing results of these messages. Among those who usually/always drove aggressively, the perceived threat and levels of anger generated by the messages were similar. Message #1 was perceived as slightly more effective than the other messages among those who usually/always drove aggressively.

The test messages (#1 to #3) did not have significantly different reactions compared to the control message (#4), which was intentionally designed to create reactance. In these tests, the use of choice language did not appear to reduce perceived threat or anger.

A significant portion of those who usually/always drove aggressively perceived the messages as threatening and felt angry. Nonetheless, a significant portion of those who usually/always drove aggressively rated the messages as effective. However, this rating does not necessarily mean that the messages will change their beliefs. It is important to note that the differences measured were small, and most differences were not statistically significant (using either parametric or non-parametric tests). This may be partially the consequence of small sample sizes. We also examined the differences between the messages for those with high proneness to psychological reactance and found no statistically significant differences.

Table 38. Message Testing Results for Aggressive Driving

Message	Aggressive Driving	N	Perceived Threat	Angry Emotion	Perceived Effective
Message #1	rarely/never	45	20%	13%	73%
	usually/always	40	90%	59%	95%
Message #2	rarely/never	50	20%	10%	68%
	usually/always	41	83%	49%	76%
Message #3	rarely/never	48	19%	4%	75%
	usually/always	49	90%	69%	82%
Message #4	rarely/never	143	22%	6%	64%
	usually/always	130	86%	61%	83%

5 CONCLUSIONS AND RECOMMENDATIONS

Surveys were developed and implemented (with independent samples) to:

- Explore the relationship between psychological reactance (proneness and situational) and moral disengagement with two behaviors associated with traffic safety: seat belt use and aggressive driving.
- Identify beliefs associated with seat belt use and aggressive driving.
- Test potential messages.

Those who rarely or never used a seat belt were found to exhibit more situational psychological reactance (in response to two messages about seat belt use) than people who usually or always used a seat belt. No differences in proneness to psychological reactance were found based on seat belt use. Among those responding to the seat belt use survey, psychological reactance decreased slightly with age and increased slightly based on education attainment (for one indicator of situational psychological reactance); however, no meaningful associations in situational psychological reactance were found based on sex or geography.

Similarly, people who rarely or never used a seat belt were found to exhibit more moral disengagement than people who usually or always used a seat belt. Among those responding to the seat belt use survey, there were no statistically significant associations between moral disengagement and age, sex, education attainment, or geography.

Those who frequently drove aggressively were found to exhibit more proneness and situational psychological reactance than people who rarely or never drove aggressively. Among those responding to the aggressive driving survey, psychological reactance decreased with age and increased with education attainment (for two indicators); however, no meaningful associations in psychological reactance were found based on sex or geography.

Similarly, people who frequently drove aggressively were found to exhibit more moral disengagement than people who rarely or never drove aggressively. Among those responding to the aggressive driving survey, males indicated more moral disengagement than females, and moral disengagement decreased with age. There were no meaningful associations between moral disengagement and education attainment or geography.

Based on these results, considering the impact of psychological reactance and moral disengagement is appropriate when developing messages to change the behaviors of those who rarely or never use a seat belt or frequently drive aggressively.

Analyses of the behavioral models identified key beliefs associated with seat belt use and aggressive driving. Specifically, potential messages to increase seat belt use should focus on the following:

- Using seat belts is a way to protect ourselves.

- Using seat belts sets a good example for our children.
- People are less likely to be seriously injured or killed if they always use a seat belt.
- Most people (in your community/at your workplace) use seat belts.
- Family/workplace rules about always using a seat belt increase use.
- People may choose to use a seat belt because they care about others and recognize that their own injury or death would negatively impact others.

Potential messages to decrease aggressive driving should focus on the following:

- Aggressively passing, tailgating, and driving over the posted speed limit increase the likelihood of a crash, injury or death, and financial loss.
- Speeding does not really save that much time.
- Many people, even those close to you, may consider aggressive driving unacceptable.
- Most people (in your community/at your workplace) don't drive aggressively.
- Speeding, when you are late, will not get you there much sooner and may result in a crash.
- Consider the way you drive as you would any other social interaction like being in a store or waiting in line at a movie theatre.

These recommendations have limitations because they are based on correlational analyses. Correlation is necessary but not sufficient to prove causality.

Examining the stages of change revealed that some people who rarely/never used a seat belt were more open to thinking about change than others and that many aggressive drivers seemed committed to not changing. Therefore, efforts using large media campaigns may seek to appeal to those who are already open to some degree of change as success with this group is more likely with messaging.

The results of the message testing were ambiguous. It was difficult to determine that any one message was better than another, and many did not seem any better than the messages developed to elicit reactance (i.e., the control messages). These tests were complicated by the small sample sizes and may have been negatively influenced by the change in driving patterns due to the pandemic.

Those who rarely/never used a seat belt or who drove aggressively may be particularly challenging individuals to change behavior – especially using only messaging. Examining their stages of change revealed that some are more receptive to change than others. For those who seem committed to not changing, messaging that directly focuses on these individuals in an effort to change their beliefs may be particularly challenging.

Perhaps messaging that seeks to engage those around these individuals may be a more effective approach when using universal media messages. For example, instead of messaging directly to individuals who rarely/never use a seat belt, messages could try to engage those around these individuals and provide guidance on how to speak to these people about always using a seat belt.

Such an approach shifts the message carrier from an authority figure (like federal/state government or law enforcement) to someone the person knows. This shift may increase trust, reduce reactance, and make the individual more willing to listen.

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7 APPENDIX

7.1 Seat Belt Use Survey

Reactance Seat Belt Survey

The purpose of this survey is to assess beliefs associated with seat belt use and to determine if psychological reactance is more prevalent among individuals who rarely or never use a seat compared to those who always use a seat belt. The sample will be recruited online from individuals across the U.S. and will screen for respondents who never or rarely use a seat belt.

The following is the text of the survey. The actual survey will be implemented online, and the questions will appear differently. Preliminary pilot tests indicate the survey will take about 15 minutes.

The Center for Health and Safety Culture is conducting research about health and safety.

We are asking for your participation in this important survey. This is not a marketing survey or to learn about selling a product. This is about improving health and safety. We know your time is valuable, and we appreciate your participation.

Your participation is voluntary, and we will only share summary results. You can stop at any time. Your responses are confidential, anonymous, and cannot be associated with your identity. This study has been approved by the Montana State University Institutional Review Board. If you have questions or comments about the survey, please contact Jay Otto with the Center for Health and Safety Culture at jayotto@montana.edu.

Thank you for taking this survey!

Jay Otto
jayotto@montana.edu

First, let us learn a little bit about you.

1. What is your age?
2. In a typical month, how often do you operate a vehicle? (never to daily)
3. Thinking back over the past 30 days, how often did you use your seat belt? (never to always)
4. In a typical month, how often do you ride (as a passenger) in a vehicle? (never to always)

5. In what state do you currently reside?

6. What is your sex? (male, female, other, I prefer not to answer)

7. In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault? None, 1, 2, 3, 4, 5, 6 or more

8. In the past year, how many vehicle crashes (even minor ones) have you been involved that you may have had some fault? None, 1, 2, 3, 4, 5, 6 or more

9. In the past year, how many citations, tickets or summonses have you received for not using a seat belt? None, 1, 2, 3, 4, 5, 6 or more

(The following is a validated scale to assess proneness to psychological reactance.)

10. How much do you agree or disagree with each statement? (strongly disagree to strongly agree)

- a) I become frustrated when I am unable to make free and independent decisions.
- b) I become angry when my freedom of choice is restricted.
- c) It irritates me when someone points out things that are obvious to me.
- d) The thought of being dependent on others aggravates me.
- e) Regulations trigger a sense of resistance in me.
- f) I find contradicting others stimulating.
- g) When something is prohibited, I usually think "That's exactly what I am going to do."
- h) I resist the attempts of others to influence me.
- i) It makes me angry when another person is held up as a model for me to follow.
- j) When someone forces me to do something, I feel like doing the opposite.
- k) It disappoints me to see others submitting to a society's standards and rules.
- l) I am content only when I am acting of my own free will.
- m) I consider advice from others to be an intrusion.
- n) Advice and recommendations induce me to do just the opposite.

11. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) "I am very concerned about safety on our roads and highways."
- b) "I believe the only acceptable number of deaths and serious injuries on our roadways is zero."
- c) "I believe the only acceptable number of deaths and serious injuries among my family and friends on our roadways is zero."

In this section, we want to learn how often you use a seat belt.

12. How often do you use a seat belt... (never to always)

- a) when you are driving within a few miles of your home?
- b) when you are driving many miles from your home?
- c) in general, driving during the day?
- d) in general, driving at night?

13. Thinking of the next 30 days, how often do you intend to use your seat belt? (never to always)

14. How likely is it that you will drive WITHOUT using your seat belt in the next 30 days? (not at all likely to extremely likely)

15. How determined are you to use your seat belt every time you are in a vehicle in the next 30 days? (not at all determined to extremely determined)

16. Imagine you are in the following situations. How willing would you be to use your seat belt? (not at all willing to extremely willing)

- a) If children are in the vehicle
- b) You are by yourself in the vehicle
- c) You are driving on rural roads
- d) You are driving during the day

17. Now, we want to ask how you feel about using a seat belt. "To me, always using a seat belt feels..."

good: bad

foolish: wise

safe: dangers

unnecessary: necessary

uncomfortable: comfortable

18. How much do you agree or disagree with the following statements? (strongly disagree to strongly agree)

- a) I believe it is important to protect myself by always using a seat belt.
- b) I use a seat belt because I don't want to get a ticket.
- c) I use a seat belt because I want to set a good example for my children.
- d) People are less likely to be seriously injured or killed if they always use their seat belt.
- e) I believe local law enforcement should enforce seat belt laws.
- f) It is a driver's responsibility to comply with traffic laws.

19. How much do you agree or disagree: "People who care about me want me to always use a seat belt"? (strongly disagree to strongly agree)

Now, we want to ask about how others would feel if you did NOT use a seat belt.

20. Would most people important to you feel it was acceptable or unacceptable if you did NOT use your seat belt? (extremely unacceptable to extremely acceptable)

21. Would most people who are important to you approve or disapprove if you did NOT use a seat belt? (strongly disapprove to strongly approve)

Again, this question asks about if you did NOT use a seat belt.

22. In your opinion, would the following people feel it was acceptable or unacceptable if **you did NOT use your seat belt**? (extremely unacceptable to extremely acceptable, does not apply to me)

- a) Your spouse or partner
- b) Your children
- c) Your friends
- d) Your coworkers
- e) Most adults in your community

23. In general, how often do most people like you use their seat belts? (never to always)

24. How many people similar to you do you think always use their seat belt? (none to all)

How common do you think it is for people like yourself to always use their seat belt? (not at all common to extremely common)

25. In your opinion, how often do the following people use their seat belts? (never to always)

- a) Your spouse or partner
- b) Your children
- c) Your friends
- d) Your coworkers
- e) Most adults in your community

26. How much do you agree or disagree: "I find it difficult to remember to always use a seat belt"? (strongly disagree to strongly agree)

27. If you wanted to, how easy or difficult would it be for you to always use a seat belt? (extremely difficult to extremely easy)

28. How confident are you that you could always use a seat belt if you wanted to? (not at all confident to extremely confident)

29. How much do you agree or disagree: "I am comfortable using my seat belt even if others in the vehicle are not." (strongly disagree to strongly agree)

30. "Even if I wanted to, I can't always use a seat belt because...
- a) my vehicle does not have a seat belt that works."
 - b) the seat belt does not fit me properly."
 - c) I have to get in and out of the vehicle too much to use a seat belt."

(strongly disagree to strongly agree)

31. Do you have a family rule about always using a seat belt? (yes, no, I don't know, I don't have a family)

32. Do you have a workplace rule about always using a seat belt? (yes, no, I don't know, I don't have a workplace)

(These statements assess eight forms of moral disengagement about seat belts: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, attribution of blame, and dehumanization. The following statements were narrowed from a longer list after pilot testing.)

33. How much do you agree or disagree with the following statements? (strongly disagree to strongly agree)

- a) "Using a seat belt isn't necessary if you are a good driver."
- b) "It's ok to not use a seat belt if you are in a hurry to get somewhere and forget to buckle up."
- c) "My heroes don't use seat belts."
- d) "Not using a seat belt is just a way of letting the government know they aren't in control."
- e) "I might not use a seat belt, but at least I don't text and drive."
- f) "Not using a seat belt is no big deal when you consider that others are choosing more dangerous behaviors like drinking and driving."
- g) "You can't blame me for not using a seat belt; I have more important things to worry about."
- h) "My friends/family don't use seat belts; why should I?"
- i) "I am not going to use a seat belt because others in the vehicle aren't either."
- j) "I don't need to use a seat belt because vehicles are so much safer today."
- k) "Not using my seat belt is okay because it doesn't impact anyone else."
- l) "We didn't have to use seat belts when I was young, and we turned out just fine."
- m) "If kids don't use a seat belt, it is their parents' fault."
- n) "If other people knew how to drive, people would not need to use a seat belt to protect themselves."
- o) "Telling people they have to use a seat belt is acting like people are stupid."
- p) "Making someone use a seat belt is treating them like less than a person."

(This section assesses psychological reactance by measuring the respondent's reaction to messages that are designed to foster a reaction. The questions used are based on published research to assess reactance. These messages and questions were pilot tested with an online sample of 160 adults).

Now we would like you to read a message and then answer some questions about the message.

Message A

You model healthy behaviors for the people you care about most.

Buckling your seat belt only takes a few seconds, is easy, and models a critical lifesaving behavior for those you care about.

Consider buckling up for the people you care about – your family, your friends, and your coworkers.

34. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message threatened my freedom to choose.
- b) The message tried to make a decision for me.
- c) The message tried to manipulate me.
- d) The message tried to pressure me.

35. To what extent did the message that you just read make you feel... (none of this feeling to a great deal of the feeling)

- a) Angry
- b) Irritated
- c) Annoyed
- d) Aggravated

36. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message is a reason for using a seat belt that is believable.
- b) The message is a reason for using a seat belt that is convincing.
- c) The message gives a reason for using a seat belt that is important to me.
- d) The message helped me feel confident about how best to use a seat belt.
- e) The message would help my friends to use a seat belt.
- f) The message put thoughts in my mind about wanting to use a seat belt.
- g) The message put thoughts in my mind about not wanting to use a seat belt.
- h) Overall, how much do you agree or disagree with the message?

Now we would like you to read another message and then answer some questions about the message.

Message B

The truth is that using a seat belt is a lifesaving behavior and the smart and easy thing to do. No matter how much you don't want your life to be regulated by others, everyone should always use a seat belt.

Why be lazy?

You can clearly see there is no other choice. Buckle up!

37. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message threatened my freedom to choose.
- b) The message tried to make a decision for me.
- c) The message tried to manipulate me.
- d) The message tried to pressure me.

38. To what extent did the message that you just read make you feel... (none of this feeling to a great deal of the feeling)

- a) Angry
- b) Irritated
- c) Annoyed
- d) Aggravated

39. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message is a reason for using a seat belt that is believable.
- b) The message is a reason for using a seat belt that is convincing.
- c) The message gives a reason for using a seat belt that is important to me.
- d) The message helped me feel confident about how best to use a seat belt.
- e) The message would help my friends to use a seat belt.
- f) The message put thoughts in my mind about wanting to use a seat belt.
- g) The message put thoughts in my mind about not wanting to use a seat belt.
- h) Overall, how much do you agree or disagree with the message?

Finally, we would like to learn a little more about you.

40. What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school graduate (high school diploma or equivalent including GED)
- Some college but no degree
- Associate degree in college (2-year)
- Bachelor's degree in college (4-year)
- Master's degree
- Doctoral degree
- Professional degree (JD, MD)
- I prefer not to answer

41. What best describes where you live?

- Urban (population of 50,000 or more)
- Suburban (population between 2,500 and 50,000)
- Rural

42. Are you Spanish, Hispanic, or Latino or none of these? (yes, none of these, I prefer not to answer)

43. Choose one or more races that you consider yourself to be:

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other _____
- I prefer not to answer

44. What is your annual household income from all sources?

- Less than \$25,000
- \$25,000 to less than \$35,000
- \$35,000 to less than \$50,000
- \$50,000 to less than \$75,000
- \$75,000 or more
- I prefer not to answer

Thanks for completing this survey. Your participation will help improve traffic safety.

7.2 Frequency Response for Seat Belt Use Survey

In a typical month, how often do you operate a vehicle?

N	Most days	Daily	100%
581	30.8%	69.2%	

Thinking back over the past 30 days, how often did you use your seat belt?

N	Never	(1)	(2)	(3)	About half the time	(4)	(5)	(6)	Always	(7)	100%
581	15.8%		11.2%	4.8%	13.8%		5.5%	6.5%	42.3%		

In a typical month, how often do you ride (as a passenger) in a vehicle?

N	Never	Rarely	Some days	About half	Often	Most days	Daily	100%
581	10.8%	29.6%	27.0%	8.8%	10.7%	5.3%	7.7%	

What is your sex?

N	male	female	other	I prefer not to answer	100%
581	45.4%	53.2%	0.5%	0.9%	

In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault?

N	None	1	2	3	4	5	6 or more	100%
581	79.9%	10.8%	4.5%	2.2%	1.2%	0.7%	0.7%	

In the past year, how many vehicle crashes (even minor ones) have you been involved in that you may have had some fault?

N	None	1	2	3	4	5	6 or more	100%
581	85.0%	8.6%	2.2%	1.9%	1.0%	0.5%	0.7%	

In the past year, how many citations, tickets, or summonses have you received for not using a seat belt?

N	None	1	2	3	4	5	6 or more	100%
581	83.5%	9.3%	3.1%	1.4%	1.7%	0.3%	0.7%	

How much do you agree or disagree with each statement? - I become frustrated when I am unable to make free and independent decisions.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	100%
581	9.1%	4.0%	6.2%	15.1%	31.8%	12.9%	20.8%	

How much do you agree or disagree with each statement? - I become angry when my freedom of choice is restricted.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	6.7%	4.1%	5.9%	13.9%	31.5%	12.0%	25.8%	100%

How much do you agree or disagree with each statement? - It irritates me when someone points out things that are obvious to me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	6.6%	5.2%	9.5%	23.8%	27.2%	11.6%	16.2%	100%

How much do you agree or disagree with each statement? - The thought of being dependent on others aggravates me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	6.0%	3.6%	8.6%	17.6%	33.0%	12.6%	18.6%	100%

How much do you agree or disagree with each statement? - Regulations trigger a sense of resistance in me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	11.9%	7.4%	16.2%	28.6%	18.2%	8.8%	9.0%	100%

How much do you agree or disagree with each statement? - I find contradicting others stimulating.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	23.4%	9.7%	16.4%	26.7%	13.6%	5.3%	4.8%	100%

How much do you agree or disagree with each statement? - When something is prohibited, I usually think "That's exactly what I am going to do."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	27.8%	13.3%	14.0%	20.5%	14.0%	6.4%	4.1%	100%

How much do you agree or disagree with each statement? - I resist the attempts of others to influence me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	7.9%	5.2%	8.8%	26.0%	27.6%	11.9%	12.6%	100%

How much do you agree or disagree with each statement? - It makes me angry when another person is held up as a model for me to follow.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	11.0%	7.4%	12.6%	29.1%	21.7%	8.3%	10.0%	100%

How much do you agree or disagree with each statement? - When someone forces me to do something, I feel like doing the opposite.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	13.4%	7.2%	11.2%	25.3%	25.6%	6.0%	11.2%	100%

How much do you agree or disagree with each statement? - It disappoints me to see others submitting to a society's standards and rules.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	15.3%	9.8%	14.1%	27.4%	18.1%	6.9%	8.3%	100%

How much do you agree or disagree with each statement? - I am content only when I am acting of my own free will.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	6.5%	6.2%	8.6%	22.4%	29.8%	11.9%	14.6%	100%

How much do you agree or disagree with each statement? - I consider advice from others to be an intrusion.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	20.3%	13.8%	22.0%	22.9%	12.4%	4.8%	3.8%	100%

How much do you agree or disagree with each statement? - Advice and recommendations induce me to do just the opposite.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	20.8%	15.5%	19.3%	24.3%	11.5%	4.6%	4.0%	100%

How much do you agree or disagree? - "I am very concerned about safety on our roads and highways."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	4.5%	0.9%	4.0%	10.7%	21.5%	20.1%	38.4%	100%

How much do you agree or disagree? - "I believe the only acceptable number of deaths and serious injuries on our roadways is zero."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	6.7%	3.1%	4.5%	14.1%	18.2%	14.3%	39.1%	100%

How much do you agree or disagree? - "I believe the only acceptable number of deaths and serious injuries among my family and friends on our roadways is zero."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	4.0%	1.9%	3.8%	14.6%	11.5%	11.2%	53.0%	100%

How often do you use a seat belt... - when you are driving within a few miles of your home?

N	Never (1)	(2)	(3)	About half the time (4)	(5)	(6)	Always (7)	
581	24.8%	6.9%	4.6%	12.7%	4.0%	7.1%	39.9%	100%

How often do you use a seat belt... - when you are driving many miles from your home?

N	Never (1)	(2)	(3)	About half the time (4)	(5)	(6)	Always (7)	
581	15.0%	7.4%	4.5%	9.5%	7.4%	9.8%	46.5%	100%

How often do you use a seat belt... - in general, driving during the day?

N	Never (1)	(2)	(3)	About half the time (4)	(5)	(6)	Always (7)	
581	21.2%	6.9%	5.0%	12.0%	6.9%	8.3%	39.8%	100%

How often do you use a seat belt... - in general, driving at night?

	Never	(2)	(3)	About half the time (4)	(5)	(6)	Always (7)	
N	(1)							
581	18.9%	6.4%	3.8%	9.8%	9.0%	8.4%	43.7%	100%

Thinking of the next 30 days, how often do you intend to use your seat belt?

	Never	(2)	(3)	About half the time (4)	(5)	(6)	Always (7)	
N	(1)							
581	16.2%	7.2%	3.6%	11.5%	6.0%	9.3%	46.1%	100%

How likely is it that you will drive WITHOUT using your seat belt in the next 30 days?

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
581	26.3%	10.5%	5.5%	9.8%	2.6%	6.0%	39.2%	100%

How determined are you to use your seat belt every time you are in a vehicle in the next 30 days?

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
581	19.3%	4.5%	5.0%	12.7%	5.2%	7.7%	45.6%	100%

Imagine you are in the following situations. How willing would you be to use your seat belt? - If children are in the vehicle

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
581	8.8%	2.8%	2.2%	12.7%	5.5%	8.1%	59.9%	100%

Imagine you are in the following situations. How willing would you be to use your seat belt? - You are by yourself in the vehicle

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
581	18.9%	7.2%	6.0%	11.9%	5.3%	6.4%	44.2%	100%

Imagine you are in the following situations. How willing would you be to use your seat belt? - You are driving on rural roads

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
581	17.7%	7.6%	5.7%	10.8%	5.2%	6.9%	46.1%	100%

Imagine you are in the following situations. How willing would you be to use your seat belt? - You are driving during the day

	Extremely likely (7)	(6)	(5)	Moderately likely (4)	(3)	(2)	Not at all likely (1)	
N								
580	16.0%	7.4%	5.2%	13.1%	6.9%	7.8%	43.6%	100%

To me, always using a seat belt feels: good: bad

N	1	2	3	4	5	6	7	
577	52.3%	8.1%	5.9%	14.4%	6.6%	4.5%	8.1%	100%

To me, always using a seat belt feels: foolish: wise

N	1	2	3	4	5	6	7	
571	5.4%	3.2%	5.3%	13.7%	7.4%	11.2%	53.9%	100%

To me, always using a seat belt feels: safe: dangerous

N	1	2	3	4	5	6	7	
573	58.5%	9.9%	8.6%	12.9%	3.8%	2.3%	4.0%	100%

To me, always using a seat belt feels: unnecessary: necessary

N	1	2	3	4	5	6	7	
572	11.2%	5.4%	5.6%	14.2%	6.1%	8.2%	49.3%	100%

To me, always using a seat belt feels: uncomfortable: comfortable

N	1	2	3	4	5	6	7	
578	21.6%	4.8%	7.8%	14.2%	8.7%	10.0%	32.9%	100%

How much do you agree or disagree with the following statements? - I believe it is important to protect myself by always using a seat belt.

				Neither agree nor disagree					
N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree		
581	13.4%	8.3%	5.2%	10.2%	14.3%	10.7%	38.0%		100%

How much do you agree or disagree with the following statements? - I use a seat belt because I don't want to get a ticket.

				Neither agree nor disagree					
N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree		
580	15.9%	4.5%	4.3%	12.4%	19.0%	15.7%	28.3%		100%

How much do you agree or disagree with the following statements? - I use a seat belt because I want to set a good example for my children.

				Neither agree nor disagree					
N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree		
581	12.9%	5.7%	3.6%	16.2%	10.7%	15.5%	35.5%		100%

How much do you agree or disagree with the following statements? - People are less likely to be seriously injured or killed if they always use their seat belt.

N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	9.3%	5.5%	5.9%	11.6%	13.6%	15.7%	38.4%	100%

How much do you agree or disagree with the following statements? - I believe local law enforcement should enforce seat belt laws.

N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	15.3%	7.4%	7.1%	13.3%	11.6%	14.1%	31.2%	100%

How much do you agree or disagree with the following statements? - It is a driver's responsibility to comply with traffic laws.

N	Strongly disagree	Moderately Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	4.5%	4.8%	2.2%	9.3%	15.0%	16.2%	47.9%	100%

How much do you agree or disagree: "People who care about me want me to always use a seat belt"?

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	6.9%	2.4%	3.1%	10.7%	12.9%	11.5%	52.5%	100%

Would most people important to you feel it was acceptable or unacceptable if you did NOT use your seat belt?

N	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	
581	7.2%	6.0%	6.2%	18.4%	12.2%	13.4%	36.5%	100%

Would most people who are important to you approve or disapprove if you did NOT use a seat belt?

N	Strongly approve	Moderately approve	Somewhat approve	Neither approve nor disapprove	Somewhat disapprove	Moderately disapprove	Strongly disapprove	
577	5.2%	2.6%	6.6%	19.4%	11.4%	13.3%	41.4%	100%

In your opinion, would the following people feel it was acceptable or unacceptable if you did NOT use your seat belt?

N	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	Does not apply to me	
580	5.7%	3.6%	6.9%	19.0%	7.1%	9.5%	41.0%	7.2%	100%

In your opinion, would the following people feel it was acceptable or unacceptable if you did NOT use your seat belt?

	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	Does not apply to me	
N									
580	4.7%	4.5%	4.0%	16.0%	6.6%	10.2%	46.6%	7.6%	100%

In your opinion, would the following people feel it was acceptable or unacceptable if you did NOT use your seat belt?

	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	Does not apply to me	
N									
581	5.5%	6.2%	7.6%	23.6%	11.7%	11.7%	32.5%	1.2%	100%

In your opinion, would the following people feel it was acceptable or unacceptable if you did NOT use your seat belt?

	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	Does not apply to me	
N									
580	4.1%	5.0%	6.7%	31.2%	8.1%	9.8%	27.8%	7.2%	100%

In your opinion, would the following people feel it was acceptable or unacceptable if you did NOT use your seat belt?

	Extremely acceptable	Moderately acceptable	Somewhat acceptable	Neutral	Somewhat unacceptable	Moderately unacceptable	Extremely unacceptable	Does not apply to me	
N									
581	4.3%	6.2%	5.9%	26.7%	12.6%	12.6%	29.8%	2.1%	100%

In general, how often do most people like you use their seat belts?

	Never			About half the time			Always	
N	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
580	5.0%	4.3%	3.3%	24.0%	14.3%	20.9%	28.3%	100%

How many people similar to you do you think always use their seat belt?

	None			About half			All	
N	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
581	5.7%	4.8%	5.2%	24.4%	12.9%	23.1%	23.9%	100%

How common do you think it is for people like yourself to always use their seat belt?

N	Not at all common			Moderately common			Extremely common	100%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
581	6.0%	5.3%	6.0%	22.5%	12.2%	16.9%	31.0%	100%

In your opinion, how often do the following people use their seat belts? - Your spouse or partner

N	Never (1)	(2)	(3)	About half the time			Always (7)	Does not apply to me	100%
				(4)	(5)	(6)			
580	8.3%	2.9%	2.2%	8.8%	4.5%	9.0%	43.6%	20.7%	100%

In your opinion, how often do the following people use their seat belts? - Your children

N	Never (1)	(2)	(3)	About half the time			Always (7)	Does not apply to me	100%
				(4)	(5)	(6)			
581	2.1%	0.9%	1.5%	7.2%	4.5%	6.7%	54.7%	22.4%	100%

In your opinion, how often do the following people use their seat belts? - Your friends

N	Never (1)	(2)	(3)	About half the time			Always (7)	Does not apply to me	100%
				(4)	(5)	(6)			
581	3.3%	1.4%	2.4%	23.1%	13.3%	16.4%	34.8%	5.5%	100%

In your opinion, how often do the following people use their seat belts? - Your coworkers

N	Never (1)	(2)	(3)	About half the time			Always (7)	Does not apply to me	100%
				(4)	(5)	(6)			
581	2.6%	1.9%	3.1%	18.4%	11.2%	14.6%	31.0%	17.2%	100%

In your opinion, how often do the following people use their seat belts? - Most adults in your community

N	Never (1)	(2)	(3)	About half the time			Always (7)	Does not apply to me	100%
				(4)	(5)	(6)			
581	2.1%	1.4%	2.6%	21.2%	12.6%	23.4%	29.6%	7.2%	100%

How much do you agree or disagree: "I find it difficult to remember to always use a seat belt"?

N	Strongly agree	Moderately agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Moderately disagree	Strongly disagree	100%
				(4)				
581	12.7%	7.6%	12.2%	12.7%	6.5%	6.9%	41.3%	100%

If you wanted to, how easy or difficult would it be for you to always use a seat belt?

N	Extremely difficult	Moderately difficult	Somewhat difficult	Neither difficult nor easy	Somewhat easy	Moderately easy	Extremely easy	
581	6.2%	4.5%	6.5%	11.4%	11.0%	12.0%	48.4%	100%

How confident are you that you could always use a seat belt if you wanted to?

N	Not at all confident (1)	(2)	(3)	Moderately confident (4)	(5)	(6)	Extremely confident (7)	
581	5.9%	2.8%	3.6%	11.5%	6.9%	11.5%	57.8%	100%

"I am comfortable using my seat belt even if others in the vehicle are not."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	9.6%	3.8%	5.0%	13.6%	9.3%	10.0%	48.7%	100%

"Even if I wanted to, I can't always use a seat belt because... - my vehicle does not have a seat belt that works."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
579	66.5%	5.4%	4.1%	9.5%	5.4%	4.1%	5.0%	100%

"Even if I wanted to, I can't always use a seat belt because... - the seat belt does not fit me properly."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
579	53.2%	5.5%	5.4%	12.3%	7.8%	7.3%	8.6%	100%

"Even if I wanted to, I can't always use a seat belt because... - I have to get in and out of the vehicle too much to wear a seat belt."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	50.1%	5.7%	6.2%	11.7%	11.4%	7.6%	7.4%	100%

Do you have a family rule about always using a seat belt?

N	no	yes	I don't know	I don't have a family	
581	36.0%	51.8%	2.8%	9.5%	100%

Do you have a workplace rule about always using a seat belt?

N	no	yes	I don't know	I don't have a workplace	
581	48.5%	27.5%	5.7%	18.2%	100%

How much do you agree or disagree with the following statements? - “Using a seat belt isn’t necessary if you are a good driver.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	50.9%	10.2%	8.6%	13.1%	5.5%	6.0%	5.7%	100%

How much do you agree or disagree with the following statements? - “It’s ok to not use a seat belt if you are in a hurry to get somewhere and forget to buckle up.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	49.1%	10.0%	7.6%	14.0%	8.1%	5.2%	6.0%	100%

How much do you agree or disagree with the following statements? - “My heroes don’t use seat belts.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	51.6%	7.9%	6.0%	22.2%	3.3%	4.8%	4.1%	100%

How much do you agree or disagree with the following statements? - “Not using a seat belt is just a way of letting the government know they aren’t in control.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
580	50.9%	9.3%	6.9%	16.2%	7.1%	5.7%	4.0%	100%

How much do you agree or disagree with the following statements? - “I might not use a seat belt, but at least I don’t text and drive.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	38.0%	7.1%	5.2%	14.5%	9.0%	8.8%	17.6%	100%

How much do you agree or disagree with the following statements? - “Not using a seat belt is no big deal when you consider that others are choosing more dangerous behaviors like drinking and driving.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
581	44.6%	9.6%	6.7%	12.0%	9.6%	7.4%	10.0%	100%

How much do you agree or disagree with the following statements? - "You can't blame me for not using a seat belt; I have more important things to worry about."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	48.4%	9.8%	7.2%	16.4%	6.9%	5.5%	5.9%	100%
581								

How much do you agree or disagree with the following statements? - "My friends/family don't use seat belts; why should I?"

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	50.7%	10.0%	9.1%	15.7%	5.2%	4.3%	5.0%	100%
580								

How much do you agree or disagree with the following statements? - "I am not going to use a seat belt because others in the vehicle aren't either."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	51.6%	10.0%	9.1%	15.7%	5.9%	3.8%	4.0%	100%
581								

How much do you agree or disagree with the following statements? - "I don't need to use a seat belt because vehicles are so much safer today."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	49.7%	10.8%	7.2%	16.4%	6.5%	4.5%	4.8%	100%
581								

How much do you agree or disagree with the following statements? - "Not use my seat belt is okay because it doesn't impact anyone else."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	44.4%	8.6%	8.1%	13.8%	6.7%	7.2%	11.2%	100%
581								

How much do you agree or disagree with the following statements? - "We didn't have to use seat belts when I was young, and we turned out just fine."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	36.8%	7.2%	6.5%	16.5%	12.2%	9.5%	11.2%	100%
581								

How much do you agree or disagree with the following statements? - "If kids don't use a seat belt, it is their parents' fault."

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N	15.0%	3.1%	3.8%	9.1%	13.4%	14.0%	41.6%	100%
580								

How much do you agree or disagree with the following statements? - “If other people knew how to drive, people would not need to use a seat belt to protect themselves.”

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	43.5%	8.3%	9.3%	14.3%	9.8%	9.0%	5.9%	100%

How much do you agree or disagree with the following statements? - “Telling people they have to use a seat belt is acting like people are stupid.”

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	40.4%	8.6%	9.1%	18.4%	8.8%	6.9%	7.7%	100%

How much do you agree or disagree with the following statements? - “Making someone use a seat belt is treating them like less than a person.”

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	50.3%	8.6%	8.3%	14.3%	6.9%	4.6%	7.1%	100%

How much do you agree or disagree? - The message threatened my freedom to choose

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	42.7%	9.1%	8.4%	13.6%	10.3%	4.0%	11.9%	100%

How much do you agree or disagree? - The message tried to make a decision for me

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	36.5%	11.7%	10.0%	15.0%	13.4%	5.3%	8.1%	100%

How much do you agree or disagree? - The message tried to manipulate me

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
580	38.3%	11.9%	9.0%	17.2%	11.6%	6.0%	6.0%	100%

How much do you agree or disagree? - The message tried to pressure me

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
581	39.4%	10.5%	10.0%	15.3%	12.7%	4.3%	7.7%	100%

To what extent did the message that you just read make you feel...? - Angry

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
579	62.3%	5.0%	6.9%	13.0%	2.9%	4.0%	5.9%	100%

To what extent did the message that you just read make you feel...? - Irritated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
579	60.6%	7.3%	6.6%	11.2%	6.0%	3.5%	4.8%	100%

To what extent did the message that you just read make you feel...? - Annoyed

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
579	58.2%	8.1%	5.9%	11.6%	6.4%	5.4%	4.5%	100%

To what extent did the message that you just read make you feel...? - Aggravated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
578	61.4%	8.5%	6.1%	9.7%	6.4%	4.0%	4.0%	100%

How much do you agree or disagree? - The message is a reason for using a seat belt that is believable.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
581	3.6%	2.4%	19.8%	32.0%	42.2%	100%

How much do you agree or disagree? - The message is a reason for using a seat belt that is convincing.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
581	3.6%	5.3%	20.8%	32.4%	37.9%	100%

How much do you agree or disagree? - The message gives a reason for using a seat belt that is important to me.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
581	4.0%	5.0%	23.1%	26.5%	41.5%	100%

How much do you agree or disagree? - The message helped me feel confident about how best to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	100%
581	5.3%	8.4%	26.0%	26.5%	33.7%	

How much do you agree or disagree? - The message would help my friends to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	100%
581	4.5%	7.9%	28.9%	26.2%	32.5%	

How much do you agree or disagree? - The message put thoughts in my mind about wanting to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	100%
581	6.2%	7.1%	22.5%	29.3%	34.9%	

How much do you agree or disagree? - The message put thoughts in my mind about not wanting to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	100%
581	29.4%	13.6%	21.0%	17.7%	18.2%	

How much do you agree or disagree? - Overall, how much do you agree or disagree with the message?

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	100%
581	2.6%	5.0%	21.9%	28.2%	42.3%	

How much do you agree or disagree? - The message threatened my freedom to choose

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	100%
581	39.4%	8.1%	9.0%	15.1%	12.0%	6.2%	10.2%	

How much do you agree or disagree? - The message tried to make a decision for me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	100%
581	35.1%	8.4%	8.8%	16.5%	14.1%	8.6%	8.4%	

How much do you agree or disagree? - The message tried to manipulate me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	100%
580	36.4%	7.9%	8.1%	15.9%	16.9%	6.6%	8.3%	

How much do you agree or disagree? - The message tried to pressure me

	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
N								
580	36.4%	7.1%	6.6%	14.7%	17.9%	7.6%	9.8%	100%

To what extent did the message that you just read make you feel...? - Angry

	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
N								
580	55.5%	7.8%	5.9%	15.0%	4.5%	4.7%	6.7%	100%

To what extent did the message that you just read make you feel...? - Irritated

	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
N								
581	52.3%	6.9%	6.5%	14.5%	8.4%	5.7%	5.7%	100%

To what extent did the message that you just read make you feel...? - Annoyed

	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
N								
581	49.6%	7.6%	6.4%	16.4%	7.2%	7.4%	5.5%	100%

To what extent did the message that you just read make you feel...? - Aggravated

	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
N								
580	53.8%	6.7%	6.4%	13.4%	7.2%	6.0%	6.4%	100%

How much do you agree or disagree? - The message is a reason for using a seat belt that is believable.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
N						
581	6.7%	6.0%	21.7%	28.6%	37.0%	100%

How much do you agree or disagree? - The message is a reason for using a seat belt that is convincing.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
N						
581	6.5%	9.1%	21.5%	28.1%	34.8%	100%

How much do you agree or disagree? - The message gives a reason for using a seat belt that is important to me.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
N						
579	7.8%	9.5%	23.8%	25.4%	33.5%	100%

How much do you agree or disagree? - The message helped me feel confident about how best to use a seat belt.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
N						
581	8.1%	9.3%	27.9%	25.6%	29.1%	100%

How much do you agree or disagree? - The message would help my friends to use a seat belt.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
N						
581	6.9%	9.1%	30.8%	24.1%	29.1%	100%

How much do you agree or disagree? - The message put thoughts in my mind about wanting to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
580	9.3%	9.0%	26.0%	27.2%	28.4%	100%

How much do you agree or disagree? - The message put thoughts in my mind about not wanting to use a seat belt.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
581	22.5%	12.0%	25.6%	20.0%	19.8%	100%

How much do you agree or disagree? - Overall, how much do you agree or disagree with the message?

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
580	6.9%	9.5%	21.6%	26.9%	35.2%	100%

What is the highest level of school you have completed or the highest degree you have received?

N	Less than high school degree	High school graduate (high school diploma or equivalent including GED)	Some college but no degree	Associate degree in college (2-year)	Bachelor's degree in college (4-year)	Master's degree	Doctoral degree	Professional degree (JD, MD)	I prefer not to answer	
581	3.3%	24.3%	24.3%	12.7%	25.6%	6.5%	1.0%	1.9%	0.3%	100%

What best describes where you live?

N	Urban (population of 50,000 or more)	Suburban (population between 2,500 and 50,000)	Rural	
576	30.2%	47.7%	22.0%	100%

Are you Spanish, Hispanic, or Latino or none of these?

N	None of these	Yes	I prefer not to answer	
581	89.5%	9.8%	0.7%	100%

What is your annual household income from all sources?

N	Less than \$25,000	\$25,000 to less than \$35,000	\$35,000 to less than \$50,000	\$50,000 to less than \$75,000	\$75,000 or more	I prefer not to answer	
581	18.6%	15.0%	16.7%	21.7%	25.5%	2.6%	100%

7.3 Aggressive Driving Survey

Reactance Aggressive Driving Survey

The purpose of this survey is to assess beliefs associated with aggressive driving (defined here as excessive passing, following too closely, and speeding) and to determine if psychological reactance is more prevalent among individuals who routinely drive aggressively compared to those who rarely or never do. The sample will be recruited online from individuals across the U.S. and will screen for respondents who routinely drive aggressively.

The following is the text of the survey. The actual survey will be implemented online, and the questions will appear differently. Preliminary pilot tests indicate the survey will take about 15 minutes.

The Center for Health and Safety Culture is conducting research about health and safety.

We are asking for your participation in this important survey. This is not a marketing survey or to learn about selling a product. This is about improving health and safety. We know your time is valuable, and we appreciate your participation.

Your participation is voluntary, and we will only share summary results. You can stop at any time. Your responses are confidential, anonymous, and cannot be associated with your identity. This study has been approved by the Montana State University Institutional Review Board. If you have questions or comments about the survey, please contact Jay Otto with the Center for Health and Safety Culture at jayotto@montana.edu.

Thank you for taking this survey!

Jay Otto
jayotto@montana.edu

First, let us learn a little bit about you.

1. What is your age?
2. In a typical month, how often do you operate a vehicle? (never to daily)
3. How often do you drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph? (never to daily)

4. In what state do you currently reside?

5. What is your sex? (male, female, other, I prefer not to answer)

6. In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault? None, 1, 2, 3, 4, 5, 6 or more

7. In the past year, how many vehicle crashes (even minor ones) have you been involved in that you had some fault? None, 1, 2, 3, 4, 5, 6 or more

8. In the past year, how many citations, tickets or summons have you received for speeding? None, 1, 2, 3, 4, 5, 6 or more

(The following is a validated scale to assess proneness to psychological reactance.)

9. How much do you agree or disagree with each statement? (strongly disagree to strongly agree)

- a) I become frustrated when I am unable to make free and independent decisions.
- b) I become angry when my freedom of choice is restricted.
- c) It irritates me when someone points out things that are obvious to me.
- d) The thought of being dependent on others aggravates me.
- e) Regulations trigger a sense of resistance in me.
- f) I find contradicting others stimulating.
- g) When something is prohibited, I usually think "that's exactly what I am going to do."
- h) I resist the attempts of others to influence me.
- i) It makes me angry when another person is held up as a model for me to follow.
- j) When someone forces me to do something, I feel like doing the opposite.
- k) It disappoints me to see others submitting to society's standards and rules.
- l) I am content only when I am acting of my own free will.
- m) I consider advice from others to be an intrusion.
- n) Advice and recommendations induce me to do just the opposite.

Next, we want to know what you think about traffic safety.

10. How much do you agree or disagree with the following statements? (strongly disagree to strongly agree)

- a) I am very concerned about safety on our roads and highways.
- b) I believe the only acceptable number of deaths and serious injuries on our roadways is zero.
- c) I believe the only acceptable number of deaths and serious injuries among my family and friends on our roadways is zero.

In this section, we want to learn about your driving.

11. When driving, how often do you ... (never to always)

- a) pass a vehicle that is going about the posted speed limit?
- b) drive so close to the vehicle in front that it would be difficult to stop in an emergency?
- c) drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?
- d) drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?

12. Thinking of the next week, how often will you... (never to always)

- a) pass a vehicle that is going about the posted speed limit?
- b) drive so close to the vehicle in front that it would be difficult to stop in an emergency?
- c) drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?
- d) drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?

13. Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? (not at all willing to very willing)

- a) There is very little traffic (few vehicles on the road)
- b) There is a lot of traffic (many vehicles on the road)
- c) You are late, and others are expecting you at home
- d) It is raining pretty hard
- e) There are others in the vehicle with you

14. Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? (not at all willing to very willing)

- a) There is very little traffic (few vehicles on the road)
- b) There is a lot of traffic (many vehicles on the road)
- c) You are late, and others are expecting you at home
- d) It is raining pretty hard
- e) There are others in the vehicle with you

Next, we want to ask about your attitudes.

15. "For me, passing a vehicle that is going about the posted speed limit feels..."

- a) useful: useless
- b) dangerous: safe
- c) foolish: smart
- d) efficient: wasteful
- e) exciting: not at all exciting
- f) harmful: beneficial

16. "For me, driving so close to the vehicle in front that it would be difficult to stop in an emergency feels..."

- a) useful: useless
- b) dangerous: safe
- c) foolish: smart
- d) efficient: wasteful
- e) exciting: not at all exciting
- f) harmful: beneficial

17. "For me, driving more than 10 mph over the posted speed limit feels..."

- a) useful: useless
- b) dangerous: safe
- c) foolish: smart
- d) efficient: wasteful
- e) exciting: not at all exciting
- f) harmful: beneficial

18. How much do you agree or disagree with the following statements? (strongly disagree to strongly agree)

- a) Driving the posted speed limit makes our roads safer.
- b) Passing a vehicle that is driving about the posted speed limit saves time.
- c) If I drive more than 10 mph over the posted speed limit, I am likely to get a speeding ticket.
- d) Driving closely to the vehicle in front of me is likely to make that driver speed up.
- e) Driving closely to the vehicle in front of me will upset the driver of that vehicle.

19. How much do you agree or disagree with the following statements? (strongly disagree to strongly agree)

- a) I believe local law enforcement should enforce speed limit laws.
- b) It is a driver's responsibility to comply with traffic laws.

Now we want to ask you about how you think others feel.

20. In your opinion, how acceptable would most people who are important to you feel it is to... (not at all acceptable to totally acceptable)

- a) pass a vehicle that is going about the posted speed limit?
- b) drive so close to the vehicle in front that it would be difficult to stop in an emergency?
- c) drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

21. In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? (extremely unacceptable to extremely acceptable, does not apply to me)

- a) Your spouse or partner
- b) Your children
- c) Your friends
- d) Your coworkers
- e) Most adults in your community

22. In your opinion, how often do most people like you... (never to always)

- a) pass a vehicle that is driving about the posted speed limit?
- b) drive so close to the vehicle in front that it would be difficult to stop in an emergency?
- c) speed on roads with speed limits between 35 mph and 50 mph?

23. In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? (never to always)

- a) Your spouse or partner
- b) Your children
- c) Your friends
- d) Your coworkers
- e) Most adults in your community

24. How EASY or DIFFICULT is it for you to... (very easy to very difficult)

- a) NOT pass a vehicle that is driving about the posted speed limit?
- b) NOT drive so close to the vehicle in front that it would be difficult to stop in an emergency?
- c) NOT drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

25. In general, how likely are you to find yourself driving in the following situations? (extremely unlikely to extremely likely)

- a) Being late to pick up someone (like children or other family members)
- b) Being late to an appointment, school, or work
- c) Feeling frustrated by traffic
- d) Feeling frustrated by other drivers
- e) Just feeling angry

26. Do you have a family rule about not speeding? (yes, no, I don't know, I don't have a family)

27. Do you have a workplace rule about not speeding? (yes, no, I don't know, I don't have a workplace)

(These statements assess eight forms of moral disengagement about aggressive driving: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, attribution of blame, and dehumanization. The following statements were narrowed from a longer list after pilot testing.)

28. How much do you agree or disagree with each statement? (strongly disagree to strongly agree)

- a) It's ok to tailgate if it gets people to realize they are doing the wrong thing.
- b) It's ok to yell at other drivers who put the lives of your passengers at risk.
- c) Honking the horn loudly is just a way of letting off frustration.
- d) Following too closely or cutting someone off is just a way of teaching someone a lesson they need.
- e) Tailgating is no big deal when you consider other people are deliberately running red lights.
- f) Yelling at other drivers is pretty tame when compared to people that attack other drivers.
- g) Speeding a little over the limit is not too serious compared to those that speed a lot over the speed limit.
- h) If a driver is pushed into being rude to other drivers, they shouldn't be blamed for it.
- i) People can't be blamed for intimidating another driver if their friend pressured them into it.
- j) You can't blame a single driver for going through a yellow light if a whole group does it.
- k) It's ok to go over the speed limit if it means you are keeping up with the rest of the traffic.
- l) Drivers don't mind being honked at because they know it just means "hurry up."
- m) Flashing headlights to get someone to move over doesn't really hurt anyone.
- n) Tailgating other vehicles when the traffic is heavy isn't really dangerous.
- o) If you are getting honked at while driving, you probably deserve it.
- p) Overly cautious drivers who are tailgated deserve it because they are a risk to everyone on the road.
- q) People who don't know how to drive provoke bad driving in others.
- r) It's alright to abuse drivers who are behaving like jerks.
- s) A driver who is inconsiderate doesn't deserve to be treated like a normal person.
- t) Some drivers deserve to be treated like the idiots they are.

(This section assesses psychological reactance by measuring the respondent's reaction to messages that are designed to foster a reaction. The questions used are based on published research to assess reactance. These messages and questions were pilot tested with an online sample of 200 adults).

Now we would like you to read a message and then answer some questions about the message.

Message A

Regardless of how others are driving, choosing to drive safely is a personal value that you and many others share.

Driving safely includes behaviors like following the speed limit and keeping a safe distance between your vehicle and the one in front of you.

Thank you for making safe driving a priority.

29. How much do you agree or disagree? (strongly disagree to strongly agree)

- e) The message threatened my freedom to choose.
- f) The message tried to make a decision for me.
- g) The message tried to manipulate me.
- h) The message tried to pressure me.

30. To what extent did the message that you just read make you feel... (none of this feeling to a great deal of the feeling)

- e) Angry
- f) Irritated
- g) Annoyed
- h) Aggravated

31. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message is a reason for not driving aggressively that is believable.
- b) The message is a reason for not driving aggressively that is convincing.
- c) The message gives a reason for not driving aggressively that is important to me.
- d) The message helped me feel confident about how best to not drive aggressively.
- e) The message would help my friends to not drive aggressively.
- f) The message put thoughts in my mind about wanting to not drive aggressively.
- g) The message put thoughts in my mind about wanting to drive aggressively.
- h) Overall, how much do you agree or disagree with the message?

Here is one more message. Please read it and then answer a few questions about it.

Message B

Think you can speed? You can't.

Passing every vehicle on the road? Not okay!

Think you have the right to tailgate someone because they are annoying you? Don't be a jerk.

You share the road with others.

Your unsafe driving puts others at risk of serious injuries and even death.

You must do your part to keep everyone safe.

32. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message threatened my freedom to choose.
- b) The message tried to make a decision for me.
- c) The message tried to manipulate me.
- d) The message tried to pressure me.

33. To what extent did the message that you just read make you feel... (none of this feeling to a great deal of the feeling)

- a) Angry
- b) Irritated
- c) Annoyed
- d) Aggravated

34. How much do you agree or disagree? (strongly disagree to strongly agree)

- a) The message is a reason for not driving aggressively that is believable.
- b) The message is a reason for not driving aggressively that is convincing.
- c) The message gives a reason for not driving aggressively that is important to me.
- d) The message helped me feel confident about how best to not drive aggressively.
- e) The message would help my friends to not drive aggressively.
- f) The message put thoughts in my mind about wanting to not drive aggressively.
- g) The message put thoughts in my mind about wanting to drive aggressively.
- h) Overall, how much do you agree or disagree with the message?

Finally, we would like to learn a little more about you.

35. What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school graduate (high school diploma or equivalent including GED)
- Some college but no degree
- Associate degree in college (2-year)
- Bachelor's degree in college (4-year)
- Master's degree
- Doctoral degree
- Professional degree (JD, MD)
- I prefer not to answer

36. What best describes where you live?

- Urban (population of 50,000 or more)
- Suburban (population between 2,500 and 50,000)
- Rural (less than 2,500)
- I prefer not to answer

37. Are you Spanish, Hispanic, or Latino or none of these? (yes, none of these, I prefer not to answer)

38. Choose one or more races that you consider yourself to be:

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other _____
- I prefer not to answer

39. What is your annual household income from all sources?

- Less than \$25,000
- \$25,000 to less than \$35,000
- \$35,000 to less than \$50,000
- \$50,000 to less than \$75,000
- \$75,000 or more
- I prefer not to answer

Thanks for completing this survey. Your participation will help improve traffic safety.

7.4 Frequency Response for Aggressive Driving Survey

In a typical month, how often do you operate a vehicle?

N	Most days	Daily	
750	32.9%	67.1%	100.0%

How often do you drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
750	15.6%	24.8%	7.9%	8.1%	4.3%	18.3%	21.1%	100.0%

What is your sex?

N	male	female	other	I prefer not to answer	
750	49.2%	49.3%	0.8%	0.7%	100.0%

In the past year, how many vehicle crashes (even minor ones) have you been involved in that were NOT your fault?

N	None	1	2	3	4	5	6 or more	
749	81.4%	12.8%	2.9%	1.7%	0.3%	0.4%	0.4%	100.0%

In the past year, how many vehicle crashes (even minor ones) have you been involved in that you had some fault?

N	None	1	2	3	4	5	6 or more	
749	86.6%	9.5%	1.9%	0.8%	0.5%	0.3%	0.4%	100.0%

In the past year, how many citations, tickets, or summons have you received for speeding?

N	None	1	2	3	4	5	6 or more	
750	84.1%	9.3%	4.0%	1.2%	0.7%	0.3%	0.4%	100.0%

How much do you agree or disagree with each statement? - I become frustrated when I am unable to make free and independent decisions.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	8.3%	4.8%	6.4%	13.7%	32.8%	18.3%	15.7%	100.0%

How much do you agree or disagree with each statement? - I become angry when my freedom of choice is restricted.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	7.1%	4.8%	7.1%	12.4%	28.7%	19.5%	20.5%	100.0%

How much do you agree or disagree with each statement? - It irritates me when someone points out things that are obvious to me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	7.3%	6.0%	9.5%	22.4%	26.6%	16.3%	11.9%	100.0%

How much do you agree or disagree with each statement? - The thought of being dependent on others aggravates me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	6.5%	4.3%	9.2%	15.5%	27.6%	20.4%	16.5%	100.0%

How much do you agree or disagree with each statement? - Regulations trigger a sense of resistance in me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	13.2%	10.4%	15.9%	28.5%	16.7%	8.6%	6.7%	100.0%

How much do you agree or disagree with each statement? - I find contradicting others stimulating.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	23.2%	14.7%	14.9%	23.7%	10.8%	8.4%	4.3%	100.0%

How much do you agree or disagree with each statement? - When something is prohibited, I usually think “that’s exactly what I am going to do.”

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	31.1%	14.4%	14.2%	17.1%	11.0%	6.7%	5.5%	100.0%

How much do you agree or disagree with each statement? - I resist the attempts of others to influence me.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	8.0%	5.9%	9.6%	24.5%	23.4%	15.0%	13.6%	100.0%

How much do you agree or disagree with each statement? - It makes me angry when another person is held up as a model for me to follow.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	12.3%	8.7%	13.2%	27.3%	19.3%	10.8%	8.4%	100.0%

How much do you agree or disagree with each statement? - When someone forces me to do something, I feel like doing the opposite.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	13.8%	7.8%	13.4%	21.3%	21.4%	11.6%	10.8%	100.0%

How much do you agree or disagree with each statement? - It disappoints me to see others submitting to society’s standards and rules.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	18.6%	11.1%	12.0%	23.9%	17.5%	9.0%	7.9%	100.0%

How much do you agree or disagree with each statement? - I am content only when I am acting of my own free will.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	7.0%	5.5%	9.4%	22.9%	26.7%	15.2%	13.4%	100.0%

How much do you agree or disagree with each statement? - I consider advice from others to be an intrusion.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
746	19.8%	16.8%	20.1%	20.1%	11.5%	6.4%	5.2%	100.0%

How much do you agree or disagree with each statement? - Advice and recommendations induce me to do just the opposite.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	25.0%	16.3%	16.7%	21.3%	9.8%	6.3%	4.7%	100.0%

How much do you agree or disagree with the following statements? - I am very concerned about safety on our roads and highways.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	2.8%	1.5%	4.4%	6.5%	20.0%	19.5%	45.3%	100.0%

How much do you agree or disagree with the following statements? - I believe the only acceptable number of deaths and serious injuries on our roadways is zero.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	5.5%	3.3%	5.5%	13.2%	12.9%	15.5%	44.1%	100.0%

How much do you agree or disagree with the following statements? - I believe the only acceptable number of deaths and serious injuries among my family and friends on our roadways is zero.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	3.3%	2.4%	3.7%	10.7%	8.9%	9.5%	61.5%	100.0%

When driving, how often do you ... - pass a vehicle that is going about the posted speed limit?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always	
750	19.7%	28.4%	14.9%	14.0%	9.6%	6.0%	7.3%	100.0%

When driving, how often do you ... - drive so close to the vehicle in front that it would be difficult to stop in an emergency?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always	
749	55.4%	21.9%	6.5%	5.5%	2.7%	2.9%	5.1%	100.0%

When driving, how often do you ... - drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
750	29.1%	26.7%	13.2%	9.3%	7.6%	6.5%	7.6%	100.0%	

When driving, how often do you ... - drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
750	26.4%	22.8%	13.6%	10.5%	10.7%	7.7%	8.3%	100.0%	

Thinking of the next week, how often will you... - pass a vehicle that is going about the posted speed limit?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
749	32.6%	25.9%	12.6%	9.3%	6.5%	5.7%	7.3%	100.0%	

Thinking of the next week, how often will you... - drive so close to the vehicle in front that it would be difficult to stop in an emergency?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
749	62.8%	16.0%	4.8%	5.5%	2.9%	3.2%	4.8%	100.0%	

Thinking of the next week, how often will you... - drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
749	36.2%	26.3%	9.5%	8.1%	7.9%	5.2%	6.8%	100.0%	

Thinking of the next week, how often will you... - drive more than 10 mph over the speed limit on roads with speed limits between 55 mph and 65 mph?

N	Never	Rarely (about 15% of the time)	Occasionally (about 30% of the time)	Sometimes (about half the time)	Frequently (about 70% of the time)	Usually (about 85% of the time)	Always		
749	33.4%	23.9%	11.2%	7.6%	8.9%	7.1%	7.9%	100.0%	

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? - There is very little traffic (few vehicles on the road)

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
750	26.0%	13.2%	8.0%	21.6%	8.1%	7.7%	15.3%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? - There is a lot of traffic (many vehicles on the road)

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
750	47.6%	14.1%	9.5%	12.5%	5.9%	4.3%	6.1%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? - You are late, and others are expecting you at home

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	28.7%	15.2%	12.3%	17.2%	9.3%	7.7%	9.5%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? - It is raining pretty hard

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	57.0%	13.6%	6.9%	8.1%	4.5%	3.9%	5.9%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to pass a vehicle that is going about the posted speed limit? - There are others in the vehicle with you

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	45.4%	13.4%	11.7%	12.1%	6.7%	3.5%	7.2%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? - There is very little traffic (few vehicles on the road)

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	28.4%	13.1%	9.9%	17.5%	8.3%	9.3%	13.5%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? - There is a lot of traffic (many vehicles on the road)

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	46.9%	14.4%	10.9%	11.9%	5.7%	4.5%	5.6%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? - You are late, and others are expecting you at home

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	34.8%	15.5%	10.3%	16.8%	8.4%	5.5%	8.7%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? - It is raining pretty hard

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
747	57.2%	13.7%	7.8%	7.6%	4.0%	3.5%	6.3%	100.0%

Suppose you are about 10 miles from your home, and you are driving home. In each of the following situations, how willing would you be to drive more than 10 mph over the posted speed limit? - There are others in the vehicle with you

N	Not at all willing (1)	(2)	(3)	Moderately willing (4)	(5)	(6)	Very willing (7)	
749	47.5%	15.6%	9.5%	10.7%	5.9%	4.1%	6.7%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: useful: useless

N	1	2	3	4	5	6	7	
734	16.1%	8.3%	13.4%	18.0%	7.8%	9.0%	27.5%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: dangerous: safe

N	1	2	3	4	5	6	7	
731	26.4%	11.9%	13.0%	20.4%	9.7%	7.9%	10.7%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: foolish: smart

N	1	2	3	4	5	6	7	
733	28.5%	10.6%	13.2%	21.8%	9.4%	5.7%	10.6%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: efficient: wasteful

N	1	2	3	4	5	6	7	
736	11.4%	9.6%	14.1%	19.2%	9.6%	10.6%	25.4%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: exciting: not at all exciting

N	1	2	3	4	5	6	7	
731	10.1%	4.9%	7.5%	22.2%	9.6%	10.7%	35.0%	100.0%

For me, passing a vehicle which is driving about the posted speed limit feels: harmful: beneficial

N	1	2	3	4	5	6	7	
730	26.0%	10.0%	11.2%	22.3%	12.6%	7.8%	10.0%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels: useful: useless

N	1	2	3	4	5	6	7	
730	9.3%	1.9%	2.5%	7.5%	6.6%	10.7%	61.5%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels:

N	1	2	3	4	5	6	7	
739	65.5%	10.7%	4.9%	6.9%	2.6%	2.4%	7.0%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels: dangerous: safe

N	1	2	3	4	5	6	7	
735	63.5%	11.8%	6.5%	6.9%	2.9%	1.6%	6.7%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels: foolish: smart

N	1	2	3	4	5	6	7	
726	5.8%	2.6%	3.3%	11.6%	7.7%	13.2%	55.8%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels: efficient: wasteful

N	1	2	3	4	5	6	7	
729	6.0%	2.3%	4.4%	10.0%	7.1%	10.3%	59.8%	100.0%

For me, driving so close to the vehicle in front that it might be difficult to stop in an emergency feels: exciting: not at all exciting

N	1	2	3	4	5	6	7	
734	62.4%	12.4%	6.0%	7.4%	3.1%	2.5%	6.3%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: useful: useless

N	1	2	3	4	5	6	7	
731	13.3%	7.7%	16.7%	19.0%	7.4%	7.8%	28.2%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: dangerous: safe

N	1	2	3	4	5	6	7	
735	28.8%	8.7%	12.8%	21.8%	13.5%	6.0%	8.4%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: foolish: smart

N	1	2	3	4	5	6	7	
733	30.7%	7.1%	11.7%	27.1%	10.0%	4.9%	8.5%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: efficient: wasteful

N	1	2	3	4	5	6	7	
734	10.9%	8.7%	15.7%	19.2%	9.4%	9.3%	26.8%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: exciting: not at all exciting

N	1	2	3	4	5	6	7	
730	8.8%	5.5%	10.0%	23.2%	9.0%	9.7%	33.8%	100.0%

For me, driving more than 10 mph over the posted speed limit feels: harmful: beneficial

N	1	2	3	4	5	6	7	
731	29.1%	7.5%	9.2%	24.2%	13.3%	7.7%	9.0%	100.0%

How much do you agree or disagree with the following statements? - Driving the posted speed limit makes our roads safer.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
749	2.1%	2.5%	5.6%	11.2%	18.8%	25.4%	34.3%	100.0%

How much do you agree or disagree with the following statements? - Passing a vehicle that is driving about the posted speed limit saves time.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
750	14.9%	10.8%	10.0%	22.0%	20.5%	12.8%	8.9%	100.0%

How much do you agree or disagree with the following statements? - If I drive more than 10 mph over the posted speed limit, I am likely to get a speeding ticket.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
749	3.3%	2.4%	8.5%	15.1%	20.2%	21.8%	28.7%	100.0%

How much do you agree or disagree with the following statements? - Driving closely to the vehicle in front of me is likely to make that driver speed up.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
749	28.7%	19.6%	10.3%	14.3%	10.8%	8.9%	7.3%	100.0%

How much do you agree or disagree with the following statements? - Driving closely to the vehicle in front of me will upset the driver of that vehicle.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
748	1.9%	1.1%	2.1%	10.2%	24.1%	27.8%	32.9%	100.0%

How much do you agree or disagree with the following statements? - I believe local law enforcement should enforce speed limit laws.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
750	2.9%	1.9%	5.5%	15.3%	19.9%	25.6%	28.9%	100.0%

How much do you agree or disagree with the following statements? - It is a driver's responsibility to comply with traffic laws.

N	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	
750	1.3%	0.1%	0.8%	5.3%	13.7%	25.7%	52.9%	100.0%

In your opinion, how acceptable would most people who are important to you feel it is to... - pass a vehicle that is going about the posted speed limit?

N	Not at all acceptable (1)	(2)	(3)	Neutral (4)	(5)	(6)	Extremely acceptable (7)	
749	21.0%	8.9%	7.3%	26.2%	14.6%	8.9%	13.1%	100.0%

In your opinion, how acceptable would most people who are important to you feel it is to... - drive so close to the vehicle in front that it would be difficult to stop in an emergency?

N	Not at all acceptable (1)	(2)	(3)	Neutral (4)	(5)	(6)	Extremely acceptable (7)	
750	50.5%	13.3%	8.8%	10.8%	5.5%	4.3%	6.8%	100.0%

In your opinion, how acceptable would most people who are important to you feel it is to... - drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

N	Not at all acceptable (1)	(2)	(3)	Neutral (4)	(5)	(6)	Extremely acceptable (7)	
750	28.7%	12.7%	8.8%	20.3%	12.4%	7.9%	9.3%	100.0%

In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? – Your spouse or partner

N	Extremely unacceptable	Moderately unacceptable	Somewhat unacceptable	Neutral	Somewhat acceptable	Moderately acceptable	Extremely acceptable	Does not apply to me	
750	28.8%	11.7%	9.1%	15.3%	8.0%	6.4%	10.1%	10.5%	100.0%

In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? – Your children

N	Extremely unacceptable	Moderately unacceptable	Somewhat unacceptable	Neutral	Somewhat acceptable	Moderately acceptable	Extremely acceptable	Does not apply to me	
750	33.7%	10.9%	10.0%	16.8%	5.6%	6.0%	6.7%	10.3%	100.0%

In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? – Your friends

N	Extremely unacceptable	Moderately unacceptable	Somewhat unacceptable	Neutral	Somewhat acceptable	Moderately acceptable	Extremely acceptable	Does not apply to me	
750	24.8%	11.7%	9.6%	21.6%	13.5%	7.9%	9.3%	1.6%	100.0%

In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? – Your coworker

N	Extremely unacceptable	Moderately unacceptable	Somewhat unacceptable	Neutral	Somewhat acceptable	Moderately acceptable	Extremely acceptable	Does not apply to me	
750	23.5%	10.1%	8.1%	24.7%	10.3%	8.3%	6.9%	8.1%	100.0%

In your opinion, how acceptable or unacceptable would the following people feel it was for you to do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? – Most adults in your community

N	Extremely unacceptable	Moderately unacceptable	Somewhat unacceptable	Neutral	Somewhat acceptable	Moderately acceptable	Extremely acceptable	Does not apply to me	
749	26.7%	12.6%	12.0%	19.8%	12.8%	7.5%	7.6%	1.1%	100.0%

In your opinion, how often do most people like you... - pass a vehicle that is driving about the posted speed limit?

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
750	11.5%	18.5%	18.4%	18.5%	16.9%	8.8%	7.3%	100.0%

In your opinion, how often do most people like you... - drive so close to the vehicle in front that it would be difficult to stop in an emergency?

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
750	25.7%	21.6%	16.4%	15.1%	11.2%	4.3%	5.7%	100.0%

In your opinion, how often do most people like you... - speed on roads with speed limits between 35 mph and 50 mph?

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
750	14.1%	19.3%	15.6%	16.4%	18.3%	9.2%	7.1%	100.0%

In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? - Your spouse or partner

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
749	38.3%	18.0%	11.5%	12.3%	7.7%	5.6%	6.5%	100.0%

In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? - Your children

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
749	47.3%	17.2%	10.0%	10.4%	6.0%	4.1%	4.9%	100.0%

In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? - Your friends

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
749	20.4%	20.4%	18.8%	17.0%	11.7%	5.5%	6.1%	100.0%

In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? - Your coworkers

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
749	23.9%	19.2%	15.4%	19.9%	11.2%	6.1%	4.3%	100.0%

In your opinion, how often do the following people do things like pass vehicles going about the posted speed limit, follow vehicles very closely, and drive more than 10 mph over the posted speed limit? - Most adults in your community

N	Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always	
748	16.7%	18.2%	17.9%	20.1%	14.6%	7.1%	5.5%	100.0%

How EASY or DIFFICULT is it for you to... - NOT pass a vehicle that is driving about the posted speed limit?

N	Very easy	Easy	Somewhat easy	Neither	Somewhat difficult	Difficult	Very difficult	
750	34.7%	17.2%	15.2%	13.2%	11.3%	4.4%	4.0%	100.0%

How EASY or DIFFICULT is it for you to... - NOT drive so close to the vehicle in front that it would be difficult to stop in an emergency?

N	Very easy	Easy	Somewhat easy	Neither	Somewhat difficult	Difficult	Very difficult	
750	55.1%	14.9%	8.3%	10.1%	4.7%	3.6%	3.3%	100.0%

How EASY or DIFFICULT is it for you to... - NOT drive more than 10 mph over the speed limit on roads with speed limits between 35 mph and 50 mph?

N	Very easy	Easy	Somewhat easy	Neither	Somewhat difficult	Difficult	Very difficult	
750	36.5%	17.6%	14.1%	11.1%	13.1%	3.5%	4.1%	100.0%

In general, how likely are you to find yourself driving in the following situations? - Being late to pick up someone (like children or other family members)

N	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely	
749	22.3%	16.7%	13.1%	13.6%	18.0%	8.1%	8.1%	100.0%

In general, how likely are you to find yourself driving in the following situations? - Being late to an appointment, school, or work

N	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely	
750	22.0%	16.9%	13.1%	14.1%	17.1%	9.6%	7.2%	100.0%

In general, how likely are you to find yourself driving in the following situations? - Feeling frustrated by traffic

N	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely	
747	10.7%	9.8%	9.0%	12.9%	27.2%	16.2%	14.3%	100.0%

In general, how likely are you to find yourself driving in the following situations? - Feeling frustrated by other drivers

N	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely	
747	8.8%	7.6%	8.4%	13.1%	27.3%	16.3%	18.3%	100.0%

In general, how likely are you to find yourself driving in the following situations? - Just feeling angry

N	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely	
744	19.9%	18.3%	14.2%	20.6%	12.4%	7.7%	7.0%	100.0%

Do you have a family rule about not speeding?

N	No	Yes	I don't know	I don't have a family	
750	49.2%	38.3%	5.1%	7.5%	100.0%

Do you have a workplace rule about not speeding?

N	No	Yes	I don't know	I don't have a workplace	
749	51.4%	21.8%	5.6%	21.2%	100.0%

How much do you agree or disagree with each statement? - It's ok to tailgate if it gets people to realize they are doing the wrong thing.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
747	51.1%	13.8%	10.6%	10.7%	6.2%	3.6%	4.0%	100.0%

How much do you agree or disagree with each statement? - It's ok to yell at other drivers who put the lives of your passengers at risk.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	26.4%	9.3%	10.5%	18.7%	16.3%	9.9%	8.9%	100.0%

How much do you agree or disagree with each statement? - Honking the horn loudly is just a way of letting off frustration.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	28.5%	10.5%	11.2%	16.1%	20.1%	6.5%	6.9%	100.0%

How much do you agree or disagree with each statement? - Following too closely or cutting someone off is just a way of teaching someone a lesson they need.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	57.1%	9.6%	8.9%	10.5%	6.0%	3.5%	4.4%	100.0%

How much do you agree or disagree with each statement? - Tailgating is no big deal when you consider other people are deliberately running red lights.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	53.7%	11.6%	9.6%	12.3%	4.9%	3.9%	4.0%	100.0%

How much do you agree or disagree with each statement? - Yelling at other drivers is pretty tame when compared to people that attack other drivers.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	27.2%	10.0%	9.9%	20.1%	17.9%	8.0%	6.9%	100.0%

How much do you agree or disagree with each statement? - Speeding a little over the limit is not too serious compared to those that speed a lot over the speed limit.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	16.0%	7.3%	8.9%	17.9%	27.8%	14.4%	7.6%	100.0%

How much do you agree or disagree with each statement? - If a driver is pushed into being rude to other drivers, they shouldn't be blamed for it.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	34.7%	13.3%	14.7%	20.1%	7.1%	5.6%	4.5%	100.0%

How much do you agree or disagree with each statement? - People can't be blamed for intimidating another driver if their friend pressured them into it.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	50.3%	11.5%	11.7%	12.8%	6.1%	4.1%	3.5%	100.0%

How much do you agree or disagree with each statement? - You can't blame a single driver for going through a yellow light if a whole group does it.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	29.6%	12.7%	13.9%	18.8%	13.9%	6.0%	5.2%	100.0%

How much do you agree or disagree with each statement? - It's ok to go over the speed limit if it means you are keeping up with the rest of the traffic.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	16.4%	8.3%	8.8%	18.3%	26.8%	13.5%	7.9%	100.0%

How much do you agree or disagree with each statement? - Drivers don't mind being honked at because they know it just means "hurry up."

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	38.1%	14.7%	15.2%	17.4%	7.7%	3.2%	3.7%	100.0%

How much do you agree or disagree with each statement? - Flashing headlights to get someone to move over doesn't really hurt anyone.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	27.3%	12.7%	15.4%	17.9%	14.0%	6.0%	6.7%	100.0%

How much do you agree or disagree with each statement? - Tailgating other vehicles when the traffic is heavy isn't really dangerous.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	51.6%	11.7%	9.5%	9.3%	6.9%	4.1%	6.8%	100.0%

How much do you agree or disagree with each statement? - If you are getting honked at while driving you probably deserve it.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	24.8%	11.1%	14.4%	23.0%	15.0%	6.5%	5.2%	100.0%

How much do you agree or disagree with each statement? - Overly cautious drivers who are tailgated deserve it because they are a risk to everyone on the road.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	36.9%	10.8%	11.5%	18.9%	9.7%	6.3%	5.9%	100.0%

How much do you agree or disagree with each statement? - People who don't know how to drive provoke bad driving in others.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	13.3%	7.1%	8.8%	19.6%	25.5%	12.3%	13.5%	100.0%

How much do you agree or disagree with each statement? - It's alright to abuse drivers who are behaving like jerks.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	44.3%	12.0%	9.8%	18.2%	7.2%	4.4%	4.1%	100.0%

How much do you agree or disagree with each statement? - A driver who is inconsiderate doesn't deserve to be treated like a normal person.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	28.3%	11.1%	12.6%	24.1%	13.6%	5.2%	5.1%	100.0%

How much do you agree or disagree with each statement? - Some drivers deserve to be treated like the idiots they are.

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	27.1%	8.5%	9.1%	21.3%	17.1%	8.3%	8.7%	100.0%

How much do you agree or disagree? - The message threatened my freedom to choose

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	41.8%	9.4%	8.0%	11.6%	8.7%	8.0%	12.4%	100.0%

How much do you agree or disagree? - The message tried to make a decision for me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	37.3%	8.8%	11.6%	19.0%	10.2%	7.2%	5.9%	100.0%

How much do you agree or disagree? - The message tried to manipulate me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
749	42.1%	10.9%	10.0%	17.5%	10.1%	5.9%	3.5%	100.0%

How much do you agree or disagree? - The message tried to pressure me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
750	43.6%	11.5%	11.5%	15.5%	8.8%	5.9%	3.3%	100.0%

To what extent did the message that you just read make you feel...? - Angry

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
749	68.1%	8.7%	4.9%	9.3%	2.4%	2.0%	4.5%	100.0%

To what extent did the message that you just read make you feel...? - Irritated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
748	65.9%	9.5%	4.4%	9.5%	4.5%	3.1%	3.1%	100.0%

To what extent did the message that you just read make you feel...? - Annoyed

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
749	65.2%	8.5%	4.4%	10.0%	5.5%	4.0%	2.4%	100.0%

To what extent did the message that you just read make you feel...? - Aggravated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
750	67.5%	7.7%	4.5%	9.6%	3.7%	3.6%	3.3%	100.0%

How much do you agree or disagree? - The message is a reason for not driving aggressively that is believable.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	4.4%	3.7%	22.7%	33.8%	35.4%	100.0%

How much do you agree or disagree? - The message is a reason for not driving aggressively that is convincing.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	3.5%	6.4%	23.0%	37.0%	30.2%	100.0%

How much do you agree or disagree? - The message gives a reason for not driving aggressively that is important to me.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	4.9%	5.6%	21.1%	33.5%	34.8%	100.0%

How much do you agree or disagree? - The message helped me feel confident about how best to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	4.0%	5.2%	26.8%	34.2%	29.8%	100.0%

How much do you agree or disagree? - The message would help my friends to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
748	4.9%	10.3%	31.7%	27.7%	25.4%	100.0%

How much do you agree or disagree? - The message put thoughts in my mind about wanting to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	4.4%	9.7%	23.9%	33.2%	28.7%	100.0%

How much do you agree or disagree? - The message put thoughts in my mind about wanting to drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
748	36.5%	16.6%	20.6%	13.9%	12.4%	100.0%

How much do you agree or disagree? - Overall, how much do you agree or disagree with the message?

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	2.8%	4.9%	19.5%	31.8%	41.0%	100.0%

How much do you agree or disagree? - The message threatened my freedom to choose

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
747	39.2%	8.7%	8.2%	13.4%	11.8%	6.8%	11.9%	100.0%

How much do you agree or disagree? - The message tried to make a decision for me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	37.4%	7.4%	8.0%	16.6%	15.4%	7.5%	7.8%	100.0%

How much do you agree or disagree? - The message tried to manipulate me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
747	39.2%	7.5%	9.8%	16.2%	13.8%	7.4%	6.2%	100.0%

How much do you agree or disagree? - The message tried to pressure me

N	Strongly disagree	Moderately disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Moderately agree	Strongly agree	
748	38.0%	7.5%	8.8%	15.5%	14.7%	8.3%	7.2%	100.0%

To what extent did the message that you just read make you feel...? - Angry

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
749	60.6%	7.6%	7.3%	11.6%	3.7%	3.9%	5.2%	100.0%

To what extent did the message that you just read make you feel...? - Irritated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
749	57.3%	7.3%	6.9%	12.8%	5.5%	4.7%	5.5%	100.0%

To what extent did the message that you just read make you feel...? - Annoyed

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
749	56.1%	6.5%	7.6%	13.4%	6.3%	4.3%	5.9%	100.0%

To what extent did the message that you just read make you feel...? - Aggravated

N	None of this feeling (1)	(2)	(3)	Moderately (4)	(5)	(6)	A great deal of this feeling (7)	
748	60.6%	5.3%	8.6%	10.8%	5.5%	4.1%	5.1%	100.0%

How much do you agree or disagree? - The message is a reason for not driving aggressively that is believable.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
747	7.1%	6.0%	20.6%	31.9%	34.4%	100.0%

How much do you agree or disagree? - The message is a reason for not driving aggressively that is convincing.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	6.8%	9.7%	22.1%	29.2%	32.1%	100.0%

How much do you agree or disagree? - The message gives a reason for not driving aggressively that is important to me.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	6.4%	9.2%	23.7%	28.7%	32.0%	100.0%

How much do you agree or disagree? - The message helped me feel confident about how best to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	6.9%	10.0%	26.0%	29.1%	28.0%	100.0%

How much do you agree or disagree? - The message would help my friends to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	8.3%	11.2%	32.9%	22.7%	24.9%	100.0%

How much do you agree or disagree? - The message put thoughts in my mind about wanting to not drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
749	8.5%	9.2%	26.4%	28.8%	27.0%	100.0%

How much do you agree or disagree? - The message put thoughts in my mind about wanting to drive aggressively.

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	32.1%	15.1%	22.4%	15.5%	14.9%	100.0%

How much do you agree or disagree? - Overall, how much do you agree or disagree with the message?

N	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
750	6.0%	6.0%	22.5%	29.1%	36.4%	100.0%

What is the highest level of school you have completed or the highest degree you have received?

N	Less than high school degree	High school graduate (high school diploma or equivalent including GED)	Some college but no degree	Associate degree in college (2-year)	Bachelor's degree in college (4-year)	Master's degree	Doctoral degree	Professional degree (JD, MD)	I prefer not to answer	
750	2.3%	22.1%	22.8%	13.1%	22.9%	11.6%	1.7%	2.9%	0.5%	100.0%

What best describes where you live?

N	Urban (population of 50,000 or more)	Suburban (population between 2,500 and 50,000)	Rural (less than 2,500)	I prefer not to answer	
743	30.6%	45.9%	22.7%	0.8%	100.0%

Are you Spanish, Hispanic, or Latino or none of these?

N	None of these	Yes	I prefer not to answer	
749	89.5%	8.8%	1.7%	100.0%

What is your annual household income from all sources?

N	Less than \$25,000	\$25,000 to less than \$35,000	\$35,000 to less than \$50,000	\$50,000 to less than \$75,000	\$75,000 or more	I prefer not to answer	
750	15.5%	15.9%	15.6%	24.3%	25.7%	3.1%	100.0%

7.5 Summary of Statistical Comparisons of Messages

This appendix summarizes the tests performed to compare messages. The comparisons were only performed for those who rarely/never used a seat belt or usually/always drove aggressively.

Table 39 reports ANOVA, and Table 40 reports the Mann-Witney U Test to compare the first three test messages for seat belts. Message #3 was reported as more effective than Message #2. No other differences were found to be statistically significantly different.

Table 39. Comparing Seat Belt Test Messages Using ANOVA (Sample 1)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #2	F(1,89)= 1.45, p= .232	F(1,89)= 2.75, p= .377	F(1,89)= 3.09, p= .082
#1 with #3	F(1,87)= 0.00, p= .950	F(1,87)= 1.10, p= .298	F(1,87)= 1.67, p= .200
#2 with #3	F(1,78)= 1.53, p= .220	F(1,78)= 3.59, p= .062	F(1,78)= 7.99, p= .006

Table 40. Comparing Seat Belt Test Messages Using Mann-Witney U Test (Sample 1)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #2	U= 1194.5, p= .176	U= 1126.0, p= .419	U= 793.5, p= .064
#1 with #3	U= 1057.5, p= .494	U= 901.0, p= .539	U= 1091.0, p= .336
#2 with #3	U= 699.5, p= .335	U= 644.0, p= .133	U= 1077.0, p= .007

Table 41 reports t-tests, and Table 42 reports the Wilcoxon Signed Rank Test to compare the differences in perceived threat, emotion, and perceived effectiveness between the first three test messages and the control message (Message #6). Message #1 was reported as more effective than the control message. No other differences were found to be statistically significantly different.

Table 41. Comparing Seat Belt Test Messages with Control Using T-Tests (Sample 1)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #6	t(49)= -0.286, p= .776	t(49)= 1.550, p= .127	t(49)= -2.781, p= .008
#2 with #6	t(39)= -0.829, p= .412	t(40)= 1.076, p= .288	t(40)= -0.200, p= .842
#3 with #6	t(38)= 2.262, p= .030	t(38)= 1.490, p= .144	t(38)= -1.933, p= .061

Table 42. Comparing Seat Belt Test Messages with Control Using Wilcoxon Signed Rank Test (Sample 1)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #6	Z= 289.5, p= .889	Z= 289.0, p= .412	Z= 243.0, p= .015
#2 with #6	Z= 118.0, p= .358	Z= 156.0, p= .331	Z= 207.0, p= .819
#3 with #6	Z= 270.0, p= .051	Z= 217.0, p= .141	Z= 177.0, p= .101

Table 43 reports ANOVA, and Table 44 reports the Mann-Witney U Test to compare the three test messages in the second sample for seat belts. No statistically significant differences were found.

Table 43. Comparing Seat Belt Test Messages Using ANOVA (Sample 2)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#3 with #4	F(1,66)= 0.830, p= .366	F(1,66)= 3.247, p= .760	F(1,66)= 0.103, p= .749
#3 with #5	F(1,59)= 1.219, p= .274	F(1,59)= 1.819, p= .183	F(1,59)= 0.377, p= .699
#4 with #5	F(1,59)= 0.056, p= .814	F(1,59)= 0.133, p= .716	F(1,59)= 0.524, p= .472

Table 44. Comparing Seat Belt Test Messages Using Mann-Witney U Test (Sample 2)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#3 with #4	U= 503.5, p= .360	U= 468.5, p= .158	U= 555.0, p= .778
#3 with #5	U= 390.0, p= .315	U= 410.5, p= .469	U= 471.0, p= .861
#4 with #5	U= 444.0, p= .827	U= 513.0, p= .414	U= 492.5, p= .626

Table 45 reports t-tests, and Table 46 reports the Wilcoxon Signed Rank Test to compare the differences in perceived threat, emotion, and perceived effectiveness between the three test messages in the second sample and the control message (Message #6). Message #4 was reported as eliciting less anger and more effective than the control message. No other differences were found to be statistically significantly different.

Table 45. Comparing Seat Belt Test Messages with Control Using T-Tests (Sample 2)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#3 with #6	t(33)= -1.078, p= .289	t(33)= 0.243, p= .810	t(33)= -1.642, p= .110
#4 with #6	t(33)= 0.369, p= .715	t(33)= 3.240, p= .003	t(33)= -2.437, p= .020
#5 with #6	t(26)= 0.305, p= .763	t(26)= 0.245, p= .800	t(26)= -1.443, p= .161

Table 46. Comparing Seat Belt Test Messages with Control Using Wilcoxon Signed Rank Test (Sample 2)

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#3 with #6	Z= 142.0, p= .394	Z= 79.5, p= .887	Z= 136.0, p= .202
#4 with #6	Z= 207.5, p= .656	Z= 113.5, p= .002	Z= 120.5, p= .036
#5 with #6	Z=151.5, p= .681	Z= 73.0, p= .795	Z= 112.5, p= .283

Table 47 reports ANOVA, and Table 48 reports the Mann-Witney U Test to compare the three test messages for aggressive driving. Message #1 was reported as more effective than Message #2. No other differences were found to be statistically significantly different.

Table 47. Comparing Aggressive Driving Test Messages Using ANOVA

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #2	F(1,79)= 1.473, p= .228	F(1,78)= 1.323, p= .254	F(1,79)= 8.925, p= .004
#1 with #3	F(1, 87)= 1.253, p= .256	F(1,86)= .226, p= .636	F(1,87)= 1.611, p= .208
#2 with #3	F(1,88)= 0.009, p= .924	F(1,88)= 3.165, p= .079	F(1,88)= 3.967, p= .049

Table 48. Comparing Aggressive Driving Test Messages Using Mann-Witney U Test

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #2	U= 669.5, p= .153	U= 658.5, p= .173	U= 548.5, p= .010
#1 with #3	U= 823.5, p= .194	U= 982.0, p= 0.823	U= 845.0, p= .264
#2 with #3	U= 1040.0, p= .773	U= 1206.5, p= .101	U= 1214.5, p= .088

Table 49 reports t-tests, and Table 50 reports the Wilcoxon Signed Rank Test to compare the differences in perceived threat, emotion, and perceived effectiveness between the three test messages for aggressive driving and the control message (Message #4). None of the differences were found to be statistically significant.

Table 49. Comparing Aggressive Driving Test Messages with Control Using T-Tests

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #4	t(39)= -0.222, p= .825	t(38)= 0.201, p= .842	t(39)= -1.591, p= .120
#1 with #4	t(40)= -0.688, p= .495	t(40)= 1.643, p= .108	t(40)= -0.967, p= .339
#2 with #4	t(48)= 1.908, p= .062	t(48)= -0.211, p= .833	t(48)= 0.611, p= .544

Table 50. Comparing Aggressive Driving Test Messages with Control Using Wilcoxon Signed Rank Test

Messages	Perceived Threat	Anger Emotion	Perceived Effectiveness
#1 with #4	Z= 172.0, p= .929	Z= 154.5, p= .590	Z= 152.0, p= .156
#1 with #4	Z= 283.5, p= .809	Z= 328.0, p= .048	Z= 288.5, p= .234
#2 with #4	Z= 451.0, p= .062	Z= 421.5, p= .455	Z= 490.5, p= .436

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