EVALUATION OF THE TEXAS REALITY EDUCATION FOR DRIVERS PROGRAM

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RED Evaluation

DISCLAIMER
The author's views expressed in this publication do not necessarily reflect the views of the Texas Department of Transportation or Baylor/Scott & White Medical Center.

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ACRONYMS

YRBS- Youth Risk Behavior Survey

RED- Reality Education for Drivers

EXECUTIVE SUMMARY

EVALUATION PURPOSE AND EVALUATION QUESTIONS

The evaluation report was prepared by Baylor University faculty members of the Robbins College of Health and Human Sciences in response to requests by the Reality Education for Drivers [RED] program developers, Baylor Scott & White Medical Center and funding by Texas Department of Transportation.

The RED program evaluation aimed to determine the efficacy of the program to reduce risky driving behaviors for at-risk teen drivers. The main objective was to assess knowledge, attitude, and driving behaviors of teens/youth and their parents who participated in the RED program. Specific research questions addressing perceived risk associated with risky driving behaviors, knowledge level of risky driving behaviors, parental involvement , and current driving behaviors were used a as guide for program development and implementation.

PROJECT BACKGROUND

The teenage years are marked by an increase in risk taking behavior and poor decision making skills, making teens more likely to be victims of motor vehicle accidents than older drivers. Lack of driving experience, distractions, and alcohol use are the most common contributors to teen related motor vehicle accidents. Programs such as the Graduate Driver Licensing, defensive driving, and the recently implemented Impact Texas Teen Drivers program were designed to increase experience and increase risk perception while reducing risky driving behaviors, yet empirical research supporting the effectiveness of the these programs is lacking. Similarly, the RED program was designed to improve knowledge, risk perception, parental involvement and decrease risky driving behaviors of at-risk youth, but without formal evaluation, one cannot determine if program goals and objectives are being met nor the feasibility and effectiveness of the program to decrease risky driving behaviors.

EVALUATION QUESTIONS, DESIGN, METHODS AND LIMITATIONS

The evaluation was guided by concepts outlined in the Health Belief Model, emphasizing the need to increase perceived risk of negative behaviors and increase self-efficacy to influence positive behaviors. A questionnaire was designed to assess the participant's knowledge of risky driving behaviors, perceived risk of specific driving behaviors, current driving behavior and parental involvement with driving expectations and enforcement of consequences. The participants complete a set of questionnaires prior to and immediately after participating in the

RED program. In addition, the participants were asked to complete a third set of questionnaires two months following the program. The assessment instruments were designed to answer the following research questions:

1. Is perception of risk associated with risky driving behaviors changed by participating in the RED program?
2. Is there a relationship between parent-child driving contracts and risky driving behaviors?
3. Does parental involvement affect teen driving behavior?
4. Is knowledge level of risky driving behaviors affected by participating in the RED program?
5. Is risky driving behavior changed by participating in the RED program?

FINDINGS AND CONCLUSIONS

Based on the analysis of the data and the findings, we came to the following conclusions, which are aligned with the aforementioned research questions (Q1-5):

Q1. Is perception of risk associated with risky driving behaviors changed by participating in the RED program?

1. Both participating youth and parents were more likely to classify specific driving behaviors as high risk after attending the RED program than before attending. The main behaviors that were reclassified to risky were: driving while talking on the phone, driving between midnight and 6:00 AM, driving on interstates, driving while passengers are under the influence of alcohol or drugs, and driving with more than one teen passenger.
2. Youth and parent perceived adolescent risks while driving under four specific conditions: high speed, using the phone, intoxication, and drinking alcohol also increased from pre to post assessment. The most significant change of perceived risk for the youth participants was in regards to driving above the speed limit and/or excessive speed. The increase in risk perception appeared to remain two months after the program. However, the 2 month post program data should be interpreted with caution due to the low return rate.

Q2. Is there a relationship between parent-child driving contracts and risky driving behaviors?

1. Parent/child driving contracts were mentioned by the instructor during the RED program, but little additional information was given to the parents and youth and no driving contract was required. The extent and need for parental involvement was assessed by asking the parents and participating youth whether their parent(s) sets driving expectations, discusses consequences, and enforces consequences. The data revealed a

discrepancy between the youth perception of these tasks and the parents' perception of engaging in conversation around these issues. A higher percentage of parents reported engaging their child in these conversations than the youth indicated. These findings support the need for more training on how to establish expectations and consequences through the use of a parent/child driving contract.

2. The participants were asked to complete a questionnaire 2 months after the RED program to determine if any driving behaviors had changed since completing the program. The number of participants who completed 2 month questions was low; therefore, further data analysis was not possible.

Q3. Does parental involvement affect teen driving behavior?

1. The answer to this question could not be determined based on the data. Research supports the positive relationship between parental expectations and teen behavior especially in the area of driving. The documented use of parent/teen driving contracts, written parental expectations and consequences, and assessment of teen driving behavior over time would be required to determine the impact of parental involvement on teen driving behaviors. The low 2 month questionnaire return rate and the lack of documented contracts in this evaluation prevented further analysis.

Q4. Is knowledge level of risky driving behaviors affected by participating in the RED program?

1. Both the youth participants and the parents reported a significant increase in knowledge related to types of risky driving, consequences of risky driving, and laws regulating driving behavior as a result of attending the RED program.
2. The data supports an increase in knowledge related to risky driving, but there was insufficient data to link knowledge to behavioral outcomes.

Q5. Is risky driving behavior changed by participating in the RED program?

1. There was insufficient data to determine if the risky driving behavior of the youth participants changed as a result of attending the RED program. The participants reported an increase in knowledge and perceived risky of specific driving behaviors, but little is known about actual driving behaviors after attending the program.
2. Longitudinal studies are required to establish changes in behavior. The low return rate of the 2 month post program questionnaire prevented further analysis.

RECOMMENDATIONS

Based on the conclusions, we present the following key recommendations:

PROGRAMMATIC RECOMMENDATIONS

1. We recommend a more comprehensive approach to understand better which components of a driving program influence teen risky driving behaviors. Using a behavior change model such as the Health Belief Model or Protection Motivation theory as a guide to program design would provide a framework for the development of future program components.
2. The inclusion of more parental involvement components is also recommended. Including more information and training on why and how to develop a parent/teen driving contract would help parents establish clear expectation and consequences. Making a driving contract a requirement of the RED program would also help foster parent/teen discussions of driving expectation.
3. Role playing is a learning strategy that is also recommend for this program. Role playing negotiations and decision making between parent and child and between teens provides opportunities for skill development.
4. We recommend including follow-up text messages reminding the teen and parent about contractual agreements and safe driving techniques. Using social media channels to promote positive behavior can enhance positive decision making.

EVALUATION RECOMMENDATIONS

1. Future longitudinal studies are recommended to determine if participating in the RED program influences risky driving behavior of teens. Driving behaviors should be assessed prior to participation and again at set time intervals of 3 months and 6 months following the program.
2. A larger sample size and the inclusion of a comparison group are needed to determine the effectiveness of the RED program. The current evaluation provided preliminary data to support the feasibility of the program, but future evidenced-based program evaluations are needed to establish program effectiveness.

EVALUATION PURPOSE & EVALUATION QUESTIONS

EVALUATION PURPOSE

The purpose of this study was to assess knowledge, attitude, and driving behaviors of teens/young adults and their parents who participated in the Reality Education for Drivers (RED) program. The RED program was designed to increase safe teen driving by promoting parental involvement in the teen's driving experience, reinforcing driver and passenger safety rules, and increasing perceived risk by exposing the teen to medical trauma related to poor driving decisions. While presenters had received positive feedback regarding the program, no formal evaluation had been completed to determine program feasibility and effectiveness.

In a continued effort to promote healthy behaviors and ensure the best use of resources, program developers, funders, policy makers, and service providers are increasingly recognizing the importance of evidence-based program evaluations. Formal program evaluations are imperative to determine effectiveness of intervention programs, to guide future program design, and to ensure judicial use of funds. The purpose of this evaluation was to ascertain both the feasibility and efficacy of the RED program. The evaluation and the results contained in this report should be used as preliminary evidence of program efficacy and to guide future program development. In order to determine program effectiveness, further formal evaluation including a larger population and comparison group is imperative.

EVALUATION QUESTIONS

The specific research questions for this study were:

1. Is perception of risk associated with risky driving behaviors changed by participating in the RED program?
2. Is there a relationship between parent-child driving contracts and risky driving behaviors?
3. Does parental involvement affect teen driving behavior?
4. Is knowledge level of risky driving behaviors affected by participating in the RED program?
5. Is risky driving behavior changed by participating in the RED program?

PROJECT BACKGROUND

Motor vehicle crashes are the leading cause of death and injuries for teens aged 15-19, accounting for one in three deaths in this age group (CDC, 2010). Lack of driving experience, distractions, alcohol use, and poor judgment are thought to be the most common risks factors for teen crashes. Crash risk is also elevated during the first six months of licensure (McCartt, Shavanova & Leaf, 2003). The driving behaviors of an adolescent often reflect many levels of the social environment. The social ecological model of McLeroy et al (1988) indicates that an adolescent's teen driving behaviors shape, and are shaped, by the social environment. The interpersonal relationships between parents and adolescents are one level of the social environment that are fundamental to adolescent safe driving skills (Beck, Hartos, & Simons-Morton, 2002, 2006; Hartos, Beck, & Simons-Morton, 2004; Hartos, Shattuck, Simons-Morton, & Beck, 2004; Simons-Morton & Hartos, 2002; SimonsMorton, Hartos, & Beck, 2003; Simons-Morton, Ouimet, & Catalano, 2008). Despite this significant role, parents often display poor monitoring and control of their teen's risky driving behaviors and fail to clearly define driving rules and expectations (Beck, Shattuck, & Raleigh, 2001; Hartos, Beck, et al., 2004; Hartos, Eitel, & Simons-Morton, 2001, 2002). To address this issue, interventions are needed that empower parents to increased level of involvement in their teenagers driving (Jaccard & Turrisi, 1999).

Risk taking attitude and behaviors are also factors related to risky driving. Teens are more likely than older drivers to engage in high risk driving activities such as careless driving, speeding, not wearing a seat belt, and driving drowsy or distracted, leading to high rates of vehicle accidents and vehicle related deaths (Johan, 1997; Romanowics & Gebers, 1990). Risk perception and social norms are strong predictors of distracted driving behavior (Carter et al, 2014) and seat belt use, albeit to a lesser degree (Ouimet et al., 2008). Adolescent risk taking behavior is thought to be influenced by the young person's perception of risk, his/her evaluation of the perceived benefits (Benthin, Slovic, & Severson, 1993) and ability or self-efficacy to choose and engage in an alternative behavior. Further influence may be derived from the evaluation of threats and the ability to cope with these threats. Theoretical models such as the Protection Motivation Theory (PMT) (Rogers, 1975) and the Health Belief Model (HBM) (Rosenstock, Strecher, & Becker, 1988) help us explore the nuisances of perceived threats and behaviors. Addressing perceived risk, threat appraisal, and potential barriers and benefits of risky driving are important components to consider when planning and implementing driver education programs for adolescents and young adults.

EVALUATION METHODS & LIMITATIONS

The purpose of this study was to evaluate the efficacy of the Texas Reality Education for Drivers (RED) program. Participants included teen and young adult drivers, aged 14 to 20 years referred by the court or school administrators as a disciplinary action, referred by community groups, or initiated by a parent and their parents. The parent-teen dyads were recruited from all four program sites: Hillcrest Baptist Medical Center in Waco, Scott and White Memorial Hospital in Temple, Methodist Dallas Medical Center and Medical City Dallas in Dallas, and McAllen Medical Center in McAllen. Informed consent and assent for the minor were signed prior to commencement of the program. The teen-parent dyads participated in the 6 hour RED program. Participants were asked to complete a baseline questionnaire, pre and post assessments, and a 2 month follow-up assessment.

Measures

Several instruments were used to assess program outcomes. The pretest for the parent and teenager consisted of questions concerning parenting style, family communication, perceived risk/susceptibility, benefits and barriers to safe driving, risky driving behaviors, and knowledge level related to program content. The posttest included knowledge level of program content and perceived risk/susceptibility, benefits and barriers to safe driving. Participants were asked to complete a 2 month follow-up questionnaire designed to assess knowledge retention, risky driving behaviors, parental involvement and adherence to the parent-teen driving contract. In addition, we evaluated the process of program implementation by asking the program presenters to complete a short questionnaire regarding implementation procedures.
See Appendix A for measures and instruments used for evaluation for child and parent.

Limitations

Several limitations should be noted and considered in full understanding of findings. First, the participants were not randomly selected from a larger sample. The participants were either required by the courts to attend the intervention session because of high risk driving or were required by a parent to attend the sessions, which biases high risk driving behavior. Second, a comparison group was not used for this evaluation. The short time allowed for this evaluation and the lack of funds for more extensive evaluation limited the group selections. However,

driving behaviors of the participants were compared to driving behaviors of a national representative sample of adolescents in 2013 as reported by the Center for Disease Control and Prevention's 2013 high school results of the Youth Risk Behavior Surveillance (MMWR, 2014)[1]. Third, less than half of the participants who completed the pre and post session questions completed the 2 month follow-up questionnaires. The small sample size and the low return rate of the follow-up questionnaires limit statistical analysis of the data. Primary descriptive data analyses were conducted using pre and post questionnaires. These analyses provide evidence of program feasibility and potential effectiveness, but a larger sample size is required for more extensive analyses.

[1] The YRBSS monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth and adults. YRBSS 2013 High School Results can be found at http://www.cdc.gov/mmwr/pdf/ss/ss6304.pdf

FINDINGS, CONCLUSIONS & RECOMMENDATIONS

FINDINGS

The participants completed the RED program at four locations: Session 1: Austin, Texas (n =11); Session 2: Waco, Texas (n=9); Session 3: Waco, Texas (n=15); and Session 4: Dallas, Texas (n=9). A total of 44 participants completed both pre and post questionnaires; 17 adolescents and 27 parents. Eight adolescent participants completed and returned the 2 month follow-up questionnaires. Descriptive statistics, including t-tests were conducted to identify changes in driving knowledge, risky driving behavior, perceived risk associated with selected driving behavior, and parent involvement. A comparison between youth perceived risk and parents' perception of youth perceived risk was also conducted.

Knowledge of Risky Driving Behavior

The participants completed pre and post-tests designed to determine knowledge related to types of risky driving behavior, consequences of risky driving, and laws regulating driving behavior. A total of 10 points were possible on each test. The adolescent and parent average score increased significantly ($p < .05$) from pretest to post-test indicating an increase knowledge from participating in the RED course. See Table 1. There was also a significant difference in adolescent and parent pretest and post-test scores with the adolescents scoring higher than the parents on both tests. Knowledge test scores (Table 2) were not significantly different across program sites. See Figures 1-2 Appendix B and Figures 3-4 Appendix C for score distribution.

Table 1. Driving Knowledge by Adolescent & Parent

	N	Pre	Post	Difference	*p*-value
Adolescent	17	5.45 (1.47)	6.85 (1.61)	1.40	.001
Parent	27	4.45 (1.47)	5.83 (1.46)	1.38	.012
Difference		.99	1.01		
p-value		.034	.049		

Table 2. Driving Knowledge by Session

	N	Pre	Post	Difference	*p*-value
Session 1	11	5.83 (1.37)	7.24 (1.22)	1.41	.027
Session 2	9	5.16 (1.62)	6.88 (1.32)	1.72	.023
Session 3	15	4.74 (1.60)	6.30 (1.64)	1.56	.014
Session 4	9	4.57 (1.35)	5.76 (1.93)	1.19	.139
p-value		.223	.200		

Table 3. Adolescent Driving Behaviors

Behavior [a]	YRBS 2013 High School	Total Youth Reported	Youth w/out Parent	Youth w/ Parent	Parent Perception
Never or rarely used seat belt when riding in car driven by someone else	7.6%	7.4%	8.3%	6.7%	0.0%
Drove while not wearing a seat belt*		20.0%	0.0%	37.5%	33.3%%
Rode with a driver who had been drinking alcohol	21.9%	0.0%	0.0%	0.0%	11.8%
Drove when drinking alcohol*	10.0%	6.7%	0.0%	12.5%	11.1%
Drove under the influence of drugs*		0.0%	0.0%	0.0%	0.0%
Drove while passengers were under the influence of drugs*		6.7%	14.3%	0.0%	33.3%
Texted or email while driving*	41.4%	66.7%	28.6%	100%	55.5%
Talked on phone while driving*		64.2%	16.2%	100%	88.9%
Drove between midnight & 6am*		53.3%	28.6%	75.0%	88.9%
Drove with more than one teen passenger*		66.7%	42.8%	87.5%	77.8%
Drove in bad weather*		60.0%	28.6%	75.0%	66.7%
Drove on unfamiliar roads*		53.3%	28.6%	75.0%	66.7%
Drove on freeways or interstates*		80.0%	57.1%	100%	77.8%
Drove 20mph or more over speed limit*		13.3%	0.0%	25.0%	22.2%

[a] Behaviors done one or more times in the past 30 days
*Students who had driven a vehicle in the past 30 days: Total Youth (n=17); Youth without parent (n=6); Youth with parent (n=11), Parent Perception (n=8)

Adolescent Driving Behavior

The adolescent participants were asked a series of 21 questions about their driving behavior in the past 30 days, while the parents were asked to assess their child's driving behavior by answering similar questions. Four of the youth scores (seatbelt use, riding with an intoxicated driver, drinking and driving, texting and driving) were compared to scores from the YRBS. A higher percentage of youth in the RED program (66.7%) reported texting and driving compared to the national sample (41.4%). However, no youths in the RED program reported driving with someone intoxicated (0.0%) compared to the national sample (21.9%). Further analysis revealed

the risky driving behaviors reported most were: driving on freeways and interstates (80.0%), texting and driving (66.7%), driving with more than one teen (66.7%), talking on the phone while driving (64.2%), and driving in bad weather (60.0%). An interesting finding was the difference between the percentage of youths indicating they participated in a risky behavior and the perception of the parents that their child was engaging in the risky behavior. In most cases, more parents thought their child was engaging in a risky driving behavior than indicated by the youth. Table 3 includes the percentages of RED program participants who engaged in risky driving behaviors and the percentage of the parents who indicated their child engaged in those same behaviors.

Youth Perceived Driving Risks

In a related question regarding driving behaviors, the youth participants and parents were asked to indicate whether or not they considered the driving behaviors to be risky driving behaviors. Both youth and parents mostly agreed before attending the RED program that the driving behaviors listed were risky behaviors with the exception of five: driving on the interstate (29.7% youth indicated this was risky compared to 35.3% of parents); driving with more than one teen passenger (40.8% youth, 70.6% of parents); listening to the radio (29.7% youth, 23.6% of parents); driving between midnight and 6:00 AM (53.0% youth, 51.9% of parents); and driving outside of familiar areas (59.3% youth, 51.9% parents). Comparison of youth and parent pre and post questions revealed several interesting findings. Only 40.8% of youth classified driving with more than one teen passenger as risky before the RED program; however, 77.0% agreed this behavior was risky following the RED program. Similarly, 53.0% of the youth participants prior to the program indicated driving between midnight and 6:00 AM as risky but 77.0% agreed it was a risky behavior after completing the RED program. The parents also changed their perception of this behavior after attending the program (51.9% pretest, 82.4% posttest). The change from pre to post-testing in perception of which driving behaviors should be considered risky supports the efficacy of the RED program. See Table 4 for youth and parent pre/post rating.

Table 4. Youth Perceived Driving Risks

	Youth Pre	Parent Pre	Youth Post	Parent Post
Driving while under the influence of alcohol or drugs	96.3%	100%	96.3%	100%
Driving while passengers are under the influence of alcohol of drugs	66.7%	82.4%	88.9%	94.2%
Driving while talking on the phone	81.5%	88.3%	92.4%	100%
Driving while texting on the phone	96.3%	100%	96.2%	100%
Driving while not wearing a seat belt	92.6%	100%	92.6%	100%
Driving between midnight and 6am	53.0%	51.9%	77.0%	82.4%
Driving with more than one teen passenger	40.8%	70.6%	77.0%	94.2%
Driving in bad weather	96.3%	88.3%	88.5%	94.2%
Driving outside of local or familiar areas	59.3%	70.6%	53.9%	70.6%
Driving on unfamiliar roads	70.4%	70.6%	73.1%	76.5%
Driving on freeways or interstate	29.7%	35.3%	42.4%	41.2%
Driving 20 more mph over the speed limit	81.5%	100%	88.5%	94.2%
Cutting in front of another car at full speed	92.6%	100%	96.6%	100%
Passing a car in a no-passing zone	92.6%	94.2%	96.2%	100%
Running a red light	92.6%	100%	96.2%	100%
Racing a car on the streets	92.6%	94.2%	96.2%	100%
Driving at high speeds through a school zone	88.9%	100%	92.6%	100%
Listening to the radio	29.7%	23.6%	53.9%	40.0%

Perceived Adolescent Risks while Driving

The youth participants and the parents were asked to rate their perception of risk using 1-7 Likert scale as it relates to four specific driving behaviors: speeding, texting and driving, riding in a car with an intoxicated driver, and drinking and driving. Some of the questions were reverse scored to ensure the participants were reading the questions carefully before answering. Overall, both the parent and youth perception of risk increased from pretest to posttest, but the youth perception of risk related to speeding increased significantly over time ($p = .010$). Perception of risk was not significantly different between parents and youths. The youth participants and parents reported a moderately high level of perceived risk for all four behaviors both at the

beginning of the RED program (4.78-5.54) and at the end of the program (5.08-5.54). Pre and post mean scores for adolescent and parent are presented in Table 5, while the mean scores per session are presented in Table 6.

Table 5. Perceived Adolescent Risks while Driving by Adolescent & Parent

	Pre	Post	*p*-value
Speed			
Adolescent	4.91 (.57)	5.43 (.81)	.010
Parent	4.93 (.21)	5.30 (.86)	.235
p-value	.936	.625	
Phone			
Adolescent	4.79 (.77)	5.08 (.92)	.250
Parent	4.78 (1.13)	5.17 (1.02)	.301
p-value	.967	.776	
Intoxication			
Adolescent	5.30 (.93)	5.36 (1.01)	.833
Parent	4.95 (.92)	5.28 (.89)	.305
p-value	.213	.791	
Drinking			
Adolescent	5.54 (.63)	5.36 (1.08)	.471
Parent	5.27 (.90)	5.54 (.73)	.361
p-value	.276	.559	

Table 6. Perceived Adolescent Risks while Driving by Session

	Pre	Post	*p*-value
Speed			
Session 1	5.38 (.72)	5.66 (.61)	.347
Session 2	4.81 (.40)	5.71 (.54)	.002
Session 3	4.54 (.71)	4.93 (.92)	.234
Session 4	5.03 (.63)	5.35 (.93)	.375
p-value	.021	.102	
Phone			
Session 1	5.25 (.79)	5.58 (.65)	.302
Session 2	5.27 (.81)	5.36 (.59)	.820
Session 3	4.36 (.69)	4.45 (1.11)	.794
Session 4	4.59 (1.16)	5.33 (.82)	.129
p-value	.044	.014	
Intoxication			
Session 1	5.33 (.84)	5.66 (.49)	.444
Session 2	5.38 (.97)	5.59 (.87)	.966
Session 3	4.78 (.87)	4.92 (1.24)	.405
Session 4	5.38 (.81)	5.30 (.90)	.913
p-value	.265	.240	
Drinking			
Session 1	5.81 (.54)	5.86 (.49)	.818
Session 2	5.63 (.67)	5.69 (.61)	.874
Session 3	5.02 (.75)	4.88 (1.29)	.726
Session 4	5.84 (.81)	5.49 (.72)	.982
p-value	.061	.059	

Parental Involvement

An important contributor to teen behavior is parental involvement in decision making. This involvement most often includes stating expectations, setting boundaries, and enforcing consequences for poor decisions. The RED program includes content related to parental involvement and parent/child driving contracts. The youth participants and parents were asked to complete several questions regarding parental involvement in order to assess the degree to which parents set expectations and boundaries for their driving teen and enforce consequences. As presented in Table 7, there were several inconsistencies between what the parent and youth reported regarding expectations and enforcement. Less than half (48.1%) of the youth reported their parent often or always discussed driving expectations, while 68.8% of the parents reported that they do discuss expectation. The difference between youth and parent perception of expectations was also observed with several key driving behaviors. Thirty seven percent (37%) of the youth indicated parents had discussed the number of allowable teen passengers, while 68.8% of the parents reported discussing this rule with their teen. Similarly, 55.5% of the youths reported parental expectations regarding driving and talking on the phone, yet 93.8% of parents indicated they had set that boundary. The perception of enforcement also differed between parent and youth. Less than half (44.4%) of the youth reported the parent often or always enforces consequences for unsafe driving, but 81.3% of the parents indicated that they often enforce the consequences. It is not uncommon for child and parent perceptions of rules and enforcement to be different; however, the noted discrepancy related to driving behaviors provide support for further program development, with a specific emphasis on the parent/teen driving contract.

Table 7. Parental Involvement

	Total Youth Reported	Youth w/out Parent	Youth w/ Parent	Parent Perception
Parent(s) often or always discusses driving expectation	48.1%	41.6%	53.3%	68.8%
Parent(s) have set expectations in the following areas:				
No. of Passengers	37.0%	25.0%	46.6%	68.8%
Phone Calls	55.5%	33.3%	73.3%	93.8%
Texting	77.8%	66.7%	86.7%	100%
Seat Belt	74.1%	66.7%	80.0%	100%
Time	18.5%	0.0%	33.3%	43.8%
Geographic Boundaries	18.5%	25.0%	13.3%	37.5%
Weather	66.7%	75.0%	60.0%	81.3%
Drugs or Alcohol	81.4%	83.3%	80.0%	93.8%
None	7.4%	0%	13.3%	0%
Parent(s) often or always discusses consequences for unsafe driving	55.5%	41.6%	66.7%	68.8%
Parent(s) often or always enforce consequences for unsafe driving	44.4%	41.7%	46.7%	81.3%

FOLLOW-UP DATA

All participants were asked to complete online questionnaires 2 months after completing the RED program to determine if any changes in driving behavior or perceived risk were sustained over time. A total 13 participants, 8 youth and 5 parents, completed the online questionnaires. Because of the low return rate, all follow-up data should be interpreted with caution.

Youth Driving Behaviors and Perceived Risk of Behaviors

Half (n =4) of the youth who completed the follow-up questionnaire drove in the past 30 days and were able to report their risky driving behaviors. The percentages of youth engaging in the various risky driving behaviors are listed in Table 8. The behaviors most often reported were: texting and driving, and driving between midnight and 6:00 AM. Even though some of the youth participants continued to engage in risky driving behaviors, they recognized that the behaviors were classified as risky (Table 9).

Table 8. Adolescent Driving Behaviors

Behavior [a]	**Youth Follow-up**
Never or rarely used seat belt when riding in car driven by someone else	0%
Drove while not wearing a seat belt	50%
Rode with a driver who had been drinking alcohol	0%
Drove when drinking alcohol*	25%
Drove under the influence of drugs*	75%
Drove while passengers were under the influence of drugs*	75%
Texted or email while driving*	100%
Talked on phone while driving*	
Drove between midnight & 6am*	100%
Drove with more than one teen passenger*	50%
Drove in bad weather*	75%
Drove on unfamiliar roads*	50%
Drove on freeways or interstates*	75%
Drove 20mph or more over speed limit*	50%

Table 9. Youth Perceived Driving Risks

	Youth Follow-up
Driving while under the influence of alcohol or drugs	100%
Driving while passengers are under the influence of alcohol of drugs	85.7%
Driving while talking on the phone	100%
Driving while texting on the phone	100%
Driving while not wearing a seat belt	100%
Driving between midnight and 6am	100%
Driving with more than one teen passenger	85.7%
Driving in bad weather	100%
Driving outside of local or familiar areas	100%
Driving on unfamiliar roads	85.7%
Driving on freeways or interstate	42.9%
Driving 20 more mph over the speed limit	100%
Cutting in front of another car at full speed	100%
Passing a car in a no-passing zone	100%
Running a red light	100%
Racing a car on the streets	100%
Driving at high speeds through a school zone	100%
Listening to the radio	28.6%

Perceived Risks

Perceived risk of speeding, talking on the phone while driving, riding as a passenger with an intoxicated driver, and driving while drinking remained fairly constant over time. The average perceived risk (4.71-5.32) of the specific behaviors indicated that both youth and parent continued to consider these behaviors as risky driving behaviors. See Table 10 for details.

Table 10. Perceived Adolescent Risks while Driving by Adolescent & Parent

	Pre	Follow-up	*p*-value
Speed			
Adolescent	4.61 (.73)	5.07 (.73)	.24
Parent	5.38 (.71)	5.04 (.73)	.48
p-value	.09	.96	
Phone			
Adolescent	4.51 (.88)	4.75 (.74)	.61
Parent	5.48 (.69)	5.23 (.46)	.53
p-value	.13	.23	
Intoxication			
Adolescent	4.82 (.95)	5.32 (.95)	.28
Parent	5.27 (.59)	4.71 (1.24)	.44
p-value	.32	.34	
Drinking			
Adolescent	5.05 (.94)	5.13 (.93)	.88
Parent	5.75 (.49)	5.09 (.80)	.19
p-value	.19	.95	

CONCLUSIONS

The purpose of the evaluation was to determine the efficacy of the RED program and to answer the following research questions:

1. Is perception of risk associated with risky driving behaviors changed by participating in the RED program?
2. Is there a relationship between parent-child driving contracts and risky driving behaviors?
3. Does parental involvement affect teen driving behavior?
4. Is knowledge level of risky driving behaviors affected by participating in the RED program?
5. Is risky driving behavior changed by participating in the RED program?

Several conclusions can be drawn from the data. First, the level of knowledge related to risky driving behaviors increased significantly from pre to post session. Both the parents and youth answered more questions correctly on the posttest than on the pretest. Second, the classification of driving behaviors as risky increased over time as well as the level of perceived risk of most risky driving behaviors. The increase in risk perception appeared to be sustained two months post session. However, this conclusion is tempered by the low follow-up response rate. Third, parental perception of their teen's driving behaviors and perception of risk differed from the teen's reported behavior. The parent's perception of his/her teen's risky driving was higher than what the teen reported. There was also a noted difference in the teen's perception of parental expectations and enforcement of consequences. The parents reported more confidence in their driving expectation and enforcement of poor driving decisions than the youth reported. Fourth, there was insufficient data to determine if actual risky driving behaviors were changed by participating in the RED program. The knowledge level and perceived risk of certain driving behaviors increased for both the parent and youth, but there was not enough data to determine if these changes translated to a change in actual driving behavior.

RECOMMENDATIONS

Based on the data and conclusions, we propose several programmatic and evaluation recommendations. First, we recommend a more comprehensive approach for understanding which components of a driving education program influence change in risky driving behaviors for teens. Behavioral models and theories, such as the Health Belief Model or The Protection Motivation Theory can be used to guide future program development. Second, we recommend including more discussions and training on parent/teen driving contracts and parental expectations and consequence to enhance parental involvement in the program. Parent/teen driving contracts, which include clear parental expectations, have been shown to influence teen driving behavior positively. Third, we recommend including parent/teen and teen/teen role playing as a learning strategy to provide opportunities for skill development. Fourth, we

recommend developing and implementing text-based reminders regarding risky driving behaviors.

Evaluation Recommendations

The data supported the efficacy of the RED program as a program that is designed to address risky driving knowledge, perceived risk of specific driving behaviors, and the need for parental involvement. At this point, there is not enough data to determine the effectiveness of the RED program to change actual risky driving behaviors. To address these issues we propose the following recommendations. First, we recommend a longitudinal evaluation to assess risky driving behaviors of the teens who participated in the RED program. Driving behaviors should be assessed prior to the program and again 3 months and 6 months after the program. Second, we recommend expanding the evaluation to include a larger sample size and comparison group to assess program effectiveness. The current evaluation provided important preliminary data that can be used to guide future program development and more extensive program evaluation.

APPENDICES

APPENDIX A:
Measures and Instruments used for Evaluation for Child & Parent

Measure	Child Items	Parent Items
Identifiers	• Name • Email • Mailing Address	• Name • Email • Mailing Address
Demographics	• Age • Gender • Race • High School Grade Average • Car: do you use your own car or share a care? Year, Size, Type	• Age • Gender • Race • Family Income Level
Parenting Styles	From Ginsburg et al. (2009): • "My parents give me help and support when I need it" • "In my family, there are clear rules about what I can and cannot do" • "My parents keep track of where I am when I am not in school and away from home"; • "My parents want to know who I am with when I am not in school and away from home."	Modified from Ginsburg et al. (2009): • "I give my child help and support when they need it" • "In my family, there are clear rules about what my teenager can and cannot do" • "I keep track of where my teenager is when they are not in school and away from home"; • "I want to know who my teenager is with when they are not in school and away from home."
Family Communication	• Family Communication Scale-10 items (Barnes & Olson, 1986)	• Family Communication Scale-10 items (Barnes & Olson, 1986)
Knowledge Test	Questions designed to test program objectives. 8 items Sample questions: • Teens are at risk while driving: a. at night. b. on weekends c. with friends d. all of the above • Name five (5) physiological effects of consuming alcohol affecting one's ability to drive safely.	Questions designed to test program objectives. 8 items Sample questions: • Teens are at risk while driving: a. at night. b. on weekends c. with friends d. all of the above • What are the restrictions associated with the Graduated Drivers' License?

Perceived Susceptibility	Adapted from Benthin et al. (1993) Benthin Risk Perception Measure- 20 items Sample questions: (7-point scale) • To what extent are the potential risks (dangers) associated with speeding frightening for people your age? • If someone your age texted while driving, to what extent do you believe that h/she would be at risk of getting hurt?	Adapted from Benthin et al. (1993) Benthin Risk Perception Measure- 20 items Sample questions: (7-point scale) • To what extent are the potential risks (dangers) associated with speeding frightening for your son or daughter? • If your son or daughter texted while driving, to what extent do you believe that h/she would be at risk of getting hurt?

Driving Risk Behaviors	• YRBS #9-12
	• In the past 7 days, how many car rides have you driven?
	• In the past 7 days, how many miles have you driven?
	• In the past 30 days, how many times have you:
	  ○ Driven while under the influence of alcohol or drugs
	  ○ Driven while passengers are under the influence of alcohol of drugs
	  ○ Driven while talking on the phone
	  ○ Driven while texting on the phone
	  ○ Driven while not wearing a seat belt
	  ○ Driven between midnight and 6am
	  ○ Driven with only one teen passenger
	  ○ Driven with more than one teen passenger
	  ○ Driven in bad weather
	  ○ Driven outside of local or familiar areas
	  ○ Driven on unfamiliar roads
	  ○ Driven on freeways or interstate
	  ○ Driven 20 more mph over the speed limit	

Parent Imposed Restrictions		• In regards to your teen's driving, have you discussed rules/guidelines/expectations with your child? Yes/No
		• If yes, what areas have you set rules/guidelines/expectations?
		  ○ Number of Passengers
		  ○ Phone calls
		  ○ Texting
		  ○ Seat Belts
		  ○ Time allowed to drive (for example: Child is able to drive

		between 6am-9pm) ○ Geographic boundaries or specific roads not to drive ○ Driving in bad weather ○ Driving under the influence of drugs or alcohol • Have you determined penalties or consequences for unsafe driving by teens?

APPENDIX B:
DISTRIBUTION OF KNOWLEDGE SCORES

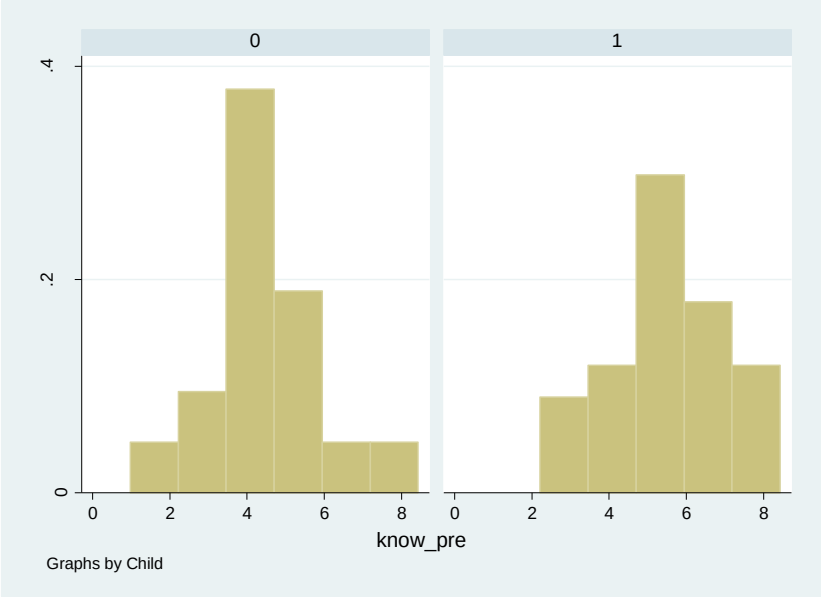

Figure 1. Pre-test Parent & Child

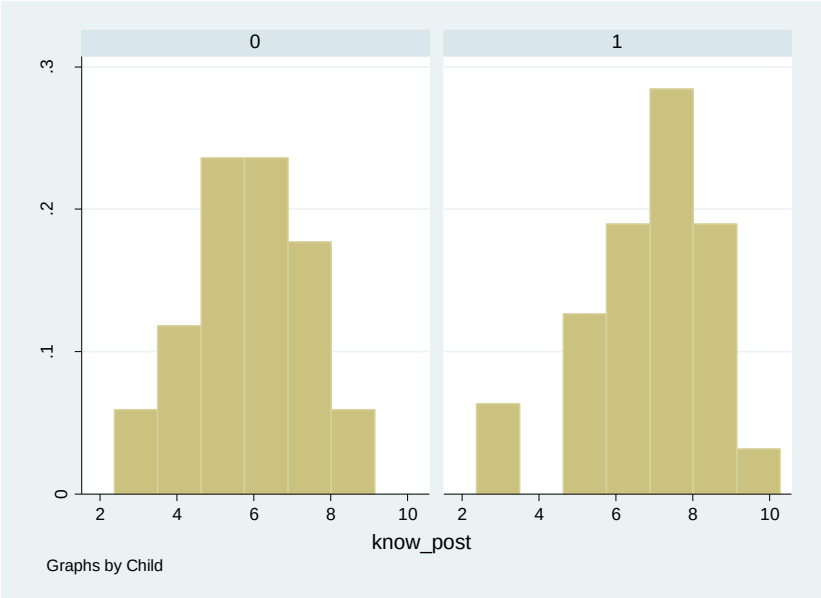

Figure 2. Post-test parent & child

APPENDIX C:
DISTRIBUTION OF KNOWLEDGE SCORES BY SESSION

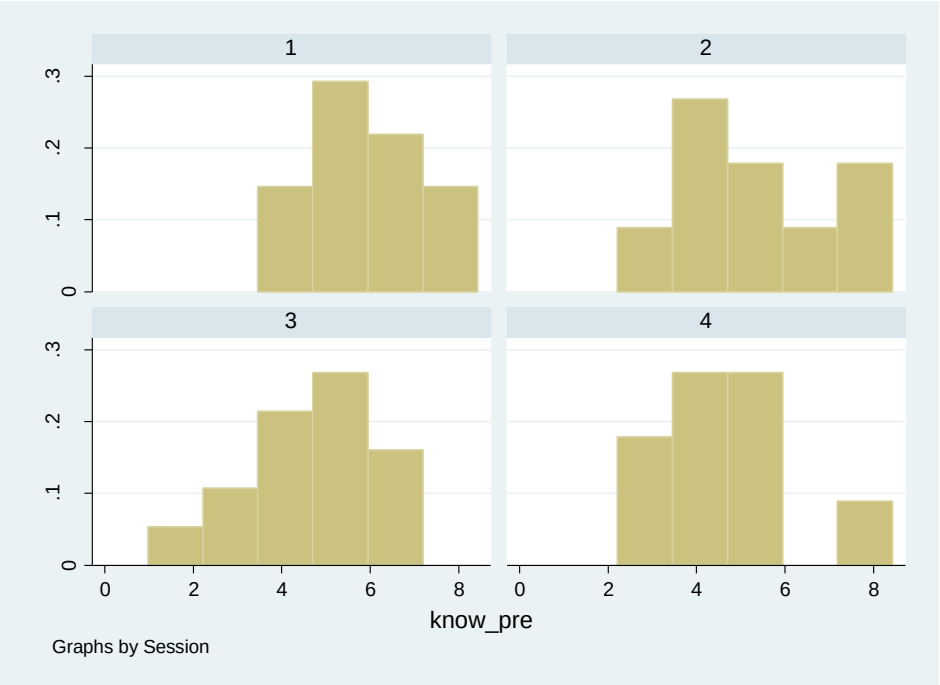

Figure 3. Pre-test for Sessions

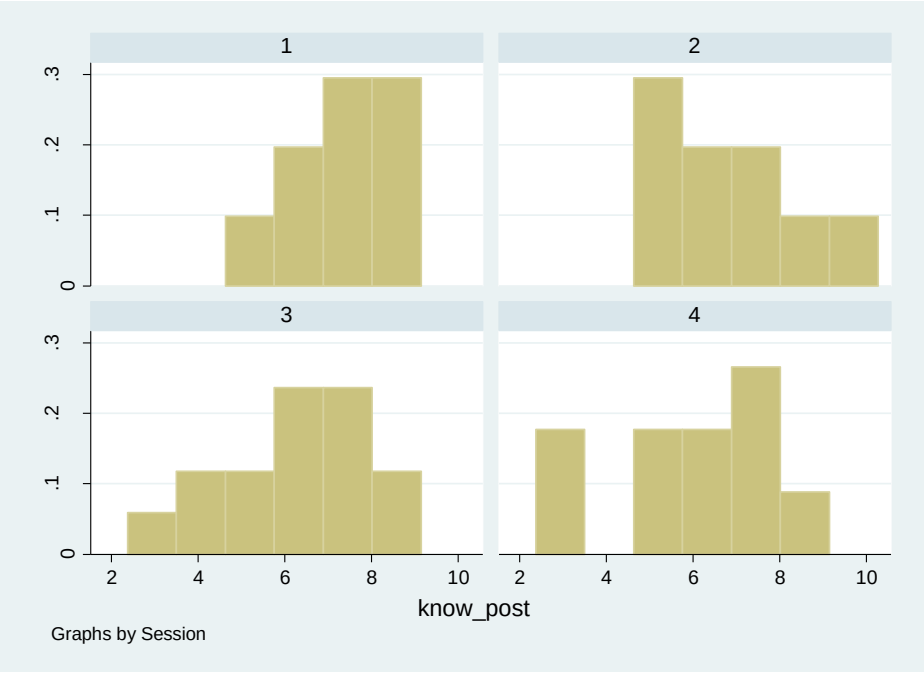

Figure 4. Post-test for Sessions

APPENDIX D
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APPENDIX E
QUESTIONNAIRES