



A Comprehensive Program to Support Parents of New Teen Drivers

February 12, 2021

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Acknowledgement of Sponsorship

This project was supported by the Collaborative Sciences Center for Road Safety, www.roadsafety.unc.edu, a U.S. Department of Transportation National University Transportation Center promoting safety.

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. CSCRS-R8	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle: A Comprehensive Program to Support Parents of New Teen Drivers		5. Report Date February 12, 2021
		6. Performing Organization Code
7. Author(s) Arthur Goodwin, Natalie O'Brien, Kristel Robison, Bevan Kirley, Stephanie Harrell		8. Performing Organization Report No.
9. Performing Organization Name and Address University of North Carolina Highway Safety Research Center 730 Martin Luther King Jr. Blvd, Suite 300 Campus Box 3430 Chapel Hill, NC 27599-3430		10. Work Unit No.
		11. Contract or Grant No. Enter the number of the contract, grant, and/or project number under which the report was prepared. Specify whether the number is a contract, grant, or project number. Example: Contract # 8218
12. Sponsoring Agency Name and Address		13. Type of Report and Period Covered Final Report (Dates)
		14. Sponsoring Agency Code If available, enter the office code or acronym if a sponsoring agency (such as FHWA or NHTSA) is named in field #12. For FHWA office codes, see https://fhwaapps.fhwa.dot.gov/fois/hqphone.do
15. Supplementary Notes Conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration.		
16. Abstract <p>The objective of this project was to create a comprehensive program, called <i>Time to Drive</i>, to support parents of beginning drivers in North Carolina. The program provides critical guidance to parents at various points in the licensing process when this guidance is most needed. <i>Time to Drive</i> includes:</p> <ul style="list-style-type: none"> • An in-person parent coaching session that encourages parents to provide their teens with a substantial amount of supervised driving practice in a wide variety of settings; • A method for driver education instructors to meet with parents to discuss the progress and proficiency of their teen driver, and to remind them of their role and responsibility in helping their teen become a safe driver; • A smartphone app that encourages diversified practice during supervised driving and allows parents to easily keep track of the amount and variety of practice teens have gained; • A competency assessment guide that helps parents gauge a teen's readiness to drive independently, and to determine the types of settings/environments in which the teen still needs practice; • Tools for parents about how to enforce GDL restrictions and how to choose a safe vehicle for a new teen driver; <p>This is the first such program in the nation. After appropriate outcome evaluation, the program could serve as a model for other states.</p>		

17. Key Words Teenage drivers; Parents; Safety Program; Program Evaluation		18. Distribution Statement	
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages XX	22. Price

Form DOT F 1700.7 (8-72)

Reproduction of completed page authorized

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Background

For almost a quarter century, graduated driver licensing (GDL) has been the primary approach in the U.S. for improving the safety of young drivers and their passengers. Motor vehicle crashes are a leading cause of death for teenagers in the United States (US). From 2015 to 2019, 15,991 young people between the ages of 15 and 20 died in crashes (FARS, 2020). GDL addresses the inexperience that contributes to young driver crashes (McKnight & McKnight, 2003). A GDL system begins with a lengthy mandatory learner stage of adult-supervised driving, during which beginning drivers obtain substantial practice in actual, but relatively safe, driving conditions. This is followed by a provisional license stage that permits driving without an adult in the vehicle; however, new drivers are not allowed to drive at night or carry multiple teen passengers, both of which are particularly risky for young teen drivers (Chen, Baker, Braverman & Li, 2000; Williams, 2003). The third GDL stage is essentially a standard license, with no limits on when, where, or with whom the individual can drive.

A substantial body of evidence indicates that GDL is highly effective in reducing young driver crashes and the resulting injuries and fatalities (Williams, 2017). For example, crashes among 16-year-old drivers in North Carolina declined by 23% after GDL was implemented, and fatal crashes dropped by 57% (Foss, Feaganes & Rodgman, 2001). One-time interventions, no matter how impactful, are unlikely to have a long-term influence on behavior (Goodwin et al., 2018). Curry et al. (2015) reviewed parent-focused interventions and argue comprehensive programs are necessary to guide families through the entire licensing process. The initial orientation session, while important, would be just one step of a carefully sequenced structure to support parents. For example, during the supervised driving period, parents need reminders of the key actions they should be taking (e.g., providing lots of practice in a variety of settings). Technology can assist with this: smartphone apps can track a teen's practice and set goals for getting experience in a variety of settings such as darkness, bad weather, interstate highways, rural roads, heavy city traffic, etc. Once the teen earns an intermediate license, parents need to understand the importance of GDL restrictions and their role in managing the teen's independent driving. The overarching goal was to create guidance for parents designed to be delivered as close as possible to the point in time when that guidance is most needed.

Although GDL has been highly successful in reducing crashes among teenagers, novice drivers continue to crash at much higher rates than those with a few years of driving experience. Most young driver experts believe that improving parental involvement is among the most promising approaches for further reducing young driver crashes and fatalities (TRB, 2009). Parents influence the timing of licensure, supervise their teens' early driving experience, influence choice of vehicles, are the primary "enforcers" of their teens' license restrictions, and may further limit driving conditions or extend limits beyond what the state requires. To assist parents with this responsibility, there are hundreds of sources of advice available of widely varying detail and quality. Few programs and materials for parents have been evaluated. Based on the available studies, one thing is clear: *simply distributing materials to parents has no measurable effect on their behavior as supervisors*. According to a recently published review of the research literature on parent-focused interventions, "there is rather strong evidence to suggest that interventions that do not actively engage parents and involve passive dissemination of information materials via one or two mailings are ineffective" (Curry et al., 2015). A critical question, therefore, is how to engage and motivate parents to adopt the most useful parenting practices for supervising and managing a teen driver.

In one effort to provide this motivation, policymakers have begun to enact legislation requiring parents to attend an in-person orientation session when their teen begins the licensing process. Currently Connecticut, Georgia, Massachusetts, Minnesota, Montana, and northern Virginia require parents to attend an orientation session. Unfortunately, the development of parent orientation sessions across the country has outpaced the knowledge base. Researchers are still studying what assistance is most needed by parents and how best to provide that assistance. Some years ago, our research team conducted a first-of-a-kind study, using in-vehicle cameras and multiple interviews, to examine how parents supervise young beginning drivers during the

learner phase of GDL (Goodwin et al., 2010). The study revealed substantial interest, concern and commitment by parents. It also identified several difficulties that parents confront, ranging from mundane issues like busy schedules of teens and parents which limit opportunities for supervised driving experience, to more substantive issues. Among the latter is the failure of many teens to obtain practice in a wide variety of settings such as darkness, inclement weather, highways/interstates, rural roads and heavy traffic. Instead, most teen practice occurs during “routine” trips that offer a fairly narrow range of experience. Moreover, the study revealed a widespread failure of parents to transfer their own wealth of knowledge and “wisdom” about driving to their children (Goodwin et al., 2014). This is not surprising, as most adults are not aware of how much they know that is central to safe driving. They have long since forgotten how overwhelming and unsettling it can feel to be a learner tackling a complex undertaking that requires many months, if not years, to master. Moreover, few parents of current beginning teenage drivers experienced the stepwise approach to becoming a driver that is embodied in modern GDL programs.

Based on this fundamental research, our team developed an orientation session called “*Time to Drive*” for parents of new drivers (Goodwin et al. 2013). The objective of *Time to Drive* is to reach parents with critical information (1) at the moment when it is most needed, (2) when parents are most receptive, and (3) in a format that is most likely to influence their subsequent behavior. *Time to Drive* emphasizes what parents can do to help their teen develop more quickly into an experienced, safe driver. During the two-hour in-person session, parents view and discuss actual video clips of parents and teens during supervised driving. This helps parents understand the situations and challenges that are likely to occur during practice driving, and how they can best handle those situations. The session also highlights the importance of teens obtaining considerable driving experience in a wide variety of situations/conditions. The failure to provide this variety is one of the main, documented shortcomings in how most parents currently approach supervision of their teen’s driving. Additionally, parent-teen communication is a major focus of the session; specifically, how parents can share their driving wisdom and help their teen begin to develop a higher-order understanding of driving.

During the development of the *Time to Drive* session, we conducted a small-scale feasibility test. Thirty-eight parents of teen drivers attended sessions and provided feedback. Overall, parents responded very positively. For example, on a scale of 1 to 10 (with 10 being the highest), the session earned an average score of 9.2 for being “interesting and engaging.” In addition, all 38 parents thought the session would be helpful for other parents of new drivers. There were many lively discussions during sessions, and parents expressed several important insights that we believe could influence their subsequent behavior as supervisors. Given these encouraging initial results, the next logical step was to conduct a larger, more rigorous evaluation study.

The primary aim of this project was to create a comprehensive program to assist parents of beginning drivers in North Carolina. One objective of the present study was to conduct a large-scale field evaluation of the *Time to Drive* parent coaching session. Parents were randomly assigned to either *Time to Drive* or a control condition. We examined whether parents who participated in *Time to Drive* adopted better supervisory practices than those in the control condition. The outcome of this study was a comprehensive program to assist parents of beginning drivers. To our knowledge, no U.S. state or jurisdiction has created a comprehensive system to support parents through the entire licensing process. After appropriate outcome evaluation, the program could serve as a model for other states. This effort was co-funded by the Collaborative Sciences Center for Road Safety (CSCRS), the Rex Healthcare Foundation, and the North Carolina Governor’s Highway Safety Program (GHSP).

Program Development

In North Carolina, teenagers must first complete driver education before they can obtain a learner's permit. Most teenagers take driver education through the public school system. Because of backlogs in the system, it typically takes six months or longer to complete the required 30 hours of classroom and six hours of behind-the-wheel instruction. Once a teen completes driver education and passes a written test, he/she can apply for a learner's permit. The minimum holding period for the learner's period is 12 months, during which teens must obtain at least 60 hours of supervised practice (with 10 at night). After passing a road test, the teen can obtain a provisional (restricted) license that allows unsupervised driving. However, newly licensed teens are not allowed to drive unsupervised between 9 p.m. and 5 a.m. or to carry more than one teenage passenger. The mandatory holding period for the provisional license is six months. Assuming the teen maintains a clean driving record, he or she can advance to a full unrestricted license. For most teenagers in North Carolina, the entire learning-to-drive process from the outset of driver education to the unrestricted licensing stage can take two years or more.

Figure 1 presents the conceptual model developed in this project for supporting parents through the learning-to-drive process. The model recognizes that parents need different guidance at each point in the process. The following sections of this report describe the various elements of the program. These elements are described sequentially based on when they occur in the learning-to-drive process. We begin by describing the evaluation of the *Time to Drive* parent coaching session.

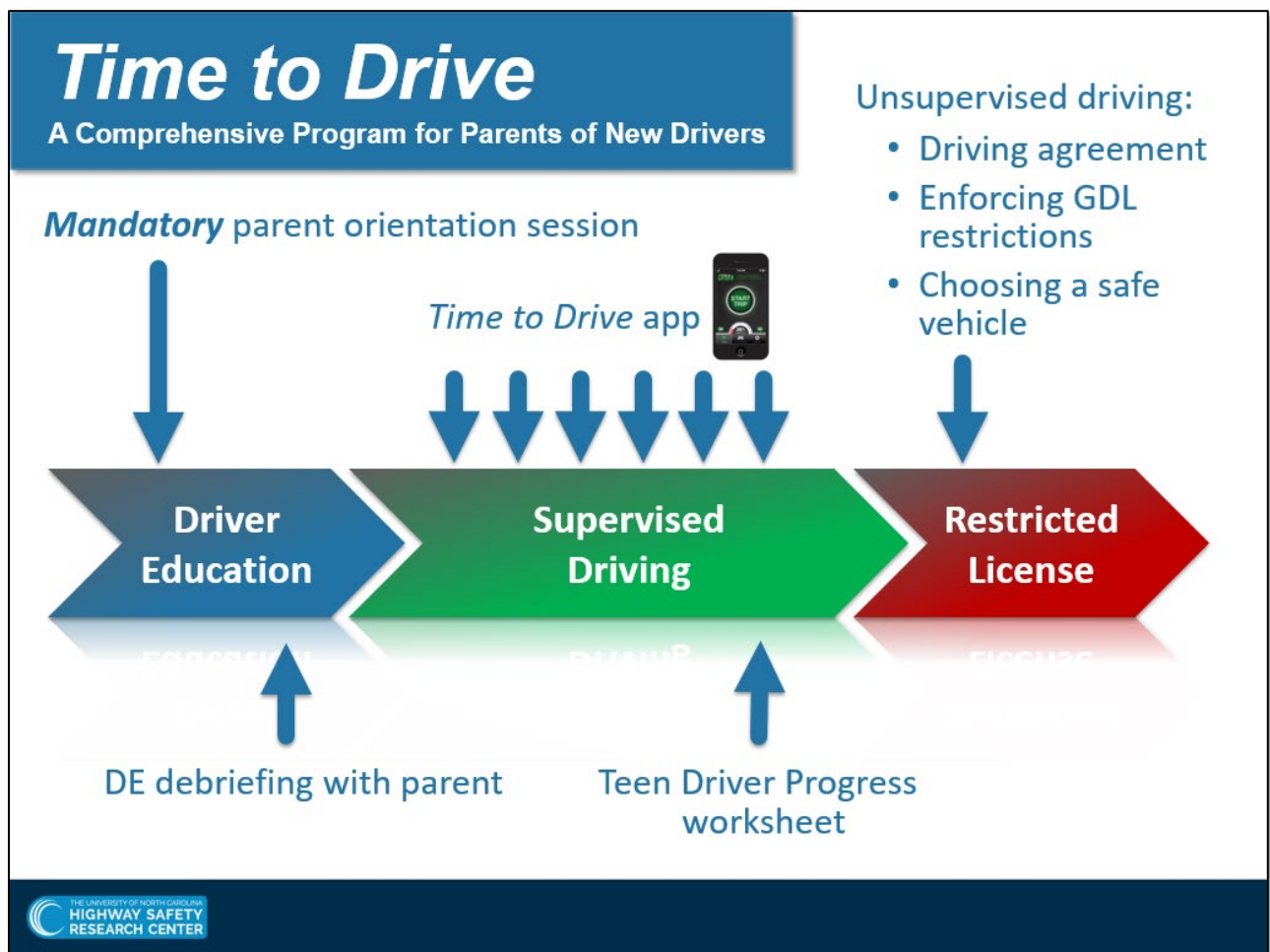


Figure 1. A Conceptual Model for a Comprehensive Program to Support Parents of New Drivers

Parent Coaching Session

Time to Drive

In a previous study, we developed a two-hour, in-person session for parents of novice drivers called *Time to Drive* (Goodwin et al., 2013). The session had two primary goals. The first was to ensure teens drive “enough” during the learner license stage. “Enough” was defined as making sure the teen has considerable experience in a wide variety of situations, to a point where the parent feels confident the teen could handle the same situations when driving unsupervised. The second goal was to help parents share their driving “wisdom” with their teen. “Wisdom” was defined

by the idea that parents have a well-developed understanding of driving based on their many years of driving experience. Their crash rates are low, in large part, because they have learned through experience how to identify and avoid potential dangers. The 12-month learner stage provides an opportunity for parents to help their teens develop not only into “skilled” drivers but also into “wise” drivers.

Rather than presenting facts and statistics, the session involves discussions and problem-solving among participants. Group size is limited to no more than 15 parents to foster participation and interaction. Parents are encouraged to draw upon their own experiences and to share these with the group. These include prior experiences in supervising a novice driver, challenges in communicating with teenagers, expectations for the learner stage, or anticipated problems. Analogies are used to help relate concepts with existing knowledge, and videos and other instructional tools are incorporated throughout.



Screenshot from a *Time to Drive* video

During several points of the session, parents view real-life (not staged) driving clips showing parents supervising a novice teen driver, or slightly-older teens who were no longer driving with supervision. These driving clips were drawn from our earlier naturalistic driving study of 50 families of novice drivers in North Carolina (Goodwin et al., 2010). Each activity during the *Time to Drive* session includes considerable group discussion, and several involve brainstorming and problem-solving. At the end of

each activity, the facilitator guides parents through a wrap-up exercise to summarize what was learned from the activity.

Field Evaluation

Study Location

We selected Johnston County, North Carolina as the location to conduct a field evaluation for the *Time to Drive* parent coaching session. Johnston County is the only jurisdiction in North Carolina where parents are required to attend an orientation session before a teen can enroll in a driver education class. The requirement was initiated, along with several other measures, in response to several high-profile teen driver fatalities in 2007. “Parent Nights” take place approximately one week before driver education classes begin. At least one

parent or guardian from a teen's family is required to attend Parent Night before the teen can enroll in driver education. The session lasts approximately 90-120 minutes. In a typical session, the driver education instructor discusses class expectations, requirements, key dates, etc. The instructor also talks with parents about important risk factors for teen drivers such as distractions, alcohol, and seat belt nonuse. Often a state highway patrol officer gives a presentation about teen driver safety and answers parents' questions. Some sessions also include a talk by a parent who has lost a teen in a traffic crash. Finally, every parent who attends the session receives a booklet called the "Student-Parent Driving Guide." The booklet includes tips for parents, a description of North Carolina's GDL system, a parent-teen driving agreement, and instructions for completing different types of driving maneuvers (e.g., turnarounds, parking).

Procedures

Our research team attended 10 Parent Night sessions at five high schools in Johnston County. The number of parents attending these sessions ranged from 40 to 150. At each session, we handed out a blank postcard to each family as they arrived for the meeting. The postcards were various colors but included 15 blue ones. The color of the postcard received by each family was random. (The postcards were shuffled prior the meeting.) Parent Night meetings were initiated by the driver education instructor who welcomed parents and asked them to complete several required forms. A member of our research team then introduced the study and asked families with blue postcards to accompany him/her to another classroom for the *Time to Drive* session. All other families remained seated and participated in the standard driver educator-led session.

The *Time to Drive* sessions were facilitated by a member of the research team with extensive experience working with adult learners in small group discussion formats. The facilitator began the session by welcoming parents and providing an overview of the study. He then led parents through the program.



A *Time to Drive* session in Johnston County

Measures

Post-session questionnaires. All parents completed a brief questionnaire at the end of Parent Night (regardless of which session they attended). The questionnaire asked parents for their opinion about the session and whether they would recommend that other parents attend this type of meeting. Parents also rated specific aspects of the session including the videos, handouts, and discussion leader.

The questionnaire also included a series of paired questions using a retrospective pre-test (RPT) format. RPT is a well-established method for measuring immediate program outcomes (Lamb, 2005; Pratt, McGuigan & Katzev, 2000). RPT obtains both the pre- and post-test measures *after* the intervention is completed, reducing the so-called "response shift effect." Response shift occurs when participants think they already know the material at the outset of a program, when in reality they do not. Hence, retrospective pre-tests can be particularly useful in situations where participants might overestimate their knowledge or understanding of a given subject on a traditional pre-test administered prior to the program. The RPT questions investigated parents' knowledge and understanding of key issues related to teen driver safety (e.g., the importance of their teen getting lots of practice in a wide variety of driving settings). A copy of the post-session questionnaire is presented in Appendix A.

Telephone interviews. To measure longer-term effects, we conducted telephone interviews with parents who participated in the *Time to Drive* and driver educator-led sessions. Interviews asked about behaviors such as the amount of driving practice during the previous week, conditions in which teens drove, and communication between parents and teens. Our research has found that parents and teens can have markedly different ideas about what has transpired regarding driving (Goodwin, Waller, et al., 2006). Accordingly, separate interviews were conducted with teens to obtain their perspective on parents' behaviors and the learning-to-drive process.

The interviews were conducted by a professional survey research organization (selected from one of several we have worked with in the past). Interviews were conducted 3 to 6 months after the teen had obtained a learner's permit. Research suggests that by 3 months, most teens have established a basic comfort with driving and have expanded the range of situations and conditions in which they drive (Goodwin et al., 2010). Prior to that time, many teens are still raw beginners, so program effects (e.g., driving in varied situations) could be difficult to detect. Permission to contact individuals for interviews was obtained following administration of the post-session questionnaires.

Results

Participants

In total, 517 parents attended one of the 10 "Parent Night" sessions. Following our random assignment procedure, 138 parents participated in the *Time to Drive* session, and 379 participated in the standard driver educator-led session. Characteristics of parents who attended each session are shown in Table 1.

Table 1. Characteristics of "Parent Night" Participants

	<i>Time to Drive</i> (N = 138)	Driver educator-led session (N=379)
Parent sex		
Male	28%	23%
Female	72%	77%
Parent age (mean)	44.1 years	43.7 years
Relation to teen		
Parent/step-parent	94%	98%
Grandparent	3%	1%
Other family member	2%	1%
Non-family member	1%	0%
Previous supervision experience		
Yes	52%	51%
No	48%	49%
Number of teens previously supervised		
1	62%	67%
2	29%	23%
3+	9%	10%

Both sessions were attended primarily by mothers. The average age of participants was 44. Parents represented a fairly diverse group in terms of their background and experience with supervising a novice teen driver. Half had previous supervision experience, with roughly one-third of those parents reporting they had supervised multiple teen drivers.

Parents in the *Time to Drive* and driver educator-led sessions were very similar on the various characteristics we measured. This suggests the random assignment procedure was successful in producing two equivalent groups of parents.

Post-session Questionnaires

Overall, parents had very positive opinions of the *Time to Drive* session. As shown in Table 2, most parents rated the session as either “excellent” or “very good.” Ratings were significantly higher for the *Time to Drive* session than the driver educator-led session. Among parents assigned to *Time to Drive*, 53% rated the session as “excellent.” By comparison, 38% of parents assigned to the driver educator-led session rated that session as “excellent.” Nearly all parents (99%) who participated in the *Time to Drive* session recommended that other parents of new drivers attend a similar meeting. Moreover, most (86%) thought the session should be *required* for parents of all new drivers.

Table 2. Parent Opinions of Their Assigned Session

	<i>Time to Drive</i> (N = 138)	Driver education-led session (N=379)	χ^2 test
Overall, how would you rate today's parent meeting?			
Excellent	53%	38%	$\chi^2=9.47$, $p < .05$
Very Good	34%	43%	
Good	12%	17%	
Fair	1%	2%	
Poor	0%	1%	
Would you recommend that other parents of new drivers attend a meeting like this?			
Yes	99%	98%	$\chi^2=0.11$, n.s.
No	1%	2%	
Do you think this type of meeting should be required for parents of all new drivers?			
Yes	86%	96%	$\chi^2=14.53$, $p < .05$
No	14%	4%	

Note: The χ^2 test measures differences between the *Time to Drive* and DE sessions. Significant differences are shown in **bold**.

Among parents who attended the *Time to Drive* session, ratings were also positive for specific aspects of the session. As shown in Figure 2, 70% of parents rated the parent-teen videos as “excellent.” Most parents also had positive opinions about the handouts, the discussion leader, and talking to/hearing from other parents.

Results from the retrospective pre-test questions are presented in Table 3. The table shows the percent of parents attending the *Time to Drive* session who “strongly agree” with statements about supervising a novice teen driver. After participating in the session, parents reported feeling better prepared for their responsibilities as a supervisor. For example, there was an increase from 43% to 61% in the percent of parents who strongly agreed they felt prepared to supervise their teen’s driving, and a shift from 45% to 71% in parents who said they understood what their teen needs to know to be a safe driver.

Changes were also observed on several items related to practice. For example, there was an increase from 23% to 40% in parents who strongly agreed they knew what might make it hard for teens to get enough practice, and an increase from 57% to 90% in parents who said they understood why practicing in lots of

situations is important. Regarding communication, there was a shift from 35% to 54% in parents who strongly agreed they were confident they knew how to talk with their teen about driving. Some items showed little change from pre- to post-test, such as parent nervousness about supervising a teen, and knowing how to judge when a teen is ready to drive without a parent in the car.

Finally, parents were asked the following question, “What would you say is the most important thing you learned today?” Parents typically mentioned staying calm, being patient, sharing wisdom, using “I” statements, and the importance of practice. A complete listing of parent responses to this open-ended question can be found in Appendix B.

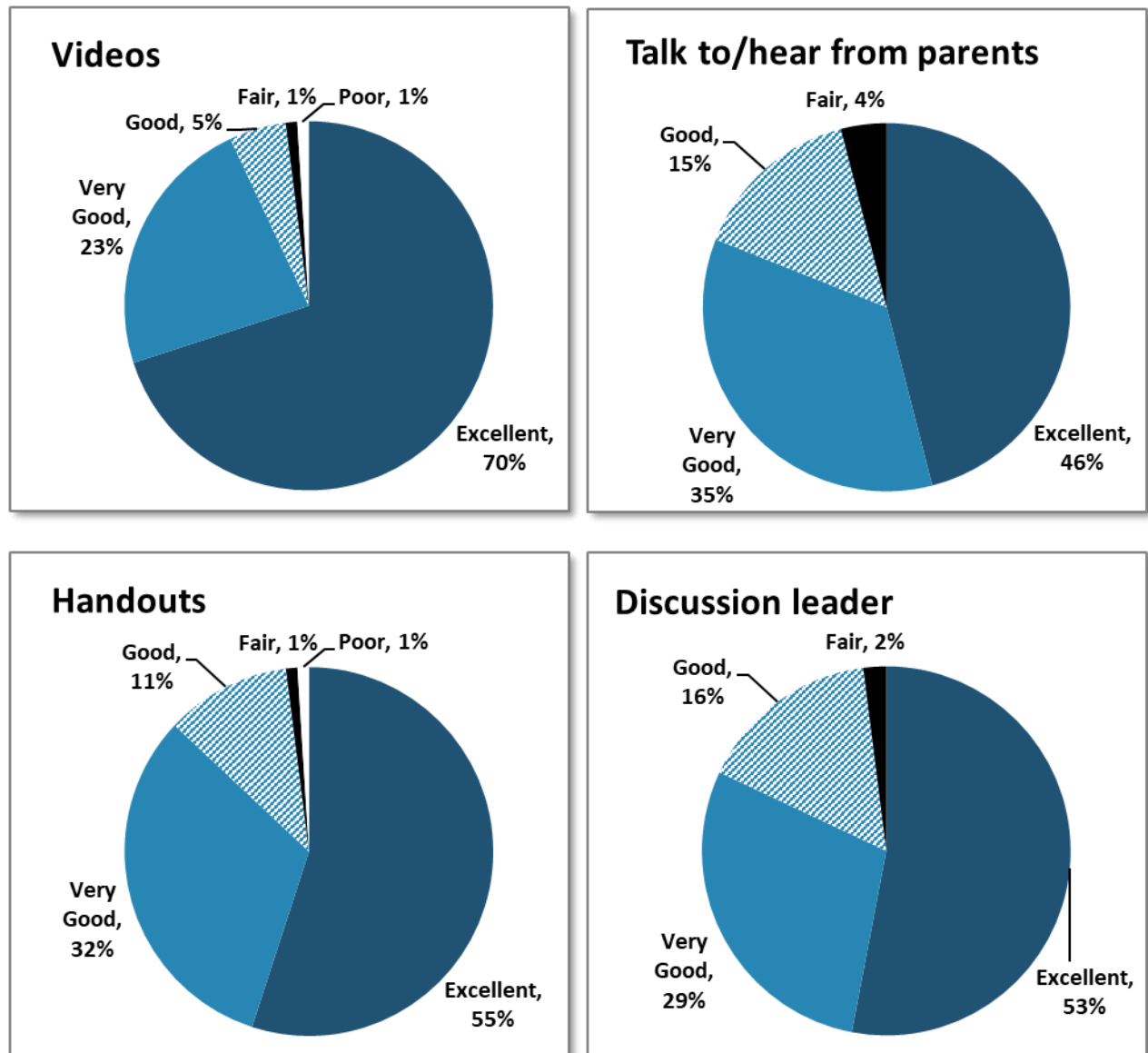


Figure 2. Parent Opinions' About Specific Aspects of the *Time to Drive* Session

Table 3. Knowledge and Beliefs About Supervision Among Parents Attending the *Time to Drive* Session (N =138)

	Pre-test	Post-test	WSR test
I feel prepared to supervise my teen's driving	43%	61%	p < .01
I understand what it feels like to be a new teen driver	33%	47%	p < .01
I think 60 hours is enough driving practice for teens	15%	10%	n.s.
I know what might make it hard for teens to get enough practice	23%	40%	p < .01
I am nervous about supervising my teen	26%	21%	n.s.
I'm confident I know how to talk with my teen about driving	35%	54%	p < .01
I have a plan for how to start supervising my teen	28%	49%	p < .01
I know how to judge when my teen is ready to drive without me	34%	37%	n.s.
I understand why practicing in lots of situations is important	57%	90%	p < .01
I understand what my teen needs to know to be a safe driver	45%	71%	p < .01

Note: Pre- and post-test results show the percent of parents who "strongly agree" with each statement. The Wilcoxon Signed Rank (WSR) test measures differences between pre- and post-test. Significant differences are shown in **bold**.

Telephone Interviews

Interviews were conducted with a total of 226 individuals. This included 126 parents (45 in the *Time to Drive* session and 81 in the driver educator-led session) and 100 teens (38 in the *Time to Drive* session and 62 in the driver educator-led session). Among parents, 72% were mothers and 25% were fathers. Three percent (3%) were a grandparent or other guardian. Among teens, 64% were female and 36% were male.

Amount of Driving. According to parents, teens had driven an average of 38 hours in total since getting a learner's permit. There was no difference in the total hours reported by parents in the *Time to Drive* and driver educator-led groups (38 hours vs. 37 hours). Most parents (89%) reported their teen had driven in the past week with 37% reporting their teen drove yesterday. Most parents said that since getting a permit, their teen had driven in rain (83%), darkness (83%), interstate highways (84%), and heavy traffic (67%). On all these items, there were no statistically significant differences between the responses of parents in the *Time to Drive* and driver educator-led groups.

The same questions regarding driving experience were also asked of teens. Once again, there were no significant differences between the *Time to Drive* and driver educator-led groups. Additionally, teens were asked how often they drive when they are in the car with a parent. As shown in Figure 3, teens whose parents participated in the *Time to Drive* session were somewhat more likely to say they "always" drive when they are in the vehicle with their parent(s).

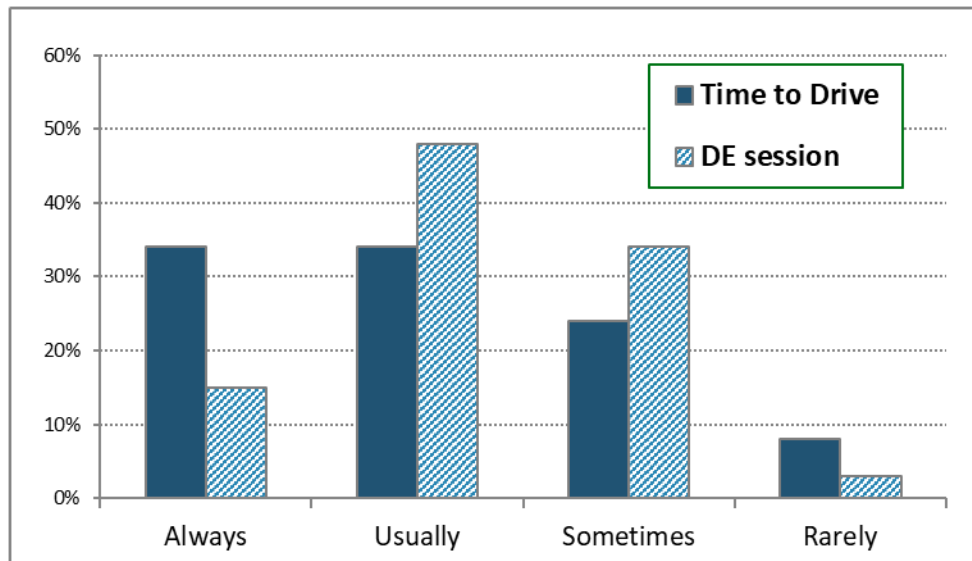


Figure 3. Frequency of the Teen Driving When Both the Parent and Teen Are in the Car

The Learning to Drive Process. The interviews with teens included a series of items examining teens' experiences with learning to drive. Specifically, the interviewer read a list of statements about driving practice, parent-teen communication, and parents' behavior during supervised driving, and teens were asked to indicate their level of agreement (or disagreement) with each statement. Responses are shown in Table 4.

Table 4. Teen Agreement with Statements About Learning to Drive

	<i>Time to Drive</i> (N = 38)	Driver education-led session (N=62)	Somers' D
My [Mom/Dad] is nervous about riding with me when I'm driving			
Strongly agree	16%	13%	n.s.
Somewhat agree	26%	35%	
Somewhat disagree	18%	26%	
Strongly disagree	40%	26%	
My [Mom/Dad] makes time to practice driving with me			
Strongly agree	74%	76%	n.s.
Somewhat agree	24%	24%	
Somewhat disagree	3%	0%	
Strongly disagree	0%	0%	
My [Mom/Dad] understands how hard it is to be a new driver			
Strongly agree	76%	68%	n.s.
Somewhat agree	16%	29%	
Somewhat disagree	5%	2%	
Strongly disagree	3%	0%	
I wish my [Mom/Dad] would stop trying to tell me so much while I'm driving			
Strongly agree	13%	27%	

Somewhat agree	24%	39%	D=.297, p < .01
Somewhat disagree	29%	16%	
Strongly disagree	32%	18%	
My [Mom/Dad] stays calm while I'm driving			n.s.
Strongly agree	55%	48%	
Somewhat agree	37%	44%	
Somewhat disagree	3%	5%	
Strongly disagree	5%	3%	
My [Mom/Dad] often tells me I need to stop or slow down sooner			D=.201, p = .07
Strongly agree	18%	34%	
Somewhat agree	34%	34%	
Somewhat disagree	32%	21%	
Strongly disagree	13%	10%	
My [Mom/Dad] is doing a good job of helping me learn to drive			n.s.
Strongly agree	92%	90%	
Somewhat agree	8%	10%	
Somewhat disagree	0%	5%	
Strongly disagree	0%	0%	
My [Mom/Dad] yells at me while I'm driving			D=.180, p = .07
Strongly agree	5%	10%	
Somewhat agree	3%	18%	
Somewhat disagree	24%	17%	
Strongly disagree	68%	55%	
When I'm driving, my [Mom/Dad] tells me ahead of time what I need to do			D=.193, p = .07
Strongly agree	68%	47%	
Somewhat agree	21%	43%	
Somewhat disagree	11%	8%	
Strongly disagree	0%	2%	
My [Mom/Dad] is patient with me when I'm driving			n.s.
Strongly agree	71%	60%	
Somewhat agree	24%	31%	
Somewhat disagree	5%	8%	
Strongly disagree	0%	2%	
My [Mom/Dad] compliments me on my driving			n.s.
Strongly agree	63%	58%	
Somewhat agree	34%	39%	
Somewhat disagree	3%	3%	
Strongly disagree	0%	0%	
I enjoy the time I spend with my [Mom/Dad] when I'm driving			n.s.
Strongly agree	68%	68%	
Somewhat agree	26%	31%	
Somewhat disagree	5%	2%	
Strongly disagree	0%	0%	

Note: The Somers' D test measures differences between the *Time to Drive* and DE sessions. Significant (or marginally significant) differences are shown in **bold**.

Teens seemed more pleased with their parents' communication about driving if their parents participated in the *Time to Drive* session rather than the standard driver educator-led session. For example, teens whose parents participated in the *Time to Drive* session were more likely to agree with the statement, "When I'm driving, my [Mom/Dad] tells me ahead of time what I need to do." Moreover, they were more likely to disagree with statements such as, "I wish my [Mom/Dad] would stop trying to tell me so much while I'm driving," and "My [Mom/Dad] often tells me I need to stop or slow down sooner."

Parents who attended the *Time to Drive* session also appeared to stay calmer during supervised driving. Teens whose parents attended the *Time to Drive* session were more likely to disagree with the statement, "My [Mom/Dad] yells at me while I'm driving." No differences were observed on other items, such as whether the parent makes time for practice, or whether teens enjoy spending time driving with their parents.

What Parents Took Away from the Session. Near the end of the interview, parents were asked the following question: "Thinking back to Parent Night, what would you say is the most important thing you learned that's been helpful in supervising your teen?" Among parents who attended the *Time to Drive* session, many of the responses to this question reflected the underlying primary objectives of the session. Some examples include:

- "Be patient and focused."
- "For parents not to get excited, grab things and yell. Be calm and talk through later how I would have done it."
- "Give them the opportunity to learn from their mistakes."
- "How important practice is."
- "How to react to your child while they are driving – how to explain/talk through things."
- "Trying to teach them to look ahead to what the other drivers in front of them are doing."
- "Be patient, because they don't have the same experience we do."
- "Use the phrase, 'This is what I do in this situation.'"
- "Videos about seeing how the teens felt when they were driving – helped me to reflect on how I react when he is driving."

By comparison, many of the responses to this question from parents who attended the driver educator-led session focused on rules of the road or driver education requirements.

Discussion

Findings suggest the *Time to Drive* parent coaching session was well received by parents. Parents gave positive assessments to the session overall and to specific aspects of the session including the videos, handouts, and discussions with other parents. It is encouraging that the session was so well received even among parents who were not volunteers. In fact, most parents who attended the *Time to Drive* session thought it should be required for all parents of new drivers. Altogether, these findings suggest most parents found the session to be valuable.

It is important to note that *approval* of a program does not indicate the program is *effective*. Several traffic safety countermeasures that reduce crashes and/or injuries are not necessarily popular among the populations targeted by those programs. (Consider ignition interlocks, motorcycle helmets, and speed cameras as just a few examples.) Consequently, we also examined changes in parents' knowledge and beliefs about their role as supervisors and their actual behavior. After participating in the session, a larger percentage of parents said they understood why practicing in lots of situations is important, and they knew what might make it hard for teens to get enough practice. Parents were also more likely to say they knew how to talk with their teen about driving. Overall, parents were more likely to agree that they felt prepared to supervise their teen's driving, and that they understood what their teen needs to know to be a safe driver. All of these were a central focus of the *Time to Drive* session.

With respect to behavior, the *Time to Drive* session had two primary objectives. First, the session emphasized the importance of teens obtaining considerable driving experience in a wide range of settings. Second, the

session encouraged parents to share their knowledge, understanding, and “wisdom” about driving with their teens. Regarding the first objective, it appears the *Time to Drive* session was not effective. Almost no differences were found in the driving experience of teens whose parents participated in the *Time to Drive* session versus the driver educator-led session. We included a wide range of questions examining how much teens had driven and the types of situations in which they drove. However, only one item showed a significant difference between the two groups: teens whose parents participated in the *Time to Drive* session were somewhat more likely to say they “always” drive when they are in the vehicle with their parent(s).

One possibility is that both sessions were successful in encouraging more driving among families. Because the present study did not include a control group of parents that received *no* intervention, it is difficult to know whether both sessions succeeded, or both sessions failed. (A true control group wasn’t feasible since Johnston County requires all parents to attend an orientation session.). Although both sessions may have prompted families to drive more, we believe this is unlikely. The amount of time devoted to the importance of practice was negligible in the driver educator-led session. Consequently, we believe the *Time to Drive* session was not successful in encouraging parents to give their teens more practice, or a greater variety of practice.

There are several reasons why *Time to Drive* may not have influenced teen driving experience. First, this is a very difficult behavior to change. There are many real-world obstacles to driving practice that can be difficult to overcome (Goodwin et al., 2010). Families have busy schedules that limit opportunities to practice. Some conditions (e.g., bad weather) occur infrequently and may necessitate special trips on the part of parents and teens. Obtaining experience on certain types of roadways, such as interstate highways or rural country roads, may be challenging for families that live far away from these roads. Some parents find their teen loses interest in driving once the “novelty” has worn off; still other parents report their teen is fearful or disinterested in driving. All of these represent barriers to the amount and diversity of driving experience that teens obtain during supervised driving.

The failure to detect differences between groups could also be a result of measurement issues. The present study assessed driving experience through self-report. People are generally not aware of how much or how far they drive (Leaf et al., 2008). We anticipated this, so we included questions that we hoped could be answered with a higher degree of accuracy. For example, we asked whether teens drove yesterday, or whether teens had ever driven in situations such as bad weather or darkness. In future studies, better measurement of driving behavior is needed. There are a variety of tools that are capable of collecting such data, such as smartphone apps and in-vehicle recording devices. These can provide valuable objective measures of driving exposure, both enhancing and helping to verify self-reports of driving obtained from interviews. Unfortunately, such tools were beyond the budget for the present study.

Although *Time to Drive* did not appear to increase driving experience, the session did influence how parents communicated with their teen during supervised driving. Teens whose parents participated in the *Time to Drive* session were more likely to agree with statements such as, “When I’m driving, my [Mom/Dad] tells me ahead of time what I need to do.” Meanwhile, they were more likely to *disagree* with statements such as, “My [Mom/Dad] yells at me while I’m driving,” and “I wish my [Mom/Dad] would stop trying to tell me so much while I’m driving.” Other items showed similar patterns regarding communication but did not achieve statistical significance. It is important to bear in mind these are *teen* reports, so they are not subject to social desirability bias—that is, a desire among respondents to present themselves in a favorable light. Moreover, teens did not attend the *Time to Drive* session, so they would not be aware of the focus on communication (unless parents shared this information with them).

The differences in communication between parents in the *Time to Drive* and the driver educator-led session are important. At present, research suggests parents do little during the learner stage to communicate “higher order” concepts such as perceiving hazards or anticipating both predictable and erratic actions of other road users (Goodwin et al., 2014). This may not be surprising since parents may not even realize what they understand about driving that their teen does not. Nonetheless, the lengthy learner stage in North Carolina presents an opportunity for parents to convey their many years of accumulated “wisdom” about driving to their teens. If parents can be encouraged to do so, this could improve safety by helping teens more quickly develop the higher order understanding that characterizes experienced drivers.

Revising the Session

Based on the results of the field evaluation, our team revised the *Time to Drive* parent coaching session to address shortcomings identified in the field evaluation. Specifically, activities related to driving practice were greatly expanded. The revised *Time to Drive* program included several activities to encourage lots of practice in a wide range of settings:

- A small group activity in which parents discuss the question: “What are some difficult places or situations around here for a new driver?”
- A review of supervised driving requirements in North Carolina.
- Introduction of a practice driving plan and discussion about the value of creating a plan.
- An exercise to identify and overcome barriers to getting driving practice.
- An exercise to illustrate the need for practice in a wide range of settings.
- Introduction of a questionnaire designed to help parents identify situations where their teen needs more practice.

Additionally, we created a new activity to help parents understand importance of choosing a safe vehicle for their teen. The importance of vehicle choice has been largely overlooked by both parents and the traffic safety community. Many teens drive smaller, older vehicles which are less likely to have important safety features, as well as pickups and older SUVs that are prone to rollover crashes (Eichelberger, Teoh & McCartt, 2015; McCartt & Teoh, 2015; Williams et al., 2006). Although parents are broadly aware that new teen drivers are more likely than experienced drivers to crash, this often leads them to choose a vehicle that will be less expensive to repair or replace when a (seemingly inevitable) crash occurs. Only a minority of parents cite safety as an important factor in choosing a vehicle for their teen (Eichelberger et al., 2015). In doing so, parents are inadvertently missing the bigger picture, placing a higher value on the vehicle than on the safety of their child. If all newly licensed teens drove the safest vehicle owned by the family—or if those purchasing a vehicle selected the safest vehicle they could afford—many deaths and injuries could be prevented even if teens’ elevated crash risk was unchanged.

The new activity begins with a video showing a crash test involving a 2015 Toyota Corolla and a 1998 Toyota Corolla. Although both vehicles were the same make and model, the older vehicle sustains substantially greater damage in the crash. The video is followed by a discussion about important safety features for new drivers (e.g., side and curtain airbags), and vehicles that should be avoided (e.g., overpowered vehicles). Crash test ratings are explained, and parents learn about resources available from the Insurance Institute for Highway Safety (IIHS) for selecting a safe vehicle for a new teen driver. Finally, parents participate in a brief activity illustrating how sharing a vehicle can help keep teens stay safe during the first, high-risk year of driving.



Screenshot from the crash test video

A 43-page Facilitator Guide was created to assist facilitators in delivering the program. The Guide describes the objective of each activity and provides a full script for facilitators (although facilitators are not expected to read the script word-for-word). A PowerPoint presentation was also created with embedded videos and other program visuals that are shown during the program. We pilot tested the revised program with two groups of parents of new drivers recruited through a broadcast email disseminated to UNC employees. Approximately 15 parents attended the two sessions. Following the sessions, additional adjustments were made to the activities and the text of the Facilitator Guide. We then conducted additional pilot testing of the program at a high school in Wake County. Over the course of one semester, a driver education instructor at the high school

was willing to require all parents to attend the session. In total, we held five sessions with 73 parents. Post-session questionnaires suggest the program was once again well received. All but one parent reported they would recommend the program to other parents of new drivers. Using the retrospective pre-test approach, we found substantial increases in parent agreement on items such as: “I have a plan for how to supervise my teen,” “I understand why practicing in lots of situations is important,” “I know how to judge when my teen is ready to drive without me,” “I feel prepared to select a safe vehicle for my teen,” and “I understand what my teen needs to know to be a safe driver.” Although encouraging, a full-scale evaluation measuring actual behavior and using control groups is still needed to establish the effectiveness of the revised *Time to Drive* parent coaching session.

Guidance for Driver Education Instructors

In many states, including North Carolina, teens must complete a driver education class during the learning-to-drive process. Although this provides an opportunity for driving instructors to engage parents, most driver education programs do not have structured or formal communications with parents (Goodwin et al., 2018). A few noteworthy exceptions can be found. For example, the Auto Club Driving School of Southern California has parent “debriefings” after each of 6-10 behind-the-wheel driving lessons; driving instructors discuss the teen’s progress and encourage parents to practice certain skills with their teens during supervised driving. (Teens in California must obtain a permit before they can begin behind-the-wheel training, so they complete supervised driving and behind-the-wheel training concurrently.)

Meetings with driver education instructors provide an opportunity to reinforce important actions parents can take to improve their teen’s safety. Driver education instructors are generally regarded as experts by parents, so their advice and recommendations carry weight. As part of the *Time to Drive* program, we developed a brief, structured meeting between parents and driver education instructors. The meeting was designed to take place at the end of behind-the-wheel training when the driving instructor “hands off” the novice teen driver to the parent. During this meeting, instructors would discuss the proficiency of the teen driver and remind parents of their role and responsibility in helping their teen become a safe driver. Specifically, instructors would encourage parents to give their teen as much supervised practice as possible in a wide variety of settings and conditions. To aid these conversations, we developed a brief worksheet for the instructor to share with parents. The worksheet describes settings and conditions where the teen needs practice and also provides suggestions for getting enough practice. For example:

- Make a practice driving plan. Set a goal to drive at least 2 hours per week.
- Have your teen drive *every time* he/she is in the vehicle. (Maybe allow one “excused from driving” each week.)
- Make special trips when the opportunity comes up (such as driving in rain).
- Make sure your teen has lots of supervised practice in whatever vehicle he/she will be driving once licensed.
- If it’s hard to find time for practice, delay licensure until your teen has practiced enough.

The worksheet also introduces the *Time to Drive* smartphone app (described in the next section) and explains how parents can download the app. Finally, parents sign the worksheet, agreeing to make sure their teen gets lots of practice in a wide variety of situations.

We consulted with driver educators in North Carolina during the development of the worksheet and incorporated their feedback/suggestions. Most instructors understood and appreciated the value of a brief meeting with parents to underscore the role of parents and key actions parents can take to improve their teen’s safety.

Guidance During Supervised Driving

Smartphone app

In 2011, the University of North Carolina announced the following call for proposals:

"The Office of the Vice Chancellor for Research, in conjunction with Innovate@Carolina, is pleased to announce a call for proposals in support of Carolina Apps, a new initiative to bring Carolina-born ideas to wider audiences through the creation of innovative mobile applications with broad public appeal. The use of mobile apps in the research, translation, and application of knowledge developed at UNC is a relatively new frontier. In order to learn more about this emerging tool set and how it may advance the research interests of the UNC community, the Office of the Vice Chancellor for Research is contributing funds to support the development of a mobile application that will apply UNC research to the content and features of a custom-built mobile application. The proposal selected will be developed from concept to finished product with the technical assistance of an external development team within a few months of identification, and will be launched and marketed by the Carolina Apps team."

Our team submitted a proposal stemming from our long-standing research investigating the role of parents in the learning-to-drive process. We envisioned a tool that could assist parents in maximizing the benefits of supervised driving. Our proposal was selected for funding, and our team worked with an app developer to design, produce and test a smartphone app called *Time to Drive*.

The *Time to Drive* app keeps a detailed record of the vehicle's movement when a teen is driving with a supervisor. To use the app, parents simply press a "Start Trip" button at the beginning of each supervised driving trip (see Figure 4). The app then automatically tracks the duration and distance of the trip. A built-in algorithm uses the recorded time of day to measure how much driving was done in darkness. At the end of each trip, parents are prompted to specify whether the trip involved certain settings/conditions such as highway driving, rural roads, heavy traffic, or inclement weather. The app also uses GPS information to track where the teen drove. For every trip, a detailed route map is available showing the specific roadways traveled.

Parents can use the app to produce a driving log in a format acceptable for submission to state DMV's, easing the load for parents and licensing officials alike. Research shows many parents are unaware of the supervised hours requirements in their state, and they struggle to maintain accurate, up-to-date driving logs (O'Brien et al., 2013). The app improves the accuracy of driving logs, and addresses concerns that parents are careless about completing—or intentionally falsifying—their teen's driving record.



Figure 4. *Time to Drive* smartphone app screen shots

However, the real value of the *Time to Drive* app is in making sure that teens get more—and better—practice so they can become safer drivers. The app has a progress report, so families can see how many hours the teen has driven overall and at night (see Figure 4). It also shows the number of trips completed in bad weather, on interstates, on rural roads, and in heavy traffic. *Time to Drive* encourages parents and teens to meet driving goals in each of these settings/conditions by awarding medals based on accrued experience.

Besides encouraging lots of driving in a wide range of settings, *Time to Drive* includes several useful features for parents including:

- An audible warning when the teen brakes too hard. The goal is to help teens learn to brake earlier and more smoothly.
- Parents can view their teen's current speed at any point during a trip.
- Parents can view previous trips taken by their teen, including a map showing all the locations where their teen has driven.
- The app provides tips for parents of teen drivers, such as how to talk with their teen about driving, how to know when their teen is ready to drive unsupervised and choosing the right vehicle for their teen.

A beta test was conducted with a few dozen parents of new drivers. All parents who participated in the beta test reported the app was easy to use and helpful, and all said they would recommend the app to other parents of new drivers. For a limited period during 2016, the *Time to Drive* app was available free-of-charge to iPhone users through the App Store. The app was downloaded 1,369 times. Of these, 332 families recorded at least 40 trips using the app with an average of 107 supervised practice driving trips per family. In total, these 332 families made nearly 36,000 supervised practice driving trips using the app. A full analysis of the trip time, distance and location (GPS) data was beyond the scope of the present investigation. The *Time to Drive* app is not currently available for download. (The app needs to be updated to the newest iPhone operating system.)

Readiness to Drive Questionnaire

Towards the end of the learner period, parents often ask: "How can I know that my teen is ready to drive unsupervised?" To address this question, our team developed a competency assessment tool that helps parents gauge a teen's readiness to drive independently, and to determine the types of settings/environments in which the teen still needs practice.

The questionnaire, "Measuring Your Teen's Readiness to Drive" lists 32 driving situations, starting with relatively easy situations such as driving in good weather or pulling into a parking space, and advancing to harder situations such as driving in heavy traffic, in an unfamiliar place, or in heavy rain. For each situation, parents rate how comfortable they would be with their teen driving *without them in the car*. Ratings range from 'not at all comfortable' to 'very comfortable.' For situations where parents do not feel very comfortable, they are encouraged to give their teen more practice. For certain situations or conditions, this might require making a special trip (e.g., heavy rain).

Ideally, parents would complete the questionnaire several times over the course of the supervised driving period to help identify where the teen still needs more practice. It would be especially important to use the questionnaire as the teen nears eligibility for a provisional license.

Guidance During the Provisional Stage

When teens make the transition to driving independently, it is critical that parents remain involved. Research shows that close parental management of a teen's early driving experience can improve safety outcomes (Simons-Morton & Ouimet, 2006). Parents can set clear expectations about driving, enforce GDL's nighttime and passenger restrictions, and choose a safe vehicle for their teen.

Driving Agreement

Many parent programs include some form of driving agreement. Driving agreements clarify the roles and expectations for both parents and teens. Research shows that driving agreements can increase parental involvement; however, parents seldom complete such agreements unless they are helped to do so (Zakrajsek et al., 2013). Many of the available driving agreements are fully completed contracts that only require signatures of parents and teens. However, the true value of a driving agreement comes from the discussion between parents and teens about expectations for independent driving. Individuals feel more investment when both parties contribute to, and negotiate, the agreement. Moreover, the driving agreement should clearly describe the roles and responsibilities of both teens and parents (Goodwin et al, 2018).

The most widely tested driving agreement is the *Checkpoints* program. *Checkpoints* was designed to encourage parents to limit teens' driving in high-risk conditions. Parents receive a video followed by a series of newsletters that describe the risks of teen driving, the role of parental restrictions, and the benefits of adopting a driving agreement to reduce risks. Research shows that families who participate in the *Checkpoints* program and who create a driving agreement are more likely to report greater limits on the teen's driving (Simons-Morton et al., 2006).

In the present study, our team developed a parent-teen driving agreement designed to be negotiated by families at the outset of the provisional license. The first page describes the value of a driving agreement and how it works:

- You and your teen should talk about the driving agreement and why it's important. Keep in mind that an agreement only works when *everyone* agrees to it.
- Fill in the restrictions on the teen's driver license that apply in your state (for example, night driving, passenger, or seat belt restrictions).
- Next, you and your teen should create a driving agreement that best fits your family. Talk with your teen and listen to his or her suggestions about what to include in the agreement. This is something you should create *together*. If you need a few ideas to get started, see the sample agreement that is provided.
- When you and your teen are satisfied with the driving agreement, both of you should sign it at the bottom. Also, make sure to write down a starting and ending date for the agreement. Finally, keep the agreement somewhere that you are likely to see it often, such as the refrigerator door.
- After a month or two, you and your teen should review the driving agreement and make changes to it. For example, if your agreement says that your teen is only allowed to drive during clear weather, you might change this to include rainy weather if you both feel comfortable with your teen's progress.

The driving agreement itself is mostly a blank form. As suggested above, parents and teens write down the GDL requirements that apply in their state (e.g., nighttime, passenger and cell phone restrictions). Next, they list actions that both parties agree to do during the provisional license period. For example, families might agree to limit the locations where the teen can initially drive. Families might also agree that parents should provide transportation, as needed, for any trips that occur during restricted nighttime hours. Parents and teens are encouraged to provide start and end dates for the agreement, and to revisit and revise the agreement at a later date. To assist

Sample Driving Agreement

Parent/Teen Driving Agreement	
Teen Agreement	Parent Agreement
I agree to know and abide by all restrictions that apply to my driver's license. These include:	As a parent or guardian for my teen, I agree to:
<input type="checkbox"/> Driving only between 5 a.m. and 9 p.m. unless I am being supervised.	<input type="checkbox"/> Drive safely and be a good role model for you, including wearing my seat belt.
<input type="checkbox"/> Driving with no more than 1 teen passenger in the car, because I know that other teens can distract me.	<input type="checkbox"/> Allow you to use the Ford Taurus anywhere in town if, after three months, you have no traffic tickets or crashes.
<input type="checkbox"/> Making sure each and every person in the vehicle (including me) is wearing a seat belt.	<input type="checkbox"/> Drive you to and from any activities after 9 p.m.
In addition, I agree to:	<input type="checkbox"/> Respect other drivers and not drive aggressively.
<input type="checkbox"/> Not drive when my abilities may be affected by my physical condition, for example, when sleepy, after drinking, or after taking some cold or allergy medications.	<input type="checkbox"/> Avoid distractions while driving, such as eating, changing CDs, or using a cell phone.
<input type="checkbox"/> Only drive the Ford Taurus unless I get permission from you to drive a different car.	<input type="checkbox"/>
<input type="checkbox"/> Only use the car to drive to and from school, baseball practice, or Johnny Morton's house.	<input type="checkbox"/>
<input type="checkbox"/> Get permission from you if I need to drive somewhere else.	<input type="checkbox"/>
<input type="checkbox"/> Request your help if I need a ride after 9 p.m. (or for some other reason).	<input type="checkbox"/>
<input type="checkbox"/> Respect other drivers and not drive aggressively.	<input type="checkbox"/>
<input type="checkbox"/> Avoid distractions while driving, such as eating, changing CDs, or using a cell phone.	<input type="checkbox"/>
Teen signature: <u>Tamara Evans</u>	Parent signature(s): <u>Bill Evans</u> <u>Monica Evans</u>

TIME PERIOD: Starting: 9/15/03
Ending: 3/15/04
Review on: 12/15/03

families with generating ideas, a sample agreement is provided.

Enforcing GDL Nighttime and Passenger Restrictions

It is extremely difficult for police officers to enforce laws that apply to specific age groups. For example, an officer cannot determine whether a young person is violating the GDL nighttime restriction without first stopping the driver and verifying the conditions of his license. Before the officer can do so, the teen would need to commit some other violation (e.g., speeding). By contrast, parents are in a much better position than police to verify that their teens are complying with GDL restrictions. Fortunately, research shows most teens comply with both the nighttime and passenger limits (Curry, Pfeiffer & Elliott, 2017). Most teens find these limits reasonable and parents (by and large) appear vigilant about enforcing them (Goodwin, Wells et al., 2006).

An objective of this study was to create materials highlighting that the existing norm is for parents to enforce—and teens to comply—with GDL requirements. Unfortunately, we were unable to develop these materials due to time constraints.

Choosing a Safe Vehicle

As mentioned earlier, a new section was added to the *Time to Drive* parent coaching session about choosing a safe vehicle for a novice teen driver. To reinforce the information presented in that session, we created a worksheet with recommendations and resources for choosing a safe vehicle. The worksheet:

- Describes important safety features for teen drivers, such as side and curtain airbags, electronic stability control and antilock brakes.
- Discusses the importance of avoiding overpowered cars or small, light vehicles.
- Encourages families to share a vehicle for the first six months of unsupervised driving. Research shows crash rates are lower for teens who share a vehicle with their parents (Garcia-Espana et al., 2009).
- Discusses the importance of vehicle safety ratings and where to find ratings for vehicles by make, model and year.
- Directs parents to lists of recommended used vehicles for teen drivers starting from \$4,000 (IIHS, 2021).

Guidance for All Stages

Despite the many ways in which parents are involved in helping their teen learn to drive, they are largely left to their own devices. They may receive a booklet or even attend an orientation session, but they navigate most the lengthy GDL process without any help. Most parents of new drivers were licensed prior to the GDL era. Hence, they cannot draw from their own experience on how to make best use of lengthy learner periods or how to enforce nighttime, passenger or cell phone restrictions. Anecdotally, parents ask questions and share experiences with other parents of new drivers. However, no state currently has a support network in place to guide families through the entire GDL process.

A final element of a comprehensive program to assist parents of new drivers would be a network of Teen Driver Safety (TDS) technicians. TDS Technicians could provide one-on-one personalized assistance to parents of new drivers. They would be available to answer questions about North Carolina's GDL system, direct parents to available resources, and address other questions that may arise (e.g., "what if my teen is too scared to drive?"). TDS Technicians would also be responsible for facilitating *Time to Drive* parent coaching sessions. We would train new instructors to facilitate the session and provide refresher training for continuing instructors. Once trained, TDS Technicians could deliver the program in schools or driver education classes across North Carolina's 100 counties. This network would be modelled after North Carolina's existing network of Child Passenger Safety (CPS) technicians. (Some individuals may choose to be both TDS and CPS technicians.)

Summary

The objective of this project was to develop a comprehensive program to support parents of new drivers in North Carolina. This system would provide critical guidance to parents at various points in the licensing process when this guidance is most needed. In their review of parent-focused interventions, Curry et al. (2015) argue that comprehensive programs are needed that guide families through the entire licensing process. To our knowledge, no U.S. state or jurisdiction has created a comprehensive system to support parents throughout the GDL process.

The *Time to Drive* program includes:

Driver education:

- A parent coaching session that encourages parents to provide their teen with a substantial amount of driving practice in a wide variety of settings, and that helps parents better communicate with their teen during supervised driving.
- A debriefing meeting with driver education instructors to inform parents of the progress and proficiency of their teen driver, and to remind parents of their role and responsibility in helping their teen to become a safe driver.

Supervised driving:

- A smartphone app that assists and encourages diversified practice.
- A competency assessment tool that helps parents gauge a teen's readiness to drive independently, and to determine the types of settings/environments in which the teen still needs practice.

Provisional license:

- A driving agreement that clarifies the roles and expectations for both parents and teens during independent driving.
- Resources to assist parents with enforcing GDL nighttime and passenger restrictions.
- A worksheet with recommendations and resources for choosing a safe vehicle for a novice teen driver.

All stages:

- A network of Teen Driver Safety technicians across the state who would facilitate *Time to Drive* parent orientation sessions and provide one-on-one personalized assistance to parents of new drivers.

The comprehensive program developed in this project has several important strengths. First, the program is grounded in research. Previous studies have identified shortcomings in parental supervisory practices. The *Time to Drive* program is designed to address those shortcomings by using evidence-based tools to improve how parents supervise and manage a new teen driver. Also, the program focuses on a few key behavioral goals: ensuring teens get considerable driving experience in a wide variety of situations during the learner stage; helping parents communicate with their teen, especially regarding higher-order driving skills; and encouraging families to choose a safe vehicle for their teen. These same behavioral goals are emphasized during multiple contacts with parents. For example, the importance of substantial and diversified practice is emphasized in the initial parent coaching session, the meetings with driver education instructors, and the smartphone app. Clear behavioral goals and repeated contacts are key to promoting behavior change and achieving desired outcomes (Goodwin et al., 2018). Finally, the program uses principles of adult learning, emphasizing active learning methods such as discussion, problem-solving and practice.

Presently, several aspects of the program remain aspirational. A mechanism does not yet exist to *require* parents to attend an in-person orientation session. Participation in such programs is typically low if parent

attendance is not mandated (Goodwin et al., 2018). Moreover, voluntary programs are likely to miss the parents who most need to be present—those who are less motivated and less engaged with their teen’s driving. Another obstacle is that the smartphone app described in this report is not currently available to the general public. (It must be updated to the newest mobile operating system.) Also, although we developed several materials to assist families as they make the transition to the provisional stage, it is not clear how these materials would be distributed. Parents and teens are required to visit a DMV office in person when applying for a provisional license in North Carolina. However, research shows passive distribution of materials through licensing offices is unlikely to be effective (Curry et al., 2015; Goodwin, Waller, et al., 2006). Finally, the statewide network of trained Teen Driver Safety technicians does not current exist. Creating this network will be a large, expensive undertaking.

Just as importantly, the full *Time to Drive* program still needs to be evaluated. Without a well-designed, carefully conducted evaluation, it is impossible to know whether a program is producing the intended results. The program described in this report would require a substantial investment of time and resources. It is important to be sure this investment is worthwhile. As part of the present study, we conducted a field evaluation of the *Time to Drive* parent coaching session. Results of the evaluation were mixed. Findings suggest the *Time to Drive* session was well received and most parents found the session to be valuable. With respect to behavior, almost no differences were found in the driving experience of teens whose parents participated in the *Time to Drive* session versus a comparison group. However, the session showed some success in influencing how parents communicated with their teen during supervised driving. For example, teens whose parents participated in the *Time to Drive* session were more likely to agree with statements such as, “When I’m driving, my [Mom/Dad] tells me ahead of time what I need to do.” Improved communication between parents and teens is important. Research suggests most parents do little during the learner stage to communicate “higher order” concepts such as perceiving hazards or anticipating both predictable and erratic actions of other road users (Goodwin et al., 2014). The lengthy learner stage in North Carolina presents an opportunity for parents to convey their many years of accumulated “wisdom” about driving to their teens. If parents can be encouraged to do so, this could improve safety by helping teens more quickly develop the higher order understanding that characterizes experienced drivers.

The field evaluation had several strengths. We measured actual behaviors through telephone interviews with parents and teens several months into the supervised driving period. The study also included a comparison group of parents who participated in a conventional driver educator-led session. Additionally, parents were randomly assigned to either the *Time to Drive* session or the comparison group. This ensured that study findings (e.g., improvements in communication) were not the result of enthusiastic parent volunteers. A weakness of the evaluation was the relatively small sample size, especially for the telephone interviews. The initial evaluation results—while promising—show additional work needs to be done. We made substantial revisions to the parent coaching session based on the results of the field evaluation; however, the revised session has not yet been systematically evaluated.

In sum, the present study described the development of a comprehensive program to support parents of new teen drivers. This is the first such program in the nation. After appropriate outcome evaluation, the program could serve as a model for other states.

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Appendix A – Post-session Questionnaire

Please take a few minutes to tell us a little about yourself and your opinions about the meeting.

1. What did you hope to get out of today's parent meeting? (Check all that apply.)

- ☐ Tips for how to supervise my teen
- ☐ Learn about the rules for new drivers
- ☐ Talk with other parents of new drivers
- ☐ Learn from teen driving experts
- ☐ I don't know – I came because it was required by my teen's driver education instructor
- ☐ Other: _____

2. Overall, how would you rate today's parent meeting?

- ☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor

3. Would you recommend that other parents of new drivers attend a meeting like this?

- ☐ Yes ☐ No

4. Do you think this type of meeting should be **required** for parents of all new drivers?

- ☐ Yes ☐ No

5. How was the overall length of today's meeting?

- ☐ Too long ☐ Too short ☐ Just right

6. In your opinion, what is the biggest cause of teen driver accidents? (Choose **one**.)

- ☐ Alcohol/drugs
- ☐ Cell phones/distracted driving
- ☐ Speeding
- ☐ Inexperience
- ☐ Risk taking

7. How strongly do you agree or disagree with each statement below? (Circle number)

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
I feel prepared to supervise my teen's driving	4	3	2	1
I understand what it feels like to be a new teen driver	4	3	2	1
I think 60 hours is enough driving practice for teens	4	3	2	1
I know what might make it hard for teens to get enough practice	4	3	2	1
I am nervous about supervising my teen	4	3	2	1
I'm confident I know how to talk with my teen about driving	4	3	2	1
I have a plan for how to start supervising my teen	4	3	2	1
Teens should practice driving in lots of situations as early as possible	4	3	2	1
I know the steps for teens to get a license in North Carolina	4	3	2	1
I know how to judge when my teen is ready to drive without me	4	3	2	1
I understand why practicing in lots of situations is important	4	3	2	1
I understand what my teen needs to know to be a safe driver	4	3	2	1

(Please continue on the other side)

8. Now please think back to ***before today's parent meeting***. At that time, how much would you have agreed or disagreed with each statement below? (Circle number)

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
I feel prepared to supervise my teen's driving	4	3	2	1
I understand what it feels like to be a new teen driver	4	3	2	1
I think 60 hours is enough driving practice for teens	4	3	2	1
I know what might make it hard for teens to get enough practice	4	3	2	1
I am nervous about supervising my teen	4	3	2	1
I'm confident I know how to talk with my teen about driving	4	3	2	1
I have a plan for how to start supervising my teen	4	3	2	1
Teens should practice driving in lots of situations as early as possible	4	3	2	1
I know the steps for teens to get a license in North Carolina	4	3	2	1
I know how to judge when my teen is ready to drive without me	4	3	2	1
I understand why practicing in lots of situations is important	4	3	2	1
I understand what my teen needs to know to be a safe driver	4	3	2	1

9. Please rate each of the following aspects of today's meeting:

	Excellent	Very good	Good	Fair	Poor
Videos	5	4	3	2	1
Talking to and hearing from other parents	5	4	3	2	1
Handouts	5	4	3	2	1
Discussion leader	5	4	3	2	1

10. What would you say is the most important thing you learned today?

Finally, it would be helpful for us to know a little more about you and your teen.

11. What is the birthdate of the teen who is taking driver education? Mo: _____ Day: _____ Year: _____

12. How are you related to this teen?

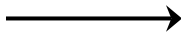
- ☐ Parent/step-parent
 ☐ Other family member
☐ Grandparent
 ☐ Non-family member

13. How many adults who might be helping your teen learn to drive were here tonight? _____

14. What year were you born? _____

15. Are you: ☐ Male ☐ Female

16. Have you supervised a new teen driver before this one?

- ☐ Yes 

How many? _____

☐ No

17. Help us keep teens safe in Johnston County. We'd like to talk with you briefly about whether this session is helpful as your teen begins driving.

Best phone number to reach you: (_____) _____ — _____

Appendix B – Comments on the Post-session Questionnaire

10. What would you say is the most important thing you learned today?

(Responses are shown in alphabetical order.)

- Be calm and use, "I"
- Be calm
- Be calm. Have a plan
- Be patient
- Be patient and calm
- Be patient and to relate my experiences to them
- Be patient and understand their feelings
- Be patient with them
- Be positive
- Being patient & share wisdom
- Better ways to talk with teen about various driving situations.
- Communicate wisdom
- Communicating w/my teen about driving experiences
- Communication
- Communication
- Communication - how to be more effective
- Communication and being calm with teen in car
- Communication and experience
- Communication skills
- Don't over teach
- Everything
- Exposure your teen to a variety of driving as often as possible
- Give advice from my personal experience in advance
- Give clear directions
- Give my teen the chance to practice in a variety of situations
- Good communication
- Good communication & positive reinforcement is effective for the teen
- Good communication. Praise.
- How the teen feels, how to talk to them
- How to better talk with my child during different situations
- How to communicate with my teen while she is driving
- How to handle tough situations
- How to talk to my teen
- How to talk to my teen and prepare her
- "I" statements
- Importance of communication
- Importance of good & effective communication
- It got my mind set ready to think about teaching driving
- Learn how to communicate with the teen and give insight from my view

- Make the time to practice
- Making time and commit
- Not to rush my teen into tougher driving situations
- Not to yell, make time to teach, and give compliments to young driver
- Patience
- Patience, videos helped
- Practice
- Practice & communication
- Practice & patience
- Practice practice. And the videos identified different situations
- Practice, practice, practice
- Practice! & feelings of new driver
- Remain calm, share your experienced
- Remembering how it was to be a new driver
- Reminder to share wisdom & remain calm
- Revisit stress points for young, new drivers. Develop plan for communicating with young drivers.
- Safety & patience
- Share experience
- Share the wisdom
- Share wisdom
- Share your knowledge
- Sharing my wisdom
- Sharing my wisdom w/my teen
- Sharing my wisdom. Positive communication. Keep calm voice
- Simple to difficult organization: let practice match skill
- Start out letting my child drive in simple situations
- Start Simple
- Stay calm
- Stay calm and give nuggets of wisdom
- Stay calm and share wisdom
- Stay calm, communicate, a lot of practice
- Stay calm, use 'I' statements
- Staying calm
- Staying calm and being positive
- Talk calm
- Talking to your child
- Techniques in communicating
- Teen's actual experience, seeing the video helped
- Teens are overwhelmed, i should not yell, lower my stress
- Teens inexperience in situations
- Teens need lots of practice in different settings
- That they have a lot of things to attend to
- To be better prepared to help my new driver
- To be reminded he will learn by doing and more about how I can help him
- To go ahead and start giving him wisdom
- To put myself in my son's shoes and to prepare him with safety as much as possible
- To remain calm and share my wisdom

- To start to share my wisdom with my teen while she is riding with me. Not waiting until she starts driving.
- To stay calm and have them practice
- To think of my role as supervisor of driving instruction, and not just as a mom
- To understand how these new drivers feel
- Tools & experiences from other parents
- Use I statements
- Using "I", calm voice
- Using I statements



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