

## **Guidance on Messaging to Avoid Reactance and Address Moral Disengagement**

Task 3 Report: Message Development

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## 1 INTRODUCTION

Significant progress has been made in addressing risky traffic safety behaviors like not using a seat belt and driving aggressively. However, a small portion of the population (i.e., about 10 percent) still does not use a seat belt and regularly speeds (one form of aggressive driving).

This project seeks to better understand if two psychological phenomena (psychological reactance and moral disengagement) are more prevalent among individuals engaging in the risky behaviors of not wearing a seat belt and aggressive driving and how messaging might be adjusted to mitigate these phenomena thereby improving traffic safety.

The project includes four major tasks:

1. Complete a review of published literature and select scales.
2. Develop and implement surveys.
3. Develop message guidance based on the results of the surveys.
4. Create resources and complete a final report.

This report summarizes Task 3 of this project. The purpose of Task 3 is to develop and test messages to address seat belt use and aggressive driving that minimize reactance and overcome moral disengagement.

## 2 BACKGROUND

### 2.1 Psychological Reactance

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). Psychological reactance theory assumes that individuals like to have choices among various options (Quick & Stephenson, 2007). When one’s freedom to choose is threatened or lost by rules or restrictions, for example, reactance is elicited, thereby motivating the individual to reestablish their freedom (Quick & Stephenson, 2007; Dillard & Shen, 2005). There are four elements in psychological reactance theory: freedom, threat to freedom, reactance, and restoration of freedom (Dillard & Shen, 2005). See Task 1 and Task 2 Reports for a more in-depth review of psychological reactance.

Psychological reactance is conceptualized in two ways: as a response to a particular situation that is perceived to threaten one’s freedom (situational) (Miron & Brehm, 2006) and as a trait or enduring characteristic (trait) (Hong & Faedda, 1996 ; Brehm & Brehm, 1981; Dowd, Milne, & Wise, 1991). In Task 2, trait psychological reactance was assessed by the Hong Psychological Reactance Scale (Hong & Page, 1989), and situational reactance was assessed by examining perception of threat, feeling of anger, and perception of effectiveness in reaction to messages about a specific behavior (e.g., always using a seat belt). Those who rarely or never use a seat belt were found to exhibit more situational psychological reactance than people who usually or always use a seat belt. No differences in proneness to psychological reactance were found based on seat belt use. Those who frequently drive aggressively were found to exhibit more proneness and situational psychological reactance than people who rarely or never drive aggressively.

Researchers have identified ways to reduce psychological reactance, which can inform how messaging might be adjusted to mitigate this phenomenon. For example, researchers have proposed that using suggestive language and offering choices may reduce a person’s perceived threat to freedom (Shen, 2015; Miller, Lane, Deatrick, Young, & Potts, 2007). In contrast, strong and forceful language may elicit more reactance (Miller et al., 2007; Shen, 2015; Quick & Considine, 2008). Framing messages in a way that focuses on the benefits and positive outcomes of complying with a message may be more effective at reducing psychological reactance than framing messages in a way that focuses on the cost or negative losses that may result from complying (Shen, 2015; Cho & Sands, 2011). Further, research has found that evoking empathy (Shen, 2010) and helping people to take the perspective of others (Steindl & Jonas, 2012) in messaging may inhibit a psychologically reactant response.

### 2.2 Moral Disengagement

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, Barbaranelli, Caprara, & Pastorelli, 1996; Bandura, 2016). In general, moral standards guide good behavioral choices. Moral disengagement, originally proposed by Albert Bandura (Bandura et al., 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. 5). Disengaging from one’s moral standards allows people to act in ways that go against their internal moral standards without the self-sanctions of feeling guilty or regretful that would normally occur (Bandura et al., 1996; Detert, Trevino, & Sweitzer, 2008). See Task 1 and Task 2 Reports for a more in-depth review of moral disengagement.

In Task 2, we found that people who rarely or never use a seat belt exhibited more moral disengagement than people who usually or always use a seat belt. Similarly, people who frequently drive aggressively were found to exhibit more moral disengagement than people who rarely or never drive aggressively.

Messaging strategies to inhibit moral disengagement have been identified. For example, research has suggested that personal distress affects moral disengagement (Paciello, Fida, Cerniglia, Tramontano, & Cole, 2013); thus, avoiding loss or negatively framed messages may be important to reducing moral disengagement. Promoting critical thinking skills (Bustamante & Chaux, 2014), social regulation and social pressure (Bustamante & Chaux, 2014; Kim, 2018), empathy (Bussey, Quinn, & Dobson, 2015; Paciello et al., 2013), and perspective taking (Bussey, Quinn, & Dobson, 2015; Bandura, 2016) may also reduce moral disengagement.

### **2.3 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.

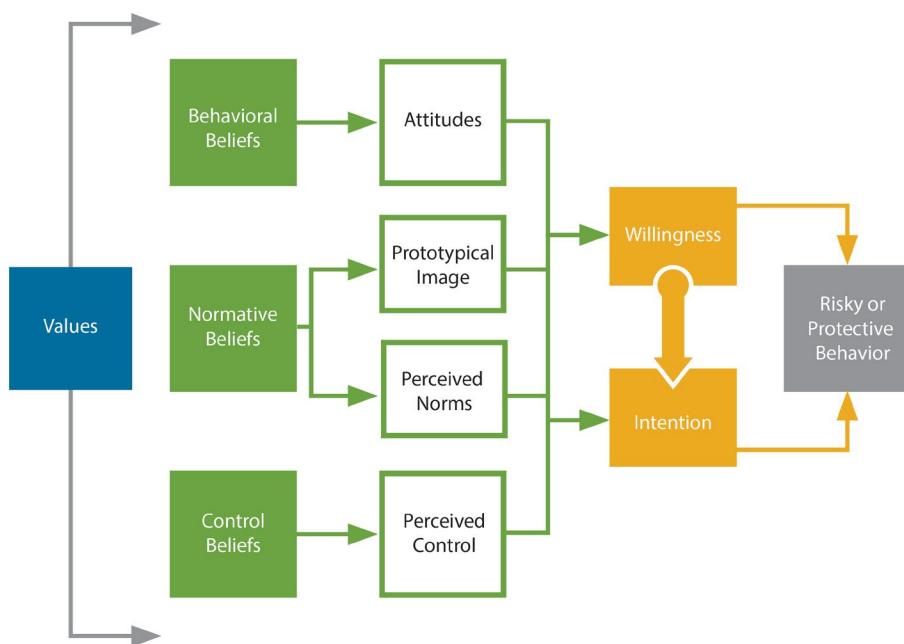
Understanding that people do not go from precontemplation directly to termination is helpful when developing interventions and messaging. Initial efforts to change behavior may be more effective if they focus on moving an individual from one stage to the next (Prochaska, Johnson, & Lee, 2009).

### 3 MATERIALS AND METHODS

#### 3.1 Introduction

#### 3.2 Key Beliefs

In Task 2, we collected two large samples of responses about seat belt use ( $n=746$ ) and aggressive driving ( $n=750$ ) using a survey based on the behavioral model shown in Figure 1 to inform which beliefs were related to these two behaviors. This model integrates several theories of belief-based decision making including the Value-Belief-Norm Theory (Stern, 2000; Oreg & Katz-Gerro, 2006), the Reasoned Action Approach (Fishbein & Ajzen, 2010), and the Prototype Willingness Model (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). Using a behavioral model to inform messaging follows best practices as noted by Lewis, Watson, and White (2016). To assure that the samples included people who did and did not engage in the two behaviors, individuals were recruited online to participate and were screened using questions to fulfill quotas of individuals who usually/always or rarely/never engaged in the behaviors. Linear regression was used to determine which beliefs were most strongly associated with behavior.



*Figure 1. Behavioral Model*

##### 3.2.1 Survey on Seat Belt Use

A convenience sample of participants was recruited by Qualtrics to complete the survey online between November 15 and December 12, 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: 46% male, 40% indicated using a seat belt rarely or never, and 40% indicated using a seat belt usually or always.

The final sample included 746 respondents living in 47 different states. Ages ranged from 18 to 78 (median: 40 years, mean: 42.8 years, standard deviation: 14.6 years). Education attainment included 27% with a high school diploma or less, 23% with some college, 39% with an Associate's or Bachelor's degree, and 11% with an advanced degree. About one-third (34%) lived in an urban setting, 44% in suburban, and 21% rural. About one in six (15%) indicated they were Hispanic. Most were white (82%) with 13% African American, 1% American Indian or Alaskan Native, and 3% Asian.

The Task 2 Report includes the complete survey and the relative frequencies of responses to all questions. Table 1 summarizes seat belt use of the sample. 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/never or usually/always use a seat belt.

*Table 1. Summary of Seat Belt Use Behaviors*

<b>"How often do you use a seat belt..."</b>	<b>Rarely or Never</b>	<b>Usually or Always</b>
when you are driving within a few miles of your home	40.3%	40.6%
when you are driving many miles from your home	28.4%	48.5%
in general, driving during the day	35.4%	41.4%
in general, driving at night	31.2%	44.8%

N= 746

Table 2 summarizes the scales that measure the core components of the behavioral model relating beliefs and seat belt use. Overall, the internal reliability of the scales is strong; all have a Cronbach's alpha greater than 0.80. Cronbach's alpha provides a measure of internal consistency of several items (three or more) used to measure a construct. Its 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 3 summarizes the correlation coefficients between the various constructs.

*Table 2. Summary of Scales on Seat Belt Use Survey*

<b>Scale</b>	<b>Number of Items</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Internal Reliability (Cronbach's alpha)</b>
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

**Table 3. 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).

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 ( $F(4, 741) = 437.67$ ,  $p < .001$ ,  $R^2 = .70$ ).<sup>1</sup> 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.

### 3.2.2 Survey on Aggressive Driving

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% indicated 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% indicated 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.

<sup>1</sup> 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.

The Task 2 Report includes the complete survey and the relative frequencies of responses to all questions. Table 4 summarizes aggressive driving behaviors of the sample. 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/never or usually/always drive aggressively.

*Table 4. Summary of Aggressive Driving Behaviors*

<b>“When driving, how often do you...”</b>	<b>Rarely or Never</b>	<b>Usually or Always</b>
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 5 summarizes the scales that measure the core components of the behavioral model relating beliefs and aggressive driving. Overall, the internal reliability of the scales is strong; all have a Cronbach's alpha greater than 0.75. Willingness to pass and willingness to speed were averaged to form a single scale (Pearson correlation coefficient  $r = .91$ ,  $p < .001$ ). Table 6 summarizes the correlation coefficients between the various constructs.

*Table 5. Summary of Scales on Aggressive Driving Survey*

<b>Scale</b>	<b>Number of Items</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Internal Reliability (Cronbach's alpha)</b>
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

**Table 6. 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

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

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.

### 3.3 Assessing Stages of Change

Stages of change were not assessed on the two original surveys but were assessed on the surveys that followed to test potential messages (see Section 3.4 Testing Potential Messages). The stage of change was assessed using a single question asking the respondent which statement best described them. The statements for the seat belt survey 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 Testing Potential Messages

Three surveys were used in Task 3 to test potential messages. Similar to the previous surveys conducted in Task 2, 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 were designed to reduce psychological reactance. The control message was designed to generate psychological reactance (it was the same message as was used in Task 2 testing). Each message was provided as written text. Only one test message was used at a time to avoid a respondent becoming psychologically reactant to the first test message and carrying that feeling to the second test message. 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 7).

*Table 7. 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

### 3.4.1 Seat Belt Use Message Test Surveys

Two convenience samples of participants were recruited by Qualtrics to complete the survey. 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 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 Survey

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 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. 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 respondent's 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

This section summarizes the results of the analyses used to identify key beliefs to address in messaging, the findings from examining the stages of change of respondents, and reactions to potential messages.

The relative frequencies of beliefs were compared among those who rarely/never and usually/always engage in using a seat belt or aggressive driving to inform key beliefs for messaging. These results were also supported by examining the effect size of the difference in the means using analysis of variance (ANOVA).

Relative frequencies of perceptions of threat, feelings of anger, and perceived effectiveness of messages were compared to inform reactions to messages. Additional analyses using both parametric and non-parametric techniques showed almost all responses were not statistically significantly different (for conciseness, these analyses were included in this report).

### 4.1 Key Beliefs

The Task 2 Report included the relative frequencies of responses to all questions for the seat belt use survey and the aggressive driving survey. In this section, we focus on the key beliefs associated with seat belt use and aggressive driving that inform potential messaging.

#### 4.1.1 Key Beliefs Among Seat Belt Users and Non-Users

As stated in Section 3.2.1, attitudes, perceived descriptive norms, and perceived control were significant predictors of willingness and intention to use a seat belt. Attitudes are informed by behavioral beliefs (Fishbein & Ajzen, 2010). Table 8. Summary of Agreement With Behavioral Beliefs About Seat Belt Use summarizes agreement with six behavioral beliefs comparing responses between those who rarely/never use a seat belt and those who usually/always use a seat belt. The differences in the levels of agreement with these beliefs are meaningful and can inform potential messaging to increase seat belt use.

*Table 8. Summary of Agreement With Behavioral Beliefs About Seat Belt Use*

<b>“How do you agree or disagree with the following statements?”</b>	<b>Among Those Who Rarely/Never Use a Seat Belt</b>	<b>Among Those Who Usually/Always Use a Seat Belt</b>	<b>Effect Size (<math>\eta^2</math>)</b>
“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

Perceived descriptive norms indicate people's perceptions of what other people do. Table 9 summarizes how often respondents perceived other people usually or always use a seat belt. About two-thirds of people who rarely or never use a seat belt perceived that their child usually or always does 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 exist for those who rarely/never use a seat belt about the prevalence of seat belt use among others (like their 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 9. 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 Use a Seat Belt	Among Those Who Usually/Always Use a Seat Belt	Effect Size ( $\eta^2$ )
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 10. Summary of Prevalence of Family and Workplace Rules Using a Seat Belt 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 10. Summary of Prevalence of Family and Workplace Rules Using a Seat Belt*

Results shown for those indicating “yes.”	Among Those Who Rarely/Never Use a Seat Belt	Among Those Who Usually/Always Use a Seat Belt	Effect Size ( $\eta^2$ )
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)

As reported in the Task 2 Report, analyses 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 11. Summary of Agreement With Moral Disengagement Beliefs). It is important to note that most people who rarely/never use 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 11. Summary of Agreement With Moral Disengagement Beliefs*

<b>“How do you agree or disagree with the following statements?”</b>	<b>Among Those Who Rarely/Never Use a Seat Belt</b>	<b>Among Those Who Usually/Always Use a Seat Belt</b>	<b>Effect Size (<math>\eta^2</math>)</b>
“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

#### 4.1.2 Key Beliefs Among Aggressive and Non-Aggressive Drivers

As stated in Section 3.2.2, attitudes, perceived injunctive norms, perceived descriptive norms, and perceived control were significant predictors of willingness and intention to drive aggressively. Table 12. Summary of Agreement With Behavioral Beliefs About Aggressive Driving summarizes agreement with three attitudinal beliefs and two behavioral beliefs comparing responses between those who rarely/never drive aggressively and those who usually/always drive aggressively. The differences in the levels of agreement with these beliefs are meaningful and can 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 12. Summary of Agreement With Behavioral Beliefs About Aggressive Driving**

<b>“How do you agree or disagree with the following statements?”</b>	<b>Among Those Who Rarely/Never Drive Aggressively</b>	<b>Among Those Who Usually/Always Drive Aggressively</b>	<b>Effect Size (<math>\eta^2</math>)</b>
“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 13 summarizes perceptions about the acceptance of aggressive driving behaviors. Many people who drive aggressively perceive that others would consider these behaviors as acceptable. This perception gives aggressive drivers permission to engage in these behaviors. Table 14. Perceptions of Acceptance of Aggressive Driving Behaviors by Specific Others summarizes the perceptions of respondents about whether they think specific other people believe aggressive driving is acceptable. Many people who engage in aggressive driving perceive that others around them consider 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 13. Summary of Perceptions of Acceptance of Aggressive Driving Behaviors**

<b>“In your opinion, how acceptable would most people who are important to you feel it is to...”</b>	<b>Among Those Who Rarely/Never Drive Aggressively</b>	<b>Among Those Who Usually/Always Drive Aggressively</b>	<b>Effect Size (<math>\eta^2</math>)</b>
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 14. Perceptions of Acceptance of Aggressive Driving Behaviors by Specific Others*

<b>“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?”</b>	<b>Among Those Who Rarely/Never Drive Aggressively</b>	<b>Among Those Who Usually/Always Drive Aggressively</b>	<b>Effect Size (<math>\eta^2</math>)</b>
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 15 summarizes how often respondents perceived other people usually or always drive aggressively. About one-third of people who drive aggressively perceived that others usually or always drive aggressively. Messages clarifying the prevalence of aggressive driving may be effective at changing these misperceptions.

*Table 15. Perceptions of Prevalence of Usually/Always Using a Seat Belt*

<b>“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.</b>	<b>Among Those Who Rarely/Never Drive Aggressively</b>	<b>Among Those Who Usually/Always Drive Aggressively</b>	<b>Effect Size (<math>\eta^2</math>)</b>
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 16 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 16. 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 Drive Aggressively	Among Those Who Usually/Always Drive Aggressively	Effect Size ( $\eta^2$ )
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 reported in the Task 2 Report, analyses revealed 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 17). 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 17. Summary of Agreement with Moral Disengagement Beliefs**

“How do you agree or disagree with the following statements?”	Among Those Who Rarely/Never Drive Aggressively	Among Those Who Usually/Always Drive Aggressively	Effect Size ( $\eta^2$ )
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

## 4.2 Stages of Change

Stages of change were not assessed on the original seat belt use and aggressive driving survey but were assessed on surveys to assess messages. Table 18 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, Shults, Sleet, Nichols, Thompson, & Rajab, 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 18. 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 19 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 19. Stages of Change Among Those Who Usually/Always Drive Aggressively*

Stage of Change	Frequency
"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?"	
"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

## 4.3 Reactions to Potential Messages

### 4.3.1 Messages About Seat Belt Use

Table 20 and Table 21 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 which 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 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) may inhibit psychological reactance as well. 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 4.1) and use language that would minimize psychological reactance.

Table 22 and Table 23 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 use 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 use 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 use 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 A 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 20. Seat Belt Messages and Reasoning (First Sample)**

<b>Message</b>	<b>Reasoning</b>
<p><b>Message #1</b>          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"> <li>Focus on beliefs of protecting yourself, important others would want you to use a seat belt, and that most people use seat belts</li> <li>Extensive use of choice language and showing change over time.</li> <li>Personal narrative</li> </ul>
<p><b>Message #2</b>          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 25<sup>th</sup> 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"> <li>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)</li> <li>Choice language, being in control, and asking questions (instead of making a demand)</li> </ul>
<p><b>Message #3</b>          "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"> <li>Connecting to role with others, importance of protecting yourself, and that most people use a seat belt</li> <li>Choice language, being in control, and asking questions (instead of making a demand)</li> </ul>

**Table 21. Seat Belt Messages and Reasoning (Second Sample)**

<b>Message</b>	<b>Reasoning</b>
<p><b>Message #3</b></p> <p>“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.</p> <p>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"> <li>• Connecting to role with others, importance of protecting yourself, and that most people use a seat belt</li> <li>• Choice language, being in control, and asking questions (instead of making a demand)</li> </ul>
<p><b>Message #4</b></p> <p>“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.</p> <p>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.</p> <p>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.</p> <p>We choose to be safe. We choose to always wear a seat belt.”</p>	<ul style="list-style-type: none"> <li>• Connecting to higher values and role modeling with children, family rules, and using a seat belt on short and long trips</li> <li>• Choice language</li> </ul>
<p><b>Message #5</b></p> <p>There are two people having a conversation in a vehicle.</p> <p>Person 1: I notice you always wear your seat belt, even if you are just driving for a few minutes.</p> <p>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.</p> <p>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.</p> <p>Person 2: Even with all of the safety features, the choices we make, like wearing a seat belt, actually matter the most.</p> <p>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"> <li>• Providing rationale for using a seat belt even on short trips and even with new safety equipment</li> <li>• Simple dialogue between two people to show change of beliefs</li> <li>• Choice language</li> </ul>
<p><b>Message #6 (Control)</b></p> <p>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"> <li>• Direct, strong language seeking to elicit psychological reactance</li> </ul>

*Table 22. Message Testing Results for Seat Belt Use (First Sample)*

<b>Message</b>	<b>Seat Belt Use</b>	<b>n</b>	<b>Perceived Threat</b>	<b>Angry Emotion</b>	<b>Perceived Effective</b>
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 23. Message Testing Results for Seat Belt Use (Second Sample)*

<b>Message</b>	<b>Seat Belt Use</b>	<b>n</b>	<b>Perceived Threat</b>	<b>Angry Emotion</b>	<b>Perceived Effective</b>
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%

#### 4.3.2 Messages About Aggressive Driving

Table 24 lists the three messages (and a control message) that were tested addressing aggressive driving. These messages sought to address key beliefs (see Section 4.1) 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, Quinn, & Dobson, 2015; Paciello et al., 2013), and perspective taking (Bussey, Quinn, & Dobson, 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 24. Aggressive Driving Messages and Reasoning**

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

Table 25 summarizes the testing results of these messages. Among those who usually/always drive 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 drive 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 drive aggressively perceived the messages as threatening and felt angry. Nonetheless, a significant portion of those who usually/always drive 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 25. Message Testing Results for Aggressive Driving*

<b>Message</b>	<b>Aggressive Driving</b>	<b>n</b>	<b>Perceived Threat</b>	<b>Angry Emotion</b>	<b>Perceived Effective</b>
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 RECOMMENDATIONS AND CONCLUSIONS

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 increases 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 but 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 use 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 message 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 use a seat belt or who drive aggressively may be particularly challenging individuals to change behavior – especially with only messaging. The Task 2 Report revealed that they may have higher levels of psychological reactance trait proneness (aggressive drivers), may respond with psychological reactance to messaging, and may experience moral disengagement. 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.

The final report will document the entire project and provide the message guidance in a standalone document.

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## 7 APPENDICES

### 7.1 Appendix A – 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 26 reports ANOVA, and Table 27 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 26. 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 27. 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 28 reports t-tests, and Table 29 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 28. 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 29. 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 30 reports ANOVA, and Table 31 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 30. 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 31. 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 32 reports t-tests, and Table 33 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 32. 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 33. 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 34 reports ANOVA, and Table 35 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 34. 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 35. Comparing Aggressive Driving Test Messages Using Mann-Witney U Test*

<b>Messages</b>	<b>Perceived Threat</b>	<b>Anger Emotion</b>	<b>Perceived Effectiveness</b>
#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 36 reports t-tests, and Table 37 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 36. Comparing Aggressive Driving Test Messages with Control Using T-Tests*

<b>Messages</b>	<b>Perceived Threat</b>	<b>Anger Emotion</b>	<b>Perceived Effectiveness</b>
#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 37. Comparing Aggressive Driving Test Messages with Control Using Wilcoxon Signed Rank Test*

<b>Messages</b>	<b>Perceived Threat</b>	<b>Anger Emotion</b>	<b>Perceived Effectiveness</b>
#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