Unconscious Motivators and Situational Safety Belt Use

Literature Review and Results from an Expert Panel Meeting

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16. Abstract
Despite the overwhelming evidence that safety belts save lives, millions of Americans still do not buckle up every time they are in a motor vehicle. A small proportion of these people never wear safety belts, but the vast majority are "situational safety belt users," wearing a belt only when they think it is necessary. NHTSA researchers hypothesized that these part-time wearers use unconscious defense mechanisms (i.e., repression, denial, rationalization, and fatalism) to suppress conscious thought of the consequences of being in a crash. To explore whether unconscious defense mechanisms are an appropriate intervention point to encourage the full-time use of belts, NHTSA commissioned a literature review and expert panel meeting on the role of unconscious motivators in response to safety threats. The literature review suggested increased mindfulness, enhanced efficacy, increasing the social desirability of compliance, disrupting resistance, and encouraging anticipatory regret as ways to overcome unconscious motivators. The expert panel suggested the following techniques: reframe personal control, reframe the reason for wearing belts (e.g., make it unrelated to safety), reframe the perception of who wears belts, use indirect messages which are nonthreatening, and recognize the factors that make belt wearing a unique behavior. Both portions of this research suggest that unconscious motivators play an important role in situational belt wearing, and offer suggestions for how to address these unconscious motivators at a mass level to encourage full-time belt wearing. However, the particular combination of strategies to achieve favorable outcomes is highly dependent on: (1) which unconscious motivators are at work, and (2) the population exhibiting the behavior targeted for change. Additional research on these two issues is recommended.

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EXECUTIVE SUMMARY

Despite the overwhelming evidence that safety belts save lives, millions of Americans still do not buckle up every time they are in a motor vehicle. In order to substantially raise the safety belt usage rate, NHTSA has emphasized enactment and enforcement of strong safety belt laws because of the proven effectiveness of those interventions. However, there is interest in augmenting those approaches with other interventions in order to enhance the comprehensiveness of safety belt programs. This project provides information to consider when devising such complementary approaches.

Among the population that does not always wear a belt, a small proportion never wears a safety belt. However, the vast majority are "situational safety belt users," wearing a belt only when they think it is necessary. Previous research has suggested that unconscious defense mechanisms (i.e., repression, denial, rationalization, and fatalism) may suppress conscious thought of the consequences of being in a crash. Thus, these unconscious defense mechanisms may interfere with the adoption of the appropriate coping behavior (i.e., buckling up).

NHTSA commissioned this study to explore whether unconscious defense mechanisms can be overcome to encourage the full-time use of belts. The research took part in two phases. In the first phase, a literature review was conducted on the role of unconscious motivators in response to safety threats. Approximately 60 citations were reviewed. In the second phase, an expert panel meeting was held. Over the course of this one-day meeting, eight subject matter experts in fields such as psychology, communication, and sociology discussed the role of unconscious defense mechanisms, and provided suggestions to NHTSA on how to overcome these defenses to promote the full-time use of safety belts.

Major Results

The literature review identified several techniques to overcome unconscious motivators. These included: increased mindfulness, enhanced efficacy, increasing the social desirability of compliance, disrupting resistance, and encouraging anticipatory regret.

The expert panelists identified several factors that make belt use a unique behavior (e.g., belt use challenges personal freedom). Panelists highlighted the importance of recognizing the uniqueness of belt use and of knowing as much as possible about part-time wearers to design successful interventions. Suggested techniques to promote belt use included:

- Develop campaigns that focus on the behaviors of "other drivers" as a reason to wear your belt; this helps to overcome a false sense of control.
- Consider campaigns that move away from telling people to wear their belts. Instead, create campaigns that lead people to the conclusion that wearing a belt is a good idea without actually using these words.
- Consider focusing on milder negative outcomes of belt nonuse (e.g., getting a ticket versus death), and promote the immediate benefits of belt use (e.g., spare others from worrying, relieve yourself from worrying about getting a ticket, and exercise positive control).

Conclusions

This research suggests that unconscious motivators play an important role in situational belt use, and offers ideas for how to address these motivators while noting that there is no one solution. There are a variety of remedies that may be helpful, depending on the defense mechanism being employed. NHTSA is advised to conduct additional research to identify the best defense mechanisms to target, i.e., ones explaining a substantial portion of belt nonuse and where the technique to overcome these defenses is easy to implement at a mass level.

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INTRODUCTION

Despite the overwhelming evidence that safety belts save lives, millions of Americans still do not buckle up every time they are in a motor vehicle. In order to substantially raise the safety belt usage rate, NHTSA has emphasized enactment and enforcement of strong safety belt laws because of the proven effectiveness of those interventions. However, there is interest in augmenting those approaches with other interventions in order to enhance the comprehensiveness of safety belt programs. This project provides information to consider when devising such complementary approaches.

Many passengers and drivers wear safety belts on an irregular basis. A term used to describe this portion of the population is "situational safety belt users." These occasional wearers tend to use a safety belt only when they think it is needed (e.g., on high-speed roads or in bad weather). Unfortunately, it is impossible to predict when crashes will occur. Numerous lives could be saved if these "part-time" users would adopt the "full-time" habit of wearing their safety belts.

NHTSA research has identified different psychological reactions to safety belt use among full-time and part-time users. Full-time users feel discomfort if they are not buckled up; thus, not wearing a safety belt leads to anxiety. Part-time users do not feel the same anxiety in response to not wearing a safety belt. Instead, part-time users often express fatalistic beliefs or utilize other defense mechanisms (e.g., repression, denial, or rationalization) to suppress thoughts about the consequences of being in a crash. NHTSA researchers have hypothesized that these unconscious defense mechanisms interfere with the conscious consideration of the consequences of not buckling up and with the adoption of appropriate coping responses (e.g., buckling up). Moreover, these defense mechanisms may counteract messages that encourage buckling up.

This project represents a unique undertaking by NHTSA to establish the role that unconscious fear, anxiety, or discomfort about anticipated crash outcomes play in belt use behaviors, and to generate ideas for possible countermeasures that may overcome this unconscious resistance. The research entailed two phases. The first phase was a review of the theoretical literature on anxiety, risk perceptions, and fatalism in response to safety threats. While this report primarily focuses on the findings from an expert panel meeting (discussed below), a brief summary of the literature review is included here to provide context (the complete literature review is included as Appendix C to this report). In the second phase, a group of eight experts in various fields (i.e., risk communication, risk perceptions, social marketing, cognitive psychology, and psychodynamic psychology) met to discuss these issues and to make recommendations to overcome these unconscious barriers. While few of these expert panelists had specific experience changing behaviors motivated by unconscious thoughts (e.g., via work as a psychodynamic psychologist), all of the panelists deal with unconscious motivators in some way professionally (e.g., via work in behavior change). Thus, each panelist had distinct expertise to contribute to the discussion.

SUMMARY OF LITERATURE REVIEW

The literature review was designed to inform and provide context for the expert panel discussion (all panelists were sent a copy of the literature review to read prior to the meeting). Relevant articles, chapters, and other information for the review were selected based on the following criteria:

- Any theoretical or clinical literature on anxiety, risk perception, and fatalism in response to safety threats;
- Any theoretical or clinical literature on converting defensive mechanisms to coping reactions, particularly in response to risks;
- Any theoretical or clinical literature on adopting appropriate coping actions to ameliorate the consequences of risky events;
- Any theoretical or clinical literature that addresses the key question: How do you change defensive behaviors to coping mechanisms and apply them to the world of safety belt usage? Ideally, case studies of successful campaigns at a societal level were desired; or,
- Any theoretical or clinical literature that addresses the key question: How does behavior change happen for unconscious behaviors? Ideally, case studies of successful campaigns at a societal level were desired.

Articles were located via searches in various academic databases (e.g., ProQuest, PsychArticles, Sociology Abstracts, and Medline), as well as in specific academic journals (e.g., *Risk Analysis* and *Cognitive Psychology*). Additionally, relevant literature was identified through personal communication with experts in this field, and through Internet searches. In total, about 60 citations were reviewed. The Project Director prepared the literature review; a subcontractor served as a reviewer.

The literature review briefly examined seven main areas:
(1) Models of behavior change;
(2) The formation of risk perceptions in response to safety threats;
(3) Precursors to message resistance;
(4) How threat messages are resisted;
(5) How to convert defensive reactions to coping reactions;
(6) Relevant case studies; and,
(7) A summary of existing research on part-time users of safety belts.

Of most interest here, the literature review identified several techniques that might be useful in overcoming unconscious motivators. These included:

- Increased mindfulness (i.e., encourage cognition): Mindfulness draws attention to unconscious motivators, thus reducing their influence.
- Enhanced efficacy (i.e., promote individual capability): Efficacy is the sense that individuals are capable of changing their behaviors; thus, enhanced efficacy frequently enables behavior change.
- Increasing the social desirability of compliance: Social norms are a powerful motivator to induce behavior change.

- Disrupting resistance (i.e., interfere with the natural desire to resist a request via distraction or some other technique): Disrupting resistance is a way to interfere with unconscious defense mechanisms before they take root.
- Encouraging anticipatory regret (i.e., ask people to think about the regret they would feel if they did not engage in a protective behavior): This technique increases mindfulness in addition to drawing attention to the benefits of engaging in protective behaviors.

As noted, the complete literature review appears as Appendix C to this report.

PANEL MEETING LOGISTICS

Potential panelists for the expert meeting were identified via the literature review, self-referral in response to messages posted on relevant electronic mailing lists, recommendations from subject matter experts, and targeted searches for the experts in a particular field. A wide range of panelists were invited to attend the meeting; NHTSA's goal was to assemble a diverse group of subject matter experts who could each contribute a unique perspective to the discussion. If a potential panelist declined the invitation, the research team asked him/her to recommend others in that field who might be interested in participating. Ultimately, the panel included a cognitive psychologist, a professor in the field of communication studies, the director of an academic center on risk communication, a researcher in the field of human judgment and decision making, an academic social and personality psychologist, a social marketer, an academic social psychologist, and an analytic psychotherapist in private practice. See Appendix A for a complete list of panelists and their affiliations.

Panelists were offered a stipend for their participation and were reimbursed for travel expenses and room accommodations. All panelists were provided with a copy of the literature review to read prior to the meeting.

The panel meeting took place on September 12, 2005, in Washington, DC, and was audio recorded and later transcribed. The meeting began with an overview of the topic provided by the NHTSA Project Officer. In the morning session, panelists discussed the nature of situational safety belt use and their experiences related to unconscious motivators. In the afternoon session, panelists discussed how to overcome unconscious motivators and generated ideas for NHTSA pertaining to the specific case of safety belts. The meeting agenda appears as Appendix B to this report. The meeting was relatively unstructured because of the novelty of this research approach and NHTSA's desire to generate new ideas. At the end of the meeting, the panelists and the NHTSA moderator agreed that this approach accomplished its mission of identifying new ways to encourage belt use. The meeting resulted in several suggestions for how to encourage belt wearing.

ABOUT THIS REPORT

The transcript from the meeting was used as the basis for the remainder of this report. Quotations from the expert panelists are indicated in the text; however, names are not used to

protect confidentiality. The free-flowing nature of the discussion led to multiple topics being discussed throughout the day; key themes and ideas that recurred are emphasized in the text of this report. This report summarizes and details the discussion as it pertained to several main topical areas: (1) issues broadly related to risk communication and specifically those factors which are more relevant in their application to safety belts; (2) what makes safety belts a unique risk communication issue; (3) general recommendations to encourage the use of safety belts; (4) specific recommendations related to unconscious defense mechanisms; and, (5) suggestions for further research. The report ends with a summary and conclusions.

RELEVANT RISK COMMUNICATION ISSUES

The discussion began with panelists sharing their experiences and expertise related to encouraging people to engage in protective behaviors. The conversation provided a brief summary of the field of risk communication[1] in general, and of risk communication issues related to the use of safety belts in particular. While each panelist used the terminology of his/her own field, the panelists had many overlapping comments pointing to commonalities of approaches across diverse disciplines. This section of the report represents an attempt to summarize the general "approaches" to risk communication discussed by the panelists. The next section of the report identifies risk communication issues that panelists considered especially relevant to promoting the use of safety belts.

A common theme throughout the discussion was that changing behaviors is difficult. Panelists emphasized the need for research to guide any communication effort. However, panelists also said that it is important to remember that the reasons for human behaviors are complex and often unknown even to the people engaging (or not engaging) in them. This is where the notion of unconscious defense mechanisms entered the discussion. While most panelists did not specifically think of themselves as experts in unconscious defense mechanisms, all were familiar with cognitive tendencies such as selective attention and selective perception (which often operate at a subconscious level) that allow people to depersonalize and minimize risks. Additionally, all panelists suggested techniques such as reframing as a way to get around these defense mechanisms, demonstrating that they had experience overcoming unconscious defenses. A more detailed summary of general risk communication issues discussed by the panelists is provided below.

Audience research is critical

Both the literature review and the panel meeting highlighted the importance of knowing as much as possible about the target audience. In fact, the very first thing panelists wanted to know from NHTSA was "how to characterize the subpopulation you are most concerned about." Panelists identified several reasons why audience research is important. First, target audiences are likely to be more receptive to persuasive messages if the messages match their information preferences (e.g., some people are more persuaded by logical appeals and others by emotional appeals).

[1] While panelists represented many different disciplines (e.g., psychology, communication, and sociology), we characterize this as a discussion about risk communication. Risk communication has been described as "any purposeful transfer or exchange of information" about risks among interested parties (Covello, 1988), and risk communication is a broad enough term to encompass all these fields.

Additionally, panelists stressed that successful campaigns use the emotions and perceptions people bring to the table to motivate change; they do not try to create new motivations. Thus, research is required to understand what motivators are pre-existing. As one panelist said: "The basis of the behavior is important, but it is not our basis, it is the audience's basis [that is important]. So their basis [for wearing a safety belt] may not be fear. We are motivated by their likelihood to get in a crash. We are trying to protect them from killing themselves. We have got to put that aside when we think about how to make them do the right thing." Audience research can also help to identify the "narrow windows where you can catch someone and deliver a risk message."

This emphasis on tailored approaches and messages underlies the difficulty in creating strategies that will work for all people. Panelists talked about the fact that successful campaigns require multiple approaches, e.g., there are many types of people who do not wear safety belts "for a lot of different reasons." Thus, it is unlikely that a "one-size-fits-all" solution exists for the remaining non-users.[2]

Risk perceptions matter, but changing risk perceptions is not enough

Without any awareness of risk, people do not consciously act to reduce risks. For example, if people perceive no risk of getting in a motor vehicle crash, they will not wear a safety belt as a way to reduce that risk.[3] Thus, one strategy to increase the percentage of people who engage in any risk-reduction behavior is to heighten people's risk perceptions. Raising risk perceptions can (and does) work; there is a link between risk perceptions and risk behaviors. For example, drivers report that they are less likely to use safety belts when driving at low speeds, and are more likely to use belts when they see others engaging in unsafe behaviors (Bradbard, Panlener, and Lisboa-Farrow, 1998). Thus, an approach that increases risk perceptions in driving situations that tend to be seen as "safe" may lead to more wearing of belts.

However, changing risk perceptions is complex. If the risk is perceived as too high, people may engage in fear avoidance behaviors (e.g., repression) instead of risk reduction behaviors. This is especially likely, according to panelists, among groups with less social power. In extreme cases, people who feel powerless may actually exhibit greater risk-seeking behaviors. Moreover, different social groups perceive and respond to risks differently. For example, white males are more accepting of risks than any other social group. This further complicates the task of altering risk perceptions. Moreover, risk information is hard to understand. As one expert said, "People have a really hard time with numbers." Additionally, risks typically are not "communicated in ways that people can easily understand, visualize, or compare to other risks." Also, the concept of cumulative risk is not well understood, even though it is helpful in explaining why it is worthwhile to engage in certain protective actions: "There are things we do that are very low risk [e.g., any one ride in an automobile]. Why do we worry about them? Because we do them over and over again … the idea of cumulative risk can help [make] … information be a little more meaningful."

[2] This point recurs later in the report. For example, panelists identified dramatically different approaches to reach people who do not wear safety belts for reasons of repression, denial, rationalization, and fatalism.

[3] They might wear a safety belt for some other reason, of course. Examples of such "other reasons" are provided in the suggestions portion of this report. Panelists also discussed when a "nonrisk" approach may be advisable.

More importantly, however, risk decisions are not based solely on risk perceptions. How people respond emotionally (affect) is critical. As one panelist said, "You can't tell someone that their emotional reaction is wrong." Another said, "When things are strongly grounded in affect … simple information won't do the trick." In other words, people have more complex reasons for engaging or not engaging in protective behaviors than whether they "correctly" or "incorrectly" perceive the risk. For example, the literature review cited a study where high-risk individuals refused to use condoms before engaging in sexual activity because of the affect associated with condom use (e.g., what it said about them and their trust in their partners), despite an understanding of how diseases such as AIDS are spread.

People do not always know why they do what they do
Further complicating matters, human behaviors are motivated by a variety of factors, many of which we are simply unaware of. As one panelist pointed out, "If you could find out why people do things simply by asking them, we wouldn't need psychotherapy." Moreover, even though "people will come up with answers" when asked why they do things, panelists cautioned: "One should be skeptical of reasons that people give for their behavior." Thus, people are quite capable of giving convincing yet false reasons for their behaviors. Moreover, they think these reasons are true.

While all panelists were familiar with this facet of human behavior, most were not comfortable using the terminology of unconscious motivators to explain these oddities. Thus, while all the panelists encountered this notion that "people do not always know why they do what they do," most panelists (as noted) did not specifically think of themselves as working in the field of unconscious motivators.

Depersonalization of risk (society versus individual)
Interestingly, risks tend to be overestimated at the societal level. That is, for any given risk, most people assume that the societal risk is larger than it actually is. For example, most people think the likelihood of any given person being in a fatal car crash is higher than it is. However, risks are underestimated at the level of the individual. In other words, "If you ask people what their personal risk is compared to [society at large] it is always lower. So I may say, 'Oh yes … these terrible things can happen to you … but they won't happen to me.'"

This depersonalization of risks was a key theme throughout the meeting, and was often cited as a critical issue that had to be overcome. For example, panelists offered the following thoughts:

- It is hard to overcome the notion that while risks exist in general "it won't happen to me;"
- The "big issue" is the discrepancy between "people's view of the general and the specific;" and,
- "Trying to get across to people that *their* risk is high is a different thing from trying to get across to people that *the* risk is high."

Cognitive skills allow people to downplay risks
The depersonalization of risks is one example of humans' remarkable adeptness at resisting potentially threatening arguments via biased cognitive processing. Panelists summarized the mindset of someone employing this type of resistance: "There is something about me that makes me unique and different, invulnerable and safe. And it is a variety of things. I … exercise; I am

very alert; I won't get in an accident; I am a defensive driver." In other words, while people are accepting of risks in general, and even overestimate societal risks, they systematically underestimate their personal risk by focusing on their uniqueness. This requires extensive cognitive effort: "People will sort of choose whatever it is that makes them uniquely less risky and focus on that as the reason they are not at risk."

Strongly tied in with this denial of risk is the idea of personal control. Panelists talked about how there is a very strong perception at the level of the individual that we have control over what happens to us (i.e., "people think they have control, people want to have control"). For example, panelists talked about how people think they are good at selecting sexual partners without diseases, or how "people who don't vaccinate their kids think they can control whether their kid is going to come into contact with a disease." This notion of control is rarely challenged in routine situations, which is one reason panelists say the myth is so persistent: "In most of our lives, while driving or smoking, or having sex, you don't get the perception that you are out of control." Moreover, the sense of control is reinforced by repeated good outcomes. As one panelist (citing a poem) said, "The stair does end almost always when you think it is going to end."

Empathy gaps also allow for the denial of risks: "Because you are not experiencing something right now, it is hard for you to understand what that means, what the implications are, or what the feeling is like." Empathy gaps thus allow for risk information to be safely processed as non-relevant. Thus, even if people know that bad outcomes exist (e.g., because other people experience bad outcomes), such outcomes can be minimized because they are happening to someone else. As one panelist observed, there is even something life affirming about witnessing a fatal car crash; the other's death reinforces the notion that you are alive.

Framing matters

Panelists discussed the impact framing has on how risk information is understood. For example, people react differently when information is framed as a benefit (e.g., cash discount when buying gas) versus a loss (e.g., surcharge for paying with credit). Panelists spent a great deal of time discussing how belt wearing can be reframed as a means to change behavior; these ideas are discussed in more detail in the suggestions section. However, it is worth noting here that reframing is one way in which information can influence decisions. One panelist talked about the power of new information to change the focus of decision-making (e.g., consider carbohydrate content when making food choices): "Once you make people believe that that is important, for whatever reason, you are going to change the behavior. [Someone might say,] 'Oh god, I just hate to give up that pizza. I mean, it is my favorite food, but look at the carbohydrates in it.' So, if you can deflect them to some other consideration that is different from the basis of what they are doing, then you have a better chance than if you try to hit them and say, 'Well, it doesn't taste so good.'"

Risks should not be exaggerated

Part of the discussion on risk communication at the meeting included cautionary advice. Chief among this advice was that risk communicators need to be careful not to exaggerate their messages. First, if risks are seen as widespread and unavoidable, exaggeration might lead to a "what the heck" attitude that encourages risk taking. Second, "choosing very extreme outcomes"

backfires in some cases because it discredits the message and/or the messenger. People know that extreme outcomes are rare, and also see such outcomes as easier to avoid via personal competence. Thus, showing less extreme outcomes (e.g., mild symptoms of STDs) can be more effective. Finally, because everyone is "told a lot of exaggerated risk messages," when people find out actual risk levels "they feel very lied to." The result can be something of a boomerang effect, so that the more the original risk was exaggerated, the more risk-seeking behavior may occur when people find out the actual risk level.

Our society engenders "risk fatigue"
Panelists talked about the fact that focusing on risks may not be the best way to get people to change their behaviors. For one thing, "everybody is competing in risk," thus "we tend to discount [risk messages]." In addition, nonrisk messages are more effective at changing some behaviors. For example, panelists talked about how cosmetic arguments are often more persuasive than health arguments in getting people to quit smoking, and how social norms (i.e., the desire to "do what everyone else is doing") can be another powerful "nonrisk" motivator.

It is hard to reach the remaining non-wearers
Finally, panelists talked about how difficult it is to reach the last portion of the population that is not engaging in any particular safety behavior. The panelists believed NHTSA has already done an excellent job promoting belt wearing (i.e., it is a common behavior); however, this means that the people who still do not wear belts are extremely difficult to reach (panelists referred to them as the "high-hanging fruit"). Panelists also emphasized that even if these people can be reached and persuaded to wear their belts, continual reinforcement is required: "Maintenance [of behavior change] is very, very difficult, in part because you really need … [to reinforce] the thing that caused change initially … the people who are successful at maintaining these behaviors somehow construct their lives so that they are constantly reinforced."

RISK COMMUNICATION ISSUES SPECIFIC TO SAFETY BELTS

In addition to having a general discussion about best practices in risk communication, panelists also identified several things about automobiles and the experience of driving that make communication about safety belts unique. For example, panelists talked about how driving creates a sense of freedom and control. This poses a challenge because the demand characteristics of safety belts potentially threaten that sense of control. Additionally, panelists discussed how driving is familiar and therefore seen as safe (this notion is reinforced as people take trips and nothing happens), and this encourages the behavior of situational belt use (e.g., that belts are needed some times but not others). A final uniqueness is that belt wearing is strongly associated with scripts and start-up routines in cars; i.e., belt wearing may differ depending on whether the user is in a familiar or an unfamiliar environment, and, moreover, the belt wearing behaviors in each environment may be governed by different factors. Thus, belt use is a unique risk behavior, and this creates opportunities and challenges for NHTSA.

Pleasure, control, and freedom
Panelists discussed at length the feelings created by driving, and how the abstract idea of driving promotes a sense of pleasure, control, and freedom. Cars are associated with "that incredible

illusion of freedom" that automakers use to sell cars, even though the reality of driving is much more "mundane." This perception is important because belt use may pose a challenge to this idealized vision. Panelists' comments on this topic included:

- "Driving is one of those big ones [pleasures] … people feel like … they are in control, you know, all these really positive things … driving is this positive, in-control thing."
- "One of the greatest pleasures in my life was to be able to drive a car at the age of nine."
- "Our cars are one of the few domains … where we can actually be alone and support the notion that we are in entire control of ourselves moving through space."
- "Driving is one of the few activities we do most commonly which puts us where? In the driver's seat, right? It gives us optimum control, locomotion, or automation."
- "People think when they are in a car that they can judge what is a risky situation and what isn't."

The meaning of a safety belt

These notions of pleasure, control, and freedom are in some ways diametrically opposed to the use of belts. As one panelist said: "The enemy of seatbelt use is the idea of feelings of control and personal freedom … I want to do what I want to do. You are infringing on my freedom; don't tell me what to do." In name, function, and design safety belts reinforce restrictions on freedom and control. Panelists commented:

- "The demand characteristics of seatbelts are super clear to everybody. And the idea that they should be doing it is also super clear, so the resistance is built in."
- "Seatbelts are seen as restrictive. We are told they are restrictive."
- "They talk about passive restraint. And it is like, if you want a word that will tick people off, we are going to restrain you."
- "It seems to me that the paradox is [that] we are trying to get people to use safety belts, or passive restraints, in a situation which technologically guarantees them maximum power, which is driving … we want that freedom."

In addition to these concerns about belts being a threat to control, panelists also talked about the fact that belt use is strongly tied to social convention. People may wear or not wear belts simply because of social norms. Peer pressure is a concern, especially for teens: "Do they look like a dweeb when they buckle up and no one else is buckling up? … I think that is a fairly significant cost to a 13-year-old." Finally, not wearing a belt may even be an act of rebellion. Thus, panelists emphasized that one important factor to consider when promoting belt wearing is the meaning of a belt: this meaning is a barrier that will have to be overcome for some audience segments.

Driving is familiar and promotes a feeling of safety

Driving is familiar, comfortable, and usually safe, which makes promoting the use of belts problematic. Panelists discussed how driving (unlike other potential risks) has not been "made into an anxious thing." As one panelist said, "You drive every day. You know that the risk is low. Look how many times you have driven and nothing has happened." Another added, "People learn from their experiences. And one of the things we experience in a car over and over and over again is nothing bad happening." This means that driving is a situation where it is critically important that people understand the concept of cumulative risk, because "if you look at the actual risk of one trip in a car it is very low."

Panelists also noted that since "the car people are selling cars," automobile marketing focuses on positive benefits of driving such as "absolute untrammeled freedom," further contributing to this notion that automobiles are safe. In addition, auto safety features may lull people into thinking they are safe even without wearing their safety belts: "We have made cars so safe, we have made the streets so safe … that a lot of people say, 'Oh, well, I am not going to get hurt anyway because of air bags, because my car is so huge and so strong and will protect me.'" NHTSA may inadvertently reinforce this notion that certain driving situations are safe (e.g., short trips to the grocery store) because its enforcement campaigns typically show high-speed highway driving. As one panelist commented, "Take '*Click It or Ticket*' … everything is on a highway, people on long trips … not in the village on people's way to go get pizza."

Automobile behaviors are tied to scripts and to start-up routines

Another feature of belt use that panelists thought was noteworthy is the degree to which belt use is tied to "start-up" driving behaviors or scripts. In other words, putting on a belt is something that many people do without even thinking about it. As one panelist said, "At least for me, seatbelt use in my own car is absolutely automatized." However, panelists said that disruptions to this starting routine (e.g., kids fighting, being in a different vehicle, or being in a hurry) could completely change the nature of this behavior: "If I am distracted, if someone else is talking to me, I am much less likely to do it [wear a belt]." In a situation such as this where belt use (or non-use) is not automatic, panelists thought other factors would govern belt behavior (e.g., whether the other people in the car are wearing belts, or the ease with which the belt can be located and fastened). Panelists also assumed the existence of a cohort effect relative to belt wearing, as belt use is more common among younger generations: "I was raised before there were seatbelts … [but] my grandkids are always buckled in. It is just part of the norm." A panelist raised with this norm reaffirmed this notion: "As a kid … we were not allowed to go anywhere if we did not have our seatbelts on … so now, as an adult, that is a habit for me." However, one panelist cautioned that because belt use is routine and expected, not wearing a belt can then become a rebellious behavior (e.g., for teens).

Situational belt use creates unique patterns of behavior

The final thing that panelists identified as unique is that belt usage requires a repeated, yet frequent, risk decision: "Every time you are in a car, you make a seatbelt decision." Additionally, "the large number of people who do it sometimes and not others … makes it unique." Finally, belt use itself also exhibits unusual patterns; e.g., people don't put their belts on until they leave their neighborhood, or take them off when they turn onto their street. As one panelist observed, "The fact that people do this, to me, makes it a unique behavior, and that may be good, because it leaves some ways to understand it better. But [it is] bad in the sense that it has these uniquenesses [which make belt use harder to understand]."

GENERAL RECOMMENDED APPROACHES

Panelists were asked to generate ideas for NHTSA about how to move part-time users of safety belts to full-time use. This discussion took place in two parts. First, as discussed in this section of the report, panelists provided general recommendations and approaches. These

recommendations tended not to use the language of unconscious motivators; instead, they were reflective of the way each panelist thought about motivating behavior change. The second part of the discussion (which is described in the next section of this report) was specifically focused on ways to overcome unconscious defense mechanisms. Panelists made similar recommendations in both parts of this discussion; however, they used different terminology to describe the issues in these two conversations.[4] The general recommendations, which are described in this section of the report, were mostly focused on reframing various aspects of belt wearing (i.e., control, reasons to wear a belt, and what wearing a belt means). However, panelists also offered general guidance (e.g., "don't tell people what to do," and "customize your campaigns") on a variety of subjects from using mental imagery to making sure all safety belts are designed the same. Note that many of these recommendations flowed directly from panelists' thoughts about the best ways to communicate risks and about what it is about belt use that is unique.

Don't tell people what to do

Because the demand characteristics of safety belts are clear (i.e., everyone knows you are supposed to wear them), one of the recommendations the experts made is that campaigns never need to say "wear your seatbelt." In fact, the experts suggested there is a lot to be gained by not using this phrase, as the phrase itself may evoke resistance and challenge personal freedom. Instead, panelists thought messages should position belt wearing as a personal decision. The experts also said that humor and unexpected messages may help a great deal in this regard: "The humor element is so often left out." They noted that creating humorous messages that strike the right balance is difficult: "It has to be done by some smart, intelligent people." While these experts did not see themselves as the ones to do this, two message ideas were offered. The first was: "If you're drinking and driving, wear your seatbelt. If you're not drinking and driving, wear your seatbelt." The benefits of this message are that it is unexpected and thus attention getting, and that the first part of the message subtly highlights the risk addressed in the second part. The second suggestion was to develop a campaign to tell people that they can wear an actual belt or a fake belt, i.e., that both comply with belt laws. Again, the idea is that an unexpected message subtly directs people to the fact that wearing a fake belt is ridiculous, and, thus, reminds them that wearing actual belts is important. In general, the experts thought indirect messages such as this were more likely to be successful.

Customize messages for the target audience

The best messages are personalized for the target audience, and speak to how target audience members think and feel about issues. Personalization allows message recipients "a way of taking control," because it makes belt use a personal decision. The goal of personalized messages is not conversion to the message designer's point-of-view: "That is religion." Instead, the experts encouraged message designers to think about the target audience's motives, and craft messages with these motives in mind. Good messages work with "what people already believe, and use [these beliefs] to do the things we want [them] to do." For example, condom marketers know that their target audience is thinking about "moving things along," not "preventing disease." Thus, condoms are marketed as "for her pleasure." In the same way, safety belt marketers need

[4] The conclusions section combines recommendations from the two discussions. However, these two sets of recommendations are presented separately initially to reflect the nature of the discussion.

to understand their targets' state of mind (e.g., getting quickly to a destination), and belts should be marketed as a way to reach these goals.

Messages should also be consistent with and reinforce the audience's self image: "It is about who they are, finding who they are, and [giving them] … an instant reward." One panelist talked about GM's very successful "Like a Rock Campaign" which was built around research that pickup truck drivers see themselves as dependable. If research on safety belt nonusers found similar self-perceptions, a campaign could be built around the notion of belt wearing as a way to be dependable for your friends. Personalized messages can be targeted to provide people with new information, but the key is to do this in a nonthreatening way, even if it involves an unconventional approach. In the end, the experts said it is the behavior that counts: "You want them to put on their belts, you don't care why they do it."

Reframing control

As discussed previously, panelists agreed that wearing a safety belt poses a challenge to the sense of personal control driving creates. Thus, one of the panelists' main recommendations is that any campaign promoting the use of belts must do so in such a way that it does not threaten this sense of control. The trick, according to panelists, is to work within these illusions of control: "I think there has to be something in the message, or something in the use, that allows it [to] be used without it being perceived as an infringement on control." For example, one panelist talked about the fact that he refuses to engage in some safety behaviors because he does not want to confront the degree to which he is not in control over his life outcomes. Thus, he said: "There are things I won't do in my life that are rationally stupid … but it is almost like I refuse to take all these precautions because the quality of my life just seems less if I have to worry … [So, any campaign] has got to be framed and defined as a behavior that has nothing to do with your limited personal control over your life." Themes related to this issue of how to promote belt use without threatening personal control are listed below.

- One suggestion was simply to move away from the notion of safety belts as something that restrains you, and move towards a notion where belts are freeing. Panelists suggested calling them "freedom belts," e.g., because they free you from mild anxiety (see below).
- Likewise, belt use can be positioned as a way for people to gain control over what happens to them. Using a safety belt is one way to "eliminate a mild, negative, outcome like worrying." Safety belts thus become a way for people to exercise positive control over their environments.
- In a similar vein, panelists recommended focusing on mild fear (e.g., getting a ticket) paired with efficacy (i.e., wearing a safety belt). They said the consequence should be something that is probable and mildly negative, because a message that was overly negative (e.g., focused on death) might trigger too much anxiety. For something a bit stronger than getting a ticket, experts suggested NHTSA might also use the avoidance of minor injuries as a reason to wear a belt. Here again, audience research is important. To be most effective, the campaign should capitalize on whatever anxiety naturally exists about driving, and position belts as a way to overcome this anxiety: "Where it has been shown to work is where the fear is sort of mild and it is paired very closely with 'here is how you can get rid of this fear.' So we don't want, I think, to say, 'Let's make our

drivers more afraid,' but we want to … promote a fear that is more of a threat really than a fear. And to say this action is what you can do to eliminate that."

- Safety belts could also be positioned as a way to enhance the feeling of control that people get when in a car. For example, belts could be marketed as "helping you feel more in control behind the wheel," or "enhancing the feeling of acceleration." However, the experts cautioned that this approach might encourage reckless driving; more study would be needed before implementing such a campaign.
- Another strategy is to connect pleasure with the notion of control. For example, an attractive woman could talk about how she "likes her men alive." This message could come from a female racecar driver, reinforcing that the message is not about fear but simply about making a smart choice. Panelists emphasized that pleasure is a powerful motivator.
- Finally, panelists said that there must be a gentle way to remind people that they are not always in control. One panelist cited a line from a play by T.S. Eliot where you "find that there is one more step than you expected there to be, and suddenly, at the bottom of the staircase, you turn from an active agent … who is in control of his destiny, into what Eliot calls 'an object [a]t the mercy of a malevolent staircase.'" Suggestions on how to remind people that they are not in control are offered later in this report.

Reframing reasons for wearing belts

Perhaps even more importantly than reframing the issue of control, panelists thought that reframing the reason for wearing a belt was critical. As one expert said, "Reframing is one of the keys … it is a subtle way to get into those affective tags, or nuances, that are associated with trying to attract people towards a certain behavior, or make them avoid an undesirable behavior." Panelists' main suggestion in this area was to take belt use out of the realm of safety/fear reduction, and move it into some other (less threatening) area. They noted that this is hard to do, because a "prevention focus is the usual focus for seatbelts: it prevents bad accidents, death, disfigurement, dismemberment, you know, any of that. The promotion focus is a lot harder to think about." Among their suggestions:

- Wear a belt to give "other people peace of mind that you are being safe." Or, more specifically, wear a belt to protect yourself for your friends. One panelist described a possible commercial based on this theme, with teenage girls in a car rolling their eyes and making a noise that sounds like "nst" (a put-down) to someone not wearing a belt.
- Wear a belt because other people care about you. One panelist suggested, "You have a campaign that seems to be a campaign asking friends to tell each other to wear their belt. But it is really a campaign aimed at the nonbelt user, they are going to put it on just so it looks like someone asked them to wear their belt." Thus, wearing a belt becomes something you do if you are "part of the tribe."
- Wear a belt as a means of social modeling for your children, so that your children will grow up knowing that wearing a belt is important.
- Wear a belt because it enhances the experience of driving, e.g., it makes you feel more secure and better able to enjoy the ride (but be cautious of promoting reckless driving).
- Wear a belt in your day-to-day life so you can have fun some other time.
- Wear a belt because it is a fun and popular thing to do: "Make it easy, fun, and popular. You know, it is easy to do, so there is no cognitive load. Make it fun. And make it popular; everybody does it. Then they will use it."

- Wear a belt to be a rebel (although panelists could not think who or what you could rebel against by wearing a belt).
- Wear a belt to get an instant reward, e.g., you feel good about yourself because you are showing you love your family. Panelists emphasized that instant rewards are likely to be more effective than the typical delayed rewards associated with belt use (e.g., not getting a ticket, or not getting injured), because instant rewards provide constant positive reinforcement.
- Wear a belt because it makes you a better driver and a better passenger.
- Wear a belt for "the future," not because it is "holding you back" (i.e., flip the cognitive story).
- Finally, replace the counterfactual: "Another way to think about reframing is what the counterfactual is. What is it that it is not? … And if you could replace the counter-fact with a different one … you know, failing to buy a condom means I am a lousy lover … that is so powerful … change the meaning of the event, get it to be about something else." So, if the current counterfactual is that not wearing a belt means you are rebelling against the government impinging on your personal freedom, change the meaning of not wearing a belt to something less desirable (e.g., being stubborn or stupid).

Make safety belts serve a different purpose

Related to the idea of reframing the meaning of safety belts, panelists also thought it might be helpful to somehow redesign belts so that they served a practical purpose (i.e., so that you could wear a belt for reasons other than safety). For example, panelists thought fasteners could be created that easily attached to and were removable from belts. The fasteners could be decorated with first names, team logos, slogans, Greek letters, or anything else that allows belts to be "self-expressive rather than self-defensive," and "show your personality by wearing a belt." Panelists thought a corporation might want to sponsor this "seatbelt garb," and saw it as similar to the personalization you can affix to a cell phone: "Sew little Velcro sleeves with your name on it, and the sleeves can then fold over the seatbelt … and you can even do it in reverse lettering so that people in the rearview mirror can see." Alternately, panelists thought safety belts could be made more practical in some other way, e.g., by including a pocket for change or a cell phone (although panelists cautioned that promoting cell phone use while driving is not a good idea).

Reframing perceptions of who wears a belt

Another suggestion panelists had was to reframe the perception of who wears safety belts. In general, they thought the image of belt wearers should be cool, stylish, and forward thinking. One way to change the image of belt wearers is to associate belt use with a celebrity spokesperson.[5] Panelists had two main suggestions for types of endorsers. The first type of endorser is a professional racecar driver (e.g., Dale Earnhardt, Jr.). Panelists thought that having a professional driver as an endorser could be successful because it reinforces the notion that smart people who take driving risks wear safety belts. The second type of endorser panelists

[5] The NHTSA moderator noted that there is some reluctance to use spokespeople because of previous bad experiences with this technique (e.g., endorsers getting tickets for drunk driving). However, this technique may be worth revisiting if the genre of the celebrity reinforces the message (i.e., do not just use famous people, use specific types of famous people).

recommended is a professional "tough-guy" athlete. The message this type of ad would send is that wearing safety belts is not "wimpy." Discussion on the topic of endorsers included:

- "You have Dale Earnhardt, Jr., in a commercial endorsing safety belts. And saying, 'You know, if you enjoy driving, that is great. I enjoy driving. And also, you don't have to be crazy.' And, in effect, reframing it and making it in some sense a positive thing rather than a fear thing. It is an overcoming fear thing, which is the motivation for the NASCAR world, I think. It is the heroism of overcoming fear."
- "Someone like Dale Earnhardt. I mean, 'Yes, that is right. I am doing this; this is my job. But I take care of my family by wearing a seatbelt.'"
- "Your Dale Earnhardt type of guy [who] deliberately risks his life could be a strong spokesperson … the script would say: 'I do this for a living. I have to. But otherwise, I take care of myself. You should too.'"
- Get an NFL player, e.g., an offensive lineman, "who is massive and has a reputation for toughness. If he puts his seatbelt on in a car ad, he is saying something about protection. He protects the quarterback."

Panelists also suggested showing ordinary people in a conversation about belt use, where non-users were called out as abnormal or undesirable. For example, they suggested the image of beautiful women discussing whether they would date a guy, and having one tell the other, "No, he is so stupid, he won't even wear his seatbelt." This is one way of reframing the counterfactual.

Positive reinforcements

Panelists also discussed the idea of providing positive reinforcements for safety belt wearers as a means to encourage more people to wear their belts. This idea was a bit more controversial in the group, however. Some panelists worried that such an approach could send the message that belt wearing is abnormal, which could undercut NHTSA's efforts. These panelists cited psychological research on the effect of calling attention to a behavior: "It communicates that it is a non-normative behavior … so you might be backfiring." Additionally, there was some sentiment that "it is a terrible low when we have to find normal … behavior as being the thing that we actually hold up as heroism." However, other panelists thought this approach was worth taking because it might be the only way to get some people to wear belts (and thus save lives): "What if we actually have to do that to turn the tide?" Panelists suggested the following incentive approaches:

- Have a contest or prize for the best safety belt art or decorative safety belt;
- Work with insurance companies to offer a discount for belt wearing;
- Have police officers give prizes for safety belt use, e.g., free gasoline or tickets to a football game (although several panelists noted that they would be irritated to be stopped by the police for this reason);
- Have a radio station do a promotion to award belt wearers and encourage the media to cover this promotion; and,
- Install "seatbelt cameras" that catch (and reward) people who wear safety belts.

Direct influence and changing norms

Simply asking people to do something is one way to increase the prevalence of behaviors. Thus, panelists suggested that NHTSA might try the direct hire approach, e.g., pay teens to tell others

to wear their safety belts. Alternately, NHTSA might have a campaign whose main message is "ask your friends to wear their belts." A benefit of this approach is that it reinforces the idea that belt use is the norm, which should then lead to more belt use: "I think one easy answer to increased anything use, seatbelts included, is a communization of the behavior."

Increased cognition

Another strategy the experts thought would be helpful is to encourage people to be more conscious of their behaviors in a car. For example, the experts suggested that NHTSA could encourage people to think about their starting routine in a car and to make belt use a part of this routine. In addition, the experts suggested that it might be helpful to encourage self-reflection, e.g., how much do you value your own life? The panelists also suggested encouraging thinking about zones of comfort. In other words, ask people to think about why they wear their belts in some places but not others (e.g., they wear it on a highway but not on the block where they live). Calling attention to these irregular belt use behaviors is one way to make people more conscious of how and when they wear their belts, and increased consciousness could lead to more belt wearing. Another way to encourage thought is to ask people to think about "what-if scenarios." For example, ask people to think about what it would be like to be in a crash. Such a campaign does not need to tell people to wear their belts; people will arrive at this conclusion if they imagine a crash: "If you ask them to think about seatbelt usage in a crash, there would be absolutely no disagreement that it would be a good idea to use the seatbelts. And once thinking about that, that is when you ask them for the commitment, 'Are you going to use your seatbelt next time?'"

An additional cognitive approach that could be encouraged is thinking about the future. As one expert said, "I am a great believer in anything thinking about the future. Counterfactual thinking, pre-factual thinking, anticipated regret, imagination and explanation, predictions of future behavior … I think those things have real impact on subsequent behavior." This expert described a possible anticipatory regret scenario as it applies to belt use. In this scenario, he asks drivers to imagine how much regret they would feel if they did not use a belt and were in a crash versus if they used a belt and were never in a crash:

> Just imagine that you failed to use your seatbelt, [and] a cement truck went through a red light, crashed into you, and you were paralyzed. How much regret would you feel? … Studies show that you would have been far less injured if you were wearing a seatbelt … [Then] imagine if you clicked your seatbelt every time you drove for the next three years, and you never came close to having an accident … How much regret would you feel?

Leading people through such a scenario may have a powerful impact; this method has been shown to work with other behaviors, and might work with safety belts because "in the near future, people would be much more concerned about the negatives of seatbelt usage, the hassle. But if you ask them to think about it in the far future, the benefits come much more into focus."

Use of images

In addition to encouraging cognition, the experts suggested that it might be productive to encourage people to visualize images related to belt use or to create such experiences for them using virtual reality technologies. There are several different directions such images could take.

One direction is to encourage people to create alarming images that make crash experiences more real, e.g., to think about what it would be like to be in a crash. Such images can be very powerful. For example, one panelist described an image he started to get in his head which made him more cautious backing out of his driveway: "I started to have this image of the little kid who is next door, who is toddler age, walking in back of me … it is an exaggerated image, but it is very effective behavior control." Such images could also be flashed on a video screen in a car. Moreover, some other feature in a car (e.g., a sound) could encourage people to think before acting. The idea is to create an opportunity for introspection "within 10 seconds of the seatbelt event," with the hope that such introspection would lead to more use of belts. Finally, panelists said that images could be created for people in a virtual reality environment. Such an environment could give people the opportunity to experience what it is like to be in a crash, or remind them of the unpredictability of the driving experience.

Find and capitalize on moments where change can occur

Panelists assumed that there must be moments when people are more likely to think about wearing their safety belts. Thus, another suggestion was to seek out these moments and attempt to capitalize on them. For example, people might be more inclined to think about belt wearing:

- After seeing a crash;
- After a personal close call;
- After seeing a police officer writing a ticket, or a reminder sign about belt wearing;
- After getting in a fender bender; or,
- After getting in a serious crash.

If there was some way to reach people at these moments and encourage them to think about and commit to using their safety belts, this might be an effective intervention technique. One possibility is to encourage highway patrolmen to put safety belt reminder signs around the scene of a crash, although panelists were not sure if this would be effective. In addition, one panelist cautioned that any approach like this would be difficult to implement: "I don't know how easy it is to target people in that narrow window, because at that narrow window they are often not having a conversation with NHTSA."

Design cars to promote belt use

Panelists had several suggestions related to car design that might increase belt use. One approach is to make all safety belts work the same. This could increase belt use by making the behavior easier to implement: "Make sure all seatbelts have exactly the same mechanisms and so on, you could probably increase seatbelt use quite a bit." Another suggestion was to engineer safety belts to give people positive feedback: "So when people put the seatbelt on, they get some positive feeling … it smelled good. Or, you know, you got a massage as well." Finally, they also suggested that belts could be easier to put on: "You can imagine … someone who studies automaticity … working together with somebody who works on seatbelts … That might be a practical thing to look at."

Don't abandon enforcement efforts

Finally, panelists emphasized that while all these suggestions might have some impact, NHTSA should continue to emphasize enforcement. Panelists mentioned two main reasons enforcement is effective. One reason is that a powerful tool to encourage belt wearing is social norms, and an

enforced law is one of the strongest ways to reinforce a norm. Second, research suggests that getting a ticket is an effective motivator: "[Getting a ticket is] a highly likely outcome that is kind of mildly negative … and that is a much better motivator because it is not so scary you don't want to think about it. It is something you could easily imagine happening … all the psychology would tell us that that would be a lot more effective [than focusing on fear or death], and it is."

RECOMMENDATIONS SPECIFICALLY RELATED TO UNCONSCIOUS DEFENSES

At the end of the discussion, panelists were specifically asked to discuss four main kinds of unconscious defense mechanisms (repression, denial, rationalization, and fatalism), and to talk about how these defense mechanisms might be overcome when encouraging belt use. In setting up this discussion, the NHTSA moderator commented that people find "any number of reasons why they will never, ever wear a seatbelt." One reason for this, he explained, is that people simply do not like to think about how risky traffic is: "You have all these wonderful defense mechanisms, all these wonderful unconscious things where people are trying to get rid of that anxiety. Traffic is a threatening situation, folks. I don't know if you feel that everyday, but when you study it, you realize what it is like." This threat can be removed or minimized via the use of unconscious motivators. As one panelist said: "The purpose of all these defense mechanisms is to take it away from the risk perception issues, so you don't have to face your imminent mortality. These mechanisms are very, very good at that."

Panelists noted that overcoming defense mechanisms is difficult for a variety of reasons.

- Defense mechanisms are abundant: "People have a lot of defense mechanisms … If I smoke, but exercise, [I will focus on] … the benefits of exercising. If I don't smoke and sit around all day, then it will be all about how risky smoking is."
- It is difficult for people to admit that they do not have control: "Personal control and personal choice are pre-eminent psychic motivators. And we suffer, I think, from the myth that we can be, and must be, in control at all times … All of us know how untrue that is in our ordinary lives, but still, it is the prevailing myth."
- Defense mechanisms need to be replaced, not merely gotten rid of: "We all need illusions … [the trick is to] supplement these illusions with something that is actually safe and securing."
- Defense mechanisms are not well understood: "Endogenous unconscious processes are, obviously, much more difficult to deal with. And, those are the ones we are talking about here … things that originated by whatever is going on with the brain, our desires, motivations, repression, and so on. And those, I don't think, there is a good handle on empirically."
- Overcoming defense mechanisms on a mass scale is especially challenging: "The balance of that is so subtle, and you can do it in psychotherapy if you are good at it, right … it is a little harder to do with a mass market, but there may be a way. And you have some very talented people working on the humor part, and so on."
- Different defense mechanisms require different approaches: "I think disturbing people is, actually, a good thing to do when you are doing a psychodynamic therapy … [You can't do this on a mass level,] but we could put out hooks that would make people question

> what they were really going after [when they do not wear their belts]. Are they going after it for the sense they have total control, [and] can drive around at fantastic rates of speeds? Or [do] they really have a secret fear that they might get killed? … We need to have multiple approaches [for each of these reasons]."

This section of the report offers a description of the various unconscious motivators that might be at work as they pertain to safety belt usage. Additionally, suggestions for how to overcome each defense mechanism are provided

Overcoming repression

The first unconscious defense mechanism panelists talked about was repression. Repression was described as "I don't know nothing about nothing," "I just don't have the habit," or "I don't want to think about it." In other words, repression is characterized by a lack of conscious consideration of belt wearing as a means to reduce the risk of being injured in a car crash. People who use repression as a defense mechanism deflect or ignore information about belt wearing because it is seen as non-relevant: "This is for someone else." Panelists described repression as a very strong, primitive response, and speculated that deep-seated repression about belt wearing likely stems from a fear of death. On some level, putting on a belt makes you think about mortality.

- "Seatbelts may make them think about these horrible things that happen … People want to … not have to think about that."
- "The repressive aspect … is that when you buckle up, or when you are confronted with a seatbelt, you are confronted with mortality, and with death. And that provides the oomph for me to start repressing."
- "The thought of that mortality … is so thoroughly repressed that it is only the action [of wearing a belt] that can manifest [the fear of death] … In a way, that form of repression is actually … an assertion of immortality."

To deal with repression, panelists said you must break through it. As one of the experts said, "You are talking about repression as a form of refusal to take in something which is not already inside the psychic container, so to speak, right? And with repression at that level, until you can get it to the pre-conscious level … you haven't got a chance of getting it into the conscious. So that is where some practitioners use shock or surprise to break through the repression … they can genuinely not be reached by, I think, a conscious appeal." For example, a clinician could use a confrontation talk-therapy approach to "reveal the anxieties and then deal with them head on." In such a psychotherapy setting, a clinician might also analyze behavioral themes and look for ways to break through revealed patterns to change thoughts. The work requires "redesigning people's filters," which the panel described as very difficult to do. Another approach is to delve deep into the repression and find out the causes for it and address those head-on: "I think there is a lot of benefit to finding out why people are reluctant to doing something and addressing those reluctances more directly." This technique is best accomplished in a therapy setting, however.

One suggestion panelists had to deal with repression on a mass level is to talk about belt wearing in connection with something other than fatality avoidance. One panelist noted, "You don't have to address the issue that you are repressing in order to wear your belt." Panelists suggested that NHTSA "put it in some other realm." For example, the focus could be on milder outcomes such

as getting a ticket or avoiding injuries. Panelists also suggested that the cognitive story about belts could be flipped: "Script writers are highly skilled at this kind of thing, you can flip the meaning of any particular theme." One way to flip the belt story is to make belts "for your future." In other words, "It is not to stop you from having a future, it has to be seen as for your future."

Panelists noted that dealing with repression at a mass level is difficult. Repressors themselves are fragile, and require "some very special handling in order for them to face the issues that they have repressed." Thus, extensive one-on-one talk therapy is the best way to deal with repression (although repressors are unlikely to see the need to seek such treatment). Moving belt use to a non-risk realm as described above is one possible solution to this problem that could be implemented at a mass level. However, one of the experts worried about this solution: "If you take it out of the realm of risk, you may get the repressors to suddenly start using seatbelts, but those semi-rationale people, who kind of do it because it might save their life, you know, I am going to say, 'Screw it. Who cares?'" Additional research is required to determine whether talking about belt use in a non-risk context could have unintended negative consequences among current users.

Overcoming denial

Panelists talked about three main forms of denial related to belt wearing. First, people may deny the existence of a risk: "I never feel at risk. That is because most of the time I get in the car … nothing happens to me. So I have learned over time that a car is perfectly safe." The second form of denial is: "I will never be in a crash. I'm a good driver." This form of denial is predicated on the notion of personal control over crash outcomes. In other words, people are reluctant to admit that crashes are "totally, 100 percent, out of my control." The final form of denial is that safety belts are ineffective, e.g., the persistent myth that people do better in a crash if they are not wearing their belts.

All these forms of denial (and the second form in particular) are connected to illusions of control: "We know that these perceptions of control are illusions. We know that they [the perceptions] can fall apart at any minute. On the other hand, we know how valuable illusions of control are … So the trick is … to focus … [on] an area where you could see [giving up some] control [as] okay, but not give up your general illusions." Thus, one way to overcome denial is to somehow break through this illusion of control, but to do it in such a way as not to create resistance. For example, reframe safety belts in terms of positive control, i.e., while you cannot control whether you get into a crash, you can control what happens if you are in a crash: "Let people know that the only way they are in control of their life is by using seatbelts. And then it is by not using seatbelts they are really out of control."

Another way to gently alter these illusions of self-control is to add information about other people. In other words, even if you are an excellent driver, other people may not be: "You are a good driver, but have you seen my brother?" Panelists saw this technique as a non-threatening way to create a potentially effective message. It capitalizes on a notion that is familiar (things happen which can catch you off-guard) without being confrontational.

- "Defensive seatbelt use is against what I can't control [the actions of other people] … That seems to me to be an interesting spin on whether I should put my seatbelt on. If I put

my seatbelt on thinking in a superior fashion, 'Well, of course I will never have an accident that I cause,' it is one thing. But, if … I am putting it on because I don't know what those other idiots out there are doing [that is something else]."

- "To me, it is a slightly different take. And it might be quite reasonable to say, 'Okay, I am in control today, but I can't control what … other people are doing.'"

To encourage such defensive use of belts, panelists suggested asking the question, "Do you think you will never be in an accident caused by anybody else?" Additionally, they thought that showing "sufficiently bad behavior" on the part of other people might be a good motivator. For example, have a commercial with people talking on cell phones, putting on makeup, etc. while driving and show another driver watching all that, shaking his/her head, and buckling up.

Another way to overcome denial is to give people the experience of being out of control, e.g., by being in a crash caused by someone else. Some research suggests this might work; e.g., Bradbard et al (1998) reported that drivers say they are more likely to put on their belts when they see other people driving recklessly (i.e., when they are reminded that other people can affect their safety). Such a technique would help to break the empathy barrier. The expert panelists cited research that has shown that "putting [people] into the situation … having them make the bad decision … and then have the experience of it" facilitates learning. In this case, panelists suggested creating a virtual reality program, a video to be shown at the DMV, an Internet site, or some other visual simulation that could create the tactile experience of being in a crash caused by someone else. To reinforce the point, this experience could be shown from the viewpoint of someone both with and without a safety belt on. Alternately, panelists suggested that real people telling their stories of being in crashes caused by someone else, or actual footage of such crashes occurring (e.g., from police chase videos), may also be beneficial in breaking through denial.

Finally, panelists said a way to deal with denial is to move it in the desired direction. One panelist described how this technique was used by a well-known therapist: "He would take whatever they [clients] did, and he would move it in a [helpful] direction." For example, the therapist would not challenge a client's belief that he was Jesus; instead, he would ask him to do some carpentry work. The primary benefit of this technique is that it does not create resistance.

Overcoming rationalization

As it relates to this discussion, rationalization is exemplified by the ability to invent reasons why belts are unnecessary. For example, "I wear a belt when I need it," or, "Other people may need to wear a belt, but not me."[6] Panelists said that it was important for NHTSA to identify whether such rationalizations are a cause or a consequence of not wearing belts. In other words, do people not wear belts for the reasons they identify, or, do people simply come up with rationales when asked to explain their behavior (and remain unaware of the actual reasons, e.g., repressed fear of death)? This characteristic of rationalization (i.e., the inability to gauge whether identified rationales are causal) creates a significant problem in overcoming this defense mechanism: "Rationalization is the unconscious king of defense mechanism. It is … the conscious supplying of reason and cause. It sounds good, except that we know from tons of research that people who introspect about their reasons are terrible about it."

[6] This form of rationalization is closely related to denial, e.g., denying your personal risk because of your own uniqueness.

In the case where rationalizations do expose the reasons for the behavior, panelists said the way to overcome them is to make people run out of rationalizations and/or break the rationalizations. This is accomplished in therapy through poking holes in the rationalizations and by asking people to list their rationalizations until they run out of them. As one panelist said, "Eventually, people run out of rationalizations, and, actually, in fairly short order." This is somewhat difficult to accomplish on a mass level, although it might be possible to poke holes in the most common rationalizations through an advertising campaign. For example, if a common rationalization is that part-time users "wear a belt when they need one," that argument could be undercut by pointing out that no one would do that with an infant (e.g., by buckling and unbuckling your baby). In the case where rationalizations are non-causal (i.e., offered after the fact), a different approach is required to get at the actual root cause of the behavior. In that case, one panelist said: "I'm not sure that taking away somebody's rationalization is really the best way."

Another way to think about rationalization as it pertains to belt use is to think of positive rationalization: i.e., "provide rationalizations for clicking your seatbelt … rather than take away the rationalizations." Examples of such positive rationale include: "I am wearing this because I am trying to stay away from the cops, not because I am scared I am going to be in a crash," and, "My mother loves me, so I'm wearing a seatbelt." This technique is effective "if what you are really fighting against is the kid in the car who doesn't want to put their seatbelt on because it is not cool." This technique cannot convert people to the desired behavior, but it can give people who have already decided to adopt the behavior a tool to resist peer pressure, and, thus, better enable them to maintain behavioral change.

Overcoming fatalism

Finally, panelists talked about the influence of fatalistic beliefs on belt wearing behaviors. Panelists noted that this discussion was about negative fatalism, which is characterized by a sense of powerlessness over one's destiny: "I am convinced that the hour of my death is fixed and there is nothing I can do to change it." Negative fatalism is more likely to be expressed by members of groups with less social power. People holding such beliefs see no benefit in wearing a safety belt. Positive fatalism, on the other hand, is the core belief that you do not have to worry about things.

One panelist noted that, "If you consider [negative] fatalism a worldview, I am not sure it is a good point for intervention." However, one suggestion related to overcoming fatalism was offered. The suggestion was not to attempt to overcome a belief in fatalism, but instead to use that belief to encourage the desired behavior: "Under Calvinism, whether people are going to heaven or hell is determined at the moment of their birth … but, the way you behave on earth is diagnostic of how you have been chosen already … so people adopt the good behavior because it is diagnostic." Thus, panelists suggested that people be encouraged to wear their belts as a means of demonstrating their destiny to live a long life, because long life is marked by certain behaviors. To wit, "You don't need to change their belief in fatalism; you just have to tell them that their behaviors are diagnostic of when they are going to die."

FOLLOW-UP RESEARCH RECOMMENDATIONS

At the end of the discussion, panelists were asked to make recommendations to NHTSA regarding future research. They offered three main suggestions, each of which is discussed in more detail below (several of the panelists also offered that they would be interested in participating in any follow-up research should an additional expert panel be convened). All of these suggestions were consistent with the panelists' overall emphasis on audience research. It is worth noting that the experts did not recommend social marketing research such as focus groups, because such research relies on individual self-observation. Self-observation is not typically informative as it relates to unconscious defense mechanisms. Such defenses, by their nature, are not consciously known. Instead, the experts called for research with measurements captured closer in time to the moment when behavioral decisions occur (thus reducing one form of response error), as well as for analysis of existing data to better quantify the number of people who may be utilizing defense mechanisms related to non-use (e.g., via a detailed analysis of survey respondents who agree that "putting on a seatbelt makes me more likely to worry about being in an accident").

The most frequent suggestion was that NHTSA study the factors that motivate people to wear or not wear belts; i.e., what is the basis of this behavior? Panelists suggested that this research could use logs, journals, think-alouds, or some other technique to capture people's thought process at the point of wearing or not wearing a safety belt. However, they emphasized that this research must be done at the point of decision: "Asking people about the reasons they have for making decisions is something that has a very fast decay time;" "People forget what went through their minds in 3 to 10 seconds, depending on how preoccupied they are with other things." The objective of this research is to identify patterns and/or frames of mind where people wear or don't wear their belts, and use this information to determine which approaches are most likely to be successful.

A related suggestion was to look at part-time users in more detail. Existing NHTSA survey data could be used to build profiles of part-time users; e.g., to classify and typify the reasons people offer for part-time use. While these data are not perfect (e.g., people may not accurately report why they do or do not wear belts), such a classification could help guide selection of intervention approaches from among the suggestions offered in this report. For example, existing data may be able to identify whether repression, denial, rationalization, or fatalism is more common as a reason for part-time use of belts. Subsequent interventions could be tailored to reach the largest possible audience of part-time users. In the same vein, panelists suggested that NHTSA identify and study people who switched from part-time to full-time belt use, and look for the motivating factors that led to this "turning point." As one panelist asked, "What was the critical load? What was the critical event or whatever that got them?" This research may also identify windows of opportunity where people are more receptive to messages about safety belt use.

Finally, panelists said NHTSA should spend more time describing what it is about safety belt use that makes it a unique behavior: "What about seatbelt use is … fairly unique to this particular behavior? And what about it is more generic and general of other things? … I think that question will get you a long way towards thinking about it productively." One way to do this is to

research the places where belts tend to be either worn (e.g., on highways) or not worn (e.g., in driveways), and then to look at the characteristics of these places. Additionally, panelists suggested that research on transition zones (places where people either buckle or unbuckle their belts) could shed light on this behavior. Such research could be conducted as a subcategory to research on why people do or do not wear their belts.

SUMMARY AND CONCLUSIONS

This report has identified a variety of approaches to overcoming the interference of unconscious defense mechanisms in the use of safety belts. An overarching conclusion is that there is no one solution to overcoming unconscious defense mechanisms. Instead, there are a variety of remedies that may be helpful, depending on the mechanism being employed. Table 1 lists several common reasons offered to explain nonuse of safety belts, the defense mechanism associated with each reason, and suggestions provided by the expert panelists for overcoming these defense mechanisms and promoting belt use.

Some of the techniques suggested in this report and Table 1 have been attempted previously by NHTSA. (This is not surprising given that the expert panelists were specifically chosen for their naiveté in regard to safety belt issues.) However, even the suggestions that have been attempted previously may be worth revisiting in light of this discussion, as previous attempts may not have been informed by this kind of analytical approach and may have included or left out critical aspects.

Table 1: Suggestions for Overcoming Defense Mechanisms Related to Belt Use

Defense Mechanism	Reason for Not Wearing a Safety Belt	Suggestion
Repression	Wearing a belt causes you to think about death.	• Do not focus on fatalities; focus on milder outcomes like getting a ticket or being injured. • Tie belt wearing to promotion outcomes, not prevention outcomes (e.g., wear a belt to give other people peace of mind, or do it for your friends or children). • Flip the cognitive story about belt wearing; make it future-oriented. • Market belts as serving a different purpose; e.g., fashion statements. • Market belts as a way to overcome fear; e.g., show racecar drivers wearing belts.
Repression	I don't have the habit; I never think about it.	• Use shock or surprise to break through the repression (hard in a mass setting); humor may help.
Denial	Any expression of denial.	• Don't challenge the particular belief (e.g., "I'm a good driver). Instead, work with that belief to move people in a different direction.

Defense Mechanism	Reason for Not Wearing a Safety Belt	Suggestion
Rationalization	Any rationale; e.g., other people may need a belt, but not me. I'm special.	• Determine if the rationale is causal; i.e., is the excuse the real reason or a post facto explanation? If it is a real reason, break the rationale by poking holes in it and causing people to run out of excuses. If it is only a nice-sounding explanation, probe for the real reason (e.g., repressed fear of death) and act accordingly.
Denial/ Rationalization	Belts are not helpful.	• Show visualizations of people in crashes both with and without a belt. • Ask people to think through "what if" scenarios about being in a crash and ask whether they would want a belt on in that situation.
Denial/ Rationalization	Wearing a belt is admitting that you are not in control of your life.	• Reframe belts as something that frees you from mild anxiety (e.g., worrying about getting a ticket). • Reframe belts as way to exercise positive control (e.g., over what happens to you in a crash). • Reframe belts as a way to give you more control over the driving experience (e.g., enjoying the ride). • Connect pleasure with the notion of control (e.g., via an attractive spokespeople). • Gently remind people that they are not always in control (see next item).
Denial/ Rationalization	I'm a good driver, so I won't get in a crash.	• Encourage cognition about scenarios where other people cause a crash, or use virtual reality to create the experience of being hit by someone else. • Gently remind people that others are not always good drivers. For example, show others engaging in bad driving behaviors, have people talk about the experience of being hit by someone else, or ask the question, "Do you think you will never be in an accident caused by someone else?"
Denial/ Rationalization	I can decide when a belt is needed.	• Encourage anticipatory regret. That is, ask people to think about how much regret they would feel if they always wore a belt and never got in a crash vs. if they were not wearing a belt and did get in a crash. • Ask people to think about loved others engaging in such behavior to highlight the hazard.

Defense Mechanism	Reason for Not Wearing a Safety Belt	Suggestion
Rationalization	Wearing a belt is something "dorks" do.	• Change the image of who wears belts: belts are fun, easy, popular, and cool. Be a part of the tribe. • Replace the counterfactual: only idiots don't use belts. • Show heroes/tough guys wearing belts. • Provide positive rationale for wearing belts, e.g., "My mother loves me."
Fatalism	The hour of my death is fixed.	• Encourage people to see good behavior as diagnostic, e.g., wearing a belt is one way to show that you are marked for a long life.
Other issues panelists believed were important	People resist being told what to do.	• Don't say wear your belt; it is not necessary (people know they are supposed to wear their belts). • Use humor and unexpected approaches. • Give positive reinforcements for belt wearing.
Other issues panelists believed were important	Existing messages have to do with the experts' reasons for wearing a belt, not the audience's reasons.	• Market belts as a way to reach driver's goals, e.g., getting to your destination without any problems. • Market belts to be consistent with the self-image of non-wearers (e.g., belts make you dependable for your friends).
Other issues panelists believed were important	Belt wearing is an automatic behavior.	• Do things to encourage people to be more conscious of the decision making process in the moment they fasten a belt; e.g., use reminders. • Ask people to think about their "zones of safety" and why such zones exist. • Capitalize on moments where people may be more open to this message (e.g., after a close call).

A next step is to conduct additional research to determine which reasons for non-use of belts make sense as an intervention point, and then to proceed with targeted interventions for specific audience segments. The following factors should be considered in making such a selection: (1) the likelihood of the intervention being successful; (2) the ease of implementation; (3) the size of the target audience likely to be reached by the intervention; and, (4) whether other segments of the population are likely to be affected (either positively or negatively) by the intervention. For example, the best intervention points are ones where a substantial portion of nonusers offer the same reason for not wearing belts, where the intervention is likely to be successful and easy to implement, and where the campaign/message will have a neutral or positive impact on the belt wearing behaviors of people outside the target audience.

The research team's initial assessment of these suggestions is that some are likely to be actionable sooner rather than later, either because they can be implemented relatively easily or

because they are likely to have immediate positive impacts. A "short list" of suggestions for immediate consideration includes:

- Identify new terminology for belts that is less threatening to personal control. In particular, avoid the word "restraint" in all public communications.
- Develop campaigns that focus on "other drivers' bad behaviors" as a reason to wear your belt.
- Consider campaigns that move away from telling people to wear their belts. Both the literature review and the panel discussion suggest that telling people to buckle up may engender resistance. Instead, create campaigns that lead people to the conclusion that wearing a belt is a good idea without actually using these words (e.g., show people watching other drivers engage in "bad behaviors" and then buckling up).
- Consider a campaign that pokes holes in the rationalization that "I can decide when I need to wear a belt" by demonstrating the fallacy of this idea; i.e., people who claim to hold this belief likely would not buckle and unbuckle their loved ones as they move through traffic situations.
- Consider focusing on milder negative outcomes of non-belt use, and even switching to a promotion focus (e.g., wear a belt to give other people peace of mind).
- Consider reframing belts in a more positive light. For example, belts relieve you from worrying, allow you to be in control over what happens to you, and give you more control over the driving experience.

While the research team believes the other suggestions offered by the panelists have merit, it appears that these suggestions require additional research before they can be implemented. A research program addressing some of these issues could benefit NHTSA by providing useful insights to better target messages for part-time safety belt users. As noted by the panelists, given the long period over which NHTSA has been promoting the use of safety belts, these remaining part-time users likely represent a hard to reach portion of the population. Reaching this group of people may require new and different approaches. A research program focused on unconscious defense mechanisms may provide the data needed to create such approaches. Such a research program might begin with the suggestions offered by the panelists. As discussed in the previous section of this report, these suggestions include: (1) examine the actual moment of decision-making (as opposed to recollections) to better determine motivators related to belt use; (2) concurrently, examine the reasons part-time users currently offer for non-use of belts (this research can be used to suggest which defense mechanisms may be most frequent, guiding future research directions); and, (3) describe what it is about safety belts that make this a unique behavior. Once this initial phase of research is conducted, additional research can be conducted as needed.

APPENDIX A: Expert Panelists and their Affiliations

Bernard J. Baars, Ph.D.
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APPENDIX B: Meeting Agenda

Expert Panel Meeting:
Situational Safety Belt Use:
Overcoming Unconscious Motivations

September 12, 2005
Embassy Suites Hotel at the Chevy Chase Pavilion
4300 Military Road NW.
Washington, DC 20015

Agenda:

8:30-9:00 a.m.	Continental Breakfast
9:00-9:30 a.m.	Welcome: Jesse Blatt, NHTSA *An informal history of NHTSA's efforts to encourage safety belt usage*
9:30-10:00 a.m.	Introductions *Panelists briefly describe their research interests and expertise*
10:00-11:45 a.m.	General Discussion *Unconscious motivators (defense mechanisms): What experience do panelists have dealing with unconscious motivators? How are they manifested? How can they be overcome?*
12:00-1:00 p.m.	Break for lunch
1:00-3:00 p.m.	Focused Discussion *Continuing discussion of unconscious motivators: What are the specific motivations and mechanisms pertaining to unconscious barriers that need to be addressed for an issue such as safety belt use? How can we encourage the adoption of appropriate coping responses?*
3:00-3:15 p.m.	Break for snacks
3:15-4:30 p.m.	Application to Safety Belts *Panelists generate ideas on how unconscious thoughts can be overcome in the specific case of promoting the use of safety belts or other similar issues*
4:30-5:00 p.m.	Wrap-up and Closing Thoughts *Panelists offer their thoughts or reflections on the discussion*

APPENDIX C: Literature Review

Converting Ineffective Behaviors Motivated by Unconscious Psychological Defense Mechanisms into Consciously Determined Effective Coping Behaviors

The National Highway Traffic Safety Administration contracted with The Media Network, Inc. (TMN) to conduct this review of research on the topic of converting ineffective behaviors motivated by unconscious psychological defense mechanisms (e.g., denial, repression, and rationalization) into consciously determined effective coping behaviors.[1] NHTSA's interest is in the context of safety belt use in automobiles. While many people now routinely wear safety belts, some do so only in the presence of enforcement efforts, and others use safety belts only when driving long distances, in bad weather, or in unfamiliar areas. NHTSA researchers have hypothesized that these part-time wearers use defense mechanisms (e.g., repression, denial, rationalization) or fatalistic beliefs (e.g., "when it's my time to go, I'll go") to avoid conscious consideration of the true consequences of non-belt use. NHTSA's hope is that this literature review, in combination with an expert panel meeting NHTSA is sponsoring, can assist in the development of innovative approaches to overcoming the interference of such unconscious motivations, thus leading to an increase in the adoption of appropriate coping behaviors in response to real safety threats.

In addition to safety belt usage, the question of how unconscious motivators may interfere with the adoption of appropriate coping behaviors has broad implications for a variety of other safety threats. For example:

- Why do people at risk for HIV/AIDS fail to take protective behaviors (i.e., wearing condoms) even when they know that condoms reduce their risk of becoming infected?
- Why do industrial workers fail to wear protective hearing devices even though they know that excessive noise can lead to hearing loss and that protective devices reduce that risk?
- Why do sunbathers fail to wear protective sun block even though they know that use of such sun block reduces their risk of acquiring skin cancer?

Numerous such examples could be provided on a variety of topics related to health, environmental, safety, and other societal issues. In such situations, the mere provision of correct "knowledge" is often inadequate to persuade the target population to adopt the correct coping response. In other words, knowing that a protective coping response exists is not sufficient to motivate the target population to take corrective action. Simply put, people do not always do what is "good for them," despite knowing that their behaviors put them at increased risk for adverse outcomes. This suggests that unconscious barriers may be a significant reason coping behaviors are not adopted.

[1] "Ineffective" refers to a failure to adopt a proven coping behavior (e.g., failure to wear a safety belt), while "effective" refers to the consistent adoption of proven interventions. While there may be instances where a failure to adopt an "effective" behavior leads to a better outcome (e.g., if a crash victim is thrown clear of a crash scene), such outcomes are statistically rare and will be ignored for the purposes of this discussion.

This project will identify and discuss the unconscious reasons for such seemingly irrational behaviors. In other words, what are the psychological defense mechanisms (e.g., denial, repression, and rationalization) that trigger these ineffective coping responses? More importantly, how can these unconscious reactions be overcome, thus leading to the adoption of effective coping strategies?

This literature review briefly examines seven areas of research related to this topic, followed by a conclusion section. These topics are:

1) Models of behavior change, with an emphasis on the role of unconscious thought in motivating behavior change;
2) The formation of risk perceptions in response to safety threats;
3) Precursors to message resistance;
4) How threat messages are resisted;
5) How to convert defensive reactions to coping reactions;
6) Case studies where ineffective coping responses have been converted to effective coping responses; and,
7) A summary of existing research on part-time users of safety belts, as a specific population to which the above research may be applied.

This review, as noted, is designed to serve as background material for a panel discussion with experts in risk communication, risk perception, social marketing, cognitive psychology, and psychodynamic psychology. There are two main purposes of this expert discussion: (1) to discuss how to convert ineffective behaviors motivated by unconscious psychological defense mechanisms into consciously determined effective coping behaviors, and (2) to generate ideas for NHTSA on how such ineffective coping mechanisms can be overcome in the specific case of safety belt usage.

Research Process:

To begin this review, relevant articles, case studies, and book chapters were identified. Two Ph.D. candidate graduate students hired by TMN to assist in this project conducted the literature search. The graduate students conducted a search for relevant articles, chapters, and other information, using the following criteria:

- Any theoretical or clinical literature on anxiety, risk perception, and fatalism in response to safety threats;
- Any theoretical or clinical literature on converting defensive mechanisms to coping reactions, particularly in response to risks;
- Any theoretical or clinical literature on adopting appropriate coping actions to ameliorate the consequences of risky events;
- Any theoretical or clinical literature that addresses the key question: How do you change defensive behaviors to coping mechanisms and apply them to the world of safety belt usage? Ideally, case studies of successful campaigns at a societal level were desired; or,
- Any theoretical or clinical literature that addresses the key question: How does behavior change happen for unconscious behaviors? Ideally, case studies of successful campaigns at a societal level were desired.

The graduate students searched for articles in various academic databases (e.g., ProQuest, PsychArticles, Sociology Abstracts, and Medline), as well as in specific academic journals (e.g., *Risk Analysis* and *Cognitive Psychology*). Additionally, relevant literature was identified through personal communication with experts in this field, and through Internet searches for relevant information. In total, 162 citations were identified for this review. Each citation was indexed and summarized in an EndNotes database, and complete copies of each article were provided to TMN. The TMN Project Director prepared this review. A subcontractor from Low + Associates served as a reviewer.

Of these 162 citations, only about 60 were found to be relevant to this review, and, thus, are discussed here. Even among these relevant citations, however, there was little specific research on unconscious defense mechanisms as these mechanisms pertain to mass social change. Altering unconscious motivations has historically occurred in a therapeutic setting via extensive personal intervention, and appears not to have been attempted frequently, if at all, in a mass setting such as that required by NHTSA for any eventual campaign. This presents both a challenge and an opportunity for NHTSA and the expert panel, as overcoming unconscious barriers to persuasion at a societal level appears to be somewhat unprecedented.

Theoretical Models Related to Behavior Change:

This project and this review, ultimately, concern behavior change. Thus, this review begins by briefly describing several theoretical models of behavior change, with an emphasis on what these models have to say about the role of unconscious thought in motivating such change. In particular, what do various behavior change theories have to say about how to convert unconsciously motivated behaviors to rationally controlled behaviors? Please note: this review does not discuss theories that primarily assume behaviors are consciously governed (e.g., the Theory of Reasoned Action).

- Psychoanalytic Model: To begin, it is worthwhile to discuss Freud's ideas about the unconscious and behavior change. Freud divided the configuration of the mind into conscious, preconscious, and unconscious thought, with almost all mind space (75-80%) devoted to the unconscious (Neill, 2005). This makes the unconscious vitally important in cognition. Indeed, Freud saw most behaviors as being governed by unconscious thought: to wit, "we are governed by hidden mental processes of which we are unaware and over which we have no control" (Internet Encyclopedia of Philosophy, 2005). In Freud's model, unconscious thought is crucial to controlling behaviors. However, and most importantly, unconscious thought cannot be accessed voluntarily, but only through the techniques of psychoanalysis.

  APPLICATION: If Freud's thinking is correct, it is "bad news" for a project such as this one because Freud's theory suggests that only through a lengthy psychotherapy process can unconscious thought be revealed, understood, and changed. Thus, it would be nearly impossible to address or change unconscious thought for a mass audience. Freud's thinking, does, however, support the notion that unconscious thought may be a significant barrier to the adoption of appropriate reactions to safety threats. Specifically, this model emphasizes that people may resist appropriate coping responses for reasons they are not consciously aware of, which makes changing such behaviors more difficult.

- Stages of Change or Transtheoretical Models: The idea behind these models is that information related to behavior change will only be received and acted upon when message recipients are at the appropriate stage in terms of message readiness. The initial stage in this theory is pre-contemplation, where change is not being contemplated and/or is seen as unnecessary; fear, denial, and/or resignation are often present at this stage. The next stage is contemplation, where benefits and costs are considered. This is followed by the stages of preparation (small steps) and action (initiating the change). Even once the change has occurred, maintenance is required to prevent relapse.

APPLICATION: These theories temporally position unconscious barriers as occurring during the first stage (pre-contemplation). Merely addressing such barriers does not lead to behavior change; however, successfully addressing such barriers is seen as a prerequisite to the next stage: contemplation. Of interest here, this theory suggests that pre-contemplation is where unconscious barriers are most prevalent. The goal during pre-contemplation is to motivate thought about change (attempting persuasion before such barriers are addressed is thought to induce resistance). Zimmerman, Olsen, and Bosworth (2000) suggest motivational interviewing as one technique to use at this pre-contemplation stage. Such interviews should indicate empathy, and utilize thought-provoking questions (e.g., "What would have to happen for you to know that this is a problem?" or "What would have to happen for you to change this behavior?"). Again, the goal is not to directly induce the behavior change, but merely to increase readiness to change when action messages are encountered at the contemplation stage.

- Threat/Efficacy Models (e.g., Extended Parallel Process Model or Protection Motivation Theory): These models assume that responses to threats are based on a dual assessment of (1) risk/threat, and, (2) efficacy/ability to cope. The theories suggest that behavioral responses are based on the joint product of these two assessments. Inappropriate coping mechanisms are most likely to occur when threat appraisals are high but coping ability is low. In such situations, fear control, defense avoidance, or denial reactions are likely to occur.

APPLICATION: Unconscious barriers to change are most likely to occur, according to these theories, when threat appraisals are high and efficacy is low. Thus, the way to overcome these faulty strategies is to increase coping by increasing response efficacy (i.e., how effective treatment is) and/or decreasing barriers to coping (e.g., cost) (Neuwirth, Dunwoody, and Griffin, 2000).

- Mental Models Decision Framework Theory: This theory combines mental models research (looking at the topic-specific knowledge held by individuals) with expectancy value models (looking at how cognitive inputs combine to lead to decisions) (Hine, Summers, Tilleczek, and Lewko, 1997). In other words, when confronted with a behavioral decision, the theory assumes that people construct a mental model of the situation, and then "run" this model to produce likely outcomes. These likely outcomes influence behavioral choices.

APPLICATION: This theory assumes a relatively conscious decision making process, but this process occurs only after unconscious thought influences the production of a mental model. Therefore, it is in the construction of the mental model that unconscious thoughts can lead to biases, and, in turn, ineffective coping responses. To decrease the influence of these "incorrect" unconscious thoughts (e.g., thoughts that assign incorrect probabilities to risks), the theory says that communicators need to target information gaps in mental models.

Discussion:

Existing behavioral change models shed some light on this problem, but do not provide a great deal of insight into how to overcome unconscious barriers to change. At best, existing theories acknowledge that unconscious barriers exist, and that such barriers manifest themselves in the symptoms of denial, fear, repression, or avoidance. However, only limited guidance is provided by these theories on how to replace inappropriate coping responses driven by unconscious thought with consciously considered coping responses. Freud suggests that psychotherapy is the answer. Stages of change models suggest that such unconscious barriers should be addressed as the first stage to change, i.e., communicators should focus on getting people to recognize the existence of such barriers in a non-threatening and thought-provoking way. Threat/efficacy models suggest that inappropriate coping responses are most likely to occur when people feel threatened and unable to deal with the threat. Thus, the models emphasize enhancing efficacy as a solution to changing behaviors. Finally, mental models decision framework theory suggests that the role unconscious thought plays is in influencing projections of likely outcomes in response to risk events. Thus, unconscious thought may manifest itself in the form of a threat denial, which then leads the person to access the risk level as low and thus project that no action is necessary to cope with the threat.

Risk Perceptions:

This section of the review identifies factors that may make safety threats seem less hazardous. Such factors are important because insufficient risk perceptions are related to an inadequate behavioral response, and because inadequate risk perceptions may be formed unconsciously. While a sufficient risk perception does not guarantee a protective response, such perceptions are prerequisite to adopting appropriate coping behaviors (Gordon, 2003). Thus, a tenet of effective risk communication is that messages need to first establish that a significant threat exists, and then that protective actions can be taken to reduce this risk (McMahan and Meyer, 1997). This section identifies factors that may interfere with the formation of such risk perceptions. The discussion begins with a brief review of how people are thought to understand risks.

How Risks are Understood:

Recent research suggests that risk information is processed in two distinct manners. The first is analytical, and involves a conscious effort to balance benefits and costs. The second is more emotion-centered, and relies on affect and feelings (Slovic, Finucane, Peters, and MacGregor, 2004). This second way of processing information is more closely related to the unconscious influencers being discussed in this review. Affective responses are more common, occur quickly, and associate "goodness" or "badness" with stimuli (Slovic et al., 2004). Thus, "affective reactions may serve as orienting mechanisms" enabling quick decision-making (Slovic et al., 2004). The existence of these two systems is one of the primary reasons that human decision-making in response to safety threats is less-than-ideal from a purely analytic perspective

(e.g., analytic reasoning would suggest that the appropriate coping behavior is to always wear a safety belt, but affect may suggest that such use is only sometimes appropriate). It is worth noting that such use of affect in reasoning is not, as sometimes suggested, irrational. Affect serves many purposes in reasoning, and without such orienting mechanisms the cognitive burden of constant decision-making would be overwhelming. However, there are times when it would be more appropriate to use analytic reasoning and not affect-based reasoning. For example, affect may interfere with judgments of sexually transmitted disease risk, as more attractive partners are seen as less risky (Blanton and Gerrard, 1997). This literature review, ultimately, discusses how to encourage analytical reasoning in situations when the use of affect may interfere with the adoption of appropriate behavioral responses.

Individual Level Characteristics and Perceptions of Risks:

There are several personality traits and other individual-level characteristics that are known to influence how people perceive risks. For example, some people appear to be more risk seeking than others, e.g., smokers have been found to be more likely to engage in all sorts of risky behaviors, including not wearing safety belts, not monitoring blood pressure, and not flossing (Hersch and Viscusi, 1998). This is perhaps because individual-level differences in characteristics such as sensation-seeking and tolerance of ambiguity affect risk and benefit perceptions (Weber, Blais, and Betz, 2002). Another individual level characteristic that may influence how people perceive risks is anxiety. Anxious people are more likely to perceive risks than non-anxious people, and also encode a higher level of threat when encountering risk information (Ruiz-Caballero and Bermudez, 1997). Over-confidence is another such trait. For example, in a study of how people respond to hazards, Lindell and Whitney (2000) found that overconfident people may adopt fewer coping reactions because they see themselves as more skillful at avoiding danger than other people.

Controllability of Risk:

Risk perceptions are downgraded when the risk is seen as uncontrollable. For example, a meta-analysis of how people respond to the threat of earthquakes showed that people living in an earthquake prone area tended to de-personalize and minimize the threat (Lindell and Perry, 2000). Likewise, workers may downplay workplace risks to justify their decision to work in a hazardous environment; unfortunately, this ignoring of threats is further manifested in unsafe workforce behaviors, such as a failure to use safety equipment (Akerlof and Dickens, 1982).

Attractiveness/Social Acceptability of the Risk:

Risk perceptions are also dependent on behavioral motivations – that is, if a behavior is highly desirable, the behavior may be perceived as less risky (Blanton and Gerrard, 1997). This is partly because most individuals do not want to consciously see themselves as knowingly and willingly engaging in risky behaviors (Blanton and Gerrard, 1997). Additionally, part of how people respond to risks is based on social modeling. For example, both friendly and unfriendly role models have been shown to influence how people respond to threats (DeTurck, Chih, and Hsu, 1999). Risks can also be understood socially, i.e., via shared understandings/dialogues. For example, an ethnography of cigar smokers found that when new information about the health threats of cigar smoking are raised, cigar smokers' discourse with one another works to discredit and discount the threat (DeSantis, 2003). Finally, peer influence is an important factor in many risk behaviors, e.g., whether adolescents smoke (Hafstad, Aaro, and Langmark, 1996). In

general then, the more attractive, common, or socially acceptable a risk is, the less threatening it is perceived to be.

Personal Threat of Risk:

There is evidence to suggest that people are biased towards seeing themselves as less susceptible to risks than others (Kunda, 1987). People generate self-serving theories, using their own life events to position themselves as less vulnerable to risks than other groups: "Such self-serving theory generation is possible because people have great facility in generating causal theories linking any attribute to just about any outcome, and they have no way of determining the correctness of their theories" (Kunda, 1987). Individuals can easily generate theories that suggest that, while others might be at risk, they personally are not. This may especially be true when their personal risk level is high. For example, sex workers and their clients downgraded and denied the personal risk of HIV infection, despite knowing about the risks of HIV and how it is contracted (Varga, 2001). In other words, they knew that HIV was dangerous, they knew that multiple sexual partners increased the risk of HIV in general, yet they all could identify specific features of their lives that allowed them to view themselves as not at risk. Interestingly, personal relevance has the positive benefit of increasing attention to risk messages; thus, messages that are highly personally threatening are more effective in gaining attention but also seem to trigger additional defense mechanisms (Witte and Allen, 2000).

Risk Fatigue:

A final factor that inappropriately reduces risk perceptions is a sense that some level of risk is unavoidable. That is, understanding of risk information is often tempered by a belief that "everything is risky" (Walter and Britten, 2002). This belief is manifested in several ways. Information may be explicitly rejected, such as when cigar smokers say "all of life is a health risk, so there's no point worrying about something as insignificant as cigars" (DeSantis, 2003). It may be manifested in the form of general skepticism about heeding risk claims. This is especially likely when experts have lost their authority to convey risk messages because of a prior failure to fully disclose risk information or if expert opinion has changed (Frewer et al., 2002). Finally, risk fatigue may contribute to a tendency to simply ignore information about risks (Witte, Stokols, Ituarte, and Schneider, 1993), thus never allowing risk perceptions to form.

Summary:

It is necessary for people to perceive a risk before they can individually and voluntarily adopt an appropriate coping behavior to deal with safety threats. Risk perceptions are based not only on analytical reasoning (which is how most risk assessors characterize risks), but also on affective responses to risks, which may be unconscious. Affect is a necessary component in understanding risk, but affective responses to risks can lead to inappropriate coping behaviors. Other factors may mitigate the formation of appropriate risk perceptions. For example, certain individuals may be more accepting of a wide variety of risks. Additionally, risks are seen as less risky when people see themselves as having no choice in accepting the risk (e.g., as a function of their work) or no control over the risk. Furthermore, risks are socially understood, and more likely to be seen as acceptable if they are accepted within a peer group or if role models are seen ignoring a risk. In addition, there is evidence that all people are cognitively biased towards processing risk information in a way that suggests that they personally are not at risk. In other words, downgrading and depersonalization of risk information appears to be an automatic

response. Finally, there is evidence of societal risk fatigue. All these factors work together to interfere with the formation of sufficient risk perceptions in the face of safety threats, and some of these factors may operate at an unconscious level.

Precursors to Message Resistance:

One reason people fail to adopt appropriate coping responses in response to a safety threat, as discussed in the previous section, is a failure to perceive the threat. Another reason appropriate coping responses may not be enacted is because of resistance to persuasive messages. Resistance is "a motivated state in which the goal is to withstand the effects of a persuasive communication … resistance is not necessarily the same thing as not being persuaded" (Jacks and O'Brien, 2004). Resistance can be conscious or unconscious. There are many reasons why persuasive communications may be resisted. This section discusses some of these reasons.

Loss of Freedom:

One reason people resist persuasive messages is because complying requires compliance. Complying with a request entails a "loss of freedom," and people are motivated to maintain their freedom of choice (Worchel and Brehm, 1971). Thus, a significant barrier to persuasion is the simple fact that people tend to resist being told what to do if they feel as though they are being coerced. Note, however, that people are open to instruction (i.e., persuasion) in a less threatening context, e.g., a classroom setting with a well-regarded teacher. Thus, loss of freedom only sometimes causes resistance. A challenge for researchers is to determine why loss of freedom (and other factors identified in this section) only sometimes evokes resistance.

Readiness to Discuss Risk:

Stages of change theories suggest that messages may also be resisted if the target audience is not yet ready to hear them. For example, a physician trying to encourage a patient to stop smoking may repeatedly provide information on cancer hazards. Such information is likely to be resisted if the patient is not yet ready to consider a change (Zimmerman et al., 2000). These theories suggest that all such persuasive messages will be resisted if the target audience is not yet ready to hear them.

Personal Threat-Level of Message:

Messages that are personally threatening are also more likely to be resisted; e.g., personal relevance has long been linked with increased defensiveness regarding health messages (Sherman, Nelson, and Steele, 2000). One study found that subjects threatened by a health message (e.g., who engaged in the behavior described as threatening) were critical of the threatening portions of a message but less critical of the nonthreatening portions (Liberman and Chaiken, 1992). This type of resistance is especially likely to occur (as noted by threat/efficacy models, see page 34) when personal threat is high and perceived efficacy is low. Likewise, Witte and Allen (2000) found that stronger fear appeals result in stronger defensive reactions, especially when the message does not provide coping information. As noted in the previous section, however, personal threat is positively related to attention to risk messages.

Efficacy of Coping Response and Self-Efficacy:

Messages are more likely to be resisted if the behavior being promoted is seen as nonattainable. If the behavior being promoted is difficult to achieve (e.g., because of cost or inconvenience) it is

more likely to be rejected. Likewise, if the target audience is low in self-efficacy related to the desired behavior the message is likely to be rejected. For example, in a study of readiness to receive a Hepatitis B vaccination, self-efficacy was linked to both behavioral readiness and message receptiveness (Rhodes, Grimley, and Hergenrather, 2003). In the same way, messages are likely to be resisted if people see themselves as unable to change. One study of sexual behavior among men at risk for HIV found many subjects reporting that their behaviors were fixed or habitual and unlikely to change, even though the men knew they were at risk (Guest et al., 2005).

Fatalism and Denial:

Fear and fatalism are known to cause resistance to risk messages. For example, African Americans may be less likely to be screened for cancer because of fear-based resistance (Beeker, Kraft, Goldman, and Jorgensen, 2001). In another example, sex workers (i.e., prostitutes) did not want to get tested for HIV because they would rather not know they had the disease than confront the consequences. The same women cited fatalism as a reason for not using condoms (Varga, 2001). Fatalistic responses are especially likely when a risk is seen as uncontrollable. For example, an ethnographic study of how a working-class community rejected a cancer prevention message suggested that cancer evokes a fatalistic response because it is seen as uncontrollable (Balshem, 1991).

Summary:

There are many reasons why persuasive messages may be resisted. Complying with a persuasive message involves a loss of freedom, which is a negative drive state. Messages are also likely to be resisted if the target audience is not yet at a stage to consider a behavior change. Message resistance is common when the behavior being targeted is personally relevant, especially when the target audience feels the behavior change is unattainable or that the skills required to complete the change are unavailable. Fear and fatalism also can cause resistance to messages.

How Messages are Resisted:

The previous section identified precursors to message resistance. This section discusses some of the ways in which messages are resisted. Again, resistance can be conscious or unconscious. Resistance can take many forms, or even multiple forms: resistance may be shown in cognitive, affective, or behavioral responses. Indeed, "individuals have a number of resistance strategies at their disposal, and, when motivation to resist is high, they will engage in a variety of these strategies in their efforts to resist change" (Jacks and O'Brien, 2004).

Biased Processing:

One of the primary ways resistance can occur is via biased cognitive processing of risk messages. Such biases are typically unconscious. The hallmark of this processing is that individuals strategically use information to support their desired outcome, e.g., through selective attention to supporting information or by giving more weight to supportive evidence while discounting evidence that is non-supportive (Blanton and Gerrard, 1997). This may be referred to as defensive processing, because people process information to be consistent with preferred outcomes (Brown, 2001). A specific form of such biased processing is repression. Repression involves decreased attention to negative stimuli and reduced emotional attention in particular. Messages that induce strongly negative emotions may be especially likely to trigger repression

(Brown, 2001). Note that defensive processing of information involves significant cognitive effort. Research has found that people have a remarkable, innovative, and extensive capability to generate and combine arguments with other information "in support of the desired position" (Lundgren and Prislin, 1998). The extensiveness of this processing is one reason that people are unaware that they are using biased thinking; they equate effortful thought with balanced thought.

Generation of Self-Serving Causal Theories:

Another way in which message resistance can occur is through the generation of self-serving causal theories, i.e., "people tend to generate and evaluate causal theories in a self-serving manner; they spontaneously generate theories that view their own attributes as more predictive of desirable outcomes and are reluctant to believe theories that imply that their own attributes might be related to undesirable events … these self-serving tendencies seem to be explained best as resulting from cognitive processes guided by motivational ends" (Kunda, 1987). Such biased processing is magnified when the information being discounted is personally threatening or otherwise relevant. To wit, "personal relevance can amplify biased message processing" (Liberman and Chaiken, 1992). The generation of self-serving causal theories appears to be automatic and unconscious.

Reactance:

Reactance involves a negative reaction to messages that are seen as threatening behavioral freedom (that is, messages which are seen as overly limiting individuals' choices pertaining to their behaviors). For example, messages with an aggressive or controversial tone may trigger reactance. Reactance appears to be more common in social groups that are engaging in unsafe behaviors, which suggests that it can be socially reinforced (Brown, 2001).

Reconstruction of Risks as Non-Hazardous and the Use of Exemplars:

Another method of resistance is by constructing arguments, either individually or collectively, which discount the threat or discredit the advocated behavior. Such arguments frequently include exemplars (i.e., single cases where the hazard turned out to be overstated or where the advocated behavior was not protective), as well as references to the unpredictability of life and to the inconsistencies of science. For example, one study found that regular cigar smokers justified their risk-taking by developing a core set of beliefs that allowed them to resist persuasive messages about the health hazards of smoking. These arguments included: (1) all things are safe in moderation; (2) cigars are not cigarettes, which are indeed harmful; (3) research on cigar smoking is flawed (this perception is heightened when reversals of medical opinion regarding what is "safe" occur); and, (4) life is dangerous anyway, with or without cigar smoking. Thus, anxiety over the potential dangers of smoking was alleviated for these cigar smokers by a new, shared interpretation of risks that discounted threat information (DeSantis, 2003). In another example, an ethnographic study of how a working-class community rejected a cancer prevention message found that community members cited exemplars (e.g., the long-living person who smoked, the healthy-eating person who died young) to reject the message (Balshem, 1991). Such arguments are another form of biased cognitive processing, because such arguments are examined one at a time, and rarely examined collectively for consistencies (DeSantis, 2003). Finally, downward comparisons allow risks to be reconstructed as non-hazardous. In downward comparisons, people downgrade their personal risk by comparing themselves to someone or

something perceived to be at even greater risk (e.g., the cigarette to cigar comparison cited above). Individuals or groups at especially high risk may be particularly vulnerable to this type of bias (Brown, 2001).

Locus of Control:

Another way to resist persuasive messages is to re-direct responsibility from oneself to another. That is, message recipients may assign responsibility for controlling the risk elsewhere, thus removing the burden of an appropriate response. For example, people may assign responsibility for protection from natural disasters to the government, thus removing the burden to prepare by stocking emergency supplies, etc. (Lindell and Whitney, 2000). In another example, clients of sex workers avoided personal responsibility by assigning the responsibility to take protective actions to the sex-workers (Varga, 2001).

Occasional Use as Protective:

Finally, one study suggested that the occasional use of advocated protections may lead to a false sense of security. In other words, the occasional exercise of protective behaviors may induce risk complacency. For example, sex workers believed that the occasional use of protection (e.g., sometimes using condoms) was sufficient to reduce their overall risk of acquiring HIV (Varga, 2001). Significantly, this assumption was based on sex workers' beliefs that they were able to correctly discern which clients posed a hazard and which did not. In other words, if people believe they can correctly predict when protective behaviors are needed, occasional compliance may be seen as sufficient.

Summary:

Persuasive arguments may be resisted in a variety of ways, and a large number of these resistance strategies happen at an unconscious level. Humans appear to be remarkably adept at resisting potentially threatening arguments via biased cognitive processing. For example, people selectively attend to information that supports their preferred viewpoints, are more critical of evidence that does not support their preferred viewpoints, and use exemplars and fatalism to reject message content. Messages are also resisted by assigning the responsibility for protective action elsewhere, or by collectively rationalizing risk information into a new, and less-threatening, format. Finally, messages appear to be resisted by partial or occasional compliance. In other words, people see themselves as protected if they occasionally adopt the prescribed behavior. It is worth noting that in many of these strategies, message resistance is unconscious, and is facilitated by automatic cognitive abilities to construct self-supporting arguments.

Converting Defensive Reactions to Coping Reactions:

The key goal of this project is to discuss how unconscious defensive reactions to safety threats can be converted into consciously adopted coping behaviors. This section of the report discusses various ways to increase risk perceptions, avert precursors to resistance, or otherwise overcome resistance. Each strategy has been shown to be successful in at least one circumstance. However, strategies for overcoming resistance must be carefully tailored to the target audience, issue, and type of resistance to be most successful. Thus, these strategies are offered as possibilities. The use of any strategy should be tailored to the unique situation being considered.

Promoting Consciousness or Mindfulness:

Because much resistance happens at an unconscious level, one key strategy to help overcome resistance is to increase consciousness or mindfulness. This has the effect of shifting risk processing from affective to analytical, which, as noted, has the desirable effect of making such perceptions more consistent with the assessments of risk made by experts. Additionally, increased consciousness makes people more aware of defensive processing, thus reducing the influence of such processing on decision-making. Indeed, increased consciousness in message processing (e.g., making specific plans in response to a message) has been shown to lead to greater adoption of positive behavioral changes (Michie and Abraham, 2004).

There are several ways to motivate increased conscious processing of messages. Louis and Sutton (1991) suggested that conditions to motivate people to switch from automatic to conscious thought include: (1) unusual or novel situations; (2) discrepancies or unexpected failures; and, (3) deliberate initiative (Louis and Sutton, 1991). Parrott (1995) offered the following suggestions to increased consciousness: (1) present information in unusual, unfamiliar, or novel ways (e.g., unexpected media or unusual or unexpected wording in printed material); (2) present information that is discrepant or unexpected (e.g., "we know you hate to wear your seatbelt"); (3) make explicit external requests for attention (e.g., "stop what you're doing and listen to this message"); and, (4) prompt internal requests for attention by providing linguistic cues for such attention (i.e., verbal immediacy, denotative specificity, spatial and temporal immediacy, and excluding unnecessary qualifiers). An additional way to promote conscious processing and reduce biased processing is to specifically draw attention to the processes that maintain the bias (Brown, 2001). Finally, the use of special language features such as tropes (an advertising feature that deviates from consumer expectations through the use of nonliteral words, e.g., "our design is so good, other carmakers are going into the copier business") may increase conscious processing (Toncar and Munch, 2001). Tropes may also decrease message resistance as claims in tropes are less likely to be challenged (Toncar and Munch, 2001).

Increasing Self-Efficacy:

Self-efficacy has frequently been identified as essential to helping people adopt appropriate coping responses. Thus, increasing self-efficacy, either at the level of individual target audience members (e.g., by promoting feelings of competence), or within the message itself (e.g., by providing information on how to engage in the behavior), is one strategy to help overcome resistance. Witte and Allen (2000) conducted a quantitative meta-analysis of all available literature exploring the persuasive impact of fear-inducing messages, including the efficacy components of such messages. They found that increased levels of fear, severity, susceptibility, self-efficacy, and response-efficacy in messages all resulted in greater "positive levels of attitude, intentions, and behavior change." These relationships are generally linear, i.e., messages that generate more self-efficacy are generally more effective. Thus, there is strong empirical support that increasing the level of self-efficacy in messages leads to more behavioral change.

One way to increase self-efficacy at the individual level is to encourage social support. Social support has been linked to an improved ability to deal with health risks (Bandura, 2004). Another way to increase self-efficacy is to increase the amount of coping information in risk messages. One study on breast cancer found that women who read messages with high coping

information responded with less fatalism than women who read a message with less coping information (Prentice-Dunn, Floyd, and Flournoy, 2001). In general, any message feature that reduces barriers to compliance or provides support to the individual can increase efficacy.

Increasing Social Desirability of Compliance:

Another strategy to overcome resistance is to highlight the social undesirability of failing to respond to risk messages. This is because people may be more likely to comply with a desired behavior to maintain social acceptability than for reasons of self-protection. For example, one study showed that greater attitude change may result from cues pertaining to social disapproval than from cues related to social approval or neutral cues, especially when the message comes from a highly credible source (Powell and Miller, 1967). Additionally, a study of the effect of advertisements on teen smoking found that messages indicating that smoking increased the likelihood of social disapproval (e.g., bad breath) were more successful than advertisements focused on the health risks of smoking (Hafstad et al., 1996). Thus, indicating that non-compliance is likely to meet with social disapproval may be one strategy to overcome resistance, as it appeals to a desire (which may be unconscious) to please others. Influential peers may also be successful conveyors of such messages.

Creating Specific, Targeted, Communications:

Messages are most effective when they are carefully crafted for their target audience. For example, one study found that women were less persuaded by male-gendered language, while men were more persuaded by such language (Falk and Mills, 1996). Thus, the use of specific, targeted, communications may reduce barriers to resistance. One way in which messages should be carefully crafted pertains to matching speaker credibility and language use. Language expectancy theory says that messages are more credible when positive violations of expectancies occur: that is, when high credible sources deliver novel messages, or when less credible sources more closely perform to norms than expected (Buller et al., 2000). Additionally, language intensity needs to be matched to message explicitness for the most success. To wit, "highly intense language works best when conclusions and recommendations are offered explicitly to recipients" because definitive conclusions may avoid confusion, while "inductive messages generally work best with low language intensity" (Buller et al., 2000).

Disrupting and Reframing/Restoring Freedom:

Another technique to overcome resistance is to disrupt-then-reframe messages. This technique is designed to interfere with the resistance that occurs because of loss of freedom (i.e., the resistance that can be expected to follow any request). In this technique, a subtle disruption (e.g., an unusual appeal) takes the focus off of avoidance, and, when followed by an attractive reframe, results in greater compliance (Davis and Knowles, 1999). For example, Davis and Knowles attempted to sell cards at a price of 300 pennies (the disruption), which is "only $3" (the reframe). Additionally, if freedom can be restored after a request is made, people become more likely to comply with the request. In one study, decisional freedom was lost when an experimenter declared that one choice was clearly superior, and then restored when another said his mind was not yet made up (Worchel and Brehm, 1971). The result of this combination was greater support for the "obvious" choice.

Utilizing Self-affirmations:

Self-affirmations (e.g., positive messages about the self) may be one way to overcome message resistance. For example, affirming people's honesty has been shown to increase acceptance of a message about affirmative action (Jacks and O'Brien, 2004). This is because "self-affirmations apparently have the power to attenuate the personal threat one feels at being confronted with a counter-attitudinal message" (Jacks and O'Brien, 2004). For example, in two studies, self-affirmations increased the acceptance of potentially threatening health information (Sherman et al., 2000). Proponents of this method caution, however, that affirmations should not be incompatible with the topic of the persuasive message, because then such affirmations can promote resistance (Jacks and O'Brien, 2004).

Encouraging Anticipatory Regret:

Yet another technique to overcome resistance is future contemplation, and, in particular, anticipatory regret. Future contemplation involves asking people to think about the future under various scenarios (e.g., engaging versus not engaging in certain behaviors). Anticipatory regret specifically asks people to imagine the regret they might feel if they do or do not do certain activities. The idea behind this is that "engaging in prefactual thinking and anticipating future regret for various choices and outcomes would affect decision strategies because people would be motivated to reduce the likelihood of future regret" (Sherman, Crawford, and McConnell, 2004). Thus, "simply asking people, prior to their behavioral choice, to anticipate the regret that they might feel in the future for complying with versus reacting against the persuasive attempt appears to be one way to overcome resistance and increase compliance" (Sherman et al., 2004).

Evoking Hypothetical Compliance:

Another strategy to overcome resistance is to ask people to anticipate whether they would engage in a behavior prior to making the actual behavioral request. Research shows that people are more likely to say they hypothetically would carry out a behavior (e.g., volunteer time) than they are to actually perform the behavior when asked. However, asking people to predict first what they would do and then following this with a request later on dramatically increases compliance (Sherman et al., 2004). The likely explanation for this is that hypothetically agreeing to do something is relatively non-threatening and allows people to maintain freedom of choice; subsequently, having stated that they would do something, the actual request may evoke more compliance because of the motivation to maintain consistency.

Alpha and Omega Approaches:

One set of authors described strategies to overcome resistance as either alpha or omega strategies (Knowles and Linn, 2004). Alpha strategies focus on increasing approach forces; e.g., making messages more persuasive, adding incentives, increasing source credibility, providing social confirmation of the importance of the message, emphasizing scarcity, invoking reciprocity, and emphasizing consistency and commitment. Omega strategies, which are more relevant to this review, focus on decreasing avoidance forces. Omega strategies include:

- Sidestepping resistance: e.g., redefining relationships (be a consultant, not a persuader), depersonalizing the interaction (people should, not you should), minimizing the request (foot-in-the-door techniques), raising the comparison (refuse a large request to make the actual request seem smaller), and pushing the choice into the future (e.g., buy now, pay later);

- Addressing resistance directly: e.g., offering a guarantee or offering counterarguments;
- Addressing resistance indirectly: e.g., raising self-esteem (offer compliments) or focusing resistance (train people to spot scams);
- Distracting resistance: i.e., providing distractions reduces counter-arguing;
- Disrupting resistance: i.e., confusion makes people less able to resist;
- Consuming resistance: i.e., intentionally give people several requests to deny, followed later on by the actual request; and,
- Using resistance to promote change: e.g., using reverse psychology, using paradoxical interventions, acknowledging resistance, and choosing between alternatives.

Recognizing the Role of Habit:

Finally, it is important to consider that modifying habitual behaviors may require unique approaches. Habitual behaviors are defined as "everyday activities [that] are repeatedly performed to the point where their performance becomes automatically controlled … intentions may play no role in performance" (Garling, 1992). For such behaviors, change is complicated because of the stronger-than-average disconnect between behavioral intentions and actual behaviors. Therefore, changing habitual behaviors is frequently more difficult than changing non-habitual behaviors. To wit: "A change of habit is tantamount to an investment in a superior decision strategy, and it follows that individuals will not always find it advantageous to change their habits in the face of small change in the decision environment" (Lindbladh and Lyttkens, 2002). Changing habits requires a great deal of energy which many people are not willing to expend. This is especially true for those lower in socio-economic status (who are more likely to rely on habit and also to associate habit with preferences) (Lindbladh and Lyttkens, 2002).

Habits are more likely to be changed when some interruption to routine behavior occurs which allows for the opportunity to reflect on habits (Lindbladh and Lyttkens, 2002). Thus, creating a disruption in routine behaviors is one way to promote the change of habits. Additionally, once habits have been changed, an on-going sense of risk may be needed to maintain changes. For example, an HIV vaccine study found that men who thought they had not received the vaccine (and thus were at continued risk) reduced their sexual risk behavior in the long term. However, men who thought they had received the vaccine reverted to their baseline level of risk behaviors (Guest et al., 2005). Thus, habits are difficult to change, and habit change requires maintenance to prevent relapse.

Discussion:

Several strategies were offered here to overcome resistance to persuasive messages. One strategy is to increase consciousness or mindfulness in the processing of messages. Yet another is to increase efficacy in response to safety threats. This review also suggested that increasing the social desirability of compliance, creating targeted communications, disrupting resistance, restoring freedom, utilizing self-affirmations, encouraging anticipatory regret, evoking hypothetical compliance, and decreasing avoidance forces may successfully reduce barriers to persuasion. Finally, this section noted that there may be special requirements related to changing habitual behaviors.

Case Studies:

An important part of this review was to locate successful case studies where unconscious reactions leading to ineffective behaviors were effectively converted into conscious decisions to adopt effective coping strategies. While the project team found a few examples of such cases (described in more detail below), a limitation on these findings is that most involved a single complex intervention involving numerous components, with a single analysis to discuss whether the intervention as a whole was successful. Thus, as noted in Michie and Abraham (2004), it is "difficult to identify particular intervention techniques" that are responsible for any one campaign's success. Because of this, Michie and Abraham called for more specific testing of theory-based behavior-change interventions, with well-designed evaluation plans a key component of eventual campaigns.

With this limitation noted, here are several examples of successful campaigns as well as some speculation on likely factors that contributed to their success. Note: none of the campaigns specifically included a discussion of unconscious barriers or of overcoming such barriers. However, these are campaigns where it is reasonable to assume such unconscious barriers might be present.

Sexual Risk Behaviors and HIV:

In this case, an experimental intervention was designed on the idea that motivation, in addition to information and behavioral skills, is required for the adoption of protective health behaviors (Carey et al., 1997). The specific intervention was designed to promote a reduction in risk behaviors associated with the contraction of HIV among low-income women, one of the groups most at risk for new infection. Women were recruited for participation through fliers, and all attended a screening session. Only women at an elevated risk for HIV were enrolled. The intervention consisted of four one-hour, small-group sessions with a trained facilitator/counselor. During these sessions, the counselor strove to express empathy, develop discrepancy between HIV knowledge and risk behaviors, avoid argumentation or confrontation, roll with resistance (i.e., offering new perspectives and reinforcing accurate perceptions), and support self-efficacy. During sessions, women viewed a tape presenting HIV information, discussed their concerns and possible ways to address these concerns, discussed the pros and cons of behavior change, developed action plans to reduce the risk of infection, and role-played effective communication strategies. There was a main effect for intervention both immediately afterward and at a two-month follow-up on HIV-related knowledge (intervention group knew more), risk perception (intervention group perceived themselves to be at greater risk), behavioral intentions (intervention group intended to engage in fewer risk behaviors), and some sexual risk behaviors (intervention group engaged in less substance use before sex and less unprotected vaginal intercourse).

LIKELY FACTORS CONTRIBUTING TO SUCCESS: The authors argued that the success of this campaign was attributable to, among other things, the fact that the women in the intervention developed their own plans to reduce risk and that they actively participated in the determination that risk behaviors had more potential cons than pros. Limiting its usefulness, however, was the extensiveness of the intervention. It would be very hard to specify why the intervention worked, or to replicate such an intervention on a mass scale.

Fruit and Vegetable Consumption:

In this case, an experimental intervention was designed to explore the impact of different types of counseling on the consumption of fruit and vegetables by low-SES individuals (Steptoe, Perkins-Porras, Rink, Hilton, and Cappuccio, 2004). Participants were recruited from a doctor's patient list. The intervention consisted of two sessions of one-on-one counseling with a research nurse in a clinical setting. Half of the participants received behavioral counseling, which included personalized, specific advice, short-term and long-term goal setting, and the provision of information about barriers to change and strategies for overcoming those barriers. The other half of participants received nutrition counseling, which focused on information about the nutrient contents of vegetables and fruits and their functions within the body, stressing that health benefits would accrue for those who eat more fruits and vegetables. At 8 weeks and 12 months, follow-up was conducted in which participants reported their fruit and vegetable consumption. This measure was verified through measurement of key minerals and vitamins in participants' bloodstream. In addition, measures of self-efficacy, anticipated regret, perceived barriers to and benefits of greater fruit and vegetable consumption, and encouragement by others was measured. While fruit and vegetable consumption improved in both groups, the behavioral counseling group experienced a stronger, larger, more durable increase. This may have been, in part, due to differences in self-efficacy, perceived barriers, and knowledge between the two groups. There were no differences in motivation between the groups. Social support predicted change in both groups.

LIKELY FACTORS CONTRIBUTING TO SUCCESS: As in the previous example, this was an extensive intervention utilizing many of the same techniques advocated in this review. Unfortunately, the extensiveness of the intervention limits its usefulness in terms of replicating the results. It is not clear which of the many interventions explain the behavior change. It is informative, however, that providing guidance which was individualized and behavior-oriented was more persuasive than providing information alone, although both were successful. Individual attention from a reputable source (medical professional) may have been a key factor, and the focus on behavior was likely also important. Finally, it is noteworthy that social support was found to be predictive, suggesting the importance of interpersonal communication pertaining to the target behavior.

Promoting Safety Belt Use: Bank Intervention:

In this study, safety belt usage was conceived of as a simple decision made repeatedly (Booth-Butterfield, 2003). Thus, this intervention tried to strategically place signs or other reminders to serve as direct cues to encourage the behavior at the point of decision-making. In other words, the hypothesis was that reminding people to buckle up at the point where they make this decision should positively increase the occurrence of this behavior. A bank drive-through was selected as the point of intervention. Small signs from the "*Click It or Ticket*" campaign were placed to encourage drivers to buckle-up. No other intervention occurred; there was no comparison site. During the course of the campaign, belt usage increased from 52 percent to 60.5 percent.

LIKELY FACTORS CONTRIBUTING TO SUCCESS: Unlike the previous two examples, this study involved only a single intervention. Thus, it appears that simply reminding people to wear their safety belts at a point where they might logically put them on was successful in increasing this behavior. What is unknown, however, is what effect the punishment nature of the reminder

(the implication of a ticket for nonuse) had on the outcome. In other words, would a less threatening reminder have been more or less successful?

Promoting Safety Belt Use: Trauma Center:
Employees at a trauma center were encouraged to wear safety belts via an e-mail campaign, posters, pledge cards, a survey, and fact sheets (Scheltema, Brost, Skager, and Roberts, 2002). Observations were then made to compare staff wearing of safety belts (intervention) versus that of visitors (control) both pre- and post-intervention. Immediately after the intervention, employees showed a significant gain in belt usage, but this increase was not maintained at the one- and three-month follow-ups. No changes were noted in visitor behavior. Employees had high knowledge of the benefits safety belts provide, but "discomfort, forgetfulness, and short driving distance" were cited as key reasons for non-use.

LIKELY FACTORS CONTRIBUTING TO SUCCESS: This final example showed only limited success (i.e., it only temporarily increased the target behavior), but it is included because it targeted the same behavior under investigation here. This campaign suggests that frequent reminders and cajoling can increase belt usage, but that the behavior may revert to baseline levels in the absence of reminders. Thus, such campaigns appear unlikely to have the desired effect of creating permanent behavior change. The likely reason for this is that the campaign was unable to address the real reasons for non-belt usage. As hypothesized by NHTSA, such factors may include unconscious barriers and other motivators. It is noteworthy, however, in both this and the preceding example, that short-term change pertaining to belt usage can be induced via a campaign of this nature.

Part-time Safety Belt Users:
Finally, this report briefly discusses what is known about part-time users of safety belts. Understanding the nature of the occasional user is key, because much of this review stresses the importance of tailoring interventions to audiences. Knowledge about the target audience enables messages to be more culturally informed, and culturally informed messages are more likely to change attitudes and beliefs. Peterson, Witte, et. al (1994) nicely sum up this point: "The potential value of any campaign is jeopardized if it disregards basic world views of its target audience. Understanding audience beliefs is especially salient for a campaign that attempts to motivate voluntary changes in audience behaviors."

NHTSA and its partners have conducted prior quantitative and qualitative research on this topic. In this report, brief results from three previous NHTSA-sponsored studies are summarized [two qualitative research studies (utilizing focus groups) and one quantitative study (a national probability sample telephone study)]. Two key findings from these reports appear below, and more detailed findings follow.

- People do not think much about risk while driving. However, certain driving situations are perceived as riskier than others (e.g., driving faster or observing other drivers make reckless decisions), and safety belt usage does appear to increase in situations that are perceived as relatively riskier. Therefore, reminding people of these situations may increase belt usage.
- Safety belts are seen as effective by almost all audiences; that is, most people believe that a safety belt reduces their risk of harm in a crash. Thus, if crashes were predictable, most

people would choose to have a safety belt on at the time of a crash. However, there is a group of people who express the belief that safety belts are as likely to harm them as help them, or that they are better off in a crash not wearing a safety belt. Such people are likely to be more difficult to reach with any campaign, and the existence of this portion of the population complicates risk communication on this topic.

Risk Perceptions:

The studies reported the following findings pertaining to risk perceptions:

- Drivers reported that they don't think of risk issues much while driving, especially when in a familiar setting (Bradbard et al., 1998);
- Reasons cited for nonuse of safety belts included: taking short trips, making frequent stops, good weather, distractions which prevent belts from being worn, wearing nice clothing, low-speed driving, discomfort associated with belt wearing, shortage of time, the perception that driving is safe, and being a passenger (Bradbard et al., 1998);
- Young men said they don't wear belts because: they forget, belts aren't comfortable, they see them as unneeded (especially in familiar settings), and belts are not always perceived as helping (Bradbard, Panlener, and Lisboa-Farrow, 1996);
- 95 percent of the public age 16 and older would want a safety belt on if they were in a crash; but a third agreed that belts are as likely to harm you as help you (Boyle and Vanderwolf, 2004);
- Only 31 percent of people who report wearing belts all the time thought safety belts are as likely to harm as help you, while 72 percent of rare/never users held this belief (Boyle and Vanderwolf, 2004);
- Drivers reported being aware of situations (exemplars) where people survived crashes by not wearing belts (Bradbard et al., 1998);
- Fatalistic beliefs on belt usage were held more strongly by those who did not wear belts; Blacks and Hispanics were especially likely to hold these attitudes (Boyle and Vanderwolf, 2004);
- Frequent belt users were more likely to report injury avoidance as a reason for wearing a belt (Boyle and Vanderwolf, 2004); and,
- People who never wear a belt are more likely to report that putting one on makes them think about getting in an accident (Boyle and Vanderwolf, 2004).

Risk Behaviors:

The studies reported the following findings pertaining to risk behaviors:

- Reported belt usage was higher for passengers in the front seat than in the back seat (Boyle and Vanderwolf, 2004);
- Social pressure is a motivator for occasional wearers of safety belts (Boyle and Vanderwolf, 2004);
- 67 percent of rare/never users cited discomfort as a reason not to wear a belt, and 43 percent disliked being told what to do (Boyle and Vanderwolf, 2004);
- 33 percent of drivers reported there was something they disliked about safety belts; annoyance was lowest (31%) among all the time users and highest (49%) among rare/never users (Boyle and Vanderwolf, 2004);

- 97 percent of frequent users, and 82 percent of occasional users would want a safety belt on in a crash, but only 52 percent of rare/never users would (Boyle and Vanderwolf, 2004);
- Younger generations reported safety belts are a habit from childhood, while older generations did not (Boyle and Vanderwolf, 2004);
- Inclement weather, unfamiliar roads, young passengers, and observing dangerous driving behaviors all stimulated safety belt use (Bradbard et al., 1998);
- Shifting locus of control away from self to others may stimulate belt wearing (Bradbard et al., 1998); and,
- Young males need information that clearly specifies the consequences of not wearing a safety belt (Bradbard et al., 1996).

Conclusion:

In conclusion, this literature review represents an initial attempt to identify the role of unconscious barriers in interfering with the adoption of appropriate behaviors in response to safety threats. Such barriers include fear and fatalism as well as various defensive cognitive processing strategies. This review suggests that such unconscious defense mechanisms are extremely common in response to persuasive messages that are personally threatening. It appears that humans are remarkably adept at resisting or ignoring messages that are threatening, and at reinterpreting threat messages in such a manner as to make them nonthreatening.

Existing behavioral change models do not provide a great deal of insight into how to overcome such unconscious barriers to change. Partly, this is because there are many reasons why persuasive messages are resisted. Message resistance appears to be especially common when the behavior being targeted is highly threatening and personally relevant, and when the target audience believes behavior change is unattainable. Persuasive arguments may be resisted in a variety of ways, and a large number of these resistance strategies happen at an unconscious level (e.g., via defensive processing). For example, people selectively attend to information that supports their preferred viewpoints. Several strategies were described to overcome such resistance. These included increased consciousness or mindfulness in the processing of messages, disrupting resistance, restoring freedom, encouraging anticipatory regret, and decreasing avoidance forces.

An additional goal of this review was to identify large-scale campaigns where such unconscious behaviors were successfully changed at the societal level. Despite an extensive search for relevant cases, there did not appear to be many examples where such techniques were successfully applied at a mass level. Instead, it appears that most work at overcoming unconscious barriers has happened in the context of psychotherapy. This suggests that interventions that deal with the unconscious may be prohibitively expensive to apply on a mass scale; however, this question requires further exploration.

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