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LONG-TERM BENEFITS OF PROMPTS TO USE SAFETY BELTS AMONG DRIVERS EXITING SENIOR COMMUNITIES

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Senior drivers are vulnerable to automobile crashes and subsequent injury and death. Safety belts reduce health risks associated with auto crashes. Therefore, it is important to encourage senior drivers to wear safety belts while driving. Using a repeated baseline design (AAB), we previously reported that motivating signs boosted safety belt usage by drivers exiting senior communities from baseline (72% and 68% usage), to postinstallation of signs (94%), to 6 months follow-up (80%). The current study was a 4-year follow-up in which six senior communities, with seat belt signs, were compared to six matched control senior communities with no signs. Safety belt usage was stable, across 4 years, at approximately 80% for both male and female drivers and front seat passengers for the six communities with signs, and was approximately 55% for control sites. These finding suggest that the simple and low-cost intervention of erecting signs to prompt safety belt use has persistent benefits that affect driver and passenger behavior alike.

DESCRIPTORS: safety belts, prompts, signs, driving safety

The incidence of automobile crashes per miles driven and their related mortality rates steadily increase for individuals over the age of 55. The extent of injuries, hospitalizations and deaths is significantly lower among drivers who wear safety belts (Henry et al., 1996). Therefore, it is important to encourage senior drivers to wear safety belts. There have been many behavioral strategies used to encourage safety belt use (Geller, 1988), but prompting with road signs is one of the most cost effective. Studies have demonstrated modest benefits of road signs used to prompt safety belt use (e.g., Malenfant, Wells, Van Houten, & Williams, 1996). The modest effect size of signs may be, in part, because signs primarily carry informational rather than motivational value.

In a previous study, we attempted to increase the motivational value of signs by using a picture of a black cross within a white heart, surrounded by a red background, with the words ''Buckle up, Stay safe'' (Cox, Cox, & Cox, 2000). In that study, 150 consecutive drivers were monitored as they exited five senior communities. The drivers were monitored twice before the signs were installed, immediately after the signs were installed, and 6 months after the signs were installed. Safety belt use rose from 70% at baseline to 94% immediately after the installation of the signs to 80% at a 6-month follow-up observation (pre-6-month follow-up comparison $p = .02$). These results were substantial and suggest that signs can be

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informative and motivational. Another important but understudied question involves long-term effects. In this study, we explore the long-term effects of signs on safety belt use 4 years after installation and focus on differential effects for male and female drivers as well as effects on passengers.

METHOD

Procedure

In a matched-subjects group design, 25 consecutive drivers exiting each of 12 different senior communities ($N = 300$) and their front-seat passengers ($N = 251$) were observed. The six experimental communities were the five sites in our previous study (Cox et al., 2000) and one additional site. All experimental sites retained the signs as originally posted. The control centers were matched with an experimental center based on three dimensions: private versus subsidized, apartments versus homes, and rural versus urban. For example, Experimental Center 1 (E1) and Control Center 1 (C1) were both affluent, rural, private home communities; Centers E2 and C2 were subsidized urban apartments; and Centers E3 and C3 were both daytime community centers. Center members were not informed of the installation of the signs or of the data-collection efforts.

Two raters were seated at the community exits, off the road, on the opposite side of the street from the sign. Raters recorded whether the driver was male or female, and whether the driver and passenger (a) were buckled when they entered the intersection or (b) buckled at the intersection. Safety belt use was determined based on the visible presence of a shoulder strap across the driver's chest. Interobserver agreement concerning whether the driver was buckled or buckled at the exit was 100%.

RESULTS AND DISCUSSION

Safety belt use was greater at each experimental site than at the matched control site (paired $t = 3.84$, $p = .006$) and was similar to experimental sites 6 months after installation (see Figure 1). The benefits were similar for men and women, with the percentages being 80% for men and 81% for women at the experimental sites and 53% for men and 55% for women at the control sites. More passengers at the experimental sites left the exit buckled ($M = 79\%$; $t = 2.54$, $p = .03$) than at the control sites ($M = 59\%$) (Figure 1).

These results replicate our previous findings (Cox et al., 2000) that a sign prompting the use of safety belts, with a positive motivating message that emphasizes physical well being, is effective in encouraging safety belt use among older drivers. This effect was found immediately after the signs were installed and 6 months after installation (Cox et al., 2000; Cox & Cox, 1999). The current study extends that research by showing that the beneficial effects of the signs were still present after 4 years. At both 6-month and 4-year follow-ups, 80% of the drivers were buckled when exiting the senior communities. The current study investigated two additional parameters: driver gender and passenger use of safety belts. The results showed that men and women exhibited similar levels of seat belt use at the experimental and control sites. The results also reflected similar increases in buckling for front-seat passengers.

The timing (and thus possibly the mechanism) of behavior change shifted between studies. In the original study (Cox et al., 2000) after installation and 6 months later, 96% and 46% of the drivers who arrived at the intersection without a seat belt buckled themselves there, whereas only 2% of the current experimental subjects buckled themselves at the exits. However, at 1 week, 6 months, and 4 years after installation, 68%, 77%, and 80%, respectively, arrived at the exits buckled, illustrating that more drivers were starting their drives already buckled. These results indicate that routine exposure to informational and motivational signs led to more routine use of

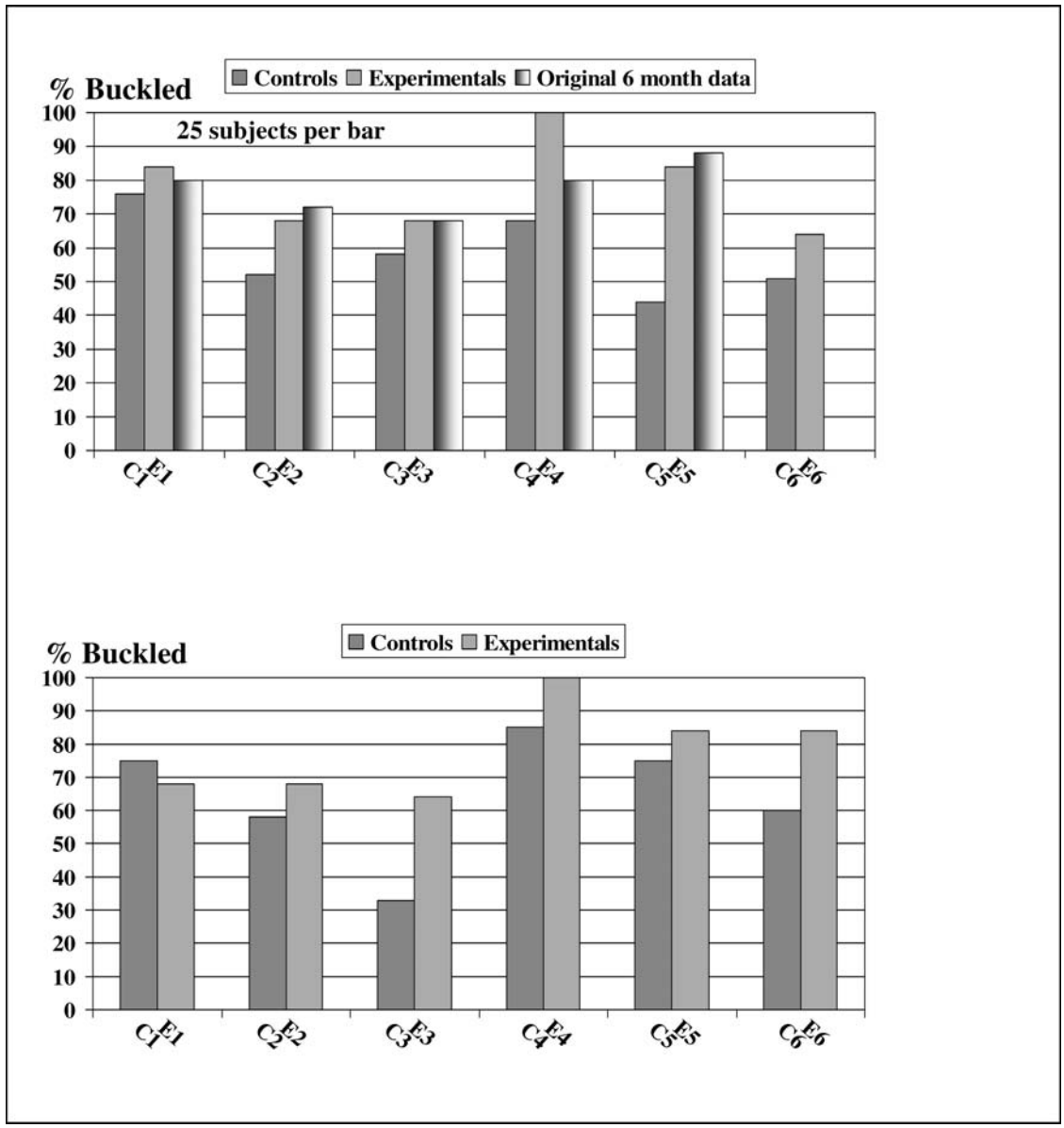

Figure 1. Safety belt use at control sites and at experimental sites 4 years after installation and the original 6-month postinstallation data (top) and use by passengers (bottom). One bar represents 25 subjects.

safety belts at these experimental communities. A logical next question is to determine how the levels of buckling at departure from the community compare with levels of buckling on the trip back to the community (e.g., back from shopping or church). Another is to determine if signs similar to those used here would affect other populations (e.g., school-aged drivers, professionals leaving office centers).

In addition to these questions, there are also some limitations in this study that could be addressed in future research. For example, although we observed consecutive drivers leaving senior communities, not all participants

were senior drivers (i.e., some were visitors or employees), and thus the generality of the results for senior drivers was not established. Another limitation is that the drivers at the various points of measurement (i.e., immediately, 6 months, 4 years) may not have been the same drivers; thus, the extent to which the results reflect maintenance at the level of individual performance was not determined. Finally, although the signs employed motivational messages, their actual function, beyond their effects on buckling, was not established.

In conclusion, this study suggests that a simple, inexpensive intervention—a sign with a positive health message—can produce long-term use of safety belts for both male and female drivers and also can influence the buckling of front-seat passengers. If this increased use of safety belts avoided a single hospitalization over the 4 years of installation, the avoided expense would be more than enough to cover the costs of installing the signs at all six sites.

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