

The Social Psychology of Seatbelt Use

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16. Abstract <p>Two studies examined interventions to increase compliance with seat belt laws. Both studies included physical reminder objects and social influence elements. The first study with a lower base rate (and lower SES profile) showed a 20% improvement in compliance in the 2 weeks following the intervention. The second study had a higher initial base rate (85%), which increased to approximately 90% in the 2 weeks following the intervention. The improvement was significant for the larger (white) samples in the study, but only for drivers (not passengers). Because the physical reminder objects were rarely present in the cars on subsequent observation, it appears the social influence manipulations were responsible for the increase in compliance. Further study is needed to determine whether knowledge of future monitoring for the behavior, or simply knowledge of social comparison information, is responsible for these effects.</p>					
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Introduction

During the summer and fall of 2009, we set out to conduct two studies of interventions to motivate seat belt compliance. This project began with an assessment of research on behavior change in social psychology. Many of these studies raised the issue of how public knowledge of individuals' intentions may impact later behavior. Our investigation into seat belt compliance straddles two major themes:

- Social norms and culture as it influences seat belt use, and
- Habit formation and work on interventions that promote safety belt use.

Social identity is a powerful construct that influences our behavior. The attribution literature has demonstrated that viewing one's self as a tidy person, or that one is a member of a tidy classroom, is more effective at reducing schoolyard litter than standard persuasion techniques such as giving information on the effects of littering or a rationale for why one should not litter (as well as compared to a control condition) (Miller, Brickman & Bolen, 1974). Following Conner and Christopher's (1998) suggestion of including self-identity and affective beliefs, we propose to use social identity as a way to imbue the generic seat belt with personal and social affective valence. Tailoring and personalization have been used effectively in the domain of smoking cessation interventions (e.g., Strecher, 1999) and in uptake rates for genetic testing for breast cancer (Skinner et al, 2002; Wang et al, 2005). The personal relevance of information about safety belts may provide novel ways of exploring behavior change.

A different explanation for noncompliance is that individuals may simply forget to buckle their seat belts when entering a car. Habits that are not well-engrained can be supported by simple **reminders** that guide the target behavior; for example, placing a briefcase near the door to help in remembering to bring it along when you leave. A simple physical object that reminds the driver to "buckle up" that is visible when entering the car, may help to increase seat belt use. This approach focuses on the formation of habit to motivate belt use. However, in both studies, the reminder was tailored to evoke the social identity of participants. By appealing to their group membership with memorabilia, we hope to tap into affect toward their affiliations. Consequently, we designed a "reminder" intervention, where a physical object labeled with a group affiliation was provided to place within the driver's view. The studies tested two forms of external reminder products, a "seatbelt wrap" and a decal placed on the windshield.

A second key concept that emerged from the early days of social psychology was the important role of **public commitment** as a factor in changing behavior. In the days of WWII meat rationing, people who made a public commitment to try a meal of organ meat once during the following week and report back were more likely to have a sustained level of behavior change. The underlying mechanisms of public commitment however are not clear. For example, is it personal commitment, an affirmed sense of identity, or a social norm effect? A study advocating a social norm effect on behavior change (Cialdini, 2008) pointed to the conservation rate of towel use in a *specific* hotel room, rather than the hotel generally. The specific tailoring ("in room 417") was more effective at getting patrons in that room to reuse towels.

An alternative account is that people may not be motivated to comply when they have little expectation of **monitoring** or consequence for their behavior. Perhaps people would be motivated to comply by information about the occurrence of monitoring. Many psychological studies have shown influence on behavior from the presence of an observer (both facilitative and inhibiting), or even the presence of a mirror. It is possible that knowing one's behavior will be monitored may influence it.

Consequently, we designed both studies with social influence interventions, where information about the observation of seat belt compliance was provided. In one study, this took the form of information about a competition that would occur on a later date, along with a request for public statement of their intention to wear their belt. In the second, information was provided about the rate of seat belt compliance in the specific place of observation. This information may invoke social norms, and may suggest that their behavior is monitored in an unexpected way.

To our knowledge, these two ideas have not been tested in the context of seatbelt use. By combining these manipulations, we hoped to achieve an impact on seat belt compliance in an observational field study, and then determine which aspects lead to compliance.

Pilot Observations and Motivation for the Two Studies

An important consideration for the study was finding a test site where improvement in compliance could be readily observed. During the first 6 months of the project, we conducted observations at various locations throughout Ann Arbor, Michigan. We observed at locations including supermarket parking lots, gas stations, child care pickup areas, and high school parking lots. We found that the rate of seatbelt use was quite high, between 90-95% among driver and passengers in the various locations we observed. This result was consistent with the seat belt use rate of 97% found in a recent statewide study of Michigan seat belt use (Datta & Savolainen, 2009).

In order to identify pockets with lower compliance, we sought out sites in surrounding areas including Ypsilanti, Canton, Milan, and Novi, which have a more diverse racial and socioeconomic status (SES) profiles than found in Ann Arbor. We observed one exception to this relatively high seatbelt use: patrons of pool halls. In our initial observations, patrons entering four pool halls outside of Ann Arbor showed 50-60% seatbelt use. These patrons were mostly males (75%) of varying ages.

Next, we set out to design a reminder product that would be visible to the driver and remind them to buckle up as they entered the car. We then conducted informal focus groups, and settled on a design for a "belt wrap," an elastic strap with velcro closure that is placed above the buckle. This does not interfere with belt use, but is visible when the belt is retracted before use as a reminder. The belt wrap included the patch of the American Pool Association (APA) to

make it relevant to the target group. This intervention and target group was the focus of Study 1.

Our pilot work also identified relatively lower seatbelt use among sports fans entering and leaving a parking lot for a college football game. That led us to develop a personalized reminder product for football fans, namely University of Michigan (UM) fans. For this second study, static cling decals placed on the front windshield were designed as a visible reminder for seat belt use. Study 2 provided a test of the effectiveness of this intervention.

Study 1

This study was conducted with regular patrons of pool halls. These participants were members of pool leagues that played weekly during the season. The key interventions in this study were:

- Reminder: "Belt wrap" with pool league logo
- Social Influence: Commit to wearing belt for competition

The belt wrap is shown in Figure 1. The patch was attached with Velcro® and was designed to be visible when the seatbelt was not in use. The wrap did not interfere with the routine use of buckling and unbuckling the seatbelt as one entered and exited the vehicle.



Figure 1: Belt wrap intervention and American Pool Association logo.

Method

Seat belt use was measured by direct observation. One requirement was that observations should be made of drivers at a particular time period on the same weeknight over several observations. Another requirement was the need to observe from a public place so as not to interfere with the driver's normal habits. A final requirement was to attain a sample representative of a driving population with a more racially diverse and varied SES makeup.

With these requirements in mind, participants in a recreational billiards league in three large metropolitan suburban areas (80,000-90,000 inhabitants each) in central Michigan were selected. Observers waited on public sidewalks in the front parking lots of four different billiards establishments. Four groups of eight team members were schedule to play each night

of the league beginning promptly at 7:30 p.m. These establishments were selected for the ease of observation when participants parked in their lots and entered the establishments, as well as having scheduled weekly pool leagues. The distance between the observers and the passing cars was 12-15 feet (4-5 m).

Prior to the study, the baseline rate of seat belt use was observed in these locations. On the first night of observations, the intervention took place. One week later, the observation was repeated (without any intervention), and a week following, another observation (without intervention) occurred. Because the league play included a rotation of teams from non-study sites, the repeated observations included only some of the players from the intervention week; this percentage ranged from 25% to 100% on subsequent weeks. No participants or teams played in more than one of these four separate weeknight leagues.

The observation period covered from 6:00 p.m. to 7:45 p.m. on the night when the billiards league played at each establishment (a Sunday, Monday, Tuesday, or Wednesday) on four separate occasions in April and May of 2009. The five college-age observers worked in pairs at each site, rotating based on availability. All information was collected anonymously, so no license plate numbers were collected. The observers collected an observation for each person inside a car arriving to park in the lot.

On the intervention night of the study, one observer completed the data collection while another stood by the entrance of the pool hall and waited for the participant to approach the front door of the establishment. This location was judged safer and less suspicious to the participants than stopping them at their car. The observer asked if the person is "playing in pool league tonight?" If yes, they were asked if they were willing to be in "a study of seat belt use." Only three did not agree. They were asked if they are a "Full Time," "Part Time," or "Non-wearer" of seat belts. Next, they were asked, "Are you willing now to commit to wearing your seat belt 100% of the time?" Each participant was then handed a "belt wrap" including the league logo along with a card describing how to wrap it around the seat belt clip above the mechanism. They were also told, "This may help to remind you to wear your belt, please leave it on for a few weeks." Finally, they were told, "We're having a competition between leagues. We're coming back on another night. The league with the most players wearing seat belts will get one night of free match play" (approximately a \$7 value per player). They had the opportunity to ask questions and were given contact information, and were thanked for their help with the study.

On the following two weeks, the same parking lots were observed in the same manner but without any intervention with the participants. In addition to the variables described above, raters also attempted to observe the use of the seat belt wraps on the participants' belts. However, because the wraps sat low in the drivers' laps, it was difficult to observe whether they were in use.

Results

Table 1 presents seatbelt use as a function of the four observation times (baseline, the initial intervention week, one week follow up, and two week follow up). The table also shows the rates for individual pool halls.

Table 1. Percent of drivers wearing seatbelt as a function of week and location.

	Pool Hall 1	Pool Hall 2	Pool Hall 3	Pool Hall 4
<i>Baseline</i>	70.0	60.0	66.7	51.9
Intervention	53.3	54.5	66.7	77.8
1 Week Follow Up (% Wk1 Returnees)	72.7 25%	89.7 50%	71.4 100%	89.7 100%
2 Week Follow Up (% Wk1 Returnees)	76.9 50%	87.5 50%	86.4 50%	81.8 75%

Figure 2 shows the overall percentages and sample sizes collapsing across the four sites. Non-overlapping confidence intervals around two bars is equivalent to a statistical test rejecting the null hypothesis of equal proportions.

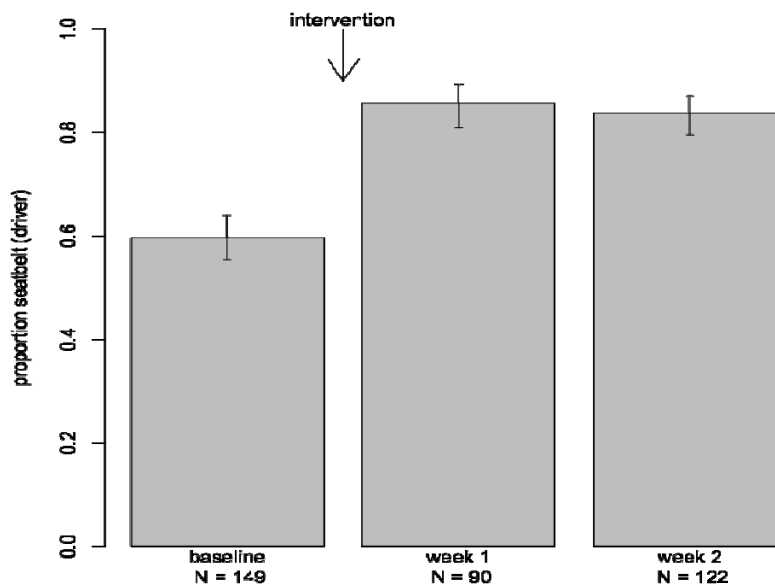


Figure 2. Percentage of Driver Seatbelt Use (collapsing across the four pool hall sites)

A similar increase occurred for passengers, but the sample size is too small to make firm statistical conclusions.

The findings from Study 1 are promising. It appears the intervention was successful, showing over a 20 percentage point difference in seatbelt use. Unfortunately, because we included multiple intervention elements, it is not possible to identify which elements are responsible for the behavior change observed. From informal discussions with participants, it appeared that the competition for league fees was a clear incentive; on the other hand, use of the seat belt wraps in subsequent weeks was infrequent. In fact, only two cars were observed with the seat belt wrap in place. We launched a second study to provide more information about the mechanism for the observed behavior change in belt use.

Study 2

Our second study focused on football fans entering parking lots before games in and near the University of Michigan campus. The three basic elements of this study are:

Reminder: Window decal with "M Buckle Up!"

Social Influence: Card saying, "97% who park in this lot wear their belts."

The information sheet is shown in Figure 3.

Figure 3. Example flyer placed on windshields in Study 2.

Method

Seat belt usage was measured by direct observation. The study was conducted at the University of Michigan, a major Midwestern university in a medium sized town (pop. 114,024). Individuals attending football games are invited to park their cars at the nearby high school parking lot. The price is \$30 for public parking, and advance permits and season passes are also sold for parking there. A total of 4,000 cars can be parked at the site each game day,



combining two blacktop lots and several grass fields. Drivers can enter the lots through seven separate gates. Those allowing cars to enter (Gates 1, 2, 5, 6, and 7) were set up as monitoring points.

Seven college-age observers worked alone or in pairs at each site. Observers waited on public sidewalks in front of these entrances for the parking lot. The distance between the observers and the passing cars was 12-15 feet (4-5 m). All information was collected anonymously, so no license plate numbers were collected. The observers collected an observation for each person inside a car entering the parking lot. In addition to the drivers' and passengers' seat belt usage, race (White, Black, or Other) and gender (male, female) were estimated.

The observation period covered 2 hours preceding game times on Saturdays on three separate occasions in October and November of 2009. For the initial measurement and intervention, the observations took place between 12:00 p.m. and 2:00 p.m. Following this period, a total of 975 packets were placed on car windshields for vehicles parked in the areas serviced by Gates 2, 5, and 6. The packets included a 3 x 3 window decal with the school logo (the "block M") and the phrase, "buckle up!" (the logo and phrase together communicate "M Buckle Up"), and a quarter page card with information on the base rate (stated as, "97% of football fans using this lot wear their seats belts"). This figure was derived from the annual statewide rate (Datta & Savolainen, 2009). The decal and card were packaged within a small plastic bag (in case of rain), The placement of packets on cars took place from 2:00 p.m. to 4:00 p.m. while the game was ongoing.

On the following 2 weeks, the same gates were observed in the same manner for a 2-hour period ending before game time, but with no intervention. In addition to the variables described above, observers also attempted to determine the use of the window decals on the participants' car windows. However, it was sometimes difficult to observe whether they were in use from the parking lot entrance observation points. So, a further count of parked cars took place during the game.

Results

One complication occurred at the second week follow-up. While the parking staff stated there would be heavy repeat customers at the lot for each game, the second week's game was anomalous. Many UM fans had sold their tickets to the visiting team fans (an unusual occurrence), so fewer returning customers appeared to be parked in the lot on that day.

Table 2 presents the percentages and sample sizes by driver and passenger, as well as the race and gender of the driver/passenger.

Table 2. Percent of Drivers and Passengers using Seatbelts by Race and Gender.

		Driver/White	Driver/Black	Passenger/White	Passenger/Black
Baseline/Intervention	Female	.85 (824)	.82 (38)	.86 (515)	.71 (18)
	Male	.86 (751)	.85 (136)	.85 (387)	.88 (213)
Week 1 follow-up	Female	.90 (654)	.89 (19)	.88 (314)	.89 (9)
	Male	.91 (923)	.91 (174)	.87 (284)	.94 (265)
Week 2 follow-up	Female	.91 (711)	.81 (21)	.86 (179)	.86 (7)
	Male	.90 (741)	.94 (90)	.84 (129)	.89 (103)

The intervention shows a small effect for both male and female White drivers (a 5% improvement in belt use from 85-86% to 90-91%). For Black drivers, there was an effect for men, but not for women (perhaps because the sample size was quite small). There were no significant changes for White passengers, but an increase in Week 1 only for Black passengers. Note that there were too few people in the “other” race category for analysis.

Unfortunately, most vehicles did not display the reminder decals on their windshield. Eleven out of 1,640 vehicles displayed the decal at the one week follow-up; four out of 1,070 vehicles displayed the decal at the second week follow-up. Though the decals were static cling, there may have been some resistance to displaying them on the front car windshield as directed. In any case, they did not appear to play the role of a reminder.

Discussion

This report summarizes findings from two intervention studies. Our findings indicate that two different interventions worked relatively well to increase the percentage of seatbelt use. One intervention was designed to target a specific population (pool hall patrons) who in our initial baseline measurements showed a relatively lower level of seatbelt use. A second intervention was designed to target a more general population (college football fans) who show a moderately high frequency of seatbelt use at baseline. Both interventions showed a significant increase in seat belt use. These findings are remarkable given the difficulty many previous studies have had in demonstrating an increase in seatbelt use (especially when seatbelt use is already moderately high, in the mid 80 percent in our second study).

The main limitation of these two studies is that we cannot pinpoint the exact psychological mechanism accounting for the change. A key component in evaluating an intervention is evidence that the intervention was “used” by the research participants. Unfortunately, here the data about the reminder intervention are less clear. In Study 1, there was little evidence that the seatbelt wraps were used in the returning cars, while in Study 2, there was little evidence that the decals were placed on the car windshields. Despite the personal relevance of the reminders, based on highly valued social identity, the reminder objects were not observed in use. Yet, in both studies, something happened between baseline and intervention to change belt use behavior.

One possible explanation for the rate increase in Study 1 was the competition intervention. We told participants we would return to measure compliance at a later week, and that a

monetary prize would be awarded. Some individuals indicated they would find this a helpful incentive. However, in Study 2, we were able to change the compliance rate even without the monetary incentive. The rate change was greater in Study 1, but the base rate was also lower to start with in the pool player sample.

However, the two social influence interventions were similar at a general level, as both studies drew drivers' attention to the use of seat belts, and the potential for monitoring at that site. In Study 1, the drivers were told the parking lot would be monitored on a future night. In Study 2, drivers were not told of the future monitoring, but the information card provided the base rate of belt use in the specific lot, which may have suggested future monitoring would take place. It is possible that drawing attention to belt use monitoring in specific areas where the drivers expect to return ("this parking lot") has an impact on belt use.

This explanation would not only account for the findings in our studies, but also for the effects found in Cialdini's research. For example, some published reports showed people were unaffected by flyers detailing the general rate of energy consumption in their neighborhoods, but did reduce their energy use when given information directly comparing their use to others'. Cialdini's explanation is the implied competition to do as well as one's neighbors. However, another explanation is the knowledge that your behavior is being monitored, regardless of any potential consequences. A "monitoring effect" would argue that people are motivated simply by the information that their behavior is public.

We believe an additional study is necessary to understand the "active ingredient" underlying the two interventions tested in the first two studies of the project (monitoring and community base rates). This third study would directly pit these two explanations by testing which is more effective at increasing seatbelt use. We will use the pool hall location given that the use of seatbelts was relatively low, which yields more power to detect changes due to manipulations without approaching a ceiling effect (as in our football study). We plan to use the seatbelt "huggy" again, but this time manipulate monitoring (as in study 1) or base rates (as in study 2). The results of this study would allow us to conclude whether people are motivated by their interest in obeying social norms versus by their knowledge that their own behavior is being monitored. This knowledge will be helpful in modeling and recommending policy implications since knowing which "policy levers" to pull in order to change seatbelt use depends, in part, on having a clear understanding of the underlying psychological mechanism.

Based on the results, we can design more efficient (and possibly cost effective) interventions that can be scaled up to much larger levels (e.g., state and national). To that end, we are continuing to data mine both studies to look for systematic patterns. In addition, we have been able to plan (through continued sponsorship) to conduct a third study to investigate these underlying social influence and monitoring mechanisms.

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