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# Q1 Talking with teens about traffic safety: Initial feasibility, acceptability, 2 and efficacy of a parent-targeted intervention for primary care settings

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## A B S T R A C T

*Introduction:* The aims of the current pilot study were to evaluate the feasibility, acceptability, and preliminary efficacy of the *Talking with Teens about Traffic Safety Program*. The program consists of a clinic-based health coaching session with parents of adolescents at their annual well-child visit to promote parent-teen communication about teen driver safety including: a Parent Handbook that is designed to serve as a primer on teen driver safety and facilitate parent-teen communication on a variety of teen driver topics; an interactive practice driving toolset; and an endorsement of the materials by the primary care provider. *Method:* Fifty-four parent-teen dyads ( $n = 108$  total) were recruited from a primary care practice. Dyads were randomized (1:1) into a treatment group or a usual care group. Implementation fidelity was assessed using checklists completed by health coaches and parent interviews. After 6 months, parents reported how often they talked with their teen about 12 safe driving topics (e.g., why their teen wants to drive, state graduated driver licensing laws). *Results:* Parents in the treatment group reported more frequent discussions than parents in the control group on 7 out of the 12 topics. Fidelity data indicate that 100% of sessions were implemented as designed and were acceptable to parents. *Conclusions:* The program was feasible to administer and there was evidence for preliminary efficacy. Generally, effects were larger for more infrequently discussed topics, which is to be expected due to the potential for ceiling effects on more commonly discussed topics (e.g., distracted driving). A larger multi-site study is warranted. *Practical applications:* The results from this pilot study provide support for implementation fidelity and establish a proof-of-concept for the *Talking with Teens about Traffic Safety Program*. The results also provide guidance for developing partnerships with pediatricians and parents to develop, implement, and evaluate parent-teen communication interventions on injury prevention topics.

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## 49 1. Introduction

50 Motor-vehicle crashes (MVCs) are a leading cause of unintentional  
51 injury and death to adolescents (NCIP, 2013). Crash rates are highest  
52 immediately after licensure, when adolescents can first drive without  
53 supervision (Chapman, Masten, & Browning, 2014). Crashes are caused  
54 by many interacting factors including practical inexperience with  
55 the driving task (Curry, Hafetz, Kallan, Winston, & Durbin, 2011;  
56 Mccartt, Shabanova, & Leaf, 2003) and norm-breaking behaviors  
57 (e.g., speeding, distracted driving; Arnett, Offer, & Fine, 1997; Bingham  
58 & Shope, 2004; Olsen, Shults, & Eaton, 2013). Active and warm parental  
59 engagement during the transition from a supervised learner to an inde-  
60 pendent driver can be an effective strategy for mitigating adolescents'  
61 crash risk (Simons-Morton & Ouimet, 2006).

Several facets of the parent-adolescent relationship and communi-  
62 cation quality have been shown to be related to adolescents' safe driving  
63 (Taubman-Ben-Ari, 2010). For example, the quality of communication  
64 and social support between parents and adolescents has been shown  
65 to be a key factor associated with increased parental engagement during  
66 the supervised learner period (Jacobsohn, García-España, Durbin,  
67 Erkoboni, & Winston, 2012; Mirman et al., 2014; Mirman, Curry,  
68 Wang, Fisher Thiel, & Durbin, 2014). Also, adolescent drivers who per-  
69 ceive their parents to be authoritative are reported to have half the  
70 risk of being in a MVC in the prior year compared to adolescents who  
71 perceive their parents as uninvolved (Ginsburg, Durbin, García-  
72 España, Kalicka, & Winston, 2009). In comparison to parents from  
73 families who reported poorer communication practices, parents from  
74 families who reported more positive consensus-based communication  
75 patterns were more likely to talk about safe driving practices with  
76 their teens, which, in turn, was associated with adolescents possessing  
77 stronger safety-positive attitudes about driving (Yang et al., 2013).  
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Interventions designed to improve parent-teen communication and related behaviors (e.g., solicitation, monitoring, disclosure, parent engagement) can reduce a variety of risk behaviors in adolescence, including risky driving (Carney, McGehee, Lee, Reyes, & Raby, 2010; Mirman, Curry, Elliot, Long, & Pfeiffer, 2018; Simons-Morton, Hartos, Leaf, & Preusser, 2006; Taubman-Ben-Ari & Lotan, 2011). Parent-directed interventions that are theory-based, inclusive of the parent-adolescent dyad, and interactive (as opposed to passive dissemination of unengaging materials) have the greatest potential for success (Curry, Peek-Asa, Hamann, & Mirman, 2015). Moreover, situating teen driving interventions, conceptually and in delivery, within the broader context of the parent-adolescent relationship is critical for uptake and effectiveness (Curry et al., 2015; Haggerty, Fleming, Catalano, Harachi, & Abbott, 2006; Mirman & Curry, 2017).

Primary care practices provide a pragmatic way to connect evidence-based interventions with adolescent patients and their parents. Research suggests that parents would like to receive information on teen driving from their adolescent's primary care physician (Ford et al., 2016), and that most pediatricians do provide guidance on teen driving to their adolescent patients (Campbell et al., 2009; Weiss, O'Neil, Shope, O'Connor, & Levin, 2012); however, conversations focus on seatbelts and alcohol and not on other important topics like graduated driver licensing policies (GDL). One primary care-based teen driving intervention was found to be valuable and acceptable to pediatricians, but demonstrated weak uptake by parents, specifically with respect to low utilization of the program's website (Shope et al., 2016).

Building off the important preliminary research suggesting that there is interest in primary care-based teen driving interventions by parents, adolescents, and care providers, but that uptake of these interventions could be enhanced, we created a primary care-based intervention program using the Health Belief Model (Janz & Becker, 1984; Rosenstock, 1974). Notably, as opposed to just targeting parents and adolescents individually or as a dyad, we sought to directly engage the parent-adolescent-provider triad as described by Ford, Davenport, Meier, and McRee (2011) in the context of adolescents' annual well-child visits (Ford et al., 2011). Parents believe that providers can sensitize them to their adolescents' vulnerability to specific health threats and provide resources to address those threats proactively, and that a pragmatic way to do this is through face-to-face discussions in clinic settings (Ford, Davenport, Meier, & McRee, 2009). Further, all three of these stakeholders perceive that interventions designed to strengthen relationships of the triad members (e.g., quality of communication) are needed and should be designed to support specific adolescent health outcomes (Ford et al., 2009, 2011).

One unique strength of the *Talking with Teens about Traffic Safety Program* intervention is that it is intended to facilitate parents' engagement with multiple risk and protective factors related to teen driver safety across the GDL continuum. Empirically-based conceptual models of factors that elevate adolescent crash risk indicate several potential targets of intervention (e.g., environmental, driver cognitions and behaviors, personality etc.; Shope & Bingham, 2008). Most parent-directed interventions are designed to focus on only one or two risk factors (e.g., drunk driving, parent limit-setting) at one stage of GDL, which might have limited their effectiveness (Curry et al., 2015). Moreover, the *Talking with Teens about Traffic Safety Program* was developed to: (a) recognize the importance of high quality parent-teen communication for adolescent health outcomes (Guilamo-Ramos et al., 2007); (b) affirm that adolescent patients and their parents should find adolescent health care valuable, effective, and accessible (Fieldston, Terwiesch, & Altschuler, 2013; Jonas, Davies, Keddem, Barg, & Fieldston, 2015; Porter, 2012); (c) be predicated on central tenets of positive youth development models of fostering developmental assets to help adolescents grow and thrive (Lerner & Castellino, 2002; Park & Peterson, 2006); and (d) support health care providers with evidence-based tools, systems, and resources to enable the data-driven translation of

evidence-based adolescent health interventions into practice with fidelity.

The aims of the current pilot study were to assess the implementation quality of an intervention program and to evaluate for preliminary efficacy using an experimental design. In keeping with the goals of a process evaluation (Saunders, Evans, & Joshi, 2005), we designed the study to answer two key implementation questions: (a) Was the intervention delivered as intended?; and (b) Was the intervention acceptable to parents? In addition, our primary measure of efficacy was a comparison of the frequency of self-reported parent-adolescent communication on teen driver safety topics between the intervention and control groups 6 months after the intervention, although as this was a pilot study a formal test of efficacy was not the primary focus.

## 2. Methods

### 2.1. Description of the Talking with Teens about Traffic Safety Program

The *Talking with Teens about Traffic Safety Program* consists of a 1:1 health coaching session between a parent and a trained Health Coach, followed by a written and verbal endorsement of the program by the adolescent's primary care provider (PCP). This program is a modified version of an intervention that has previously been developed and tested outside of the clinic setting, with evidence that it effectively increased safe teen driving behaviors (Mirman et al., 2014; Mirman et al., 2017, 2018; Mirman, Albert, Curry, et al., 2014; Mirman, Lee, Kay, Durbin, & Winston, 2012). The health coaching sessions are conducted in conjunction with annual well-child visits conducted by the adolescents' PCP. The state of Pennsylvania is the only state in the United States that requires adolescents to provide a medical certification of their fitness to drive completed by a qualified medical professional prior to taking their learner's permit test. This creates a natural point of intervention for PCPs to provide anticipatory guidance in conjunction with reviewing and completing the medical certifications.

The health coaching sessions are designed to sensitize parents to their teen's vulnerability to traffic injury, especially during the first 6 months that the teen is independently driving, and to increase parent-teen communication about important traffic safety topics prior to the teen obtaining a license. In addition, the Health Coach provides the parent with several psychoeducational resources, including a parent handbook that serves as a primer on teen driver safety written for a lay audience and a practice-driving toolkit. The Health Coach briefly orients parents to the materials, emphasizes that parents can promote their teen's safety by staying engaged throughout the learning-to-drive process, and concludes by providing a concrete cue to action: "I recommend that you read through these materials and talk with your teen about driving in the next two weeks." The Health Coach also asks the parent to focus on two topics during the first conversation: (a) the importance of practice driving, during which the parent is encouraged to make a verbal commitment to his or her teen to help the teen obtain high quality and diverse practice, and (b) why the teen wants to drive, with a goal of clarifying his or her driving motives (e.g., for fun and/or practical reasons). These topics were chosen because evidence suggests that generally adolescents do not have rigorous, diverse, and challenging practice drives that focus on higher order tasks (e.g., scanning for hazards; Ehsani et al., 2017; Goodwin, Foss, Margolis, & Harrell, 2014; Mirman & Kay, 2012). Clarifying goals and motives for driving is a practical point of conversation that can set the stage for on-going communication about teen driver safety. It also provides an early opportunity for parents to get a sense of what kinds of issues might come up during the post-license period and begin to scaffold the teens' expectations about what kinds of rules might be in place and why (e.g., passenger restrictions). Health coaching sessions are designed to take place without the adolescent present and last approximately 10 min. Adolescents are seated in a separate area of the waiting room or are already being seen by their PCP.

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