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Four Approaches to Instruction in Occupant-Restraint Use

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The results of four test programs for increasing teenage occupant-restraint use are presented. Each program contained an informational component while three programs provided additional learning experiences—a testimonial, operation of a vehicle, and use of a safety-restraint convincer. Conclusions show that the programs are a promising way to educate teenagers about using restraints.

Although the use of occupant restraints represents the single most valuable way of reducing traffic injuries and fatalities, use continues to be very low. The use rate for drivers in the United States is only about 10 percent while the rate for young people (ages 16-19) is even lower. Since young drivers are overrepresented in the number of traffic accidents, it is extremely important to encourage the use of occupant restraints in this segment of the population.

The National Highway Traffic Safety Administration funded a study for the development, implementation, and evaluation of several supplementary driver-education programs to be taught subsequent to the standard driver-education curriculum. One of these programs deals with occupant restraints.

The main objective of the restraint program is to teach teenage drivers to use safety restraints and encourage their passengers to do the same. Other objectives include teaching the students the value of safety belts in reducing injuries and fatalities as well as the risks associated with nonuse. In addition, the course encourages favorable attitudes toward restraints, including the belief that restraints are valuable and that the safety of passengers is the driver's responsibility.

NATURE OF PROGRAM

To attain these goals and objectives, four individual driver-restraint programs were developed. Each program contained an informational component while three of the programs provided additional learning experiences, which included a testimonial, operation of a vehicle, and use of a safety-restraint convincer. A brief description of each program is presented below:

1. Information only--The information program consists of 3 h of classroom instruction. No behind-the-wheel or other learning experience is provided. The classroom activities are, however, supported by a film. The information contained in the student materials and the film is directed toward cognitive and additudinal aspects of safety restraints. This program is designed to provide students with factual information about restraints and to increase their perception of the risks associated with nonuse.
2. Testimonial--The testimonial program includes the information contained in the previously described program. In addition, it provides an audiovisual presentation that consists of a testimonial in which an age peer describes an accident, the nature and extent of any injuries, and the disabilities that resulted from the crash.
3. Vehicle--The vehicle program adds to the information program the experience of riding in a vehicle, both restrained and unrestrained, through a series of emergency maneuvers. The maneuvers were selected to show the effect of restraint use on ability to control the vehicle in an emergency.
4. Convincer--The convincer program combines with the information program the use of a device designed to demonstrate the forces experienced in a crash. A sled with a car seat and safety-restraint system is mounted on an inclined plane at approximately a 45° incline. The sled is raised to the top of the incline and allowed to slide freely to the bottom. Persons, properly restrained, ride the sled and can feel the forces exhibited in a simulated crash.

METHODS

A before-and-after design was employed to evaluate each of the four programs. The programs were administered at four high schools in St. Louis, Missouri. Approximately 100 students were available at each school, each school administering only one program. The use of four different schools was necessary to be able to determine the effects of each program on actual restraint use. If more than one program had been given at each school, there would have been no way of knowing, as students arrived and left in their cars, which students received which program.

The measures employed to evaluate the program were as follows:

1. Knowledge test--A paper-and-pencil test that contained items on the facts of restraint use, the risks of injury, and the effects of nonuse on occupants;
2. Attitude test--A multiple-choice measure that presented scaled opinions concerning the use of restraints; and
3. Use of restraints--Observations were made on students' use of safety restraints while coming to

school and when going home.

All subjects were administered a knowledge and attitude test prior to commencing the program. Baseline performance was observed for three consecutive days prior to the beginning of the program at each school. Postprogram knowledge and attitude tests were administered on completing the course while postprogram performance was observed over the same three days of the week as the baseline period. Each subject took different forms of the knowledge test on preprogram and postprogram administration. Both forms were used equally often as pretest and posttest in order that differences in forms would not bias precourse and postcourse comparisons. A single form of the attitude measures was used.

In the schools giving the vehicle and convincer program, all three measures were given on a follow-up basis one month after postprogram administration. In the case of the knowledge test, the form given as a preprogram measure was repeated.

RESULTS

Results from the study of the restraint program will be discussed in terms of (a) actual use of restraints, (b) knowledge about restraints, and (c) attitudes toward restraints.

Use of Restraints

Results obtained from monitoring use of restraints are shown in Table 1. It is evident that wide preprogram and postprogram differences existed among the students who received the four programs. These differences prevent any meaningful comparisons being made across the four programs.

Each of the four programs produced a gain in use. Gains for the information, testimonial, and vehicle programs were statistically significant ($p < 0.05$). Significance was assessed through a one-tail test of correlated means. The gain for the convincer group was well within chance variation ($p = 0.26$).

As noted earlier, follow-up comparisons could be made only for the vehicle and convincer programs. The students in the vehicle program maintained the substantial gain obtained earlier. The gain for the convincer group continued to be nonsignificant.

Knowledge

Results obtained from the administration of knowledge tests appear in Table 2. Although students in all four programs were given the same information presentation, the information and testimonial groups showed the largest percentage gain--42 and 32 percent, respectively. Both gains were highly significant. The knowledge gain for the vehicle group, although statistically significant, was considerably smaller. The convincer group failed to show a significant information gain.

Although the information component of all four programs was the same, the conditions under which it was delivered differed among the groups. For the information and testimonial programs, it was presented in a classroom situation with opportunity for interaction. The information presentations for the vehicle and convincer programs were, on the other hand, given to all students collectively in an assembly hall. There was no interaction and no way of making sure students were paying attention. These conditions may explain the small amount of gain.

The follow-up knowledge administration evidenced a somewhat lower but still statistically significant gain for the vehicle program. Results for the convincer program were the same as they were immediately after the program.

The failure of the convincer group to show a significant knowledge gain may help explain the lack of a significant gain in restraint use. It appears that what little gain in restraint use occurred for the convincer group came as a result of the experience in the convincer and not the information that was presented.

Attitudes

Results obtained from administration of the attitude measures to students in the four programs appear in Table 3. All groups evidenced statistically significant attitude pregains and postgains. Attitude gains for the information and testimonial groups paralleled the knowledge gains. This is not surprising, considering the relation between knowledge and attitudes. The attitude gains for the vehicle and convincer groups surpassed knowledge gains and seem to indicate that experiences in the vehicle or convincer also influenced attitudes. The results of follow-up measures suggest that the attitude changes experienced by students in the vehicle and convincer programs tend to endure.

SUMMARY

The overall results indicate that all four programs are capable of having a beneficial effect. The

Table 1. Restraint program results of use measures (percentage using restraint).

Program	Preprogram	Postprogram	Preprogram/ Postprogram Difference	Follow-Up	Preprogram/ Follow-Up Difference
Information	3.3	8.5	+5.2[a]	-	-
Testimonial	4.1	6.7	+2.6[a]	-	-
Vehicle	13.5	26.7	+13.2[a]	27.7	+14.2[a]
Convincer	9.0	13.2	+4.2	11.8	+2.8

[a]$p < 0.05$.

Table 2. Restraint program results of knowledge measures—mean scores.

Program	Preprogram	Postprogram	Preprogram/ Postprogram Difference	Follow-Up	Preprogram/ Follow-Up Difference
Information	8.5	12.1	+3.6[a]	-	-
Testimonial	9.5	12.5	+3.0[a]	-	-
Vehicle	9.8	11.2	+1.4[a]	10.8	+1.0[a]
Convincer	9.7	10.3	+0.6	10.3	+0.6

[a]$p < 0.05$.

Table 3. Restraint program results of attitude measures—mean scores.

Program	Pre-program	Post-program	Preprogram/ Postprogram Difference	Follow-Up	Preprogram/ Follow-Up Difference
Information	12.2	16.5	+4.3[a]	–	–
Testimonial	13.1	16.7	+3.6[a]	–	–
Vehicle	11.9	15.3	+3.4[a]	15.2	+3.3[a]
Convincer	12.4	14.1	+1.7[a]	14.5	+2.1[a]

[a]$p < 0.05$.

information, testimonial, and vehicle programs produced significant gains in knowledge about, attitudes toward, and use of restraints. How long these gains were sustained could be determined only for the vehicle program. However, the fact that gains realized through this program appeared to endure is encouraging.

The vehicle program appeared to produce the most substantial gains in restraint use. However, it would be dangerous to make comparisons. The fact that the program use rate was highest among students who received the vehicle program may be an indication that they were a more responsive group than those who received the other programs.

The effectiveness of the convincer program is difficult to evaluate. The failure to obtain any significant gains in use is certainly discouraging. However, this failure is accounted for at least in part by (a) failure of the information component of the program to communicate effectively and (b) large day-to-day variation in prevailing restraint use.

From the results obtained, the following conclusions may be offered:

1. It is possible to influence the use of safety restraints among teenage drivers by means of an in-school program;
2. Communication of factual information about restraints and the risks associated with failure to use them are necessary elements of any program; and
3. More research is needed to determine whether any additional benefit is derived from experiencing the consequences of nonuse through operation of a vehicle, a ride in a convincer, or the testimony of someone who has been injured in a crash.

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Contributory Negligence in Promotion of Safety Belt Use

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Contributory negligence, or contributory fault, can be described as unreasonable behavior on the part of an individual by which he or she contributes to injuries caused him or her by another's negligent act. Historically, under common law, once contributory negligence on the part of a plaintiff is established by a defendant in a personal-injury action, this serves as a complete bar to the plaintiff's claim. Even in jurisdictions without seat belt legislation, the common law over the past two decades has been increasingly recognizing that the failure to wear seat belts constitutes contributory negligence. It appears that if the common law continues to develop by itself, the seat belt defense will be increasingly recognized by the courts in the assessment of contributory negligence. If the seat belt defense is to be recognized by law, such statutes should be broad rather than restrictive to provide just penalties for contributory negligence.

Many studies in laboratories, as well as on-site motor vehicle crash investigations, have shown that modification of collision forces to prevent human injuries requires occupant restraint. Canada, the United States, the United Kingdom, and many Western world countries have mandated the availability of three-point restraint systems during the past 10-15 years. The effectiveness of seat belts is clearly established from the many studies on the subject. The disadvantages of wearing seat belts appear to be negligible.

Data were recently collected on seat belt legislation and its effectiveness in many countries of the Western world (1). A summary of the major findings is cited below:

1. Countries that have enacted seat belt laws seem to have evolved to a state where mandatory seat belt legislation was considered acceptable by the majority of the public prior to actual enactment. Where this is not the case, the law has either been repealed, has no penalty associated with it, or is not rigorously enforced by the police.
2. Seat belt laws enacted by various countries usually pertain to the driver and front-seat passenger only. Also, the laws are generally applicable to passenger cars and vans.
3. Most countries with seat belt laws have penalties associated with the legislation. In some cases the amount of the fine has a substantive upper limit ($200-$300). However, where statistics are available, it has been shown that the average fine is usually less than $10. Some countries have penalties for noncompliance that include imprisonment.
4. All countries allow exemptions from seat belt legislation. Exemption generally applies to passengers of a particular age or size, passengers with certain medical conditions, and drivers of commercial vehicles.
5. All countries studied have regulations regarding the installation of seat belts in both new and old cars. Most countries specify that the three-point inertial-retractor-type belt be installed.
6. Public information and education programs have been used to some extent by all countries that have enacted seat belt legislation. However, it was found that while these programs may be of value in