Factors Associated With Adolescents’ Propensity to Drive With Multiple Passengers and to Engage in Risky Driving Behaviors

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ABSTRACT

Purpose: Research shows that parenting factors and individual difference variables, such as sensation seeking (SS) and risk perceptions (RPs), are associated with increased motor vehicle crash risk for young drivers. The presence of peer passengers is also known to be associated with increased crash risk. However, as previous studies did not study these factors concurrently, less is known about the factors that are associated with driving with peer passengers and if peer passengers may mediate the effect of parenting and individual difference variables on adolescents’ engagement in risky driving behavior.

Methods: We examined predictors of driving with multiple passengers (DWMPs) and explored it as a potential mediator of pathways from three factors: (1) SS, (2) RPs, and (3) Parental monitoring and rule-setting to risky driving behaviors in a convenience sample of 198 adolescent drivers using a cross-sectional Web-based survey.

Results: Findings indicate that both stronger RPs and perceiving parents as strong monitors and rule setters were associated with less engagement in risky driving, whereas greater SS was associated with more engagement in risky driving; RPs, monitoring, and SS were also significantly associated with DWMPs in these same directions. DWMPs partially mediated the effect of these risk factors on risky driving behavior.

Conclusions: Results inform theory and policy by examining factors associated with risk taking in the context of adolescent driving. Interventions can be developed to complement graduated driver licensing laws by targeting individual difference variables and decreasing opportunities for peer passenger carriage.

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Adolescent risk taking is a widely studied topic due to the deleterious effects of maladaptive risk taking on the health and development of young people. Studying risk taking within the context of driving is critical due to the public health threat posed by young drivers. In the United States in 2008, a total of 3,118 adolescent drivers (aged 15–19 years) and their passengers were killed when an adolescent driver was behind the wheel. Furthermore, >1,000 other drivers, pedestrians, and bicyclists were killed and >40,000 people were severely injured (e.g., brain or spinal cord injury, fractures, and concussions) because of adolescent driver motor vehicle crashes (MVCs) [1]. MVCs by adolescent drivers represent the single greatest source of morbidity and mortality in adolescence [2] and cause one in three adolescent deaths [3]. Several factors in combination lead to increased risk for MVCs [4–5]. In this study, we focus explicitly on how peer presence may contribute to engaging in risky driving behaviors.

One risk factor that is an especially pressing problem for young drivers is the influence of peer passengers. Driving with
same-aged peer passengers increases MVC risk for youth [6]; further, MVC risk increases with the number of peer passengers [7]. Observational research indicates that adolescents are more likely to drive unsafely (e.g., decreased following distance) in the presence of their peers than when they are alone [8]. The negative effect of peer passengers on drivers’ behavior is likely due to both distraction and increased intentional risk taking [8–11].

Peer passengers can exert a negative effect on driver behavior by both implicitly and explicitly encouraging risk taking. A recent study using functional magnetic resonance imaging demonstrated that adolescents take more risks and show stronger engagement of neural circuitry associated with reward seeking when making decisions while being observed by peers than when alone, even when peers are located in a different room; adults show no differences in behavior or brain activity related to peer context [9]. Thus, the presence of passengers may implicitly bias adolescents toward risky driving by “priming” neural circuitry to respond to the reward value of the risk behavior, independent of any explicit peer pressure by friends. Peer passengers may also explicitly encourage risk-taking behaviors (e.g., speeding, racing) by providing direct encouragement and social pressure to the driver to engage in risky behavior.

Prevention approaches have typically operated under the assumption that youth will ride with multiple passengers if given the opportunity, and therefore opportunities should be restricted. Two mechanisms for restricting opportunities are graduated driver’s licensing (GDL) laws and parental monitoring. GDL laws were created to keep novice adolescent drivers out of situations that are associated with increased risk for crash and injury while skills develop [12]. Evaluations show GDL laws to be effective for reducing crashes in target populations [13–15].

Yet, youth still drive with passengers [16]. Parental monitoring of adolescent postlicensure behaviors can promote compliance with state laws and with household rules [17]. Family members need to be in accordance about the strength and type of household driving rules [18–20], as rule discordance is predictive of risky driving [18].

Parents can also reduce their adolescent’s engagement in risky driving by controlling car access, which provides an opportunity to discuss usage and what friends may be invited into the car, so that parents can better regulate with whom their adolescent is driving. Adolescents whose parents allowed primary access to a car, as opposed to shared access, were more likely to crash and to engage in risky driving behaviors than those whose parents restricted access [21]. Further, adolescents who perceived that their parents monitored, placed restrictions, and were concerned about driving reported engaging in less risky driving [22].

Less research exists on individual difference factors that may lead to driving with multiple passengers (DWMPs) in the first place; yet substantial data do exist on the factors that are associated with risky driving in general. For example, sensation seeking (SS) and risk perceptions (RP) are two widely studied psychosocial variables that have been found to be associated with risky driving. Numerous studies have demonstrated a positive association between SS and risky driving [23–25]. Interestingly, Donohew et al.’s research showing that adolescent peers tend to cluster on the characteristic of SS [28,29]. Moreover, these findings suggest a model in which the relationship between individual SS and substance use takes an indirect route through peers and their SS level [28,29]. Therefore, the relationship between SS and risky driving may analogously operate through driving with multiple peers.

Much like the research on other risk behaviors, RPs about driving behaviors do not show a consistent pattern with risky driving, with some studies showing positive associations [30] and others inverse associations [31]. These differences are likely due to methodological differences. In fact, Machin and Sankey [32] demonstrated both positive and inverse associations among RP and self-reported speeding depending on the type of measure used. As RP are associated with behavior, they remain a worthwhile construct to explore, albeit with greater methodological specificity.

Summary and study overview

Although there is strong empirical evidence that suggests DWMPs is a risk factor for crashing, there is less information on how parenting, SS, and RP, together, may be associated with adolescents’ propensity to drive with multiple passengers. Pathways from these variables to risky driving may be partly accounted for by an increased propensity to drive with multiple passengers. Policy makers have recognized the risk of peer passengers and attempted to limit peer passenger carriage by GDL laws, and studies indicate that these laws can be successful [14,33]. Lack of compliance and inconsistent and difficult enforcement of GDL laws means that youth are still driving with peers even in states where it is prohibited [34]. Thus, it is important to understand the factors associated with individual differences in DWMPs so that we can inform other prevention efforts, and to determine whether these effects are mediated or “carried forward” to individual differences in risky driving via DWMP. The current study examined the role of DWMP as a potential mediator of expected predictive pathways from three risk factors—SS, RP, and parental monitoring and rule-setting (PMRS)—to risky driving (Figure 1).

Methods

Sampling methodology

A convenience sample of participants was recruited using an online panel maintained by e-Rewards, Inc., Dallas, TX. Panel members were recruited through their existing relationship with member companies and were invited to participate using both online and offline recruitment strategies. After joining the panel, participants provided demographic and other information, which was used to determine survey eligibility. The volume
of survey invitations is about five surveys per year. All panel establishment methodologies used by e-Rewards are opt-in and fully compliant with Council of American Survey Research Organizations and World Association of Research Professionals guidelines. To recruit panel members aged <18 years, e-Rewards first contacts adult panel members with adolescent children and requests parents’ permission for their children to participate in youth-specific research. If parents allow their child to participate, the panel administrator contacts the youth to gain adolescent assent to participate. Conduct of the Web survey was approved by an institutional review board at a contracted survey vendor, Marketing4Change. The Institutional Review Board of The Children’s Hospital of Philadelphia approved the study protocol for data analysis.

**Eligibility criteria**

Participants needed to be the primary residents of Pennsylvania (PA) or New Jersey (NJ) and be aged 15–17 years. For a desired sample size of 625, e-Rewards invited a random sample of 3,125 youth who met the aforementioned criteria to complete the survey. After the sample size was met, the survey was closed. For the current analysis, we selected junior license holders by only including youth who answered yes to the following question: “I passed my driver test but my license puts some restrictions on my driving.” We excluded youth with learner permits because they can only drive with an adult supervisor and those youth with an unrestricted license because we were particularly interested in youth whose behaviors were governed by GDL laws. We also excluded three cases with outliers, which resulted in a subsample of 198 adolescents.

**Scale construction**

Scales used in the current study were taken from a larger survey of young drivers and passengers. Relevant items were chosen based on coherence with the theoretical constructs of a priori interest, outlined previously.

**Risky driving** ($\alpha = .73$). Participants reported the degree to which they engaged in six different risky driving behaviors on a 3-point scale: (1) Often or always, (2) Sometimes or occasionally, or (3) Rarely or never. Item responses were reverse-scored and averaged, such that higher scale scores represented more risky driving. Items included the following: (1) I have road rage when I drive; (2) I talk on the cell phone while I drive; (3) I am speeding when I drive; (4) I am in a hurry when I drive; (5) I drink alcohol and then drive; and (6) I smoke pot and then I drive.

**Driving with multiple passengers.** Using responses to a single item rated on the same 3-point scale as risky driving (i.e., from (1) Often/always to (3) Rarely/never), riding with peers was assessed as the frequency with which participants reported that “I drive with many teen passengers (i.e., piling),” and reverse-scored such that higher scores reflected greater frequency of this behavior. The word piling emerged during a previous qualitative study on adolescents’ perceptions about driving and licensure [35]. Teens described that piling meant DWMPs at once; therefore, we included a reference to piling in the item stem.

**Parental monitoring and rule-setting** ($\alpha = .69$). We were interested in two aspects of parenting associated with adolescents’ relative engagement in risk behavior, including adolescents’ perceptions that their parents (a) set clear rules and (b) monitored whereabouts. Scale scores were constructed as the average of participant responses to the following two items, assessed on a scale from (1) Strongly disagree to (5) Strongly agree: (1) My parents keep track of where I am when I am not in school and away from home, and (2) My parents set clear rules about what I can and cannot do.

**Sensation seeking** ($\alpha = .83$). SS was assessed as the mean response to a subset of items selected from the Zuckerman Sensation Seeking Scale [36], chosen for their face-valid measurement of intentional risk taking and stimulus seeking (Steinberg et al [37], for validity of a similar version). The following three items were rated on a scale from (1) Strongly disagree to (5) Strongly agree: (1) I like to take risks; (2) I would like to explore strange places; and (3) I like to do frightening things.

**Perceived risks of risky driving** ($\alpha = .79$). RP was assessed as the mean response to the following five items measuring the degree to which a given driving scenario is perceived as dangerous to a driver or a passenger riding in a car, on a scale from (1) Safe to drive or ride in a car to (5) Dangerous to drive or ride in car: (1) The driver has road rage; (2) The driver is talking on the cell phone; (3) The driver is in a hurry; (4) The driver is drunk; and (5) The driver is speeding.

**Covariates.** Participants’ self-reported age, gender, hours driven per week, state of residence, and self-reported grades in school were entered as covariates in the first step of all multiple regression analyses described later. State of residence was coded as a dummy variable (NJ = 1, PA = 0), and grades were coded based on categorical self-report of grades from the last 12 months on a 5 point scale ranging from (1) Mostly A’s to (5) Mostly F’s (reverse scored such that higher scores reflected higher grades). Refer Table 1 for descriptive statistics and Table 2 for correlations among continuous study variables. No differences were found by gender.

As PA and NJ do differ in GDL laws, we conducted an exploratory $t$ test to see whether there were state differences among the study variables. We found that NJ teens reported slightly more DWMP, mean (SD) = 1.52 (.65), than PA teens, mean (SD) =
1.03 (.55), p = .009. The current report and the study methodology were not designed to examine the effectiveness of the two states’ GDL laws, and as noted, we controlled for state of residence as a covariate. We caution against the overinterpretation of this finding, especially as other studies explicitly designed to evaluate GDL laws have found positive effects of passenger restrictions [14,33].

### Analysis plan

Consistent with the criteria for demonstrating mediation proposed by Baron and Kenney [38], our analysis proceeded in four steps. First, we conducted regressions to examine direct predictive effects from each of the three risk factors to risky driving, not controlling for the effects of DWMP (i.e., Hypothesis 1: Direct effect from Risk Factor to Risky Driving is significant). Second, we examined whether any of the three risk factors predicted DWMP (i.e., Hypothesis 2: Direct effect from Risk Factor to DWMP is significant). Third, we added DWMP as an additional predictor (alongside the covariates and three risk factors) in the regression predicting risky driving to evaluate whether DWMP accounted for unique variance in risky driving (i.e., Hypothesis 3: Direct effect from DWMP to Risky Driving is significant). Finally, for each of the three risk factors, we used a robust resampling procedure adopted from Preacher and Hayes [39] to evaluate the degree of significance of the indirect effect, quantified as the product of unstandardized beta coefficients corresponding to Risk Factor ¡ DWMP ¡ Risky Driving effects (i.e., Hypothesis 4: Indirect effect from Risk Factor ¡ DWMP ¡ Risky Driving is significant). All regressions examined the three risk factors simultaneously, and therefore each individual effect controlled for the effects of the other two. For ease of interpretation, all continuous variables were mean-centered, and regression coefficients are reported as standardized betas; effect sizes are reported as R² change (ΔR²) values, derived by specifying the predictor(s) in the last step of the corresponding regression. Covariates (i.e., age, gender, state, driving hours per week, and grades) were entered in the first step of all regressions; covariate effects are only reported when significant. Statistical tests were two-tailed with an α = .05. The resampling procedure adopted from Preacher and Hayes estimates the size of the indirect effect with a 95% confidence interval.

### Table 1

**Descriptive statistics**

<table>
<thead>
<tr>
<th>Study variables</th>
<th>Scale</th>
<th>Number of items</th>
<th>Mean (SD)</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky driving</td>
<td>1–3</td>
<td>6</td>
<td>1.42 (.29)</td>
<td>.57</td>
<td>.11</td>
</tr>
<tr>
<td>Driving with multiple passengers</td>
<td>1–3</td>
<td>1</td>
<td>3.34 (.60)</td>
<td>.27</td>
<td>.56</td>
</tr>
<tr>
<td>Parental monitoring and rule setting</td>
<td>1–5</td>
<td>2</td>
<td>3.51 (1.02)</td>
<td>-.38</td>
<td>-.56</td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>1–5</td>
<td>3</td>
<td>2.76 (.97)</td>
<td>-.09</td>
<td>-.68</td>
</tr>
<tr>
<td>Risk perceptions</td>
<td>1–5</td>
<td>5</td>
<td>4.03 (.59)</td>
<td>-.80</td>
<td>.36</td>
</tr>
</tbody>
</table>

**Sociodemographic characteristics**

<table>
<thead>
<tr>
<th>n (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>87 (43.9%)</td>
</tr>
<tr>
<td>Female</td>
<td>111 (56.1%)</td>
</tr>
<tr>
<td>State</td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>114 (42.4%)</td>
</tr>
<tr>
<td>NJ</td>
<td>84 (57.6%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Caucasian/white</td>
<td>159 (80.3%)</td>
</tr>
<tr>
<td>African American/black</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>Asian American</td>
<td>20 (10.1%)</td>
</tr>
<tr>
<td>Native American</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>Native Hawaiian or Pacific Islander</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>6 (3.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (1.5%)</td>
</tr>
</tbody>
</table>

SD = standard deviation.

* Mostly A’s and B’s.

### Table 2

**Correlations among psychosocial, behavioral, and demographic variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risky driving</th>
<th>DWMP</th>
<th>PMRS</th>
<th>Sensation seeking</th>
<th>Risk perceptions</th>
<th>Age</th>
<th>Academic achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky driving</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWMP</td>
<td>.36**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMRS</td>
<td>-.25**</td>
<td>-.28**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>.26**</td>
<td>-.36**</td>
<td>-.11</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk perceptions</td>
<td>-.25**</td>
<td>-.30**</td>
<td>.22**</td>
<td>-.14</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.25**</td>
<td>.04</td>
<td>-.18**</td>
<td>.04</td>
<td>-.14**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Academic achievement</td>
<td>-.03</td>
<td>-.18**</td>
<td>.19**</td>
<td>-.03</td>
<td>.01</td>
<td>.05</td>
<td>1.00</td>
</tr>
<tr>
<td>Hours driven/week</td>
<td>.21**</td>
<td>.11</td>
<td>-.14**</td>
<td>-.01</td>
<td>-.08</td>
<td>-.08</td>
<td>-.21**</td>
</tr>
</tbody>
</table>

Associations between continuous variables are reported as Pearson’s bivariate correlation coefficients. Differences in study variables related to gender and state are reported in Table 3.

DWMP = driving with multiple passengers; PMRS = parental monitoring and rule-setting.

* p ≤ .05, ** p ≤ .01.
enlistment of the three risk factors to the introduction of the three risk factors to the introduction of the three risk factors to the introduction of the three risk factors to the 
\[
R^2 = 69.0, p < .001, R^2 = .226).\] Furthermore, unique variance in risky driving was predicted by each of the three risk factors, including SS (\(\beta = .23, t = 3.49, p = .001, \Delta R^2 = .050)\), RP (\(\beta = -.15, t = -2.28, p = .024, \Delta R^2 = .021)\), and PMRS (\(\beta = -.14, t = -2.05, p = .042, \Delta R^2 = .017)\); together, the introduction of the three risk factors to the covariate model captured 11.3% of additional variance in risky driving (\(\Delta F(3, 189) = 9.22, p < .001, \Delta R^2 = .113)\). Risky driving was also significantly predicted by age (\(\beta = .21, t = 3.16, p = .002, \Delta R^2 = .040)\) and by driving hours per week (\(\beta = .20, t = 3.03, p < .003, \Delta R^2 = .038)\).

**H2: Prediction of DWMP by SS, RP, and PMRS**

We next examined whether the hypothesized mediator, DWMP, was predicted by one or more of the three risk factors for risky driving, with covariates entered in step 1 and SS, RP, and PMRS entered in step 2. As hypothesized, the full regression model significantly predicted DWMP (\(F(8, 189) = 8.91, p < .001, R^2 = .274)\), with significant variance in DWMP collectively accounted for by the three risk factors (\(\Delta F(3, 189) = 17.45, p < .001, \Delta R^2 = .201)\). Furthermore, each risk factor predicted unique variance in DWMP, with the largest predictive effect apparent for SS (\(\beta = .31, t = 4.85, p = .001, \Delta R^2 = .090)\), followed by RP (\(\beta = -.23, t = -3.49, p = .001, \Delta R^2 = .047)\) and PMRS (\(\beta = -.15, t = -.230, p = .023, \Delta R^2 = .020)\). DWMP was not significantly predicted by any of the covariates in the full model.

**H3: Prediction of risky driving by DWMP**

To evaluate the role of DWMP as a predictor of risky driving, we added DWMP as a third step to the H1 regression described previously. The introduction of DWMP significantly improved the fit of the model, accounting for an additional 4.6% of variance in risky driving (\(\beta = .25, t = 3.43, p = .001, \Delta R^2 = .046), total R^2 = .272)\). Furthermore, consistent with partial mediation, the addition of DWMP to the model reduced the amount of variance in risky driving collectively explained by the three risk factors from 11.3% to 4.0% (\(\Delta F(3, 188) = 3.42, p = .018, \Delta R^2 = .040)\). Controlling for DWMP, the unique predictive effect for SS was reduced (\(\beta = .15, t = 2.24, p = .026, \Delta R^2 = .019)\), and the predictive effects for RP (\(\beta = -.10, t = -1.42, p = .156, \Delta R^2 = .008)\) and PMRS (\(\beta = -.10, t = -1.51, p = .132, \Delta R^2 = .009)\) were no longer significant. Prediction of risky driving by age (\(\beta = .22, t = 3.43, p = .001, \Delta R^2 = .045)\) and driving hours per week (\(\beta = .19, t = 2.90, p = .004, \Delta R^2 = .032)\) remained significant after controlling for DWMP.

**H4: Significance of indirect effects**

The results presented thus far are consistent with mediation by DWMP of associations between each of the three risk factors and risky driving. To evaluate the significance of each mediation effect, we used the SPSS macro "INDIRECT" [39], a resampling procedure that constructs bias-corrected CIs around the product of the two constituent paths of an indirect effect (i.e., Predictor → Mediator and Mediator → Outcome). An indirect effect is considered significant if its CI does not include zero. Mediation tests for each of the three risk factors controlled for all other study variables, drawing 1,000 bootstrap samples (with replacement) to construct 95% CIs. Tests of indirect effects were significant for all three risk factors, indicating that DWMP partially mediates the predictive effects of SS (CI = .008, .050), RP (CI = -.061, -.010), and PMRS (CI = -.029, -.001) on risky driving (Table 3).

**Discussion**

The purpose of this article was to better understand mechanisms by which known risk and protective factors are associated with risky driving. Variations in SS, RP, and PMRS were independently associated with variations in DWMPs and risky driving. By studying these factors together, we were able to control for the effects of each factor on the others and obtain a clearer picture of each factor’s unique contribution. Factors were associated with risky driving in the expected direction and DWMPs partially mediated these relationships. Results illustrate the potential for intervening in PMRS, SS, and RP to decrease frequency of DWMP and point to the latter as mechanism for increasing risk of unsafe driving behavior.

Parents should not just defer to GDL laws or rely on police enforcement—parents need to actively clarify rules and expectations about passenger carriage. Theoretically, it would make sense that a parent–teen contract would codify rules; however,
an evaluation of a parent–teen contract found modest yet significant effects on some driving limits, but no effect on passenger limits [40]. It may be that adolescents view passenger carriage as a personal and not safety-related behavior and are less likely to be supportive of parental attempts to regulate their behavior in this domain. Social Domain theory provides a useful theoretical paradigm for studying this issue in more depth [41] by illustrating how parent–child conflict can arise from differing perceptions about behaviors are perceived (e.g., personal, health).

RP were found to be inversely associated with DWMP, suggesting the possibility that if RP can be enhanced, DWMPs could be reduced. Importantly, we used RP measures that measured adolescents’ perceptions of driving scenarios in general and not their perceptions about their individual level of risk. Also, RP were strong across the sample; therefore, even though they were associated with risky driving, there may not be that much room to enhance RP via intervention. Although SS may not be as amenable to change as the other risk factors we examined, parents need to be sensitive to their individual child’s SS and determine if they need to increase restrictions while providing opportunities for developing self-control [42]. These factors can be explicitly addressed in driver’s education courses, DMV examinations, and parent programs.

These findings add an important nuance to our understanding of the pathways by which RP and SS are associated with risky driving. Specifically, RP and SS may be more related to the tendency to DWMP than with the inclination toward risky driving. In the case of SS, the relationship may be stronger with DWMP than with risky driving because the motivation is not the risk, but rather the arousal [27,36]; this may be derived largely from the social stimulation of peers (whose SS may well match that of the drivers’) [28–29], sharing the “thrill” experience of driving.

Limitations and future directions for research

This study has some limitations that should be noted. First, we were not specific as to what activities specifically were being monitored; stronger associations may have been observed by including items that were specific to driving (e.g., rules about passenger restrictions). We did not directly study the process variables by which peers may increase risk taking, nor can we infer causal relations between the psychosocial factors and risk-taking outcomes from our cross-sectional study design. The present study can be used to inform the conduct of experimental, longitudinal, and observational studies that explore these and related questions, such as examining gender–specific interactions between drivers and passengers, trip purpose, driver experience, and urbanicity.

Intervening to reduce risky driving behaviors requires the identification of the most malleable and potent factors associated with those behaviors and will likely include promoting protective factors as well as mitigating risk factors in an attempt to shift adolescents’ propensity for engaging in risky behavioral patterns toward more safety-positive behavioral patterns. This research further substantiates the need to enhance GDL provisions with evidence-based parent- and adolescent-focused interventions to increase compliance and motivate youth to drive with a reduced number of passengers during the early postlicensure phase.

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