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Shared and Distinct Parental Influences on Teen Impaired Driving in Rural and Suburban Contexts: A Mixed Methods Study of Young Drivers

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Abstract

Objective: To explore shared and distinct parental influences on rural and suburban adolescents' riding with an impaired driver (RWI) and driving while impaired (DWI) behaviors during high school.

Methods: Participants in the NEXT Generation Health Study (NEXT) were classified into four RWI/DWI trajectory classes (i.e., Abstainer, Escalator, Decliner, Persister) which described patterns of RWI/DWI from high school to emerging adulthood. A follow-up, in-depth, qualitative interview was conducted with a purposeful selection of participants from each trajectory class

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between March and September 2020. Guided by Ecodevelopmental Theory, the interview included questions which explored parent-teen influences on driving and RWI/DWI.

Results: Imposition of a curfew was a shared parental influence in rural and suburban contexts. Unique to the rural context, parent modeling of RWI/DWI was described as normative and occurring since childhood.

Conclusions: Prevention interventions targeting parent RWI/DWI may reduce their children's risk for RWI/DWI among rural adolescents.

Keywords

impaired driving; parental influences; rural; youth

1. INTRODUCTION

Over the last 10 years, the alcohol-impaired driving crash fatality rate has increased by 21% in the United States.(Goldstick et al., 2022; National Center for Statistics and Analysis, 2022) Nearly half of alcohol-related crashes occur in rural areas, yet less than a quarter of the U.S. population lives in these areas.(Li et al, 2014) Previous research has shown that multiple factors contribute to higher rates in rural areas compared to urban areas, including longer travel distances, limited public transportation, lower visibility enforcement, permissive cultural norms around underage drinking, riding with an impaired driver (RWI) and driving while impaired (DWI).(Fell et al., 2015; Gill et al., 2013) In both rural and suburban areas, young drivers are among the most vulnerable and at the highest risk of being seriously injured and killed in alcohol-related crashes. Much of this vulnerability exists as young drivers are navigating increased independence from parents. Yet, parent influences have been largely underexplored in the context of rural-suburban disparities in alcohol-related crashes. This mixed methods study explored parental influences on rural and suburban adolescents' RWI/DWI behaviors during high school.

1. METHODS & MATERIALS

Participants were sampled from the NEXT Generation Health Study (NEXT), a 7-year longitudinal nationally representative cohort study of adolescent health behaviors starting in 2009-2010 (10th grade).(K. Li et al., 2014) Parent permission and adolescent participant assent was obtained upon enrollment, participant consent was obtained at 18 years of age. Baseline (Wave 1) data collection included measures of demographics, parental monitoring knowledge (e.g., adolescents' perceptions of their mother's and father's monitoring knowledge of their activities),(K. Li et al., 2014) and the level of urbanicity of the adolescents' school, which was used to classify participants in the current study's urbanicity status when they were in the 10th grade. Covariates were race/ethnicity, sex, parent education, urbanicity, and family affluence. Latent Class Analysis (LCA) of all 7 waves of NEXT data was conducted to identify a set of mutually exclusive latent classes of individuals based on their responses to questions assessing RWI in the past 12 months and DWI in the past 30 days. LCA classified participants from the complete NEXT cohort (n=2,783) into four RWI/DWI trajectory classes which described patterns of RWI/DWI

from high school to emerging adulthood (i.e., Abstainer (consistent low probability of RWI/DWI over 7 waves), Escalator (probability of RWI/DWI increased over 7 waves), Decliner (probability of RWI/DWI decreased over 7 waves), and Persister (consistent high probability of RWI/DWI over 7 waves). (Vaca et al., 2021) Using a sequential explanatory mixed methods design, the quantitative data guided the purposeful selection of participants from each trajectory class for a follow-up, in-depth, qualitative interview between March and September 2020. The protocol for this study was approved by the Yale University Institutional Review Board.

Qualitative in-depth interviews were conducted via Zoom (Zoom Video Communications Inc., 2023) with 105 young adults (29.5% Abstainer [N = 31], 31.4% Escalator [N = 33], 13.3 % Decliner [N = 14], and 25.7% Persister [N = 27]). Trained interviewers followed a semi-structured interview guide that explored beliefs, attitudes, lived experiences, behaviors, and social influences related RWI/DWI from high school through young adulthood. The guide was informed by the Ecodevelopmental Theory (ET), a theoretical model that builds upon Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979, 1986) and developmental theory (Ford & Lerner, 1992; Sameroff, 1983; Sameroff & Chandler, 1975) with an emphasis on social interactions such as parental influence to describe complex social-developmental and environmental factors affecting adolescent health outcomes. (Lopez et al., 2009; Pantin et al., 2004; Perrino et al., 2000; Prado et al., 2009) explored parent-teen influences on driving and RWI/DWI. Interviews lasted approximately 35 minutes, were audio-recorded, and professionally and independently transcribed verbatim.

All analyses were conducted in Dedoose v9.0.9 (SocioCultural Research Consultants LLC, 2023) by a multidisciplinary team of eight investigators with expertise in young driver behavior, adolescent development, public health, addiction medicine, and injury epidemiology. The analysis consisted of a directed content analysis, which is a systematic process that includes a deductive approach to explore textual data for insights that align with the conceptual model and an inductive approach to identify emergent insights. (Hsieh & Shannon, 2005) First, the investigator team created a codebook with a priori deductive codes aligned with ET, the conceptual model that guided the overall study. Then investigators added inductive codes that emerged in a memoing process of the transcripts. This coding process continued until thematic saturation was reached, or no new codes emerged. (Saunders et al., 2018) Finally, a trained coder applied the final codebook to all the transcripts. The key mechanisms of data interpretation and theme development included data immersion (with coded data and transcripts), investigator reflexivity, and team dialogue during weekly team meetings. Study investigators maintained a detailed log of coding and analytic decisions. (Holloway & Galvin, 2017) For the current study, we present a qualitative analysis of the "Parental Monitoring" code data and focus on themes derived from young drivers who attended schools in rural and suburban areas when they were in 10th grade. Although not excluded, no participants from urban areas were selected into our purposeful sample.

2. RESULTS

Participant demographics are presented in Table 1. Two themes emerged around parental influences on RWI/DWI behaviors: Curfew (shared parental influence) and Parent Modeling of RWI/DWI (unique to rural).

2.1. Curfew:

In both rural and suburban areas, most participants described that their parents' driving rules reinforced safety measures outlined within graduated driving licensure laws, such as nighttime driving restriction: *"I think we couldn't drive past [9 o'clock] because the license itself had rules when you first get it for the year."* [Male Persister, Rural] Participants in both rural and suburban areas and across RWI/DWI trajectories also recalled strong parental messaging against RWI/DWI *"Don't ever drink and drive. You know, they made that clear."* [Male Abstainer, suburban] and to call them if needed: *"If you're gonna drink or if something happens, call me and let me know if you need anything."* [Female Escalator, Rural]. Of note, participants in both rural and suburban areas reported similar levels of parental monitoring (see Table 1). Participants also perceived that parents would assume they had NOT been drinking if they adhered to the curfew. Alternatively, participants perceived that their parents would discover they had been drinking if they were late (i.e., breaking curfew) or called their parents. Therefore, participants engaged in RWI/DWI to avoid this happening: *"My decision to drive home was like, I didn't want to admit to my parents that I've been drinking a bunch. And so I drove home to essentially hide that fact."* [Male Persister, Rural] There were few instances wherein participants recall calling their parent as an alternative to RWI. However, no participants used this option to avoid DWI.

3.2 Parent Modeling:

Unique to the rural context, many participants shared experiences wherein they were exposed to RWI/DWI from an early age through parents or other relatives: *"My mom would take us out to the movies, and she'd be drinking while we did that, or pretty much anything. It's kind of hard to like pinpoint it to when it first started happening, because I don't remember when it wasn't like that."* [Male Abstainer, Rural]. Some participants described how this exposure contributed to their own normative perceptions of RWI/DWI: *"My dad would drive us home. I mean, he was definitely intoxicated. So, after my experiences with my father, I never thought it was a big thing."* [Female Persister, Rural]; *"I'd seen my Dad drinking and drive so maybe I thought...it wasn't a big deal."* [Male Escalator, Rural]. Another participant described how it led him to largely (but not always) abstain from RWI/DWI: *"I grew up with a dad that drank and drove all times and most of the time if I was doing anything, I stayed where I was."* [Male Decliner, Rural]

4. DISCUSSION

We found that rural and suburban-residing parents shared similar expectations around curfews and DWI and their children reported similar levels of parental monitoring knowledge. However, youth indicated that parents perceived their adherence to the curfew as a sign of not drinking, thereby inadvertently increasing risk of DWI, suggesting

that parent messaging around RWI/DWI may need to specifically incorporate messaging around prioritizing safety over curfew. We also found that rural participants recalled parent modeling of DWI throughout their childhood. Although national epidemiological data suggest that rural and suburban areas have similar rates of binge drinking, alcohol use disorders, (Dixon & Chartier, 2016; Substance Abuse and Mental Health Services Administration, 2022) and crash fatalities related to alcohol (~30%), (National Center for Statistics and Analysis, 2022) our qualitative data suggest that parents in rural areas may be more likely to transport children/youth when they drive impaired. It is possible that children in rural areas potentially are exposed to RWI/DWI at younger ages than those in suburban areas, increasing the likelihood that rural youth perceive this behavior to be normative and acceptable once they reach adolescence. (Greene et al., 2018) Future research is needed to examine whether rural and suburban differences in parental perceptions of the acceptability DWI with their children as passengers, the ease of using alternative transportation options, and how parents monitor behaviors and enforce rules around RWI/DWI after they themselves have modeled RWI/DWI contribute to rural/suburban differences in youth RWI/DWI. Moreover, perceiving RWI/DWI as normative is likely to hinder intervention efforts in rural areas unless programs address adult modeling specifically.

Study limitations include use of a sample of young adult participants who self-report experiences of RWI/DWI behavior during high school and emerging adulthood, which is prone to social desirability, recall, and self-report bias. Participants were sampled from NEXT, which might limit the transferability of the findings to other populations, including those who do not have a history of previous research engagement. Although non-White individuals represent up to 20-30% of people in rural and suburban US counties, (Pew Research Center, 2018) few Black or Hispanic individuals were participants in the qualitative research portion of this mixed methods study and future research is needed to further describe parental monitoring phenomenon in the context of RWI/DWI in these populations. Nonetheless, our national sample of participants had diverse experiences with RWI/DWI as they were sampled from four trajectory classes of RWI/DWI identified initially from the NEXT study nationally representative sample for the quantitative analysis (i.e., latent class analysis yielding RWI/DWI trajectory classes). Due to the qualitative nature of the study, we cannot conclude whether the prevalence of parent DWI is higher or lower in rural or suburban contexts. Finally, it should be noted that these findings emerged from a secondary qualitative data analysis of a larger qualitative dataset whose purposeful sampling strategy included sampling by RWI/DWI trajectory class rather than urbanicity. Thus, although adolescents from urban schools were included in NEXT, our final sample did not include participants from urban contexts and there were fewer participants from suburban than rural contexts.

CONCLUSIONS

In summary, this novel study begins to characterize shared (curfews) and distinct (parent modeling) parental influences on RWI/DWI behaviors among rural and suburban youth. These findings highlight the strong influence of parent modeling on risk behaviors and that future RWI/DWI prevention research should focus on further understanding the generativity of RWI/DWI within families, including those who are Black and Hispanic.

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Highlights

- Riding with an impaired driver (RWI) and driving while impaired (DWI) pose serious risks to young drivers.
- This mixed methods study explored rural-suburban disparities in parent influences on youth RWI/DWI.
- Curfews are a shared parental influence on RWI/DWI among rural and suburban youth.
- Rural youth recalled parent modeling of DWI throughout their childhood.

Table 1.Characteristics of Qualitative Interview Participants by urbanicity in 10th grade

	RURAL N=73 (69.5%)	SUBURBAN N=32 (30.1%)
Age at time of qualitative interview, mean [SD]	26.37 [0.39]	26.15 [0.47]
Trajectory Class, n (%)		
Abstainer	22 (30.1)	9 (28.13)
Decliner	7 (9.6)	7 (21.9)
Escalator	23 (31.5)	10 (31.3)
Persister	21 (29.8)	6 (18.8)
Race/Ethnicity, n (%)		
Latino	2 (2.7)	2 (6.3)
Blacks	1 (1.4)	0 0
White	68 (93.2)	29 (90.6)
Another Race/Ethnicity	2 (2.7)	1 (3.1)
Parental monitoring score, * mean [SD]		
Father's parental monitoring	3.13 [0.69]	3.32 [0.19]
Mother's parental monitoring	3.64 [0.35]	3.67 [0.74]

* Calculated by averaging five items from a validated scale (Brown et al., 1993): how much parent knows about their: 1. friends, 2. spending, 3. free time, 4. whereabouts after school and 5. at night (Response options: 1=don't have/see father or mother/guardian; 2=doesn't know anything; 3=knows a little; and 4=he/she knows a lot).

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