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Cover Page Footnote

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Family-Centered Approach to Teen-Driving Program: Program Evaluation of Parental Behavioral Outcomes

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Abstract

Motor vehicle crashes are the leading cause of death and injuries for teens aged 12-19 (Miniño, 2010). These crashes account for one in three deaths of adolescents. Researchers working to reduce teen-driving fatalities have recognize that "parents are the key to improving teen driving safety" (Brooks-Russell & Simons-Morton, 2014, p. 600). Yet, it is difficult to determine specifically which strategies are most effective in improving parental involvement in teen-driving (Curry et al., 2015). Therefore, the purpose of this paper is to contribute to the growing literature on family-centered approaches to improving teen driving behaviors. Specifically, we examine the change in parental behaviors after participation in the Reality Education Driving (RED) program.

Common risk factors of adolescent crashes include the lack of driving experience, distractions, alcohol use, and poor judgment (Miniño, 2010). Research has demonstrated that the risk of an adolescent crashing is greatest during the first six months of licensure (McCartt, Shavanova & Leaf, 2003). One persistent problem is that in order for drivers to gain substantial driving experiences to become competent drivers, they must increase driving time which increases the risk of being involved in a motor vehicle accident. In response, some states have required the Graduated Driver Licensing, which was developed to increase experience without increasing risk (Williams & Ferguson, 2002). These programs tend to lawfully require effective prevention measures include increasing adult involvement and teen driving limits. Driving limits include increasing seatbelt use, decreasing distractions such as other teens in the car and texting, enforcing a zero tolerance for drinking and driving, and reducing driving time during high risk times especially at night and in inclement weather (Miniño, 2010).

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Parental Involvement

In addition to these preventive measures, researchers recognize the impact of parent involvement on teen behavior and posit that "parents are the key to improving teen driving safety" (Brooks-Russell & Simons-Morton, 2014, p. 600). This is no surprise, as for decades, health experts have agreed social influences mediate health behaviors (McLeroy, 1988). Parents, in particular, are viewed as being primarily responsible for teen's acquisition of essential values, beliefs, and skills (Maccoby, 2006). Therefore, parent-programs are generally accepted as effective strategies to improve parental capacity and prevent problems before they occur (Kaminski, Valle, Filene, & Boyle, 2008; Lundahl, Risser, & Lovejoy, 2006).

Accordingly, some teen driving interventions include a parent component (Curry, Peek-Asa, Hamann, & Mirman, 2015). A shift to family-centered programming has largely resulted from research highlighting the relationship between parents and teen driving safety. For example, Simon-Morton, Hartos, Leaf and Prusser (2006) found that teens whose parents set driving limits are less likely to engage in risky driving. Other researchers suggest that parents generally exhibit poor monitoring and control of teens' risky driving behaviors (Hartos, Eitel, Haynie, & Simons-Morton, 2000; Hartos, Eitel, & Simons-Morton, 2002), which is often the result of parents failing to establish driving expectations (Hartos, Beck, Simos-Morton, 2004; Hartos, Shattuck, Simons-Morton, & Beck, 2004).

The majority of family-centered programs include components designed to educate families, improve relationships, and/or teach family management skills (Ryzin, Kumpfer, Fosco, & Greenberg, 2016). Overall, these programs tend to improve parental management and monitoring of children's behaviors. Family-centered programs are likely to be designed using effective-based programming approaches (Kettner, Moroney, & Martin, 2017). These approaches have been found to evoke lasting change in families (e.g., Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Nowak & Heinrichs, 2008). Specifically, with teen driving programs, the program designers actively seeking parental involvement have used a variety of teaching methods including multimedia, direct engagement, in-vehicle data recorders, or some combination of these methods (see Curry, et al., 2015 for review). Some teaching methods appear to be more effective than others in changing behavior. However, it is difficult to determine specifically which strategies are most effective in family-centered driving programs (Curry et al., 2015).

RED Program

RED is a program designed by practitioners and implemented in community-settings. Teens and their parents are court mandated to attend the program as a consequence to law infractions. Similar to other driving interventions, RED practitioners disseminated information via video, print, and educational sessions. However, unique to RED is an interactive hospital tour. The RED program was designed based on the guiding social science theories of the Social-Ecological model (SEM) and Health Belief Model (HBM). Health promotion programmers using a socio-

ecological perspective recognize the importance of social influences on health behaviors (McLeroy, 1988). In the context of RED, the model can be used to describe how appropriate changes in social environments, such as parents, will produce changes in the teens driving safety (McLeroy, 1988). Additionally, health promotion programmers using a HBM perspective recognize that engagement in health-promoting behavior is influenced by an individual's beliefs about the issue, perceived benefits/barriers of action, as well as, self-efficacy (Janz & Becker, 1984; Strecher & Rosenstock, 1997).

The theoretical underpinnings of the SEM and HBM and related-research on teen-driving translate into RED's theory of change: To increase parental monitoring and control of adolescent's driving, first, parents would need to believe that their children were at risk for motor vehicle crashes. Second, parents would have to perceive teen motor vehicle crashes were severe enough to have significant medical, social, and emotional consequences. Third, parents would have to believe that in the effectiveness of setting driving rules and enforcing consequences in reducing motor vehicle crashes. Fourth, parents would have to perceive few barriers to setting driving rules and enforcing consequences. Fifth, parents would have to feel that they had the skill and determination to achieve some degree of success with their adolescent.

The program was designed to be a three-hour, one time program for teen drivers and their parents. Teens for the program were court mandated to attend. Any teens under the age of 18 were required to have a parent or guardian in attendance. The program consisted of educational sessions covering risky driving (2 hours), a hospital tour for adolescents (1 hour), and a parent-only session (30 minutes). Once parents completed the parent session, they joined their adolescent on the hospital tour. Hospital tour provided participants the opportunity to see the reality of being in a crash as they journey the path of a crash victim starting in the emergency room and ending at the morgue.

Current Study

In this paper, we examine the impact of the Reality Education for Driving (RED) program on parental behaviors. We hypothesized that involvement in the program would increase parents control and monitoring behaviors regarding teen driving. Findings from the study contribute to the growing literature on the effectiveness of programs designed to influence parental involvement in teens driving.

Methods

Study Participants

This study on parent outcomes was part of a larger program evaluation that received approval by Institutional Review Board. The purpose of the larger study was to evaluate the effectiveness 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. Participants in this community-based program were from three different cities in Texas including Austin, Dallas, and Waco. Four programs were sampled in spring 2015. Program content and implementation was evaluated across the four sites to ensure fidelity.

The sample for this study included fifteen parents/guardians that participated in the four classes. Parents identified as birth mother (n= 8), adoptive father (n= 1), step-father (n=1), and aunt (n=1); one did not identify. Parents' ages ranged from 37 to 54 with a mean of 45 years of age. Eight parents identified as Hispanic. Family annual income ranged from $20,000 to $100,000+ with an average annual income of $63,000.

Data from this study included parent responses to a baseline paper-questionnaire and a two-month follow-up online-assessment. Participants were offered a $25 gift card for completion of the two -month follow-up questionnaire. Twelve (80%) parents/guardians completed the follow-up surveys. Subsequently, parents and guardians will simply be referred to as parents. One parent was eliminated because no responses were completed on parental monitoring, and control questions (8%). There were no missing data in the analyses following the elimination of this one participant.

Measures

Changes in parental behaviors were assessed using parental responses to two constructs: parent control and parent monitoring. Both measures were based on the previous work of Hartos, Shattuck, Simons-Morton, and Beck's (2004) in-depth examination of parent imposed driving rules. Specifically, these authors examined the content, delivery, rigidity, and compliance with 143 parent-imposed driving rules. The results of that study, along with their future work (Simons-Morton, Hartos, Leaf, & Preusser, 2005; 2006) and other teen-driving studies guided the development of these measures.

Parent Control. Parent-imposed driving limits were assessed pre-program and two months after the program. The measure consisted of eight items indexing areas of risky driving in which parents had set explicit rules with adolescents. Items were assessed with a dichotomous response (0 = no, 1 = yes). Categories included: number of passengers, phone calls, texting, seat belt, time, geographic boundaries, bad weather, and driving under the influence. Each rule was analyzed individually and overall composite scores were derived.

Parental Monitoring. Parental monitoring was assessed pre-program and two months after the program. Parent monitoring consisted of three items: (a) How often do you discuss driving rules/guidelines/expectations with your child? (b) How often do you discuss the penalties or consequences for unsafe driving? and (c) How often do you enforce the penalties or consequences for unsafe driving with your child? These questions had a 5 point Likert type response consisting of (1) never, (2) rarely, (3) sometimes, (4) often, and (5) always. Cronbach's alpha was .77 at pre-test and .88 at follow-up.

Analyses

Analyses were completed to assess program effectiveness on parent control and monitoring of teen drivers. Data analyses were conducted using STATA 14.0. Dependent t-test was used to examine if parent's driving rules, monitoring, and control changed as a result of the program; change in parental behaviors was assessed at pre-test and follow-up questionnaires.

Under the null hypothesis, we assumed that the program has no effect on the parents. Standard error was used as a gauge of variability between sample means. Dependent t-test is a parametric test with two assumptions: (a) interval level of data and (b) normal distribution. Perceived risk was measured at the interval data level. To assess normality, we computed the differences between scores at pre and follow-up measures, and then examined if the difference was normally distributed by examining the skewness, kurtosis, and the Shapiro-Wilk test. Scores that were determined to be significantly different from a normal distribution are noted in tables. These scores were assessed using the Wilcoxon signed-rank test—the non-parametric equivalent of the dependent t-test (Wilcoxon, 1945). Results are presented in Table 1; however, the Wilcoxon signed-rank test was used only when appropriate and is reported in the results. Results are reported as significant with the respective 95% confidence interval. Effect size *r* was calculated using the test statistics from the dependent t-test and Wilcoxon signed rank test (Rosenthal, 1991; Rosnow & Rosenthal, 2005). Standard conventions were used to interpret effect size (Cohen 1988, 1992): small (r = .1), moderate (r = .3), and large (r= .5).

Results

Parental Control. Results are presented in Table 1. Prior to the program, parents were explicitly setting an average of 5.91 (SD = 1.30) rules out of 8 teen driving rules. In other words, 75% of the 8 rules assessed were being explicitly set by parents at the time of the program. Parental rule setting behaviors increased after the program and were sustained two months following the program. Specifically, parents were setting an average of 6.50 (SD = 1.00) driving rules two-months after the program. In other words, 81% of the 8 rules were being explicitly set by parents. Although, the change from pre-test to follow-up was not statistically significant, the effect size is moderate ($t(10) = 1.00$, $p = .34$, $r = .30$). Notably, all parents had texting and seat belt rules prior to participation in the RED program. The majority (91%) of parents had set rules related to phone calls, bad weather, and drugs prior to the program; whereas, two-months after the program all parents had set rules related to phone calls and drugs. The largest change occurred in the number of parents setting a rule regarding geographic boundaries for teen drivers. Prior to the program only 27% of parents had set rules regarding where teens were able to drive; whereas, after the program, 55% of parents set rules regarding geographic boundaries.

Parental Monitoring. Results are presented in Table 1. On average, parent monitoring increased in parental discussion of rules and consequences, but decreased for enforcement of consequences. Prior to the program, parents often discussed the driving rules with adolescents

(*M* = 3.91; *SD* = 0.83). Parental discussion of rules increased after the program and were sustained two months following the program (*M* = 4.50; *SD* = 0.67). This change in parental monitoring was statistically significantly, and the effect size is large (*t*(10) = 2.21, *p* = .05, *r* = .57). Prior to the program, parents often discussed the consequences of breaking rules with adolescents (*M* = 4.00; *SD* = 0.80). Parental discussion of consequences increased slightly after the program and were sustained two months following the program (*M* = 4.33; *SD* = 0.78). This change in parental monitoring was not statistically significantly, and the effect size wasmoderate (*t*(10) = 1.15, *p* = .28, *r* = .34). Prior to the program, parents often enforced consequences when adolescents broke the rules (*M* = 4.73; *SD* = 0.65). Interestingly, parental enforcement of consequences decreased slightly after the program (*M* = 4.42; *SD* = 0.67). This change in parental monitoring approached statistical significance, and the effect size waslarge (*z* = -1.73, *p* = .08, *r* = -.52).

Table 1. Change in Parents Control and Monitoring Behaviors

	Pre-test		Follow-up		t-test/Wilcoxon			
	Mean	S.D.	Mean	S.D.	t/z	df/N	*p*	*r*
Parental Control								
Set driving rules	5.91	1.30	6.50	1.00	1.00	10	0.34	0.30
No. of passengers	0.64	0.50	0.73	0.47	0.43	10	0.68	0.13
Texting	1.00	0.00	1.00	0.00	0.00	10	1.00	0.00
Seat belts	1.00	0.00	1.00	0.00	0.00	10	1.00	0.00
Time Restrictions	0.27	0.47	0.18	0.40	-0.43	10	0.68	0.13
Geographic boundaries	0.27	0.47	0.55	0.52	1.40	10	0.19	0.40
Bad weather	0.91	0.30	0.92	0.29	0.00	10	1.00	0.00
Drugs/Alcohol*	0.91	0.30	1.00	0.00	1.00	11	0.32	0.30
Phone calls	0.91	0.30	1.00	0.00	1.00	10	0.34	0.30
Parental Monitoring								
Discuss driving rules	3.91	0.83	4.50	0.67	2.21	10	0.05	0.57
Discuss consequences	4.00	0.89	4.33	0.78	1.15	10	0.28	0.34
Enforce consequences*	4.73	0.65	4.42	0.67	-1.73	11	0.08	-0.52

*Wilcoxon sign-rank test

Discussion

In a previous review paper on family-centered teen-driving programs, researchers reported that many programs that meet only one-time (e.g., workshop or seminar) had the lowest level of effectiveness (Curry et al., 2015). In the current study, results from effect size analyses suggest that the RED program had a moderate effect on increasing parental control and large effect on increasing parental monitoring. More research is need to substantiate these findings as the current findings are based on a small sample and all findings were not statistically significant.

It is important to note that many of the results of this study were not statistically significant; yet, the effect sizes should be considered because the non-significant *p* values may be a function of the small sample size (Thompson, 1999). Thompson (2006) stresses that "obtaining a 'statistically nonsignificant' result does *not* mean that the results are unimportant or invaluable" (p. 147). Because we investigated parental behaviors that result in life-saving practices of teen drivers, the practical significance, which focuses on how much difference an intervention makes is critical in determining significance of findings. As demonstrated in the Rosnow and Rosenthal's (1989) aspirin study, even small effect sizes in light of life-saving practices are not trivial. Just as aspirin can be life-saving in regards to heart attacks, previous research suggest that improving parental behaviors results in reduced teen risky driving which can reduce teen crashes and ultimately teen deaths (e.g., Curry, et al., 2015; Hartos et al., 2000; 2002; 2004; Simon-Morton, et al., 2006; 2007).

Researchers have found that effective parental control and monitoring are a result of clearly defining rules and expectations (Hartos et al., 2000; 2002; 2004). On average, parents in the current study reported defining 6 of the 8 rules for their adolescents prior to the program and 6.5 of the 8 rules at follow-up. Geographic boundaries and time restrictions were the two rules least likely to be defined by parents at the time of the program. Whereas, texting and seat belts were two rules that had been defined by all parents at the time of the program. This may be a result of these rules being the center of national media campaigns, such as the National Highway Safety Administrations campaign "Click it or Ticket" in regards to seat belts as well as the mobile carrier provider AT&T's campaign "It Can Wait" in regard to texting. The number of rules defined by parents at start of the program may be higher than in other studies due to parent's reaction to adolescent's encounter with the legal system, as both adolescents and parents were court mandated to attend the program. Overall, the largest change in parental rules was in regards to geographic boundaries for teen driving.

Parental monitoring behaviors increased after participation in the RED program. Specifically, parents' at two-month follow-up were more likely to discuss driving rules with their children, more likely to set additional driving rules, and more likely to discuss consequences. The largest effect was in the frequency that parents discussed rules with their teen drivers. Conversely, parents were less likely to enforce consequences at follow-up than prior to attending the program. Previous research notes adolescents whose parents set limits on their driving are less

likely to engage in risky driving (Simon-Morton et al., 2006). Therefore, it is conceivable that if parents are exhibiting better monitoring and control of teen's risky driving behaviors; then the teen driver is less likely to break the rules. We propose a future hypothesis to test a logical explanation for the decrease in parental implemented consequences. We hypothesize if parents set clear rules on teen driving, and if parents discuss these rules and consequences with their teens at a regular frequency; then teen drivers are more likely to observe driving rules (i.e., exhibit less risky driving behaviors), and then parents have no reason to enforce consequences. As demonstrated in Figure 2, a polynomial trendline of the change in parental control and monitoring behaviors supports this initial hypothesis (R^2= .999); however, more research is needed to test the reliability and reproducibility of this finding.

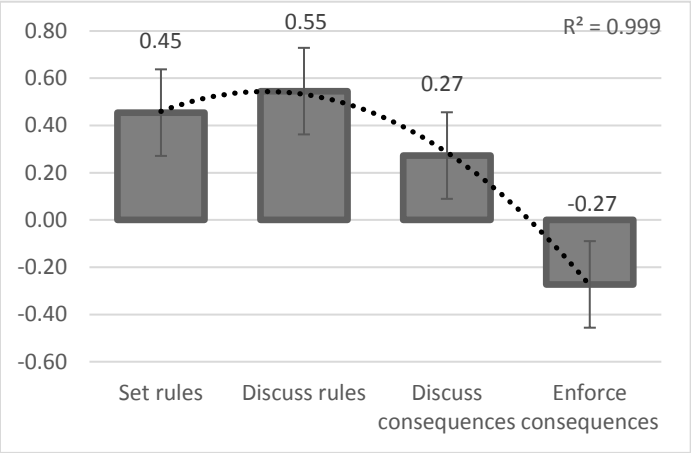

Figure 2. Change in Parent Control and Monitoring

Moreover, additional explanations for these findings may also exist. For example, the decrease in parental enforcement of consequences may also suggest the program was *not* effective in empowering parents to enforce consequences. In fact, more than three-quarters of parents desired more information on child rearing practices; specifically, 42% wanted more information on discipline or guidance principles (Young, Davis, Schoen, & Parker, 1998). Anticipatory disciplining or guidance techniques are effective in preventing misbehavior and promoting appropriate behavior (Maccoby, 1992; Russell & Russell, 1996). Whereas, problems with parental discipline are associated with conduct disorder and delinquency, poor academic achievement, substance abuse, and other related problems (e.g., DeBaryshe, Patterson, & Capaldi, 1993; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Hawkins, Catalano, & Miller, 1992; Patterson & Stouthamer-Loeber, 1984, Vicary & Lerner, 1986). In regard to teen-driving, rules are most effective when they are clear and enforced, and when rule violations are thought to be followed immediately by real consequences associated with the behavior (Barnett et al., 2002; Brooks-Gunn, 1993; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001).

If this explanation of parental discipline is true, then, future program designers may consider additional implementation methods to improve these outcomes. For example, in the RED program, the facilitators merely provided disciplinary and guidance suggestions to parents. To advance the effectiveness of parent-education session, programmers can provide parents the opportunity to role-play different scenarios in which adolescents violate driving rules. Ramirez et al. (2012) demonstrated positive benefits of teaching parents a conversation technique called Motivational Interviewing and allowing parents opportunities to role play-regarding teen driving. Additionally, researchers evaluating teen-driving programs have suggested adding a program component to disseminate information to parents after the program (i.e., Curry et al., 2015). For example, successful parental programs have included 1, 2, and 3-month booster training sessions for parents (Ramirez et al., 2012).

Future Evaluations

This study was a program evaluation designed to examine changes in parental behaviors. In this section, we provide additional considerations for those conducting a similar type of evaluation. First, this study used a single-group pretest/posttest evaluation (Kettner et. al, 2017). This experimental design uses only a single group as both the experimental group and comparison group. The impact of the program is attributed to changes in scores; therefore, researchers cannot be certain that the impact is a result of the program as the impact may be attributed to confounding factors such as maturation. Future evaluations may consider using a nonequivalent comparison group design or randomized experimental design to decrease internal validity threats.

A second consideration for future evaluations is the pre-questionnaire. The pre-questionnaire was designed for parents to report on their control and monitoring behaviors at the time of the program. However, as adolescents were court-mandated to attend the program, it may be possible that parents had increased their control and monitoring behaviors as a consequence of the adolescent's deviant behavior. Future researchers may want to consider the parental control and monitoring prior to adolescent's encounter with the legal system, at the time of the program, and at follow-up.

The quantitative analysis provided some insight into parental outcomes of the RED program; however, no data was collected on the underlying causations for this change. In this discussion, two competing hypotheses of results have been provided and should be studied further before making any final conclusions. Future researchers may want to consider qualitative research methods to provide a more in-depth analysis of parent outcomes. Likewise, future researchers should investigate which components of the program were most effective in changing parent's values and beliefs. These studies are need to better inform programmers about which components to include when designing family-centered programs.

Limitations

Our study has several limitations; some of these have been discussed in the previous section related to future evaluations. The sample included 15 parents from Central Texas who were court-directed as a result of their adolescents' behaviors. Thus, our sample was small and not representative of the general public. Second, we developed survey instruments based on previous research and questionnaires; however, the reliability and validity of the current instrument has not been tested extensively. Third, all data were self-reported by participants. Thus, responses are prone to possible underreporting and recall bias. In light of these limitations, this evaluation of the RED program provides promising results for family-centered teen-driving programs. Our findings may help guide development of future risky-driving program. However, programs should continue to be monitored and evaluated for effectiveness.

Conclusion

Overall, the evaluation suggests family-centered approaches should be considered as a strategy to improve parental control and monitoring of adolescent drivers. This approach may also be applied to other health education programs as a strategy to improve outcomes. Future research is needed to assess reliability and replicability of the program design.

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