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Environmental and Personality Risk Factors for Drinking and Driving in Youth

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Introduction

- Drinking and driving is a significant health risk behavior, particularly for adolescents (Hingson & Winter, 2003).
- Studies of youth drinking and driving have identified individual difference factors that alter the likelihood youth will drive after drinking.
- Impulsivity and sensation seeking are related to drinking and driving behaviors in both youth and adults (Ryb et al., 2006; Jonah, 1997).
- Environmental factors such as parental monitoring and alcohol availability have also been shown to predict youth drinking and driving behaviors (Bingham & Shope, 2004).
- Very little is known about mechanisms by which personality characteristics and aspects of the environment might contribute to youth drinking and driving behaviors.
- We tested an integrated model of disinhibited personality traits and environmental influences on youth drinking and driving.
- We tested three alternative models:
 - Additive model: Personality and environment make unique contributions to drinking and driving behaviors.
 - Indirect effects model: The influence of disinhibited personality traits on drinking and driving is mediated by aspects of the adolescent's environment.
 - Moderation model: Disinhibited personality traits influence drinking and driving only for youth who are able to obtain alcohol or who have low parental monitoring.

Method

Participants

- Time 1: 266 high school students recruited from local high schools in Columbia, Missouri.
- Time 2: 76% ($n = 202$) of participants were followed-up approximately 8 months later.
- No differences were observed between study attriters and completers on gender, age, drinking and driving, and most alcohol use measures.

- Study attriters were more likely to be African American and to be current drinkers at Time 1.
- Final Sample
 - 85% Caucasian, 8% African American, and 7% other ethnicities.
 - Average age = 16.15, $SD = 1.00$, range = 13-18.
 - 67% female.
- At Time 2:
 - 19% were Non-Drivers.
 - 25% were Recently Licensed Drivers.
 - 55% were Established Drivers.

Measures

- Demographics.
- Alcohol Use. Past month quantity, frequency, and frequency of heavy drinking.
- Driving Behavior. Current driver's license (yes/no), times unsupervised driving.
- Parental Monitoring. Youth self-reported rating of parental knowledge of youth behavior.
- Alcohol Availability. Youth perception of ease of obtaining alcohol.
- Sensation Seeking and Impulsivity. Assessed by the Zuckerman-Kuhlman Personality Questionnaire in true/false format.
- Drinking and driving behavior (DD). Past year (Time 1) and 3 month (Time 2) frequency.
- Riding with a drinking driver (RWDD). Past year (Time 1) and 3 month (Time 2) frequency.

Procedure

- Participants were recruited through fliers distributed at local high schools and posted in the community.
- Questionnaires, study information, and consent forms were mailed to participants.
- Participants were followed up 8 months later.
- Youth received a gift certificate for \$20 for completion of each assessment.

Analytic Strategy

- Zero-inflated Poisson models were used for all analyses. These models separately consider two dependent variables:
 - Poisson Regression: dependent variable is a count variable for individuals able to assume values of zero and above.
 - Logistic Regression: a binary latent variable of whether the behavior is engaged in or not.
- Models were run separately for DD and RWDD.
- All analyses controlled for time 1 alcohol use, sex, and drinking and driving behaviors.

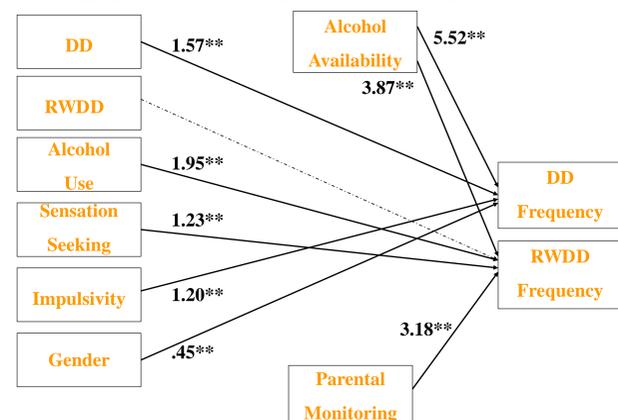
Results

- Preliminary analyses tested whether study variables predicted drinking and driving behaviors, over and above control variables.

Time 1	Drinking and Driving		Riding with a Drinking Driver	
	OR	PR	OR	PR
Sensation Seeking	.70	2.34**	1.78**	1.72**
Impulsivity	.53	1.28**	1.03	1.85
Alcohol Availability	.22	11.27**	1.70	4.07**
Parental Monitoring	1.48	2.87**	.86	3.66**

* $p < .05$; ** $p < .01$

- Sensation seeking, alcohol availability, and parental monitoring were associated with frequency of drinking and driving and riding with a drinking driver.
- Impulsivity was related to frequency of drinking and driving.
- Only sensation seeking was associated with engagement in riding with a drinking driver.



- We then tested a model with all study variables as predictors of frequency of drinking and driving and riding with a drinking driver (see Figure 1).
- Impulsivity and alcohol availability were uniquely associated with drinking and driving.
- Sensation seeking, alcohol availability, and parental monitoring were significantly associated with riding with a drinking driver.

Indirect Effects Model

- Sensation seeking was modestly correlated with potential mediators: alcohol availability ($r = .16$, $p < .05$) and parental monitoring ($r = .18$, $p < .05$).
- Poisson regression coefficients for sensation seeking did not change when mediators were added to the model.
- Results did not support mediation.

Interaction Model

- Impulsivity
 - Significant interactions with both alcohol availability and parental monitoring.
 - Impulsivity was more strongly associated with frequency of riding and driving after drinking for youth with low parental monitoring and high alcohol availability.
- Sensation seeking
 - Significant interactions with alcohol availability and parental monitoring for riding with a drinking driver.
 - Significant interaction with alcohol availability for drinking and driving.

Discussion

- Disinhibited personality traits and environmental factors are unique influences on drinking and driving behaviors.
- Sensation seeking and impulsivity were stronger predictors of drinking and driving behaviors for youth who were able to obtain alcohol or who had low levels of parental monitoring.
- Differences were observed in what factors predicted drinking and riding after drinking. Impulsivity was related to the decision to drink and drive, where as sensation seeking was related to riding with a drinking driver.
- Future studies could explore other potential mediators. For example, peer factors might mediate the influence of sensation seeking on riding with a drinking driver.