Published in final edited form as:
Fam Community Health. 2009 ; 32(2): 175–188. doi:10.1097/FCH.0b013e318199482c.

Efficacy of a Brief Group Parent–Teen Intervention in Driver Education to Reduce Teenage Driver Injury Risk: A Pilot Study

Jennifer S. Zakrajsek, MS, MPH,
University of Michigan Transportation Research Institute, Ann Arbor

Jean T. Shope, PhD,
University of Michigan Transportation Research Institute, Ann Arbor

Marie Claude Ouimet, PhD,
Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, Maryland

Jing Wang, PhD, and
Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, Maryland

Bruce G. Simons-Morton, EdD
Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, Maryland

Abstract

The purpose of this study was to test the efficacy of an adapted Checkpoints Program designed to increase parental limits on novice teen independent driving under high-risk conditions. Twenty-seven class sessions with a minimum of 5 dyads each were delivered in driver education to 231 parent–teen dyads. Entire driving school classes were randomized to Checkpoints Program or comparison group sessions, both led by a trained health educator. At licensure, compared with parents in the comparison group, treatment parents had increased awareness of teen driving risk and were more likely to have completed a parent–teen driving agreement and met Checkpoints recommendations for restrictions on teen driving in inclement weather and road types. They were also marginally more likely to have met Checkpoints restrictions on driving with teen passengers. This study indicates that it is feasible to implement the Checkpoints Program in driver education with positive effects on parent management practices.

Keywords

driver education; driving restrictions; group intervention; parent management practices; teen driving risk

MOTOR VEHICLE CRASH RATES are higher for teens than for members of any other age group.[1] High crash rates among teen drivers are attributed to their young age, lack of driving experience, and propensity for risky behaviors.[2–4] Crash risk is greatest during the first 2 years of driving, is particularly elevated during the first months of driving,[5] and is disproportionately high at night and with teen passengers.[6–10] Delaying licensure and imposing restrictions on driving privileges after licensure can reduce teen driver crash risk. While graduated driver

Corresponding Author: Jennifer S. Zakrajsek, MS, MPH, University of Michigan Transportation Research Institute, 2901 Baxter Rd, Ann Arbor, MI 48109 (jzak@umich.edu).

licensing (GDL) programs have delayed access to full licensure, provided policy restrictions on high-risk driving conditions after licensure, and reduced teens' crash rates, enhanced parental management of teens' early driving has potential to further reduce teens' risk of injury in motor vehicle crashes.[11]

Parents can play an important role in risk prevention by delaying their teens' driver licensure, as they authorize their access to a permit and license, and also by setting and reinforcing limits on high-risk driving conditions during early independent driving. Greater parental restrictions have been associated with better teen driving safety outcomes.[12–14] Research has shown that nearly all parents set limits on novice teenagers, but these limits are neither strict nor maintained long enough for teens to gain valuable driving experience under relatively less dangerous conditions.[12–14] Parents' driving restrictions have been more related to trip conditions (ie, where the teen is going and when returning) than to high-risk driving conditions, such as driving at night and with teen passengers.[12,13] Restrictions on high-risk conditions decline rapidly in the year after licensing.[13]

The Checkpoints Program was designed to increase parental limits on novice teen independent driving under high-risk conditions. The program is based on the protection motivation theory[15,16] and uses persuasive communication techniques supported by a video, newsletters, and a driving agreement. The Checkpoints parent–teen driving agreement (PTDA) is designed to facilitate clear rule-setting on driving privileges during the first year of independent driving. The goal is for parents and teens to negotiate an agreement on limits related to driving at night, with passengers, on high-speed roads, and in inclement weather. The Checkpoints PTDA includes 4 periods of several months each, allowing for a gradual increase in driving privileges. The Checkpoints Program has been implemented successfully in different settings and at different points in the licensing process.

Three randomized control trials have been conducted to evaluate the efficacy and effectiveness of the Checkpoints Program. Studies were conducted at the time the teen obtained a permit or when the teen obtained a license, and participants were recruited at Department of Motor Vehicle offices. In a study initiated at teen permit, Checkpoints material was mailed during the learner's permit period (ie, video after issue of permit, newsletters every 4–8 weeks during permit period, driving agreement before licensing) and first 6 months of the licensure period (ie, newsletters every 4–8 weeks).[17–19] Comparison dyads received driving-relevant newsletters on such topics as vehicle maintenance. In a brief intervention study conducted at licensure, the material was distributed in person (ie, video, driving agreement) with a follow-up newsletter mailed 1 week later.[20,21] Significant treatment effects of the Checkpoints Program were found at licensure on parent and teen risk perception and parent outcome expectations for parental limits, which were found to mediate limit setting.[18] Similarly, there were significant effects during the first months of licensure on communication about driving,[21] parental limit setting,[18,19] and teens' risky driving behavior and traffic violations.[17]

Driver education provides a potential setting for encouraging parent management practices because parents and teens may be particularly concerned about safety while teens are learning to drive. Furthermore, the driver education setting may provide a unique opportunity to enhance the effectiveness of the Checkpoints Program approach by providing a venue for face-to-face prelicensure interaction with the help of a facilitator (eg, health educator, driver educator) and for parent–teen driving discussions and negotiation of driving privileges. The efficacy of a brief group intervention with parent–teen dyads designed to increase parental limits on novice teen independent driving has not been tested. While some instructional materials from several public agencies, private groups, and insurance companies are available for parents on how to teach teenagers to drive, few materials have yet been tested empirically and little attention has been devoted to parental management of teen driving after licensure. Thus far, the Checkpoints

Program has been implemented through state licensing offices, making it impossible to ensure families' full exposure to the intervention. Driver education is a promising but untested venue for implementing a parent–teen intervention.

The state of Michigan in the United States has adopted a unique GDL program for novice teen drivers, which consists of 3 levels of driver licensure and 2 segments of driver education (Figure 1). Segment 2 of driver education is one of the final requirements before teens are eligible to obtain a Level 2 license (ie, allowing unsupervised driving except for a nighttime driving restriction) and provides a unique opportunity to access and influence teens and their parents at a time when they are preparing for independent driving and potentially responsive to the Checkpoints Program.

The purpose of this study was to test the efficacy of an adapted Checkpoints Program delivered during a group session at the end of Segment 2 of driver education in Michigan. Three specific hypotheses were tested in this study: compared with parents or parent–teen dyads in the comparison group, (1) parents exposed to the Checkpoints Program will report increased awareness of teens' initial driving risks at licensure; (2) parent–teen dyads exposed to the Checkpoints Program will be more likely to adopt a PTDA at licensure; and (3) parent–teen dyads exposed to the Checkpoints Program will be more likely to impose parental restrictions on teen driving at levels meeting Checkpoints recommendations at licensure. Finally, the use of the materials by dyads and issues related to the feasibility of implementing the Checkpoints Program within a driver education setting were explored.

Methods

Sample

Parent–teen dyads were recruited with assistance from a large, private driving school in Michigan from April 2005 to November 2006. Eligible dyads met the following inclusion criteria: the teen's expected driver licensure date was within 3 months of completing driver education; the teen would be 16 years old on the expected licensure date; the teen lived with the participating parent or legal guardian at least 50% of the time; and dyads were able to read, understand, and speak English. Expected licensure dates were provided by parents and teens during study enrollment. The criteria were selected to ensure that participants would obtain a license and complete all follow-up surveys within the study period, that teens would be 16 at licensure and thus representative of both the normative license age and the age of drivers at the greatest risk for violations and crashes,[1,9] that teens would remain younger than 18 years and within the GDL system for the duration of the study, that participating parents would have an adequate role in the teen's supervision, and that all participants were able to understand and complete all study activities. Dyads were recruited through a 3-part process: (1) the driving school included a study session invitation in the information packet that was mailed to the parents of all preregistered teens prior to the start of the first Segment 2 class; (2) a driving school administrator handed a study session invitation to parents who completed Segment 2 registration in the classroom on the first day of class; and (3) the driver education instructors promoted the study session to teens during Segment 2 and distributed reminder fliers to teens for their parents.

At the start of the study session, the health educators delivered a standardized introduction briefly describing the study and inviting parents and teens to enroll. Parent informed consent and teen informed assent were obtained in writing according to procedures approved by the institutional review board at the University of Michigan. No monetary compensation was provided for the study session. Each participating parent and teen received $10 for each follow-up telephone survey they completed.

Study setting and procedures

The study was conducted at 4 locations of the driving school. The school was chosen because it operated driver education classrooms in several locations throughout the state and had a large Segment 2 student enrollment. Working with this school allowed investigators to implement a multisite research design and concurrently streamline the study session scheduling process by working with administrators in the driving school's central office. Study location choice was based on a favorable combination of accessibility for the health educators conducting the interventions (ie, within 100 miles of the research center), large class enrollment, adequate classroom size, convenient class schedule for parents, and anticipated availability of classrooms for study sessions. Study enrollment, baseline data collection, and the treatment and comparison interventions all took place in the driver education classrooms during a special parent–teen study session that was held on the last day of Segment 2 of driver education (Figure 1). All sessions were held in addition to the regular driver education classes. The investigators and driving school administrators reviewed the Segment 2 class calendar and scheduled sessions for 1 hour, either immediately preceding or following the final Segment 2 class; the final determination was based on a combination of classroom availability and likelihood that parents would be able to attend (ie, day of week, time of day). Driver education instructors employed by the driving school conducted their Segment 2 classes according to their regular curriculum. Trained health educators employed by the investigators conducted the study sessions according to the study protocol.

Study design

The study was a group-randomized trial. Driver education classes within the 4 locations were randomly assigned to either the treatment or comparison groups using the random number generating function in SAS version 9.1.[22] During the study session, parent–teen dyads in classes assigned to the treatment group were exposed to the Checkpoints Program, whereas those assigned to the comparison group received a comparison intervention. Data were collected immediately before the intervention at baseline (T_0) and at licensure (T_1) from both parents and teens, and 3 and 6 months after licensure (T_2 and T_3, respectively) from teens only. The T_0 survey was a self-administered questionnaire, whereas the T_1–T_3 surveys were administered via telephone interview. Interviewers used the expected licensure dates to determine T_1 survey dates and confirmed with parents and teens that a license had been obtained before starting the survey; if licensure had been delayed, interviewers asked for a new expected licensure date and delayed T_1 accordingly. The results presented here focus on T_0–T_1.

Treatment group (The Checkpoints Program)

The Checkpoints Program was adapted to fit Michigan's GDL system and to be delivered to groups of parents and teens in driver education classrooms; the information previously delivered via newsletters was incorporated into the study session protocol and delivered as a brief group intervention. After parent–teen dyads completed the informed consent and assent forms and the baseline surveys, a health educator trained in the intervention protocol delivered the Checkpoints Program to the group. The 30-minute session consisted of the following: a video and a review of the key points (10 minutes), facilitated completion of the Checkpoints PTDA (15 minutes), and conclusion and polling of parents on their intended driving restrictions (5 minutes). Approximately 1 week prior to the teen's expected license date, dyads were mailed another copy of the PTDA, along with a 1-page newsletter that provided information to reinforce the key points from the study session and to encourage them to complete the PTDA.

Video—The Checkpoints 9-minute video, “Who Wants to Be a Driver,” introduced the risks of teen driving, setting of expectations about restricting initial teen driving privileges, and

completion/adherence to a PTDA. The video examined family issues surrounding the risks inherent in teen driving, restrictions on teen driving, and working within a PTDA.

Parent–teen driving agreement—The PTDA was designed to help families establish restrictions for specific driving conditions, general teen driving rules, and consequences for violating the rules and restrictions during the first year of licensure. The PTDA allowed parents to specifically state the conditions under which their teens would be allowed or not be allowed to drive and to specify the markers of experience and success that would earn their teens greater driving autonomy. The agreement highlighted 4 conditions known to increase crash and injury risk for teen drivers: driving with teen passengers, at night, in inclement weather, and on highspeed roads. The PTDA also contained sections in which families establish driving rules to be in effect for all driving trips and in all conditions and consequences for rule and restriction violations. Using the PTDA, parent–teen dyads divided the first year of licensure into 4 "checkpoints." The PTDA included a blank space to write the checkpoint duration and end date; on that date, parent and teen were advised to revisit the PTDA to review the teen's driving performance and adherence to the PTDA and to establish the PTDA terms for the next checkpoint. Signature lines were provided at each checkpoint for parents and teens to affirm their commitment to the terms of the agreement. The PTDA was designed to be displayed like a poster in a prominent location; it was printed on durable paper stock and had a bright color scheme. The back page of the PTDA provided reference information including a table of teen driving risk information and a sample, completed PTDA with the Checkpoints Program recommended restrictions for each checkpoint.

Facilitated completion of the PTDA—The health educator guided the parent–teen dyads through completion of the first checkpoint (first 3 months) on the PTDA, using persuasive messages to explicitly present Checkpoints Program recommendations for each section, highlighting each of the 4 risky driving conditions. For each section/condition, the health educator displayed a chart demonstrating the teen driving risks specific to that situation and presented the Checkpoints Program recommendation for that section/condition on the PTDA. The health educator then allowed the dyads time to discuss, establish, and record their restrictions for that section/condition on their own PTDA. That process was repeated until each section/condition of the first checkpoint had been discussed. The health educator encouraged dyads to use the same procedures to complete their expectations for the first checkpoint at home and to complete the subsequent checkpoints throughout the first year of licensure.

Comparison group

After dyads completed their informed consent and assent forms and baseline surveys, the health educator gave each dyad a copy of the National Safety Council's booklet, *Teen Driver: A Family Guide to Teen Driver Safety*.[23] The material covered in this comprehensive reference booklet included information on teen driving risks and tips for parents to apply at every stage in the driver licensing process (from supervised practice driving to independent driving). The booklet contained a section on parent–teen agreements and the Checkpoints Program, but parent–teen agreements were not explicitly mentioned to the comparison dyads at any point during the study sessions. The dyads were released after the booklets were distributed, and they did not receive a follow-up mailing.

Measures

The primary study outcomes for these analyses were parent awareness of teen driving risk, adoption of a PTDA, and parent-imposed driving restrictions at licensure. Other outcomes were use of and response to the Checkpoints Program materials. Most measures were used in previous Checkpoints studies.[18]

Parent awareness of teen driving risk (perceived risk) was assessed at T_0 and T_1 by the 14-item perceived risks of adolescent driving scale.[18] Parents were asked to assess how much risk for a crash or an injury newly licensed teen drivers face in situations such as driving with one teen passenger, multiple teen passengers, several teen friends on a weekend night, between 9 PM and midnight, between midnight and 5 AM, late at night during the week, late at night on the weekend, outside of local or familiar areas, on unfamiliar roads, on freeways or expressways, in bad weather, under the influence of alcohol or drugs, while passengers use drugs or alcohol in the vehicle, and not wearing a seat belt. The scale was modified to use a 5-point response scale ranging from 1 (*some risk*) to 5 (*extreme risk*) (α = .89). Mean scores across items were calculated resulting in a scale score ranging from 1 to 5.

Adoption of a PTDA was measured at T_1 with a single item that asked parents and teens, "Have you and [parent/teen] completed a written parent–teen driving contract or agreement?"

Parent-imposed driving restrictions at licensure were measured at T_1 by asking parents and teens about restrictions in place to limit unsupervised driving with teen passengers, at night (weekday, weekend), in inclement weather (heavy rain, snow or ice, fog), and to allow driving only on certain road types (local, speed limits slower than 55 miles per hour).[18]

Questions about the use of and discussion about the Checkpoints Program and comparison materials and perception of the materials (eg, understandable, helpful, boring, appealing, appropriate length) were asked of parents and teens at T_1.

Several demographic items were included on the T_0 survey to describe participant characteristics. Parent measures included sex, relationship to teen, race/ethnicity, age, marital status, work status, education, and income. Teen measures included sex, race/ethnicity, school grade, and marks in school.

Analysis

Given the hierarchical structure of the data in this group-randomized design, mixed modeling was used to test the intervention effect controlling for design and covariates.[24,25] Mixed modeling reduces the bias related to the possibility that participants within a class share some characteristics and are more similar to one another than they are to participants in other classes. Such a case would produce a positive intraclass correlation, which would violate the assumption of independence required in ordinary regression analyses. If ignored, analyses would underestimate the standard error and inflate the type I error.[24]

The main independent variable was the random assignment to intervention condition (treatment or comparison group). Covariates included parent–teen gender and education (parents' highest level attained or teens' current grade). In all analyses, driver education classes were nested within intervention groups and considered as random effects. Only classes with 5 or more dyads were included in the analyses. Analyses using SAS PROC MIXED were employed for continuous dependent variables and normally distributed residual errors were assumed.[22] For dichotomous dependent variables, each model was fit using PROC GLIMMIX in SAS version 9.1,[22,26] specifying a binary distribution for the residual error and a logit link to obtain a mixed-model logistic regression analysis.

Results

A total of 44 study sessions were conducted (22 treatment and 22 comparison), with 344 parent–teen dyads attending the study sessions; they represented 30% of the eligible segment 2 families. Of these dyads, 94.2% enrolled in the study and completed baseline surveys (T_0) (N = 324; n = 169 treatment group dyads; n= 155 comparison group dyads). Among these

dyads, 275 teens (84.9%) had obtained a driver's license by the end of the study and the dyads had completed licensure surveys (T_1). Among these participants, 231 (84.0%) dyads (n = 117 treatment group; n = 114 comparison group) were from study sessions with 5 dyads or more (n = 27 study sessions) and were included in the data analysis. Parent and teen demographic characteristics are presented in Table 1. There were no differences between the treatment and comparison groups in teen time to licensure or in parent or teen demographic characteristics. Analyses were conducted on demographic variables at each step described above to compare those included in the study and those who did not participate or were excluded. There was only 1 difference found between those who completed T_1 and those who did not: non-White parents were less likely to have completed the T_1 survey. There were no differences between those included in the data analysis and those who had completed T_1 but were excluded because they were from a study session with fewer than 5 dyads.

The study findings are presented in the paragraphs below organized by the hypotheses and related research questions. Only participants with no missing data on the relevant measures were included in the analyses using those measures. Percentages with complete data ranged from 90.5% to 98.3% of the total sample for teen measures and from 90.9% to 93.9% for parent measures.

Hypothesis 1

Compared with parents in the comparison group, parents exposed to the Checkpoints Program will report increased awareness of teens' initial driving risk at licensure.

The unadjusted means for parents' perceived risk were treatment $T_0 = 3.99 \pm 0.61$, treatment $T_1 = 4.23 \pm 0.49$, comparison $T_0 = 3.92 \pm 0.58$, and comparison $T_1 = 4.02 \pm 0.55$. A mixed-model regression adjusted for the group-randomized design and covariates showed that perceived risk significantly increased from T_0 to T_1 for the treatment parents but not for the comparison parents (LS means = 4.22 vs 4.02; $P = 0.0134$).

Hypothesis 2

Compared to parent–teen dyads in the comparison group, dyads exposed to the Checkpoints Program will be more likely to adopt a PTDA at licensure.

Table 2 shows the frequency of agreement completion without adjustment for cluster design. Figure 2 shows percentages of parents and teens who adopted an agreement with adjustment for cluster design. The results of the mixed-model logistic regression indicated that both parents and teens in the treatment group were more likely to report having completed a PTDA at licensure than the parents and teens in the comparison group (parents: OR = 7.60, $P < 0.001$; teens: OR = 3.12, $P < 0.001$).

Hypothesis 3

Compared to parent–teen dyads in the comparison group, dyads exposed to the Checkpoints Program will be more likely to impose parental restrictions on teen driving at levels meeting Checkpoints recommendations at licensure.

Table 2 shows the frequency of driving limits without adjustment for cluster design. Figure 3 shows the percentages of treatment and comparison parents and teens who reported restrictions at licensure that met the Checkpoints Program recommendations with adjustment for cluster design (ie, no teen passengers allowed other than for exceptions approved by parents, no nighttime driving, no driving in inclement weather, and driving only permitted on local or low speed limit roads). Mixed-model logistic regression analyses were conducted separately for each of the high-risk driving conditions. Treatment parents were more likely than comparison

parents to report restrictions on driving in heavy rain (OR = 3.01, $P < 0.001$), in snow or ice (OR = 2.19, $P < 0.05$), in fog (OR = 2.50, $P < 0.01$), and to allow driving only on local roads (OR = 3.30, $P < 0.001$), and on roads with speed limits slower than 55 miles per hour (OR = 2.93, $P < 0.01$). Treatment parents were marginally more likely to report restrictions on driving with teen passengers (OR = 1.89, $P < 0.10$). There were no intervention effects for parent-reported restrictions on nighttime driving on either weekdays or weekends. Treatment teens were more likely to report restrictions on driving in heavy rain (OR = 3.22, $P < 0.01$) and were marginally more likely to report being allowed to drive only on local roads (OR = 4.19, $P < 0.10$). There were no intervention effects for teen-reported restrictions on driving with teen passengers, at night, in snow or ice, in fog, or being limited to driving only on roads with speed limits slower than 55 miles per hour.

Two research questions were asked about the use of the materials and feasibility of the Checkpoints Program when conducted in driver education.

Will parent--teen dyads exposed to the Checkpoints Program use and discuss the materials?

Table 3 shows participants' evaluation of the Checkpoints Program and comparison group materials; groups are not compared statistically on these measures. Most treatment parents and teens reported discussing the written materials and the video. In general, parents reported that the materials were easy to understand, helpful, appealing, not boring, and not too long. Teens' reports were consistent with the parents', although only 34.6% reported that the materials were appealing. Nearly all the treatment parents (98.3%) and teens (95.8%) who completed the PTDA recommended it for other families. While dyads in the comparison group reported favorable responses to the booklet they received, and most recommended it for other families, there were more discussions in the treatment group about the Checkpoints materials.

Was it feasible to adapt the Checkpoints Program and administer it as a group session during driver education?

Each of the 22 Checkpoints Program class sessions was successfully completed within the time limit. Parents and teens were extremely engaged during the dyad discussions. With the health educator's guidance, 100% of the dyads completed or initiated the first checkpoint during the group session. The informal parent polls at the end of each session indicated that a majority of parents intended to set specific limits and adopt Checkpoints Program recommendations. However, extensive communication was required to promote sessions directly to parents via letters delivered by mail and in person and indirectly via parent-aimed flyers delivered to the teens in driver education class. Also, scheduling sessions around class times and parent availability proved challenging (eg, classrooms were booked for other events at desired times; classrooms located in malls were restricted to mall business hours and not available early on Saturdays). Recruitment started at location 1, followed by locations 2 and 3, respectively. Segment 2 classes at location 1 were typically held on Saturday mornings, whereas classes at locations 2 and 3 were held late afternoons and early evenings on weekdays. Participation was greatest on Saturdays, particularly when the study session was offered at 9:00 AM, before the class began. Recruitment was subsequently stopped at locations 2 and 3, and these sites were replaced by location 4, which offered Saturday classes. The majority of study sessions were conducted at locations 1 to 4: location 1 (13 treatment and 14 comparison sessions); location 2 (1 treatment and 2 comparison sessions); location 3 (1 treatment and 1 comparison sessions); location 4 (7 treatment and 5 comparison sessions). Overall, implementing the program in driver education worked well, but contacting families and scheduling sessions presented some challenges.

Discussion

This article reports the results of the first group-randomized trial of a parent management of teen driver intervention conducted in driver education. The main findings were that the parent–teen dyads who participated in the Checkpoints Program had an increased parent awareness of teen driving risk, were more likely to adopt a PTDA, and were more likely to impose several restrictions, meeting the Checkpoints Program's recommendations.

Baseline parent awareness of teen driving risk was reasonably high for both the treatment and comparison groups with means of 3.99 and 3.92, respectively on a scale of 1 to 5. However, the treatment parents reported a significant increase in perceived risk from baseline to licensure that was not experienced by the comparison group.

The agreement completion rates were approximately 80% for both treatment parents and teens and were somewhat higher than those attained in previous Checkpoints studies.[18] Treatment dyads may have benefited from initiating agreement completion during the group session and from the prelicensure mailing of a reinforcement newsletter and a new copy of the agreement.

Parents exposed to the Checkpoints Program generally set more strict limits on novice teen driving than parents in the comparison group, including setting limits at the recommended levels for the important risk conditions of teen passengers, road types, and inclement weather conditions. These results are encouraging and suggest that this group approach allowing for explicit delivery of risk information and restriction recommendations and providing a venue for parent–teen discussion holds promise for helping parents set restrictions at appropriate levels.

Teen reports of parental restrictions that met the level of Checkpoints Program recommendations were lower than the parent reports and there were fewer intervention effects. The difference between parent and teen reports observed here is consistent with other investigations[27] but is a concern because all the treatment dyads in this study initiated a discussion about driving limits and began negotiating and recording driving restrictions during the treatment session. The discrepancy between the parent and teen reports may be a result of inflated reports by the parents but may also indicate a lack of continued communication between parents and teens beyond the initial study session discussions. Further efforts to bridge such differences are important because disagreement between parent and teen reports of restrictions on driving conditions has been associated with teen risky driving.[28]

The modest restriction rates, particularly reported by teens, and lack of intervention effects for nighttime driving are troubling and may reflect a false sense on the part of parents that additional family restrictions are not needed because the Michigan GDL program restricts teen driving from midnight to 5 AM. Future efforts should include strong messages to encourage parents to set restrictions beyond existing state restrictions where appropriate. Also, these modest results may suggest the need to add a booster to the Checkpoints Program that would provide tools for adhering to the terms of a parent–teen agreement. In this study, the Checkpoints curriculum previously delivered via periodic newsletters was presented by health educators during the group sessions ensuring full exposure to the intervention but not necessarily continued maintenance at home; perhaps a combination of the group session and periodic newsletters or other written materials would help optimize the strengths of both approaches for both parent and teens. The current analyses focused on agreement adherence and restrictions at licensure. Future reports will focus on the effects of restrictions on teens' risky driving behaviors at 3 and 6 months after licensure.

Implementation and feasibility of the program were notable. The Checkpoints Program protocol was administered without problems in each of the 22 treatment study sessions and

less than 6% of those who attended the sessions refused to participate in the study. Both parents and teens reported favorable responses to the Checkpoints Program materials and most would recommend it to other families. Impressively, 95.8% of the teens recommended the parent–teen agreement, despite the restrictions it placed on their driving. It is also notable that the group intervention worked well. The participating parent–teen dyads were attentive and appeared to enjoy and get value from the sessions. The parent–teen dyads operated well, and concerns that family members might not work well together in a group setting were unrealized.

These results should be considered within the context of the strengths and limitations of the study. This is the first reported group-randomized trial evaluating the effects of the Checkpoints Program on parent limit setting conducted in a driver education setting. The study design and analyses were rigorous, adhering to a minimum of participants in each driver education class and controlling for the possible effect of clustering. Also, as a control for potential attention bias, the comparison group was provided with a comprehensive reference booklet, the National Safety Council's, *Teen Driver: A Family Guide to Teen Driver Safety*,[23] that includes a section about PTDAs and the Checkpoints Program. Therefore, treatment group effects can likely be attributed to the mode of delivery of the intervention, involving active learning in the treatment group and passive learning in the comparison group.

It is not known how the time to licensure or the demographic characteristics of study participants compared with nonparticipants enrolled at the same driving schools. However, compared to US census data from the schools' communities, there were somewhat more White individuals, higher levels of education, and higher household income levels among study participants than in their communities. This difference should be considered when examining the generalizability of these results.

There were 2 important study limitations. First, the low participation rate at the study sessions contributed to a lack of power to detect statistical differences between groups. Second (but related to the first), participation rates were low, despite diligent recruitment efforts. The participation rates suggest the limits of voluntary participation. Finding new ways to improve parent attendance is a challenge that must be addressed by future efforts using this program. At least 1 state (Connecticut) has recently adopted a GDL requirement that parents attend driver education and this is being considered in several other states. Required parent attendance at the driving school is already implemented in other countries, such as in the supervised-driving program in France.

In conclusion, the study results provide good evidence that the Checkpoints Program can be adapted and effectively implemented as a brief group intervention in a driver education classroom setting with encouraging results. Work is ongoing, evaluating a Checkpoints Program delivered by trained driver education instructors. Meanwhile, the current study provides valuable information that could enhance the effects of future research and practice efforts to deliver the Checkpoints Program to families through driver education and facilitate improved parent management practices that reduce teen driving risks.

Acknowledgments

Support for the conduct of this study was received from the Intramural Research Program of the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

The authors thank David Van Dyke, Bradley Huspek, and Gary Matuszak for their assistance and cooperation throughout the study and Tenaya Sunbury for her efforts administering the program and entering data.

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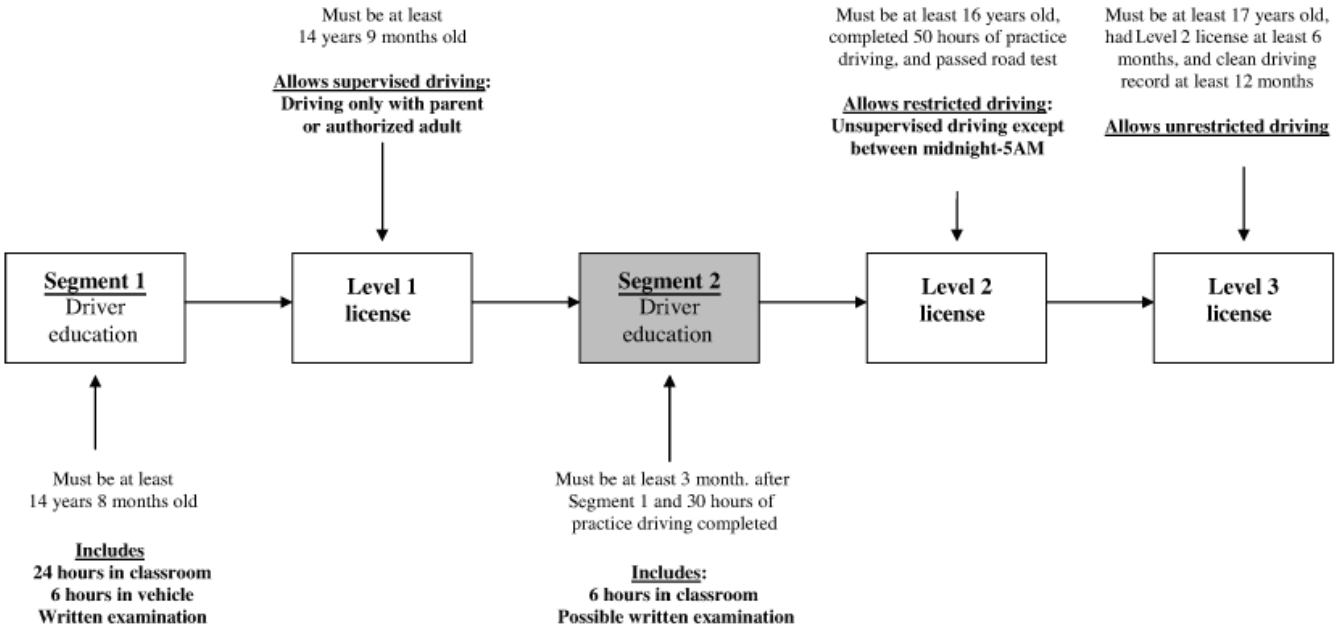

Figure 1.
Graduated driver licensing and driver education in Michigan.

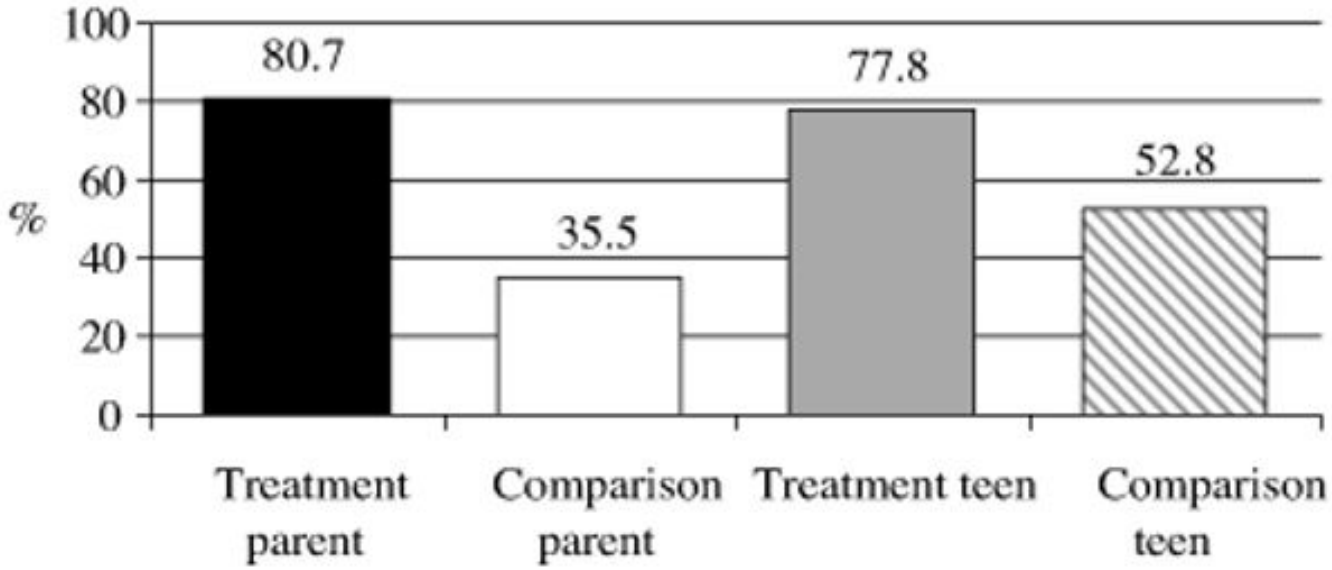

Figure 2.
Percentages with a parent–teen driving agreement completed at licensure with adjustment for cluster design.

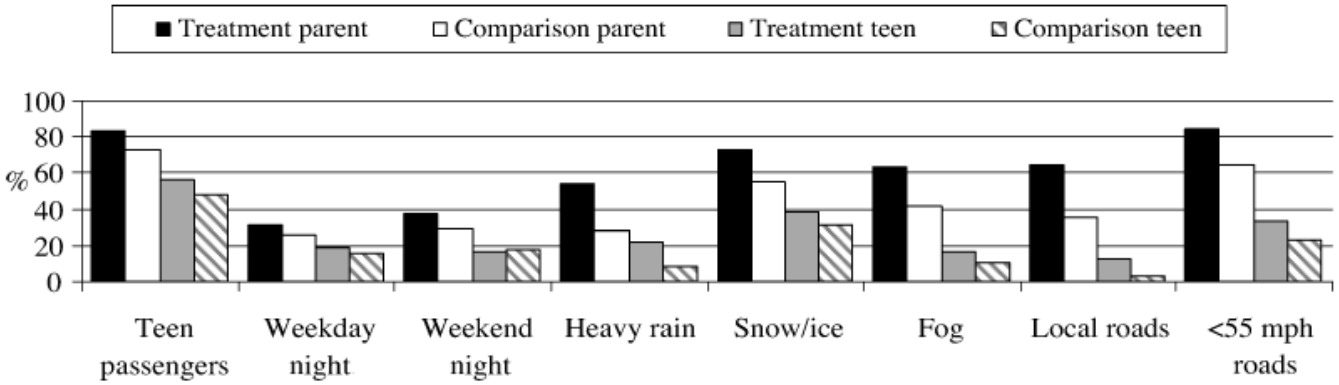

Figure 3.
Percentages reporting restrictions meeting the Checkpoints Program recommendations with adjustment for cluster design.

Fam Community Health. Author manuscript; available in PMC 2009 September 21.

Table 1

Parent and teen characteristics

	Total included (*N* = 231)		**Treatment (*N* = 117)**		**Comparison (*N* = 114)**	
	N	**%**	***N***	**%**	***N***	**%**
Parents Sex (*N* = 230)						
Male	73	31.7	37	31.9	36	31.6
Female	157	68.3	79	68.1	78	68.4
Relationship to teen (*N* = 230)						
Mother	151	65.7	74	63.8	77	67.5
Father	69	30.0	34	29.3	35	30.7
Other	10	4.3	8	6.9	2	1.8
Race/ethnicity (*N* = 230)						
White	206	89.6	104	89.7	102	89.5
Non-White	24	10.4	12	10.3	12	10.5
Age, y (*N* = 229)						
<39	29	12.7	14	12.2	15	13.2
40–44	60	26.2	36	31.3	24	21.1
45–49	88	38.4	42	36.5	46	40.4
≥50	52	22.7	23	20.0	29	25.4
Marital status (*N* = 229)						
Married	192	83.8	96	83.5	96	84.2
Divorced	28	12.2	15	13.0	13	11.4
Other	9	3.9	4	3.5	5	4.4
Work status (*N* = 230)						
Full-time	149	64.8	76	65.5	73	64.0
Part-time	28	12.2	14	12.1	14	12.3
Homemaker	43	18.7	21	18.1	22	19.3
Other	10	4.3	5	4.3	5	4.4
Education (*N* = 226)						
Less than college degree	93	41.2	46	40.4	47	42.0
College degree or higher	133	58.8	68	59.6	65	58.0
Income (*N* = 198)						

	Total included (*N* = 231)		Treatment (*N* = 117)		Comparison (*N* = 114)	
	N	**%**	***N***	**%**	***N***	**%**
<$50000	27	13.6	13	13.0	14	14.3
$50,000–$69 999	22	11.1	11	11.0	11	11.2
$70 000–$99 999	50	25.3	24	24.0	26	26.5
$100 000–$149 999	56	28.3	33	33.0	23	23.5
$150 000+	43	21.7	19	19.0	24	24.5
Teens Sex (*N* = 230)						
Male	121	52.6	60	51.7	61	53.5
Female	109	47.4	57	48.3	53	46.5
Race/ethnicity (*N* = 230)						
White	200	87.0	100	86.2	100	87.7
Non-White	30	13.0	16	13.8	14	12.3
Grade (*N* = 228)						
9th–10th	159	69.7	80	69.6	79	69.9
11th and above	69	30.3	35	30.4	34	30.1
Marks in School (*N* = 226)						
A	108	47.8	54	47.0	54	48.6
B	88	39	42	36.5	46	41.4
C or lower	30	13.3	19	16.5	11	9.9

Table 2

Frequency of parent–teen driving agreement completion and driving restrictions[a]

	Parent				Teen			
	Checkpoint (*N* = 117)		Comparison (*N* = 114)		Checkpoint (*N* = 117)		Comparison (*N* = 114)	
Outcome	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**
Agreement completion								
Yes	81	73.6	31	30.1	82	71.9	48	48.5
No	29	26.4	72	69.9	32	28.1	51	51.5
Passenger limit								
0 and 1 passengers	88	79.3	75	68.8	63	54.3	52	46.0
2 and more	23	20.7	34	31.2	53	45.7	61	54.0
Weekday night (allowed)								
Yes	80	72.1	85	78.0	94	80.3	94	83.2
No	31	27.9	24	22.0	23	19.7	19	16.8
Weekend night (allowed)								
Yes	73	65.8	79	72.5	97	82.9	94	83.2
No	38	34.2	30	27.5	20	17.1	19	16.8
Weather (allowed)								
Heavy rain								
Yes or sometimes	52	46.8	77	71.3	90	76.9	104	91.2
No	59	53.2	31	28.7	27	23.1	10	8.8
Ice or snow								
Yes or sometimes	35	31.5	54	50.0	74	63.8	82	71.9
No	76	68.5	54	50.0	42	36.2	32	28.1
Fog								
Yes or sometimes	47	42.3	70	64.2	96	82.1	102	89.5
No	64	57.7	39	35.8	21	17.9	12	10.5
Road limit								
Local	69	63.3	36	33.3	17	14.5	6	5.3
Other	40	36.7	72	66.7	100	85.5	107	94.7

[a]The values are unadjusted for cluster design.

Table 3

Dyad evaluation of Checkpoints Program and the comparison group materials[a]

	Parent		Teen	
	Treatment	Comparison	Treatment	Comparison
Materials				
Read the materials	90.9	75.0	74.4	60.2
Discussed the materials	97.3	81.0	93.2	64.6
Impression of materials				
Easy to understand	100.0	95.0	95.5	85.2
Boring	16.7	27.2	22.7	22.6
Helpful	95.4	86.4	72.7	75.5
Appealing	74.8	69.6	34.6	36.3
Too long	19.4	25.2	20.9	19.6
Recommend materials	98.2	96.2	92.2	94.7
Discussed Video	78.4	…[b]	63.8	…[b]
PTDA				
Satisfied with PTDA	98.3	…[b]	70.8	…[b]
Recommend PTDA	98.3	…[b]	95.8	…[b]

Abbreviation: PTDA, parent–teen driving agreement.

[a] The percentages are unadjusted for cluster design.

[b] Questions not asked to the comparison group.