

'I Should Have Known Better': Adolescent Decision-Making, Alcohol Use, and Delinquency

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Abstract

Prior research indicates that young people who engage in thoughtful and reflective decision-making (TRDM) are less prone to criminal and delinquent behavior, although certain factors (e.g., stress, lack of sleep) can undermine the crime preventive effect of TRDM. We build on this research by examining the possibility that adolescent alcohol use may also undermine the relationship between TRDM and youth crime. Drawing on data from a nationally representative sample of adolescents, we conduct negative binomial regression analyses and test for interaction effects between TRDM and alcohol use.

Keywords

decision-making, adolescents, alcohol use, crime, delinquency, thoughtful and reflective decision-making

Introduction

Juvenile crime continues to pose significant social and public health challenges in the United States (Stevens et al., 2020; Weber & Lynch, 2021). Although juvenile crime is believed to be a product of numerous risk factors operating in multiple life domains (Kubrin et al., 2009; Wojciechowski, 2018), one line of research seeks to better understand the complex decision-making processes that make young people more or less susceptible to negative influences and, ultimately, risky behavior. Based on their extension of rational choice theory, Paternoster and Pogarsky (2009) highlight the role of thoughtful and reflective decision-making (TRDM). They

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argue that young people who are thoughtfully reflective in their decision-making are more likely to enjoy favorable life outcomes and exhibit a reduced likelihood of criminal engagement.

Notably, the stage of adolescence is characterized by heightened vulnerability, during which individuals undergo several developmental changes, such as changes in cognitive control, reasoning, performance monitoring, and problem-solving (Steinberg, 2008; Timmer et al., 2022). These developmental changes have consequences for later participation in risky behavior. Yet, as predicted by Paternoster and Pogarsky (2009), empirical studies indicate that the capacity for TRDM serves as a protective factor against risky behavior during adolescence (Maimon et al., 2012; Paternoster et al., 2011; Timmer et al., 2021, 2022). These findings should be of interest to practitioners and policy makers, as they are understandably interested in promoting the development of healthy decision-making among the nations' youth.

Research in this area is limited, however, and there is a need for a more complete understanding of the factors that may support or undermine the crime preventive effect of TRDM. For instance, recent research indicates that certain factors, such as stress and lack of sleep, can weaken the crime preventive effect of TRDM (Timmer et al., 2021). These findings have possible implications for delinquency prevention, as they suggest the need to attend holistically to the larger context in which young people make choices. That is, attention should not focus solely on young people's capacity for TRDM. Rather, attention should also focus on the social, personal, and situational circumstances that support or undermine the benefits of TRDM.

In the current study, we examine the possibility that alcohol use may be one additional factor that weakens the crime preventive effect of TRDM. As with depression or lack of sleep (Timmer et al., 2021), alcohol use may disarm the controlled and deliberate mode of cognitive processing that is crucial to thoughtful decision making. This may be the case even among youth who perform TRDM at a high level and who, in the absence of alcohol, would benefit from its crime preventive effect. The role that alcohol may play in this regard warrants examination given that it is widely consumed by young people. Indeed, alcohol is the most widely used psychoactive substance among youth. By the end of high school, most adolescents have experimented with alcohol, with binge drinking being a common pattern of consumption (Miech et al., 2021). Further, given the deleterious effects of alcohol on health and well-being (Marshall, 2014; Tapert & Ebersohn-Shumate, 2022), and given consistent empirical support for an association between alcohol use and crime/delinquency (Barnes, 1984; Carpenter, 2007; Swahn et al., 2004), adolescent drinking is a logical target for prevention and intervention efforts (Chung et al., 2018; Sánchez-Puertas et al., 2022).

To explore the possible interactive effects between TRDM and alcohol use, we examine longitudinal data from a national survey of adolescents. Specifically, we examine the possibility that adolescent alcohol consumption moderates the effect of TRDM on offending behavior. Before turning to the data and analyses, we discuss the relevant research on TRDM and alcohol consumption in greater detail.

Theoretical Framework

Thoughtfully Reflective Decision-Making and Crime

Paternoster and Pogarsky (2009) established the concept of thoughtfully reflective decision-making (TRDM), which involves a process of implementing logical and methodical reasoning before, during, and after a decision. Individuals who engage in TRDM accumulate relevant information regarding a problem, think consciously and rigorously about possible solutions to the issue, employ reasoning and interpretation of alternative solutions, and reflect on the decision's outcome to acquire knowledge of its costs and benefits (Paternoster & Pogarsky, 2009). As a

result, those who can effectively perform TRDM are more likely to engage in prosocial activities, such as scholastic pursuits, and have improved health, while refraining from criminogenic and deviant activities (Paternoster et al., 2011; Paternoster & Pogarsky, 2009; Timmer & Jacobsen, 2023). At the same time, researchers emphasize how the decision-making process among individuals may vary over time or across contexts, as the functioning of TRDM may depend on various circumstances (Paternoster et al., 2011; Paternoster & Pogarsky, 2009).

Empirical Evidence on TRDM, Contingencies, and Crime

Previous empirical studies have highlighted the significance of thoughtful and deliberate thinking in understanding criminal behavior. For instance, studies that utilized the National Longitudinal Study of Adolescent to Adult Health data concluded that TRDM had a protective effect against general delinquency and property crime among youth (Paternoster et al., 2011; Paternoster & Pogarsky, 2009; Timmer et al., 2021, 2022). Louderback and Antonaccio (2017) explored the effect of TRDM on other outcomes, finding that individuals who were more thoughtful and reflective in their choices were less likely to commit cybercrimes and become victims of the same type of crime in comparison to those with low levels of TRDM.

Whereas recent studies have demonstrated a link between TRDM and crime, few attempts have been made to examine how the effect of TRDM may be conditioned by other variables. Among the few studies investigating conditioning factors, Timmer and colleagues (2021) discovered that the impact of thoughtful and reflective decision-making on delinquency was contingent upon several conditions, such as stressful circumstances, negative mental states, and adverse physical states during adolescence. Specifically, among youth who experienced higher levels of stress, depression, and sleep problems, the crime preventive effect of TRDM was significantly reduced (Timmer et al., 2021). In a more recent study, Timmer et al. (2024) found that the crime protective influence of TRDM was more pronounced among youth with stronger moral beliefs (Timmer et al., 2024). Focusing on a school context, Maimon et al. (2012) revealed that the influence of TRDM on adolescent violence was stronger in schools with relaxed sanctions compared to those with punitive disciplinary environments. In all, more research is needed to understand how conditioning factors shape the TRDM-delinquency relationship.

One possible conditioning factor that is ripe for investigation involves alcohol use. As described earlier, alcohol plays a prominent role in adolescent crime and delinquency. Alcohol appears to be related to crime and delinquency, in part, as a result of its *direct* effects on decision-making and risky behavior. But as suggested below, alcohol may also play an interactive or *conditioning* role by disrupting the link between an individual's ability for TRDM and offending behavior. To our knowledge, such a link has yet to be investigated.

Does Alcohol use Condition the Effect of TRDM on Delinquency?

The relationship between alcohol and delinquency may be due, in part, to alcohol's direct effects on decision-making. Alcohol use is associated with impairments in executive functioning and may facilitate crime and violence by reducing self-awareness and self-control, including the ability to monitor one's own behavior (Baumeister et al., 1994). Examples of such direct effects are most clearly seen in research on the long-term effects of heavy alcohol use, in which chronic alcohol abuse leads to lasting problems with memory, concentration, and other executive functions and, hence, a lower capacity for effective decision-making and problem solving (Allen et al., 1997; Nasrallah et al., 2009; Tapert & Ebersson-Shumate, 2022). Yet, in addition to its direct deleterious

effects on decision-making ability, it is possible that alcohol use may impact behavior in a more subtle, interactive manner. Alcohol use may weaken the inhibiting effects of TRDM on offending behavior—even among individuals who, ordinarily, perform TRDM at a high level.

To understand how this may occur, it is helpful to review previous arguments in greater detail. As described by [Timmer et al. \(2021, p. 965\)](#), “TRDM can be conceptualized as an example of the cool mode of [information] processing as it involves deliberation and thoughtful reflection at each stage of making decisions, which requires considerable cognitive effort.” Whereas the cool mode is sensitive to costs and benefits and is attuned to future consequences, dual process theorists highlight the simultaneous existence of a “hot mode” of information processing that is associated with feelings, emotions, and immediate concerns, and that is largely unresponsive to rational choice considerations. When the hot mode of processing is activated, it can disrupt cool mode processing, making it difficult for individuals to translate rational thoughts into action ([Loewenstein, 1996](#); [Van Gelder, 2013](#)). Consistent with dual process theories, [Timmer et al. \(2021\)](#) hypothesized that adverse experiences are likely to trigger the hot mode of processing, thereby disarming the cool mode and serving to inhibit “the effective linkages between the ability of individuals to analyze thoughtfully when making decisions and avoidance of different delinquent behaviors” ([Timmer et al., 2021, p. 967](#)).

Alcohol use may be one additional factor that, likewise, disarms the cool mode of information processing and thereby reduces the inhibiting effect of TRDM on delinquency. Consistent with this possibility, certain dual-process theorists argue that alcohol consumption disrupts the controlled and deliberate mode of cognitive processing ([Moss & Albery, 2009](#); see also [Bernheim & Rangel, 2004](#)). As a result, the behavior of intoxicated individuals becomes more susceptible to uncontrolled, automatic, or habitual “hot mode” processing. Consequently, the “regulatory control functions are weakened” among intoxicated individuals, leading them to develop a myopic focus on the most salient and easy-to-process cues in social situations, which can impede their ability to interpret ambiguous cues and can influence how they react to provocation ([Moss & Albery, 2009, p. 524](#)). They also become less sensitive to future consequences and display a heightened level of reckless behavior (see also [Bushman, 1997](#); [Bushman et al., 2012](#); [Giancola, 2000](#); [Steele & Josephs, 1990](#)).

In addition to the acute (situational) effects of alcohol, there are at least two reasons to believe that alcohol consumption—especially heavy consumption—may have lingering effects on information processing. First, bouts of heavy drinking tend to be followed by hangover symptoms, which include headache, fatigue, and negative mood. These disturbances often continue into the following day and may spill over into other life domains such as the family or school ([Scholey et al., 2019](#)). These hangover-related negative mood states may also trigger the hot mode of information processing and thereby disarm the cool mode. Second, alcohol researchers speculate that a regular pattern of binge drinking may have enduring effects on the brain, increasing the sensitivity of individuals to “hot mode” triggers ([Blanco-Ramos et al., 2019](#); [Lannoy et al., 2014](#)).

In summary, there is ample evidence to suggest that alcohol consumption may disrupt or disarm the cool and deliberate mode of information processing, especially at higher levels of consumption. Further, heavy bouts of drinking may have lingering, and even enduring, disruptive effects on cool mode processing. Thus, as with stress or depression, alcohol intake may therefore inhibit the usual linkage between the ability of individuals to analyze thoughtfully and reflectively when making decisions and the avoidance of risky behavior.

If this is the case, then, in addition to any direct effects of alcohol, we would expect alcohol use to condition the effect of TRDM on offending behavior. Adolescents who typically engage in TRDM should display a tendency to refrain from criminal and delinquent behavior. But in the context of alcohol use, we would expect the inhibiting effect of TRDM to be weakened, given the

tendency of alcohol to disarm the cool mode of information processing. Existing research suggests that the disruptive effects of alcohol (including acute and lingering effects) are most evident at higher levels of alcohol consumption (Bartholow et al., 2012; Moss & Albery, 2009; Scholey et al., 2019), so an interaction effect of this type may be most likely in the context of heavy drinking, especially regular heavy drinking.

Present Study

This study aims to fill a gap in the literature by assessing how thoughtful and reflective decision-making interacts with adolescent alcohol use to influence delinquency. We follow the same approach that has been used successfully in previous research on TRDM and related contingencies (Timmer et al., 2021). Specifically, by assessing how alcohol use interacts with TRDM, we will be able to increase our understanding of the conditions that support or undermine the crime preventive effects of deliberate decision-making. Prior research suggests that the propensity of alcohol to disrupt the cool mode of processing may vary according to different patterns of alcohol intake (Bartholow et al., 2012; Moss & Albery, 2009; Scholey et al., 2019); therefore, we focus on three different aspects of alcohol use, namely alcohol use frequency, binge drinking, and drunkenness levels, and examine how they condition the relationship between TRDM and criminal behavior among youth.

Overall, this study tests the following hypotheses:

H1: Young people who engage in a high level of TRDM will exhibit relatively low levels of criminal and delinquent behavior.

H2: The crime protective effects of TRDM will be reduced among youth who use alcohol more frequently.

H3: The crime protective effects of TRDM will be reduced among youth who experience higher levels of drunkenness.

H4: The crime protective effects of TRDM will be reduced among youth who engage in more frequent binge drinking.

Methods

Data

The first two waves of Add Health data, a nationally representative longitudinal study of adolescents in grades 7-12, were used in this study. During Wave I (1994–1995), adolescents were randomly selected from 132 schools in the United States and interviewed about their personalities, behaviors, attitudes, schools, friends, and other relevant aspects. Reports from Wave I in-school, in-home, and primary caregiver surveys were utilized to establish our independent, conditioning, and control variables, and Wave II in-home student surveys, which were collected one year later, were used to create our dependent variable.

We utilized respondents' reports who had valid Add Health sample weights and had no missing data on our dependent variable (delinquency at Wave II), which is consistent with the guidelines for using Add Health data and other studies (Chantala, 2006; Maimon et al., 2012; Timmer et al., 2021, 2022). The appropriate sample-attrition weight provided with the data was used to control for non-response and sample attrition between the two waves (Chantala, 2006; Laursen et al., 2011, p. 155). In all our models, Wave II sample weights were included to account for sample clustering and oversampling of particular social groups. As only about 8% of observations had

missing data on specific predictors in our resulting sample, listwise deletion was used with a final sample of 12,496 adolescents (Allison, 2001).

Measures

Dependent Variable (Wave II). An additive delinquency index derived from the in-home survey during Wave II was used in this study, which is consistent with prior research utilizing Add Health data (Demuth & Brown, 2004; Hoffmann, 2018; Kort-Butler, 2017; Timmer et al., 2021, 2022). The index comprises 12 survey items that examine violent and property crime involvement in the past year (see Appendix Table 1 for the list of survey items). Higher scores on the delinquency index indicate a greater degree of engagement in delinquent activities ($\alpha = .82$).

Independent Variables (Wave I)

TRDM. Thoughtfully reflective decision-making (TRDM) is the corresponding four-item index used by Paternoster and Pogarsky (2009) in their initial assessment of the concept. Our TRDM scale is composed of participants' agreement levels with statements that examine all four components of TRDM: intentionality, forethought, self-reactiveness, and self-reflectiveness (see Appendix Table 1 for the list of survey items). The items were added together, with higher values representing higher levels of TRDM ($\alpha = .74$). Respondents who obtain high scores on the TRDM scale indicate that, when making decisions or attempting to solve problems, they usually (1) try to collect as many relevant facts as possible, (2) think of different approaches, (3) compare alternatives, and (4) after making decisions, they usually analyze "what went right and what went wrong."

Alcohol use Variables. First, we included the item of alcohol use frequency, which was measured by asking respondents the number of days they drank alcohol over the past 12 months. Responses were recorded to range from 0 = never to 6 = every day or almost every day. Similar items were used in prior literature on adolescent alcohol use (Balsa et al., 2010; Marshal et al., 2008; Mogro-Wilson, 2008). Further, following prior literature on binge drinking (Marshal et al., 2008; Shin et al., 2009; Tucker et al., 2012), we used an item asking adolescents how many days in the past 12 months they had five or more drinks in a row. Responses were recoded to range from 0 = never to 6 = every day or almost every day. Finally, adolescents were asked about how many days in the past 12 months they have gotten drunk or 'very high' on alcohol. Responses were recoded to range from 0 = never to 6 = every day or almost every day (see Marshal et al., 2008; Mogro-Wilson, 2008; Rees et al., 2001 for similar items).

Control Variables

Sociodemographic Factors. We utilized important sociodemographic characteristics of youth and their caregivers. They are adolescent gender (1 = female), age (in years), and race/ethnicity (White/non-Hispanic [reference group], Black/non-Hispanic, Latinx, Asian/Pacific Islander, American Indian and other race/ethnicity). We further included a family structure binary variable reflecting whether adolescents reside with two biological parents (1 = lives with two biological parents"; 0 = another situation), parents' educational achievement with responses ranging from 1 = did not graduate high school or did not complete a GED to 5 = got professional training beyond a four-year college or university, and whether respondents' caregivers received any kind of public assistance in the past year (1 = yes; 0 = no).

Informal Social Control. Similar to prior research (Maimon et al., 2012; Nagin & Pogarsky, 2001; Timmer et al., 2021), we included several factors representing important informal social influences in adolescents' lives as control variables. Parental attachment was assessed through a four-item index that included responses to questions: "How close do you feel to your mother/father?" and "How much do you think your mother/father cares about you?" The responses for these items ranged from 1 = not at all to 5 = very much ($\alpha = .72$) and were summed to reflect parental attachment with higher scores representing stronger attachment to parents. The measure of attachment to school was examined by utilizing three questions that ask about the respondents' level of agreement with the statements: "I feel close to people at school," "I feel like I am a part of this school," and "I am happy to be at this school." The responses were recoded to range from 1 = strongly disagree to 5 = strongly agree and were included in an additive index, with higher scores indicating stronger school attachment ($\alpha = .77$).

Self-Control. To help isolate the effects of TRDM, we control for self-control in the analyses. We utilized a measure of self-control that, consistent with Hirschi's (2004) redefinition of self-control, captures the inclination to consider the full range of consequences of one's actions (see also Paternoster et al., 2011; Timmer et al., 2021, 2022). Specifically, youth were asked to evaluate the extent to which they agree with the following statement: "When making decisions, you usually go with your "gut feeling" without thinking too much about the consequences of each alternative?". Responses ranged from 1 = strongly agree to 5 = strongly disagree, with higher scores indicating higher levels of self-control.

Other Control Variables. We followed previous research examining the impact of TRDM on delinquent behavior (Maimon et al., 2012; Paternoster & Pogarsky, 2009; Timmer et al., 2021) to adjust our models for delinquent opportunities and prior delinquent involvement. Delinquent opportunities were represented by a measure of the frequency of respondents hanging out with their friends with responses ranging from 0 = "not at all" to 3 = "five or more times". Finally, we controlled for past delinquency, which was constructed using the Wave 1 delinquency items that duplicate the 12 violence and property offenses items reported in Wave II ($\alpha = .83$).

Analytic Strategy

Following prior research on adolescent delinquency using Add Health Data (Timmer et al., 2021, 2022), we conducted non-linear negative binomial regression models. This strategy is appropriate given our delinquency index is a variable with overdispersed distribution/skewness resembling or approximating counts (Osgood, 2000). We mean-centered our predictors of interest (i.e., TRDM and alcohol use measures) prior to constructing multiplicative interaction terms to reduce multicollinearity and facilitate interpretation of coefficients. In all models, variance inflation factors were below the value 2, which ruled out multicollinearity issues. Finally, all models adjust for Wave II sample weights to account for design used in Add Health study including data clustering by schools and oversampling.

Results

Table 1. Descriptive Statistics.

Variables	Mean ^a	SD	Min	Max
Delinquency (wave II)	1.845	3.370	0	36
TRDM	.000	2.517	–11.210	4.790
Alcohol use frequency	.000	1.402	–.993	5.007
Drunkenness	.000	1.232	–.577	5.423
Binge drinking	.000	.417	–.659	3.529
Past delinquency (wave I)	2.492	3.854	0	36
Age	15.047	1.611	11	20
Gender (1 = female)	.500	.500	0	1
White (ref)	.663	.473	0	1
Black non-Hispanic	.147	.354	0	1
Latinx	.118	.322	0	1
Asian/Pacific Islander	.037	.190	0	1
American Indian	.025	.155	0	1
Other	.011	.104	0	1
Lives with two biological parents	.563	.496	0	1
Self-control	2.979	1.121	1	5
Unstructured socializing	2.000	.999	0	3
Parental attachment	9.292	1.090	2	10
Attachment to school	11.337	2.574	3	15
Parent education	2.974	1.205	1	5
Parent public assistance	.100	.300	0	1

^aWeighted means are shown.

Table 2. Negative Binomial Regression Coefficients Representing the Direct Effects of TRDM, Alcohol Use Frequency, Drunkenness, and Binge Drinking on Delinquency ($N = 12,496$).

Predictors	Model 1		Model 2		Model 3		Model 4	
	B (SE)	IRR	B (SE)	IRR	B (SE)	IRR	B (SE)	IRR
TRDM	-.022* (.009)	.978	-.021* (.009)	.979	-.022* (.009)	.978	-.022* (.009)	.978
Alcohol use frequency			.104*** (.014)	1.110				
Drunkenness					.086*** (.017)	1.090		
Binge drinking							.071*** (.014)	1.074
Past delinquency	.179*** (.006)	1.196	.167*** (.006)	1.181	.170*** (.006)	1.186	.172*** (.006)	1.188
Age	.260 (.238)	1.297	.231 (.250)	1.260	.253 (.245)	1.287	.271 (.246)	1.311
Age ²	-.012 (.008)	.989	-.011 (.008)	.989	-.012 (.008)	.988	-.012 (.008)	.988
Female	-.326*** (.047)	.722	-.346*** (.047)	.708	-.336*** (.047)	.715	-.331*** (.047)	.718
Black non-Hispanic	-.072 (.064)	.930	-.030 (.065)	.970	-.047 (.065)	.954	-.046 (.065)	.955
Latinx	.183*** (.060)	1.201	.207*** (.061)	1.230	.201*** (.060)	1.222	.197*** (.061)	1.217
Asian/Pacific Islander	-.101 (.114)	.904	-.040 (.119)	.961	-.063 (.117)	.939	-.067 (.116)	.935
American Indian	.189 (.101)	1.208	.208* (.104)	1.231	.203 (.103)	1.225	.194 (.102)	1.215
Other race/ethnicity	-.069 (.151)	.934	-.049 (.156)	.952	-.055 (.154)	.947	-.053 (.153)	.948
Two biological parents	-.202*** (.041)	.817	-.190*** (.041)	.827	-.191*** (.041)	.826	-.195*** (.042)	.823
Self-control	-.056** (.017)	.946	-.048*** (.017)	.953	-.051*** (.017)	.950	-.051*** (.017)	.950
Unstructured socializing	.113*** (.022)	1.119	.095*** (.022)	1.100	.101*** (.022)	1.106	.103*** (.022)	1.109
Parental attachment	-.042* (.017)	.959	-.037* (.017)	.964	-.039* (.016)	.962	-.040* (.017)	.961
Attachment to school	-.013 (.008)	.987	-.008 (.008)	.992	-.010 (.008)	.990	-.010 (.008)	.990
Parent education	-.035 (.022)	.966	-.039 (.022)	.962	-.037 (.022)	.964	-.035 (.022)	.965
Parent public assistance	-.093 (.062)	.911	-.079 (.061)	.924	-.088 (.060)	.916	-.094 (.060)	.910

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed); the figures shown are unstandardized coefficients, robust standard errors (in parentheses), and incident rate ratios.

Table 3. Negative Binomial Regression Coefficients Representing the Interaction Effects Between TRDM, Alcohol Use Frequency, Drunkenness, and Binge Drinking on Delinquency ($N = 12,496$).

Predictors	Model 1		Model 2		Model 3	
	B(SE)	IRR	B(SE)	IRR	B(SE)	IRR
TRDM	-.022* (.009)	.979	-.023* (.009)	.977	-.024* (.009)	.976
Alcohol use frequency	.107*** (.014)	1.113				
TRDM x alcohol use frequency	.007 (.005)	1.007				
Drunkenness			.092*** (.017)	1.097		
TRDM x drunkenness			.014* (.006)	1.014		
Binge drinking					.077*** (.014)	1.081
TRDM x binge drinking					.017** (.005)	1.017
Past delinquency	.167*** (.006)	1.182	.171*** (.006)	1.186	.172*** (.006)	1.188
Age	.230 (.250)	1.258	.252 (.246)	1.287	.272 (.246)	1.313
Age ²	-.011 (.008)	.989	-.012 (.008)	.988	-.012 (.008)	.988
Female	-.345*** (.047)	.708	-.334*** (.047)	.716	-.327*** (.047)	.721
Black non-Hispanic	-.028 (.065)	.972	-.046 (.065)	.955	-.045 (.066)	.956
Latinx	.208*** (.061)	1.231	.201** (.060)	1.223	.200** (.060)	1.222
Asian/Pacific Islander	-.037 (.118)	.964	-.060 (.117)	.942	-.063 (.116)	.939
American Indian	.211* (.105)	1.235	.208* (.104)	1.231	.199 (.103)	1.220
Other	-.049 (.156)	.952	-.053 (.153)	.949	-.055 (.153)	.946
Two biological parents	-.188*** (.041)	.828	-.191*** (.041)	.826	-.195*** (.041)	.823
Self-control	-.048** (.017)	.953	-.052** (.017)	.950	-.051** (.017)	.950
Unstructured socializing	.096*** (.022)	1.101	.101*** (.022)	1.107	.105*** (.022)	1.110
Parental attachment	-.037* (.017)	.964	-.038* (.017)	.963	-.039* (.017)	.962
Attachment to school	-.009 (.008)	.991	-.010 (.008)	.990	-.010 (.009)	.990
Parent education	-.039 (.022)	.962	-.037 (.022)	.964	-.035 (.022)	.966
Parent public assistance	-.075 (.062)	.927	-.084 (.061)	.919	-.088 (.062)	.916

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed); the figures shown are unstandardized coefficients, robust standard errors (in parentheses), and incident rate ratios.

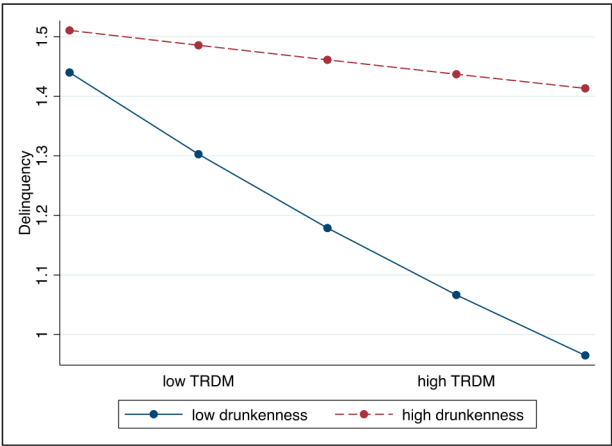


Figure 1. The influence of TRDM on delinquency at different levels of drunkenness.

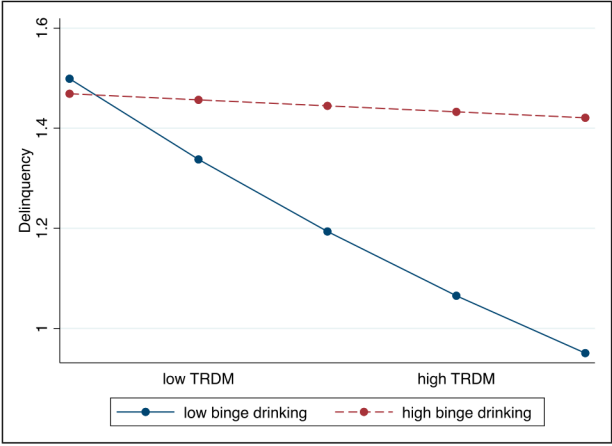


Figure 2. The influence of TRDM on delinquency at different levels of binge drinking.

Appendix

Table AI. Survey Items Used for Measuring Independent and Dependent Variables.

Wave II delinquency survey items	Response categories
<i>In the past 12 months how often did you...</i>	0 = never
1) Paint graffiti of signs on someone else's property or in a public place?	1 = 1 or 2 times
2) Deliberately damage property that didn't belong to you?	2 = 3 or 4 times
3) Take something from a store without paying for it?	3 = 5 or more times
4) steal something worth less than \$50?	
5) steal something worth more than \$50?	
6) go into a house or building to steal something?	
7) drive a car without the owner's permission?	
8) sell marijuana or other drugs?	
9) get in a serious physical fight?	
10) hurt someone bad enough to need bandages from a doctor or nurse?	
11) use or threaten to use a weapon to get something from someone?	
12) take part in a fight where a group of your friends was against another group?	
Wave I TRDM Survey Items	Response categories
<i>Please, tell me whether you agree or disagree with each of the following statements</i>	1 = strongly disagree
1) "When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible"	2 = disagree
2) "When you are attempting to find a solution to a problem, you usually try to think of as many different approaches to the problem as possible"	3 = neither agree nor disagree
3) "When making decisions, you generally use a systematic method for judging and comparing alternatives"	4 = agree
4) "After carrying out a solution to a problem, you usually try to analyze what went right and what went wrong"	5 = strongly agree

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