Prompting safety-belt use with a positive versus negative prompt: Comparative impact on the target behavior and relevant body language

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ABSTRACT

Two studies were conducted to compare the efficacy of two behavioral prompts in increasing safety-belt use. Two approaches were used in both studies. The first approach involved showing a sign with the message, "Please Buckle Up, I Care" to unbuckled drivers leaving a parking lot; the second involved displaying the nationwide slogan "Click it or Ticket" (CioT). Participants were 1,822 unbuckled drivers exiting two student parking lots of a large university. Research assistants identified an unbuckled driver, flashed one of two signs, and recorded whether the driver buckled after the prompt, as well as the driver's facial reactions and hand gestures. Of the unbuckled drivers, 34% buckled following the Flash-for-Life (FfL) prompt, and 26% with the CioT prompt ($p < .05$). Drivers gave significantly more positive facial expressions and hand gestures following FfL vs. CioT prompt ($p < .05$). The second study used a variation of the procedures in Study I and implemented the intervention at a large department store. Driver age was measured with the previous driver variables. Participants were 1,990 unbuckled drivers exiting a parking lot. Results showed no significant differences in terms of compliance to signs (20.8% for FfL and 20.4% for CioT, *p's* > .05). Significant differences in hand gestures, facial expressions and ages were detected as a function of compliance, regardless of sign (all *p's* < .001). Specifically, drivers who complied with either prompt were more likely to be younger, and present positive hand gestures and facial expressions. Implications and future directions are discussed.

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Introduction

Motor-vehicle related crashes are the leading cause of death for four to 34 year-olds and is the eighth leading cause of death for people of all ages (Subramanian, 2007). In 2006, 42,642 people died in motor vehicle crashes in the U.S. and 2,575,000 more were injured (NHSTA, 2007a). Of those injured, 138,325 were not using their safety belts. In Virginia alone, 960 motor vehicle-related fatalities occurred in 2006.

The National Highway Transportation Safety Administration (NHTSA, 2006b) estimates that in 2006, 15,383 lives were saved by the use of safety belts and an additional 5,441 lives could have been saved and countless numbers of injuries avoided had belt use been at 100%. NHSTA also estimates that had belt use in 2005 been at 90% rather than 82%, an estimated $7.2 billion could have been saved in costs such as reduced productivity losses, property damage, medical costs, rehabilitation costs, legal and court costs, emergency services costs, insurance administration costs, funeral costs, traffic delay, and costs to employers (NHTSA, 2006b).

Safety belts are the least costly and most effective means of reducing morbidity and mortality due to motor vehicle crashes. When used properly, safety belts can reduce morbidity in motor vehicle related crashes from 22 to 75% (Derrig, Segui-Gomez, Abtahi, Liu, & Ling-Ling, 2002). Despite this fact, safety-belt use remains stagnant and estimated to be at 82% in 2007 (NHTSA, 2007b).

Safety-Belt Use Demographics

Safety-belt use varies dramatically across demographic categories. A 2007 NHTSA report on safety-belt use revealed the belt use rate for men was 78% while belt use for women was 85% (Glassbrenner & Ye, 2007). Additionally, the observed belt use of Caucasians is higher than the observed belt use of African-Americans (81% versus 75% respectively), while the belt use of "members of other races" was observed to be at 88%. In 2007, the observed belt use for different ranges were as follows: 8-15 years, 84%; 16-24 years, 76%; 25-69 years, 82%; and 70 and older, 85%. These results suggest males, between the ages of 16 and 24 years, are the least likely to use their vehicle safety-belts.

Prompting Safety-Belt Use

For more than three decades, a myriad of methods have been used in an attempt to increase safety-belt use with varying degrees of success in different combinations and contexts. Much of the conceptual framework used to increase safety-belt use follows the "ABC Model" of

applied behavior analysis (Geller, 1988). While a number of studies have shown incentives can be an effective way to increase safety-belt use (Cope, Moy, & Grossnickle, 1988; Geller, Davis, & Spicer, 1983; Geller, Kalsher, Rudd, & Lehman, 1989; Geller, Paterson, & Talbott, 1982; Geller, Whitman, & McGuire, 1972; Kalsher, Geller, Clarke, & Lehman, 1989; Nimmer & Geller, 1988; Rudd & Geller, 1985), incentives can be costly and the effects are only sustained while the rewards are offered, thereby limiting any maintenance effects. On the other hand, prompting and antecedents are less costly and found to be as effective as incentives in some cases.

Previous antecedent attempts to increase safety-belt use have used pledge cards. Pledge cards rely on individuals' written commitment to buckle up. More specifically, Geller and Lehman (1991) introduced the "Buckle-Up Promise Card" as a versatile and effective mean of increasing safety-belt use. Indeed, this pledge-card strategy was found to be successful in a variety of different settings. One study, on a large university campus, showed significant increases in safety-belt use among students and faculty member ranging from 20-25 percentage points above baseline (Geller et al., 1989). Similar results were found when the pledge cards were used on a naval base (Kalsher et al., 1989). But in both of these cases, incentives (Geller et al., 1989) or disincentives (Kalsher et al., 1989) were used to motivate a pledge-card commitment.

Buckle-up reminders, in various forms, have also been used successfully to increase safety-belt use. In one study, researchers in Pensacola, FL developed "buckle-up reminder stickers" to place on the front dashboards of vehicles so passengers in the front seat could see the prompt (Thyer & Geller, 1987). When they inquired about the sticker drivers told passengers "I always prefer that my passengers wear their safety belts." The study used an ABAB design, measuring safety-belt use for two weeks during each baseline and intervention condition. During the final intervention phase, safety-belt use was observed at 78%.

In a similar study, Rogers, Rogers, Bailey, Runckle, and Moore (1988) used signature sheets and sticker prompts for two conditions and a sticker only for a third to increase belt use for state employees. Results showed an increase in belt use from baseline (11%, 9%, and 10% respectively) to intervention (57%, 47%, and 38% respectively). Additionally they noted a decrease in workmen's comp claims during the intervention phase.

Verbal reminders have been used with some success as well (Austin, Alvero, & Olson, 1998; Engerman, Austin, & Bailey, 1997). These studies evaluated the impact of local employees at restaurants and supermarkets reminding customers as they were leaving to buckle up and they evidenced increases in belt use to 12% and 22% above baseline levels, respectively.

Signs

One of the most prolific antecedent strategies used in research for increasing belt use is prompting the target behavior with signs. One study evaluated the impact of a permanent sign with a physical safety message "BUCKLE UP, STAY SAFE", (B. S. Cox, Cox, & Cox, 2000). Baseline belt use was measured to be approximately 70% and after one week of implementation, there was a 24% increase in belt use. Researchers also reported that 86% of unbuckled drivers complied with the sign during the intervention. Moreover, these researchers demonstrated that once implemented, belt use remained above baseline at 80% four years later (C. D. Cox, Cox, & Cox, 2005). This is the only study thus far, to use a safety/health message in an attempt to increase buckling behavior.

One of the more interpersonal antecedent methods of increasing safety-belt use is the "Flash-for-Life" (FfL) technique. Geller, Bruff, and Nimmer (1985) pioneered this approach in the early 80's when safety-belt use was only 10-20% (Dinh-Zarr, Sleet, Shults, Zaza, Elder et al., 2001). The method they employed involved having a passenger in the front seat of a vehicle display an 11X14 inch flash card with the text "Please buckle up—I Care" on the front. When an unbuckled driver in another vehicle was stopped at an intersection, viewed the card, and buckled up on the spot, the person holding the sign fliped it over to reveal the back which read "Thank you for buckling up". Of the 1,087 unbuckled drivers who were flashed, 82% were observed turning their heads and looking at the sign. Of those who looked at the sign, 22% complied immediately with the prompt.

Another successful application of the FfL technique was accomplished by Thyer, Geller, Williams, and Purcell (1987). Using an ABAB design, college student were positioned at the exit/entrance of campus parking lots and with the flash card reminded unbuckled occupants to use their safety belts. During the first intervention phase, safety-belt use increased from 19.6% (n = 629) during baseline to 54.5% (n = 635). Following the removal of the intervention, safety-belt use fell to 28.5% (n = 634), but rose to 51.5% (n = 625) after re-introduction of the FfL

intervention. It's noteworthy that one study found that a person prompting with a sign is more effective than a sign alone (M. Williams, Thyer, Bailey, & Harrison, 1989).

More recently, Farrell, Cox, and Geller (2007) demonstrated the efficacy of the FfL intervention on a large university campus. Using the same method as Thyer et al., college students flashed the sign to unbuckled drivers exiting a large student commuter parking lot. They found that while baseline belt use was already high at 79.5%, 30% (n = 427) of the unbuckled drivers complied with the sign request. This compliance percentage is noticeably higher than that found in both previously mentioned studies employing the FfL technique. This is significant, because in both of the previous studies, baseline safety-belt use was markedly lower.

Thus, the Farrell et al. findings suggest the FfL technique is still an effective method for increasing safety-belt use, despite already high use percentages. Additionally, the researchers found that male drivers were significantly more likely to comply with the prompt when the flasher was a female rather than a male. Female drivers were equally likely to respond to both genders of the flasher.

Safety-Belt Laws

Currently, safety-belt laws are in effect in every U.S. state and territory except New Hampshire. Most state laws vary in terms of exceptions, applicability, and extent of enforcement. Most notably, there are two overarching types of safety-belt laws: primary and secondary laws. Primary belt-use laws allow police to pull over vehicles and issue tickets because the driver was observed to be unbuckled. Secondary belt-use laws require the driver be pulled over for a moving traffic violation in order to be issued a ticket for not using the vehicle safety belt. A study of safety-belt use in primary versus secondary states (NHTSA, 2005) revealed safety-belt use in primary states to be significantly higher (i.e., 85%) than belt use in secondary states (i.e., 75%). Additionally, a 2006 study of fatalities in primary and secondary belt-law states indicated fatalities in secondary states to be 17% higher than in primary states (Liu, Linsey, Chen, & Utter, 2006).

As of 2007, 28 states and territories of the U.S. have primary safety-belt laws and 26 states have secondary safety-belt laws (NHTSA, 2007b), including Virginia. The first primary safety-belt law was implemented in Elmira, New York in 1984. Following the enactment of that law and subsequent enforcement, safety-belt use increased from 49% to 77%. The Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users (SAFETEA-LU)

provides grant funding to states that enact and enforce primary belt laws (NHTSA, 2006a). SAFETEA-LU can provide upwards of $500 million in total available grant funds (NHTSA, 2006a).

Enforcement of Belt-Use Laws

Enforcement began soon after the primary safety-belt laws were enacted in 1984. However, it was not until 1994 in North Carolina, that the enforcement approach to increasing safety-belt use became the key focus of federal and state efforts to get vehicle occupants buckled up. North Carolina modeled their program after the program in Elmira. This program soon became known as "Click-it-or-Ticket" (CioT) and reportedly increased belt use from 60 to 84% (A. F. Williams, Reinfurt, & Wells, 1996). However, this campaign failed to achieve higher levels of safety-belt use in the five years following its initial implementation (A. F. Williams & Wells, 2004). Currently, CioT is the only federally-funded program designed to increase safety-belt use.

NHSTA and select states applying NHTSA's Selective Traffic Enforcement Program (STEP) spent $33 million on paid media advertisements in May of 2005 on their highly publicized CioT campaign (NHTSA, 2006a). This campaign involves two components: 1) a media blitz of material including radio ads, television commercials and public service announcements, and signs posted along the highways, and 2) the heavy enforcement of safety-belt laws during intermittent two-week periods.

In states with primary belt-use laws, the enforcement period often involves setting up safety-belt check points (similar to sobriety check points) where motorists are given citations on site for not using their safety belts. During the May 2005 CioT campaign, an estimated 9,761 law enforcement agencies participated in the campaign (NHTSA, 2006a). In that same year, over 725,000 citations were issued by law-enforcement officials during the two-week campaign and safety-belt use was increased from 80% nationally to 82% (Solomon, Gilbert, Nichols, Chaffee, Julie et al., 2007). No data are currently available on the costs associated with the time and effort law-enforcement officials accrued during the two-week enforcement period.

Despite the apparent ubiquitous nature of the CioT campaign, 18% of Americans continue to avoid using their safety belts (NHTSA, 2006a; A. F. Williams & Wells, 2004). Proponents of the CioT campaign are quick to state the ineffectiveness of the program can be remedied through greater penalties associated with noncompliance, more enforcement efforts

and the upgrading of secondary laws to primary laws (A. F. Williams & Wells, 2004). Currently, over half the states in the U.S. have secondary safety-belt laws. Many critics of the primary belt laws claim the law infringes on civil liberties and has the potential to increase racial profiling.

"Healthy People 2010", a Federal initiative that aims to improve quality and length of life, has set as one of its objectives to increase safety-use to 90% by the year 2010 (USDHHS, 2000). The data, as reported by NHTSA, indicate this objective is not likely to be achieved within the proposed time frame. In light of this, it appears additional methods for increasing safety-belt use need to be examined.

Given the encouraging results in Farrell et al.'s study, the FfL message may be a viable and more effective alternative to the ubiquitous CioT campaign. Because the CioT campaign relies heavily on the threat of being ticketed it could elicit negative attitudes about belt use and even activate psychological reactance (Brehm & Brehm, 1981) or countercontrol (Skinner, 1971). In addition, Chaudry, Solomon, and Cosgrove (2004) found that for those individuals who do not "always" use their safety belts, the perceived risk of being ticketed is lower. Moreover, the perceived threat of being ticketed is ultimately going to be lower in states that have secondary belt-use laws.

The CioT approach has not been directly compared with any alternative approach. As such, neither the mechanism through which belt use is increased (either CioT serves as a reminder or the threat aspect encourages belt use) nor its efficacy in the face of alternatives has been evaluated. Moreover, no research has examined the social validity of any prompting technique with regard to the prompting recipients' preference for one method versus another. Behavioral data, such as a person's response to a prompt via hand gestures and facial expressions, may reflect social validity and help to shed light as to why the remaining 18% of Americans are abstainers. Study I examined this possibility by comparing the FfL intervention with the CioT campaign on a university campus.

Study I

Method

Participants and Setting. The participants were 1,822 unbuckled drivers (574 women and 1,248 men) exiting a student parking lot at a large university in southwest Virginia. Observations

occurred at two locations of a large commuter parking lot during three non-consecutive one-hour shifts, four days a week, for two months.

Materials and Apparatus. The intervention involved the display of a buckle-up reminder sign, either a FfL or CioT prompt. Both signs were approximately 11"X14". The CioT sign read, "Click it or Ticket" and, as shown in Figure 1, contained an image of a person wearing a shoulder harness behind bold blue and red lettering. As depicted in Figure 2, the FfL sign read, "Please Buckle Up, I Care" on the front and "Thank You For Buckling Up" on the back in bold black and yellow letters.

<Insert Figures 1 & 2 about here>

Procedure. During each of the one-hour shifts, one or two trained undergraduate research assistants collected data for four hours a day, four days a week for two months. When two research assistants conducted the observations, a "Field Observers" and a "Flasher" stood at the exit/entrance of the parking lot and looked for exiting unbuckled drivers. These research assistants positioned themselves at stop signs to ensure drivers could readily see both the sign and the observers when stopped. Whenever the Flasher saw an unbuckled driver, he/she held up the intervention sign. Research assistants alternated the two types of intervention signs daily and by week. Thus, the FfL prompt was used on Wednesday and Friday of the first week and on Tuesday and Thursday of the second week.

Flashers held the relevant sign in both hands, with their arms extended and showing a neutral facial expression. After the vehicle left, the Field Observer and the Flasher independently recorded the driver's gender, pre- and post-flash belt-use, facial expression (positive, negative, or neutral) and hand gestures (positive, negative, or neutral). Examples of observed facial expressions included smiles (positive), grimaces/frowns (negative), or faces devoid of any emotional valence (neutral). Hand gestures included thumbs up or a "shoulder-belt salute" (positive), the middle finger (negative), and hand movements that were neither positive nor negative (neutral).

If the driver buckled up following the FfL, the Flasher flipped the sign over to show the thank-you message on the back. When only one research assistant collected data, he or she intervened with the sign and then recorded the designated observations on standard data sheets. (see Appendices A and B for copies of the actual forms used to record observations).

Results

Two research assistants recorded data independently on 50% of the field observations. Interobserver reliability was calculated for each dependent variable by dividing the number of agreed upon observations of the Flasher and Data Recorder by the total number of observations.

Interobserver agreement was 93% for driver gender, 93% for identifying unbuckled drivers, 91% for buckling in response to the prompt, 94% for hand gestures, and 85% for facial expressions. Of the 895 unbuckled drivers flashed with the FfL sign, 33.6% buckled up following the prompt; and of the 927 drivers prompted with the CioT sign, 25.6% buckled up after the sign was displayed.

Given the study entailed three separate Chi-Square tests addressing three different dependent measures (compliance, hand gestures, and facial expressions), Bonferroni corrections were conducted to adjust for potential inflation of the familywise Type-1 error rate. Following the Bonferroni correction, the first Chi-Square test revealed the frequency of compliance varied significantly as a function of the prompting condition, χ^2 (1, n = 1,822) = 14.2, $p < .001$.

Following the Bonferroni correction, the second Chi-Square test addressing hand gestures revealed hand gestures (positive, negative, or neutral) differed significantly as a function of the type of prompt, χ^2 (2, n = 1,822) = 53.45, $p < .001$. Likewise, the observed frequencies of facial expressions (positive, negative, or neutral) differed significantly as a function of the type of prompt, χ^2 (2, n = 1,822) = 27.03, $p < .001$ subsequent to Bonferroni correction. A summary of the percentages of positive versus negative hand gestures and facial expressions as a function of the intervention approach is presented in Table 1.

Lastly, the prompts evidenced temporal differences as well. The FfL intervention showed a gradual increase in impact from influencing an average of 33% compliance at the beginning of the study (the first two-week period) to 41% belt use after two months (the fourth two-week period). Alternatively, compliance with CioT held roughly constant throughout the intervention, starting at 27% compliance and ending at 23%. These time-series trends are illustrated in Figure 3.

<Insert Figure 3 about here>

Discussion

Both prompting strategies are effective at increasing vehicle safety-belt use, supporting the conclusions of Farrell et al. (2007) that safety-belt use can be increased with a simple

reminder, despite already high usage rates. Moreover, based on the Chi-Square analyses and the differential percentages of compliance, the FfL prompt can be considered a more efficacious method of promoting belt use among unbuckled drivers between the ages of 18 to 24 than the CioT sign.

Additionally, it can be inferred from variations in hand gestures and facial expressions that some drivers preferred the FfL method over the CioT sign. One explanation for these differences, as mentioned previously, is that the positive framing of the FfL message may elicit more positive attitudes, or the greater compliance with the FfL prompt may have influenced a more positive attitude toward the intervention. The "Thank You" aspect of the prompt may act as a reward whereas the CioT acts as a threat. This explanation is consistent with theories of psychological reactance (Brehm & Brehm, 1981) and self-determination theory (Deci & Ryan, 1985).

Geller (1991) posited that a portion of the population will actively resist negative reinforcement approaches to increase their safety-belt use, especially because the probability of getting caught unbuckled is low. During one study using feedback to increase safety-belt use (Geller, 1996), vandals removed the sign from its location and threw it in a nearby pond. Indeed, some believe their use of a vehicle safety belt is a personal choice and off limits to governmental control. Some drivers in the present study reflected this attitude through negative hand signals and facial expressions to both prompting techniques, as well as a greater number of negative facial expressions and hand gestures following the CioT prompt.

Brehm and Brehm's (1981) seminal work on psychological reactance suggests individuals who encounter "implied threats to future freedoms will increase reactance arousal" (p.32). CioT relies heavily on the implied threat of receiving a ticket for not using one's safety belt. Alternatively, FfL ostensibly does not threaten one's freedom to use one's safety belt. The threat to one's freedom to use or not use a safety belt becomes even more salient in secondary enforcement states (like Virginia) because they are less likely to be ticketed for not buckling and may be more likely to view safety-belt use as a personal choice.

Deci and Ryan's (1985) work on intrinsic motivation offers a similar perspective with regard to why CioT is less effective than FfL in Study I. Deci and Ryan state "negative feedback that implies incompetence will decrease intrinsic motivation" (p. 61). Thus, in this instance, the feedback is non-compliance with the current safety-belt law (implying the driver is not

complying with the law and warrants a negative consequence). Furthermore, Deci and Ryan specify intrinsic motivation is undermined when "locus of causality" is externally perceived and therefore denies one's sense of self-determination. In other words, when individuals feel pressure from an outside source, they may perceive their behavior is being controlled by extrinsic contingencies, thereby decreasing their sense of autonomy. This perception makes them less likely to engage in the desired behavior and may elicit negative emotions. Positive feedback, on the other hand, is more likely to increase a person's sense of competence and increase intrinsic motivation.

Both prompting techniques involved interpersonal communication, and it's likely the personal display of the sign was critical to the intervention's success. Thus, a large-scale application of FfL prompt would require the availability of individuals willing to administer the intervention at key locations (e.g., parking-lot exits and intersection). The nationwide CioT enforcement program requires substantial funds to implement, amounting to $33 million in advertising alone (NHTSA, 2006a), whereas volunteers from community groups (e.g., boy and girl scouts) could be called on to hold up FfL signs at strategic locations. While it is premature to suggest the FfL technique be used in lieu of CioT, these results lend support for using one or the other or both techniques per relevant circumstances. Follow-up research is needed to determine situations where one prompting technique is more effective than the other.

Limitations

Although the results of this study are encouraging, there are some fundamental limitations. First, the intervention only targeted university students between the ages of 18 to 24. Thus, only a select sample received the prompting interventions, thereby detracting from external validity. Second, the observers were obtrusive, making it impossible to distinguish the impact of the prompts from drivers' awareness they were being observed. Additionally, the two prompting procedures were not equivalent in that the FfL involved administering a "Thank You" after drivers complied with the prompt. This positive consequence could have contributed to the significant differences in positive versus negative hand gestures and facial expressions. Moreover, the study did not examine the within-subjects effects of the intervention on drivers, such as repeated exposure to the intervention for "repeat offenders" and whether the facial expression and hand gestures came from a select few individuals.

Additionally, one might argue the CioT campaign is more than a sign and the comparison between the two techniques are not equivalent to the actual campaign. However, as mentioned previously, CioT relies heavily on the threat of punishment. Given the CioT sign used in this study is similar (almost identical) to the one used in the national campaign, it could be assumed the threat of being fined for not using a vehicle safety belt was elicited in a similar manner as the actual campaign.

Study II

Study II was designed to address some of the methodological issues of Study I as well as to examine the efficacy of the two signs in a different context. Specifically, the current study enhanced Study I in the following ways: 1) observations were made on a larger age demographic, thus increasing external validity, 2) observations regarding belt use, hand gestures, and facial expressions were made unobtrusively, 3) the "Thank You" part of the FfL technique was eliminated to make the two prompting procedures more equivocal 4) and decreasing the repeated exposures of the prompt to the same drivers.

Method

Participants and Setting. Participants consisted of 1,990 unbuckled drivers (825 female and 1164 male) exiting from one of two exits in a Super Wal-Mart parking lot in Christiansburg, VA. The age ranges for the drivers were as follows: 16-24 years old, 22.9%; 25-39 years old, 35.3%; 40-60 years old 32.1%; above 60 years-old, 9.6%. Data were collected during four to five-one hour sessions, seven days a week for two nonconsecutive two-week periods. Research assistants administered the interventions signs at one location during weekdays and both locations during weekends to accommodate the increased traffic. At the two locations, research assistants used one sign for one half hour and then prompted with the other sign for the second half of the hour. The order of the signs flashed was alternated by day (for example, if the FfL sign was flashed first on Monday, the CioT sign was flashed first on Tuesday). At each of the four locations, research assistants collected data in one-hour increments from 8:00AM to 11:00AM and 4:00PM to 7:00PM on weekdays, and from 10:00AM to 3:00PM on Saturday and Sunday.

Materials. Materials consisted of one or more data collection/protocol sheets (see Appendices C and D) and the FfL sign and CioT sign. The signs were the same as those used in Study I and depicted in Figures 1 and 2, except the back of the FfL sign was not used as

discussed below. Research assistants were positioned at stop signs within the parking lot in order to maximize the likelihood of being noticed and minimize the risk of distraction to drivers in moving vehicles.

Procedures. Field observations were made by one or two (for reliability) trained undergraduate research assistants (Field Observers), and the intervention was administered by one trained undergraduate research assistant (Flasher). The Field Observer(s) and the Flasher arrived at the locations and parked their vehicle at close visual proximity to where the Flasher was flashing the intervention sign. The Flasher took the respective intervention sign and stood near the stop sign at the predetermined location. Once the Filed Observer(s) were ready, the Flasher began targeting unbuckled drivers exiting the parking lot. Specifically the Flasher, with extended arms, held the sign and showed no facial expression.

During the intervention process, the Field Observer(s) independently observed and recorded each driver's a) gender, b) age category, c) whether the flasher identified an unbuckled driver, d) whether the driver buckled in response to the prompt, d) positive, neutral or negative hand gestures, and e) positive, neutral or negative facial expressions. The drivers' age was categorized into one of four ranges: 16-24, 25-39, 40-60, and over 60. After flashing one intervention sign for 30 minutes, the Flasher began using the other intervention sign. Thus, each Flasher displayed both of the signs during each one-hour shift.

Results

Two research assistants recorded field observations independently on 78% (N = 1,990) of the driver-prompt events. As in Study I, interobserver reliability was calculated for each dependent variable, resulting in 96% for driver gender, 97% for identifying unbuckled drivers, 97% for buckling in response to the prompt, 96% for hand gestures, 91% for facial expressions, and 74% for age. Additionally, 56 of 2,047 observations were deleted from the analysis because at least one observer recorded the Flasher prompted a driver who was already buckled. Of the 1,005 unbuckled drivers prompted with the FfL sign, 20.8% buckled up following the prompt; and of the 985 drivers prompted with the CioT sign, 20.4% buckled up after the sign was displayed.

With the addition of age as an independent variable, four Chi-Square tests were conducted: compliance with the prompt, hand gestures, facial expressions, and age. As with Study I, Bonferroni corrections were performed to adjust for Type-1 error rate inflation. The first

Chi-Square test comparing differences in compliance with the prompt reveal no significant difference between the FfL and the CioT conditions, χ^2 (1, N = 1,990) = .073, p > .50.

The second Chi-Square tested for any significant difference in the frequency of hand gestures as a function of prompting condition did not reveal any differences, χ^2 (2, N = 1,990) = 2.65, p > .50. The same analysis on facial expressions revealed similar results with no significant differences between prompting signs, χ^2 (2, N = 1,990) = 2.13, p > .50. Two Chi-Square tests examined differences in frequencies of compliance by sign as a function of age. The first was a 2 X 4, sign by age Chi-Square for those who did buckle, and the second was 2 X 4 of the same design for those who did not buckle. These tests revealed no significant differences, χ^2 (3, N = 1,990) = 8.22, p > .20; χ^2 (3, N = 1,990) = 4.05, p > .50. It should be noted that before the Bonferroni adjustment, the second Chi-Square examining those who did not comply with the prompt was significant. A summary of the percentages of drivers who complied, who expressed positive versus negative hand gestures, facial expressions and drivers' ages as a function of the intervention approach is presented in Table 2.

<Insert Table 2 about here>

In order to test for the possibility of an interaction between sign and hand gestures, facial expressions, gender, and age, a logistic regression analysis was performed with compliance to the prompt as the dependent variable. The resulting analysis indicated the model with sign, hand gestures, facial expressions, gender, age and the interaction of sign with the other independent variables accounted for significantly more variance than a model without the variables and interaction terms, χ^2 (17, N = 1,990) = 232.13, p < .001. There were no significant interactions in the model; however there were main effects for positive facial expression (b = 1.51, SE = .195, df = 1, p < .001, OR = 4.54), positive hand gestures (b = .976, SE = .26, df = 1, p < .01, OR = 2.67), and the age group 16-24 as compared to over 60 (b = -1.630, SE = .195, df = 1, p < .01, OR = .318).

In an attempt to better understand the above results, three subsequent Chi-Squares (and the corresponding Bonferroni adjustment) were performed to test if those who complied with either prompt differed in terms of frequency of hand gestures and facial expressions and age. The first test showed hand gestures varied significantly as a function of responding to either prompt, χ^2 (2, N = 1,990) = 98.93, p < .001. The same analysis on facial expressions revealed similar results, χ^2 (2, N = 1,990) = 226.6, p < .001. The frequencies for age as a function of whether they

responded to either prompt did not differ from chance, χ^2 (3, N = 1,990) = 4.05, $p > .50$. Frequencies of hand gestures, facial expressions, by prompt and compliance are presented in Table 3. No temporal differences in compliance between signs were detected.

<Insert Table 3 about here>

Given these unexpected findings from Study II, Study I results were reanalyzed to determine if similar relationships occurred. Two Chi-Square tests were performed to test whether hand gestures and facial expressions varied significantly as a function of compliance. The first Chi-Square revealed the frequencies of hand gestures varied as a function of compliance, with those buckling up to the prompt giving more positive hang gestures, χ^2 (2, N = 1,822) = 105.2, $p < .001$. The second Chi-Square test on facial expressions showed similar results, χ^2 (2, N = 1,822) = 305.6, $p < .001$. Table 4 presents the percentages of positive vs. negative facial expressions and hand gestures as a function of whether or not the drivers complied with the prompt.

<Insert Table 4 about here>

Discussion

As with Study I, Study II examined whether a positive prompt would be more effective at increasing safety belt use as compared to a negative prompt. The data indicate both signs were equally effective at increasing the use of vehicle safety belts by unbuckled drivers exiting a Wal-Mart parking lot. Additionally, neither prompt condition received significantly more hand gestures nor facial expressions and no one age group responded more to one prompt over the other.

The Chi-Square analyses did reveal differences in frequencies of positive hand gestures and facial expression as a function of compliance. Further examination of these effects showed three significant main effects from the logistic regression analysis: 1) those who gave a positive hand gesture, regardless of the prompt used, were 2.67 times more likely to comply, 2) those who gave positive facial expressions were 4.54 times more likely to comply with either prompt, and 3) people aged 16-24 years-old were 3.14 times more likely to buckle after observing either prompt, than people aged above 60 years-old. Moreover, when the Chi-Square analyses were performed on the data from Study I, significant differences in the frequencies of positive hand gestures and facial expressions as a function of compliance were also found. This indicates that

those who complied gave more positive hand gestures and facial expressions than those who did not.

Both signs were effective at increasing safety-belt use, however, this Study II failed to replicate the findings of Study I in terms of differences in compliance percentages between types of prompt: positive vs. negative. This may be due to a number of reasons. First, this study examined the use of these signs within the context of a more diverse population (e.g., a wider age range, education level, and socio-economic status). It could be that the findings of Study I are unique to a more narrow age group. However, because there were no significant interactions between type of prompt and age for the dependent variable, this seems unlikely. Even though there was a main effect for the oldest age group as compared to the youngest, the oldest age group represented 9.6% of the observed sample. Alternatively, socioeconomic status (SES) was not measured and could have had a significant impact on compliance and response to the prompts. In Study I, the SES of drivers was more homogenous and higher than the drivers exiting the Wal-Mart parking lot.

These findings, as well as the findings from Study I, are different than previous research using prompts. These studies did not find nearly as high compliance percentages with the signs of the more recent studies (Austin et al., 1998; B. S. Cox et al., 2000; Engerman et al., 1997). The compliance percentages in Study I and II more closely resemble the compliance percentages found in the original Geller et al. (1985) study (20%). This may be due to the fact that baseline belt use in the current studies was already high (79% based on the state average), so there may have been a ceiling effect. Similarly, in the original study, baseline belt use was low (11%) so there may have been a floor effect.

It should be noted that all but one of the previous studies using prompting to increase safety-belt use did not increase belt use beyond the 80% level. The one study that did (B. S. Cox et al., 2000) was conducted in a senior citizen community home, which is a select sample of people. Additionally, follow-up data showed that after the initial increase, belt use remained at 80% (C. D. Cox et al., 2005). In light of the previous research, the fact that any increase in belt use was found appears to be clinically significant. The current studies differed from the ones previously in that these studies compared direct compliance after prompting an unbuckled driver whereas the previous studies measured overall differences in groups of drivers from baseline.

As compared to Study I, there were fewer negative hand gestures and facial expressions given for both prompt conditions. This is contrary to the hypothesis with respect to psychological reactance. The lack of significant differences between hand gestures as a function of sign may indicate people did not prefer or dislike one sign over the other. However, that inference may be inappropriate. Drivers may have been merely expressing acknowledgement that they approved of the reminder or that they had complied with the prompt through positive hand gestures and facial expressions.

Inferring that the facial expressions and hand gestures are expressions of preference for a prompt may be appropriate in the context of significant differences as a function of the prompting condition; however, such an inference is not appropriate when there are no differences between compliance and prompt nor are there differences between facial expression and hand gestures as a function of prompt condition. Given the context of these findings, future studies may benefit from measuring when the hand gestures or facial expressions were given (e.g., before or after they complied with the prompt). This may give a more clear indication as to whether the response is an expression of preference—if the response is given before compliance—or of acknowledgement—if given after compliance. Even knowing when the response was given is not an explicit indication of preference or acknowledgement and as such, it would be necessary to interview drivers after they have been prompted to determine what their reactions were in reference to—the prompts or merely acknowledgement of compliance.

While the procedures for prompting changed from Study I to Study II to make them more equivocal, the mere fact the procedures where implemented in a different place may have had an impact on FfL technique. More specifically, the Flashers could have varying effects in the different contexts. In Study I, Flashers were prompting those similar to themselves (i.e., 18-22 year-olds) whereas in Study II the same aged Flashers were prompting a wider age range of drivers. Cialdini's (2000) research has shown that "liking" is an important principle in terms of social influence and that people who are similar to us have more influence over our decisions. From this perspective, liking may account for the increased compliance of the FfL sign as the message "I care" may make the similarities more salient. The results provide limited support for this notion given the main effect for the youngest group (ages 16-24) being more likely to comply than the oldest group (ages above 60). Future studies should include Flashers of varying ages to see if this effect exists.

Changing the Flashing procedures from Study I to Study II may have impacted the results of Study II in another way. In Study I, the method for flashing each sign was the same because the "Thank You" portion was removed. This suggests the "Thank You" part of the FfL prompt could have influenced hand gestures and facial expressions. Moreover, Study I showed an increase in compliance over time with the FfL prompt which was not demonstrated in Study II. This too may be due to a positive impact of the Thank You part of the FfL. In order to tease out these effects, future studies could use a within-subject design to compare three different prompts: 1) CioT, 2) FfL without the Thank You side and 3) FfL with the thank you side. A within-subject design could be accomplished if Field Observers recorded license plate numbers of unbuckled drivers.

It may be that using both prompts provides the most optimal means of encouraging safety-belt use. Specifically, some individuals might be most susceptible to a negative prompt while others might be more susceptible to a positive prompt. This is suggested by the significant main effects for positive hand gestures and facial expressions for those who complied, regardless of prompting condition. In order to determine if type of prompt impacts compliance, future studies should include both a neutral reminder condition (e.g., "Buckle Up") as well as a no sign condition (e.g., merely measure how many people buckle at a stop sign without any prompting). With the inclusion of these two conditions researchers would be able to clearly identify whether a sign or type of sign (i.e., negative or positive) has an impact on increasing belt use. The inclusion of a neutral message, without a no sign condition, would only indicate that some people are responsive to a reminder—not that people are unresponsive to positive or negative prompts. Additionally, the inclusion of a no sign condition is necessary so in the event there are no significant differences between prompting conditions, one can at least say the prompts are causing the buckling behaviors and not other factors.

Even with the inclusion of the aforementioned conditions, it would be difficult to determine the impact of the positive or negative prompts without developing a single-subject design where drivers are exposed to each sign and their corresponding compliance (or lack thereof) is recorded. Such a design is necessary as it would appear there are individual differences between drivers that determine their compliance with prompts. Given the complications and intricacies involved with designing behavioral interventions to increase

safety-belt use, such individual differences may be better measured through a combined behavioral and self-report approach.

Results from Study I and II suggest increasing safety-belt use is more complicated than simply finding the optimal prompt. Safety-belt use is arguably a behavior most people know prevents injury and death. Moreover self-efficacy is often a factor in increasing health behavior (Bandura, 1977, 1997), but is not applicable with safety-belt behavior. Every vehicle driver knows how to buckle up.

With regard to people who do not buckle up, it would appear that, for some, factors beyond forgetting to buckle maintain their reticent attitudes. The findings from Study I and II indicate certain contextual factors influence belt use. Additionally, because there appear to be differences in responses to the signs as well as compliance, psychological reactance may play an important role for different age groups (i.e., 16-24 year-olds) or in different settings (e.g., on a university campus). Understanding these nuances and how they interact with one another is important to figuring out which prompting strategies will be the most effective in a given situation.

The literature on marketing and health promotion is ripe with studies examining how to best frame a message in order to increase the sale of a product or initiation of a particular health behavior. During the genesis of this research, it was theorized that people encoded the information in messages as either negative or positive (Tversky & Kahneman, 1981), resulting in a gain or loss focus. Over the years the accumulation of evidence has pointed to a three-factor framing theory whereby messages are evaluated based on their level of either 1) risk, 2) an object's/event's attributes, or 3) a behavior's consequences with each of the three factors being framed in either a positive or negative way (Levin, Schneider, & Gaeth, 1998).

Levin et al. (1998) provide a number of cogent examples for their three-factor message frames. The classic example given in the literature for risky-choice framing is that of the "Asian disease problem" (Tversky & Kahneman, 1981). In it, participants are told they have to choose between one of two procedures. The first, positive-valence message states one of two procedure ensures one third of a group of people will be saved whereas in the alternative, there is a one third chance of saving everyone. The second, negative-valence message frame states in the first procedure there is a sure chance of losing two thirds of the group whereas the in the alternative there is a one third chance of not losing any lives. An example of the attribute-framed message is

where one message may ask a person if they would choose meat that is 75% lean (positive valence) or 25% fat (negative valence). The goal-framed messages are stated so if the recipient engages in the behavior he/she is either gaining a reward (positive valence) or avoiding a punishment (negative valence). In this sense, the messages used in this research may be categorized as goal or consequence framed with a negative valence for the CioT sign and attribute framed with a positive valence for the FfL prompt. While FfL is not explicitly a quantitative attribute message, the results of this study could imply it is a qualitative attribute message in that another person is positively qualifying the behavior. This type of categorization has not been examined in the literature and warrants further research.

Levin et al.'s review supports the findings of Study II, where an attribute-framed message with a positive valence (FfL) and a goal-framed message with a negative valence (CioT) are more likely to elicit compliance than an attribute-framed message with a negative valence and a goal-framed message with a positive valence. However, the findings with regard to goal-framed messages are somewhat inconsistent (Levin, Gaeth, Schreiber, & Lauriola, 2002; Levin et al., 1998). As such, the role of these types of messages is not clearly understood. Levin, Gaeth Schrieber, and Lauriola (2002) conducted a follow-up research to examine the within-subject effects of the two valence (positive and negative) by three message frame (risk, attribute, and goal) design. The message that researchers conveyed was eating less red meat, and the dependent measure was a Likert rating of how willing they were to comply with one of the six messages. The results showed that each of the three message frames are independent from one another, indicating unique decisions processing occur for each type of message. Additionally, there were consistent findings that a positive attribute message and a positive risk message evidenced more compliance than their respective negative messages. Goal framing failed to materialize any consistent findings. Researchers also found that some individuals showed no effect to message framing. Lastly, they found that compliance to a message frame was predicted by two factors of the Big Five: Agreeableness and Conscientiousness. Depending on the message, high or low Agreeableness and Conscientiousness predicted compliance for various messages. For example low Conscientiousness but high Agreeableness predicted compliance with the attribute-framed messages whereas high scores on both predicted compliance with goal-framed messages.

The findings from the Levin et al. (2002) study indicate that a multifaceted approach to message framing may prove to be the most effective as different decision-making processes occur for each message. Goal-framed messages in particular, such as CioT, may be less effective on their own than when combined with another type of message. These findings also suggest that 100% compliance, no matter what type of message, may be unrealistic at the present time or using the presented model. In terms of safety-belt use, future studies should experimentally manipulate the six types of messages with safety-belt use as the dependent measure. It may also prove beneficial to determine how those who do not buckle score on measures of Conscientiousness and Agreeableness to determine the most optimal message framing approach.

Limitations

The field observers in Study I and II did not systematically record whether an unbuckled driver looked at the FfL or CioT sign. However, given the positioning of the flashers at stop signs (along the driver's side), the likelihood any driver did not see the signs was low. However, research assistants observed that some unbuckled drivers seem to actively avoided eye contact with the person holding the sign, perhaps to maintain a sense of self-determinism or dignity when publicly identified as avoiding a socially-advocated behavior. Also, some drivers might have buckled after driving away from the prompting intervention. Future studies might benefit from conducting behavioral observations downstream from the intervention site to ascertain any delayed effects of the prompting intervention. For example a driver might not want to admit being "controlled" by a sign and therefore show their compliance unobtrusively.

Again, Study II did not measure how many people were flashed more than once, which could account for a significant portion of facial expression and hand gestures. The likelihood of someone being flashed more the once would arguably be more likely in Study I than in Study II, as people probably do not make daily trips to Wal-Mart as they do to the university. The differences in hand gestures and facial expressions between Study I and Study II may indicate that repeated exposures to the prompt is what moderates hand gestures and facial expressions. In other words, being repeatedly exposed to the prompts may affect the amount and type of hand gestures and facial expressions. Specifically, as per the time series results of Study I, there may be more positive hand gestures and facial expression for the FfL prompt. Future studies could use a longitudinal, within-subjects design to determine if this is the case. Moreover, repeated

exposure could result in greater compliance as the time series showed at Virginia Tech following the positive prompt.

Finally, neither study measured maintenance effects. Cox et al. (2005) found that extended exposure to a sign may have lasting effects (e.g., four years) on increasing belt use. Indeed, with Study I there were increases in compliance to the positive prompt over time, but the entire duration of this study was only five weeks. What if prompting occurred at several parking lots of a community, and these remained in effect for several months? Many drivers report safety-belt use becomes a habit after several mindful trials of buckling up. The number of such trials needed to form a buckle-up habit likely varies substantially among drivers, but numerous belt reminders by volunteers at parking lots throughout a community could be instrumental in developing numerous habitual safety belt users. The result: lives would be saved and serous injuries prevented from inevitable vehicle crashes.

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Table 1
Percentage of drivers buckling up and giving positive vs. negative hand gestures and facial expressions as a function of prompting condition (Study I).

Type of response	Flash-for-Life (*n* = 895)	Click-it-or-Ticket (*n* = 927)
Compliance	33.6%	25.6%
Positive hand gesture	13.2%	7.8%
Negative hand gesture	0.9%	2.6%
Positive facial expression	25.0%	18.9%
Negative facial expression	3.9%	9.2%

Table 2
Percentage of drivers buckling up and giving positive vs. negative hand gestures and facial expressions as a function of the prompting condition (Study II).

Type of response	Flash-for-Life (*n* = 895)	Click-it-or-Ticket (*n* = 927)
Compliance	20.8%	20.4%
Positive hand gesture	10.7%	8.5%
Negative hand gesture	0.6%	0.7%
Positive facial expression	18.7%	16.3%
Negative facial expression	1.8%	2.1%

Table 3

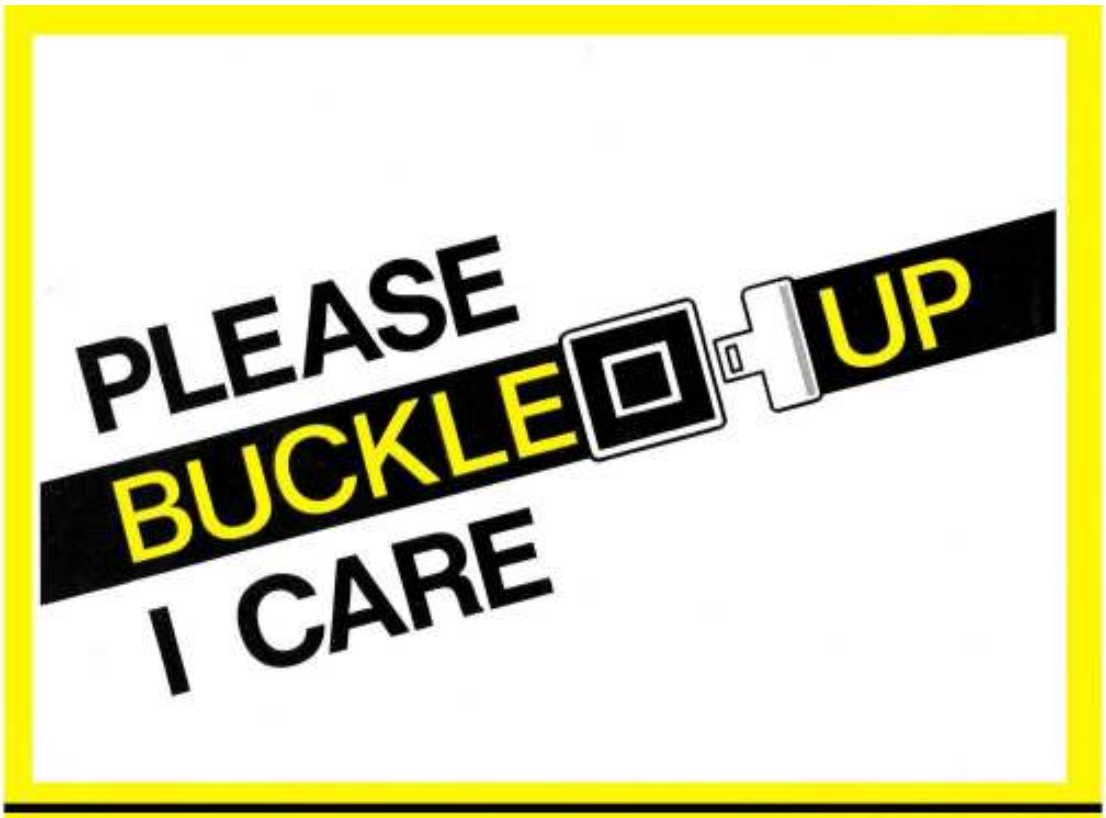
Type and percentages of responses to intervention by whether responders buckled or not (Study II).

	Buckled in response to prompt		Did not buckle in response to prompt	
Type of response	Flash-for-Life (*n* = 210)	Click-it-or-Ticket (*n* = 201)	Flash-for-Life (*n* = 795)	Click-it-or-Ticket (*n* = 784)
Positive hand gesture	24.8%	19.9%	6.9%	5.6%
Negative hand gesture	0.5%	0.5%	0.6%	0.8%
Positive facial expression	46.2%	38.8%	11.4%	10.6%
Negative facial expression	0.5%	1.0%	2.1%	2.4%

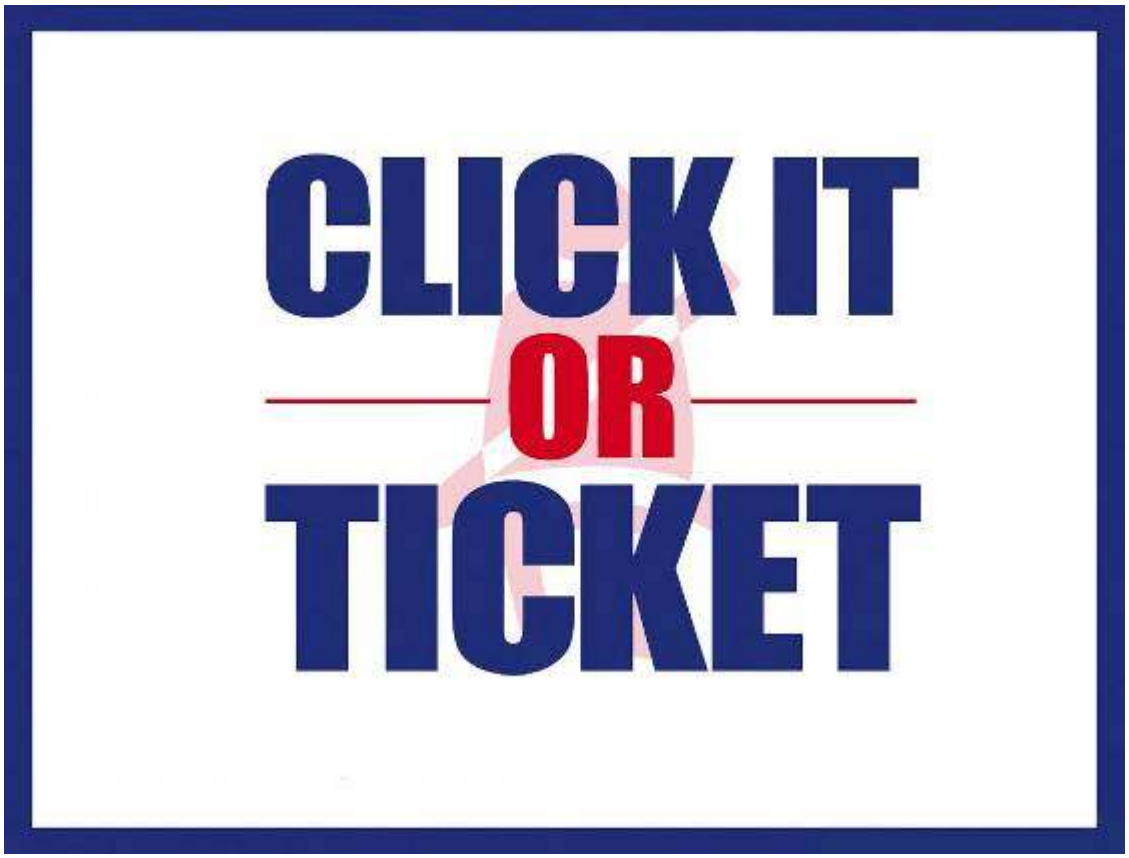
Table 4

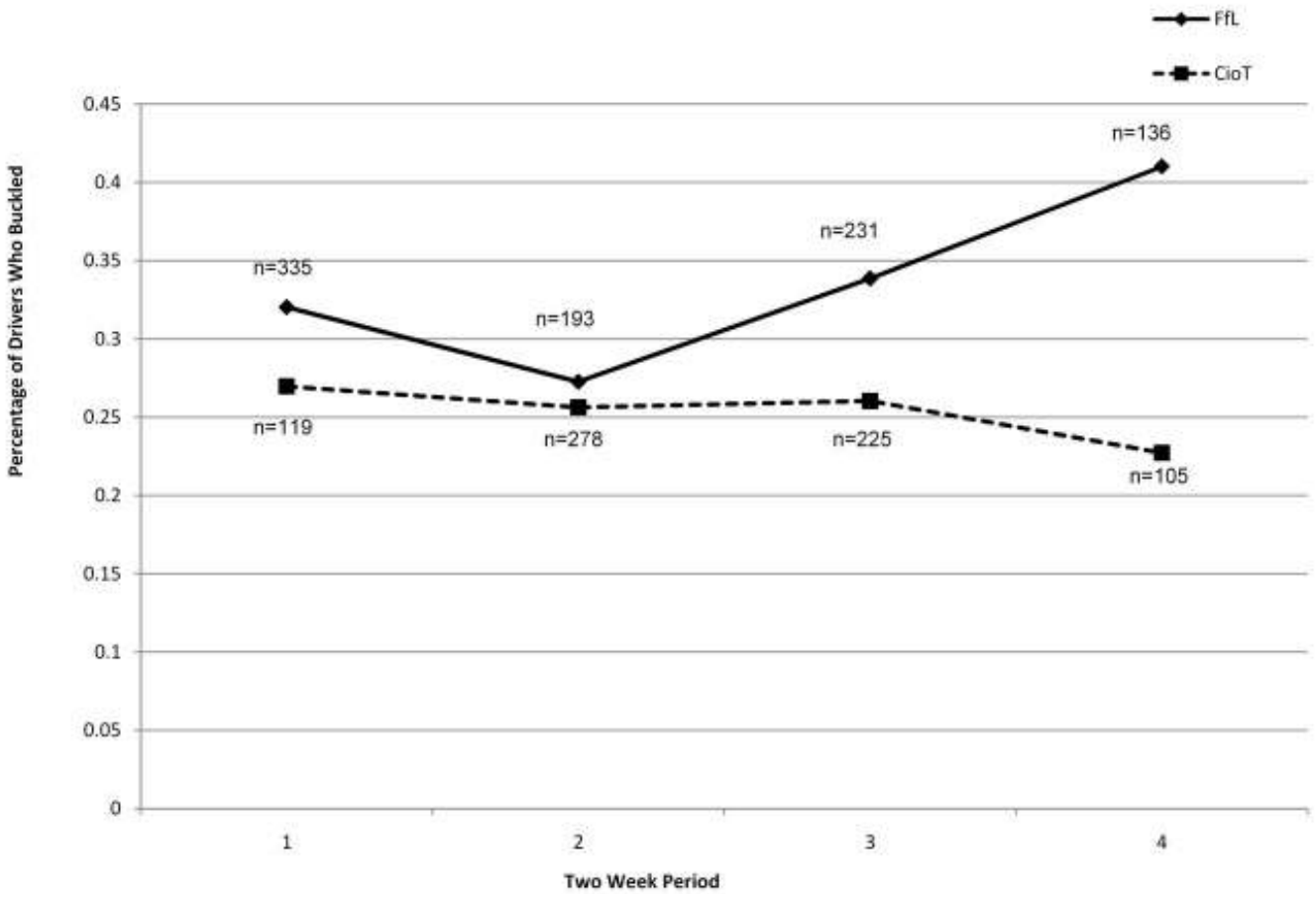
Type and percentages of responses to intervention by whether responders buckled or not (Study I).

	Buckled in response to prompt		Did not comply with prompt	
Type of response	Flash-for-Life (n = 301)	Click-it-or-Ticket (n = 238)	Flash-for-Life (n = 594)	Click-it-or-Ticket (n = 689)
Positive hand gesture	25.9%	15.1%	6.7%	5.2%
Negative hand gesture	0%	0%	1.4%	3.5%
Positive facial expression	51.2%	44%	12.0%	10.2%
Negative facial expression	1.7%	4.6%	5.1%	10.7%


PLEASE
BUCKLE UP
I CARE


THANK YOU!
FOR
BUCKLING UP


CLICK IT
OR
TICKET


FfL
CioT
Percentage of Drivers Who Buckled
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
n=335
n=193
n=231
n=136
n=119
n=278
n=225
n=105
1
2
3
4
Two Week Period

Appendix A

Click it or Ticket Data Recoder Data Sheet

Date:_____

Location: Prices Fork Lot **A** Prices Fork Lot **B**

Time: **10:30am-11:30pm** **11:00am-12:00pm** **12:00 pm-1:00pm**
1:00pm-2:00pm **1:30pm-2:30pm** **2:00pm-3:00pm**

Flasher Data Collector #:_____
Data Sheet Person Data Collector #:_____

Observation #	Gender	Pre-Flash Belt	Post-Flash Belt	Hand Gesture	Facial Expres.
1	M F	Y N	Y N N/A	+ - Ø	+ - Ø
2	M F	Y N	Y N N/A	+ - Ø	+ - Ø
3	M F	Y N	Y N N/A	+ - Ø	+ - Ø
4	M F	Y N	Y N N/A	+ - Ø	+ - Ø
5	M F	Y N	Y N N/A	+ - Ø	+ - Ø
6	M F	Y N	Y N N/A	+ - Ø	+ - Ø
7	M F	Y N	Y N N/A	+ - Ø	+ - Ø
8	M F	Y N	Y N N/A	+ - Ø	+ - Ø
9	M F	Y N	Y N N/A	+ - Ø	+ - Ø
10	M F	Y N	Y N N/A	+ - Ø	+ - Ø
11	M F	Y N	Y N N/A	+ - Ø	+ - Ø
12	M F	Y N	Y N N/A	+ - Ø	+ - Ø
13	M F	Y N	Y N N/A	+ - Ø	+ - Ø
14	M F	Y N	Y N N/A	+ - Ø	+ - Ø
15	M F	Y N	Y N N/A	+ - Ø	+ - Ø
16	M F	Y N	Y N N/A	+ - Ø	+ - Ø
17	M F	Y N	Y N N/A	+ - Ø	+ - Ø
18	M F	Y N	Y N N/A	+ - Ø	+ - Ø
19	M F	Y N	Y N N/A	+ - Ø	+ - Ø
20	M F	Y N	Y N N/A	+ - Ø	+ - Ø
21	M F	Y N	Y N N/A	+ - Ø	+ - Ø
22	M F	Y N	Y N N/A	+ - Ø	+ - Ø
23	M F	Y N	Y N N/A	+ - Ø	+ - Ø
24	M F	Y N	Y N N/A	+ - Ø	+ - Ø
25	M F	Y N	Y N N/A	+ - Ø	+ - Ø
26	M F	Y N	Y N N/A	+ - Ø	+ - Ø
27	M F	Y N	Y N N/A	+ - Ø	+ - Ø
28	M F	Y N	Y N N/A	+ - Ø	+ - Ø
29	M F	Y N	Y N N/A	+ - Ø	+ - Ø
30	M F	Y N	Y N N/A	+ - Ø	+ - Ø
31	M F	Y N	Y N N/A	+ - Ø	+ - Ø
32	M F	Y N	Y N N/A	+ - Ø	+ - Ø
33	M F	Y N	Y N N/A	+ - Ø	+ - Ø
34	M F	Y N	Y N N/A	+ - Ø	+ - Ø
35	M F	Y N	Y N N/A	+ - Ø	+ - Ø

Entered: _____

Notes:

Verified: _____

Please make tick marks to show total (buckled and unbuckled!!) count of Commuter drivers exitng the lot.

Appendix B

Flash for Life Data Recoder Data Sheet

Date:_____

Location: Prices Fork Lot **A** Prices Fork Lot **B**

Time: 10:30am-11:30pm 11:00am-12:00pm 12:00 pm-1:00pm
1:00pm-2:00pm 1:30pm-2:30pm 2:00pm-3:00pm

Flasher Data Collector #:_____
Data Sheet Person Data Collector #:_____

Observation #	Gender	Pre-Flash Belt	Post-Flash Belt	Hand Gesture	Facial Expres.
1	M F	Y N	Y N N/A	+ - Ø	+ - Ø
2	M F	Y N	Y N N/A	+ - Ø	+ - Ø
3	M F	Y N	Y N N/A	+ - Ø	+ - Ø
4	M F	Y N	Y N N/A	+ - Ø	+ - Ø
5	M F	Y N	Y N N/A	+ - Ø	+ - Ø
6	M F	Y N	Y N N/A	+ - Ø	+ - Ø
7	M F	Y N	Y N N/A	+ - Ø	+ - Ø
8	M F	Y N	Y N N/A	+ - Ø	+ - Ø
9	M F	Y N	Y N N/A	+ - Ø	+ - Ø
10	M F	Y N	Y N N/A	+ - Ø	+ - Ø
11	M F	Y N	Y N N/A	+ - Ø	+ - Ø
12	M F	Y N	Y N N/A	+ - Ø	+ - Ø
13	M F	Y N	Y N N/A	+ - Ø	+ - Ø
14	M F	Y N	Y N N/A	+ - Ø	+ - Ø
15	M F	Y N	Y N N/A	+ - Ø	+ - Ø
16	M F	Y N	Y N N/A	+ - Ø	+ - Ø
17	M F	Y N	Y N N/A	+ - Ø	+ - Ø
18	M F	Y N	Y N N/A	+ - Ø	+ - Ø
19	M F	Y N	Y N N/A	+ - Ø	+ - Ø
20	M F	Y N	Y N N/A	+ - Ø	+ - Ø
21	M F	Y N	Y N N/A	+ - Ø	+ - Ø
22	M F	Y N	Y N N/A	+ - Ø	+ - Ø
23	M F	Y N	Y N N/A	+ - Ø	+ - Ø
24	M F	Y N	Y N N/A	+ - Ø	+ - Ø
25	M F	Y N	Y N N/A	+ - Ø	+ - Ø
26	M F	Y N	Y N N/A	+ - Ø	+ - Ø
27	M F	Y N	Y N N/A	+ - Ø	+ - Ø
28	M F	Y N	Y N N/A	+ - Ø	+ - Ø
29	M F	Y N	Y N N/A	+ - Ø	+ - Ø
30	M F	Y N	Y N N/A	+ - Ø	+ - Ø
31	M F	Y N	Y N N/A	+ - Ø	+ - Ø
32	M F	Y N	Y N N/A	+ - Ø	+ - Ø
33	M F	Y N	Y N N/A	+ - Ø	+ - Ø
34	M F	Y N	Y N N/A	+ - Ø	+ - Ø
35	M F	Y N	Y N N/A	+ - Ø	+ - Ø

Entered: _____

Notes:

Verified: _____

Please make tick marks to show total (buckled and unbuckled!!) count of Commuter drivers exitng the lot.

Appendix C

Off Campus Data Recoder Data Sheet

1 = 16-24
2 = 24-39
3 = 40-60
4 = 60+

Date:_____

Location: **Walmart A** **Walmart B**

Time Range: _____

Flasher Data Collector #:_____ ☐

Data Recorder Primary #:_____ ☐ **Data Recorder Reliability #:**_____ ☐

Observation #	Sign		Gender		Pre-Flash Belt		Post-Flash Belt			Hand Gesture			Facial Expres.			Age			
1	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
2	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
3	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
4	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
5	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
6	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
7	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
8	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
9	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
10	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
11	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
12	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
13	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
14	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
15	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
16	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
17	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
18	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
19	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
20	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
21	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
22	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
23	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
24	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
25	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
26	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
27	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
28	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
29	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
30	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
31	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
32	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
33	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
34	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4
35	F	C	M	F	Y	N	Y	N	N/A	+	-	Ø	+	-	Ø	1	2	3	4

Notes:

Entered: _____

Verified: _____

Appendix D

Data Collection Protocol

Enter Date (YY/MM/DD)

1) Circle Location
2) Write time in military time (e.g., 4:00PM = 1600)
3) Circle weather condition for when you start collecting data
4) Enter CABS data collection #'s for **BOTH** Flasher and Data Sheet Person and "check" which one you are.

PROTOCOL

Each research assistant should have their own specific data sheet

Data Recorder: Hold the Data Recorder data sheet

Drive to specified data collection spot, and begin making observations **when your time slot begins. BE SURE TO ONLY OBSERVE PEOPLE LEAVING THE PARKING LOT.**

OBSERVATION NUMBER: Hear (from the flasher) which vehicle you are observing (make sure you and the flasher are on the same **observation number**)

SIGN: Circle "F" if using Flash-for-Life and "C" if using Click-it-or-Ticket.

GENDER: Is the driver **male** or **female**? –circle gender

PRE-FLASH BELT: Is the driver buckled or unbuckled? –circle Y or N

POST-FLASH BELT: Did the driver buckle up after being flashed? – circle Y or N

HAND GESTURE: Did the driver give you a hand gesture post-flash? – circle + for positive hand gestures (e.g., wave, thumbs up) – for negative hand gestures (e.g., the finger, thumbs down).

FACIAL EXPRESSIONS: Did the driver show a facial expression post-flash? – circle + for positive facial expression (e.g., smile), - for negative facial expressions (e.g., stick tongue out, grimace), or Ø for no facial expression

AGE: Estimate the age range of the driver and circle the appropriate response. Responses are as follows: 1 = 16-24 2 = 24-39 3 = 40-60 4 = 60+

NOTES: If at anytime you observe behavior that is not measured on this sheet, please note the observation number and make your comment in the **notes field** of the data collection sheet.

CONTINUE FOR ONE HOUR. E.g., if you are signed up for the 1-2 data collection spot please make your first observation at 1pm and make your last observation at 2pm.

IMPORTANT: **NOTE:** All time spent traveling to and from data collection spots can be counted on the data collection slip. I will allow up to a half hour of travel (30 min to and 30 min from) on the slip. **ALL DATA COLLECTION SHEETS MUST BE TURNED IN WITHIN 24 HOURS OF THE COLLECTION OR YOU MAY NOT RECEIVE CREDIT.**