Delinquency and alcohol-impaired driving among young males: A longitudinal study ☆

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ABSTRACT

The present study assessed how the trajectory of delinquency affects the growth curve of alcohol-impaired driving using three-waves of data collected from the Buffalo Longitudinal Survey of Young Men (BLSYM). Using the structural equation modeling method, latent growth modeling was utilized to assess four age cohorts of sixteen, seventeen, eighteen, and nineteen years of age at the first wave. The data indicated that the growth rate of delinquency significantly and positively affects the growth rate of alcohol-impaired driving for the respondents who were sixteen at the first wave. The growth rate of drinking was also significantly and positively associated with the growth rate of alcohol-impaired driving for this age cohort. Although the growth rate of delinquency had no significant effect on the growth rate of alcohol-impaired driving for the age cohort which was seventeen at Wave 1, the growth rates of both drinking and drug use did affect for this age cohort. The data, however, showed that alcohol-impaired driving had a significant increase across the waves for the eighteen year old cohort, but there was no significant variation in the rate across respondents. Finally, for the nineteen year old cohort there was no significant increase in alcohol-impaired driving across the waves, and also no significant variation of the growth rate of alcohol-impaired driving across the respondents. These findings indicated that interventions focused on reducing delinquency, alcohol and drug use by sixteen and seventeen year old male adolescents will also reduce their alcohol-impaired driving.

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Introduction

Alcohol-impaired driving is a major social problem in the United States. Although traffic fatalities in alcohol-impaired-driving crashes have been declining since the 1990s, the nation still has serious work to do to meet the national health objective for 2010 (Paulozzi & Patel, 2004). According to the National Highway Traffic Safety Administration (2008a), a total of 12,998 people were killed in alcohol-impaired-driving crashes in 2007. These alcohol-impaired-driving fatalities accounted for 32 percent of the total motor vehicle traffic fatalities in the United States and represented an average of one alcohol-impaired-driving fatality every forty minutes.

Data also indicated that young drivers are overrepresented in these alcohol-impaired-driving fatalities. The National Highway Traffic Safety Administration (2008b) reported that in 2007, the highest percentage of drivers in fatal crashes who had a BAC level of .08 or higher was for drivers at ages twenty-one to twenty-four

(35 percent), followed by those at ages twenty-five to thirty-four (29 percent). In 2007, 13 percent (6,982) of all drivers involved in fatal crashes (55,681) were young drivers at ages fifteen to twenty years old, and 15 percent (1,631,000) of all drivers involved in police-reported crashes (10,524,000) were young drivers.

For the same age group, 31 percent of the drivers who were killed in motor vehicle crashes during 2007 had been drinking. It is well known that motor vehicle crashes are the leading cause of death among young people. In 2007, a total of 3,174 fifteen-to twenty-year-old drivers were killed and an additional 252,000 were injured in motor vehicle crashes. Also, there were 202.8 million licensed drivers in the United States in 2006 (2007 data not available). Young drivers, between fifteen and twenty years of age, accounted for 6.4 percent (13.0 million) of the total, a 7.2-percent increase from the 12.1 million young drivers in 1996 (National Highway Traffic Safety Administration, 2008b).

Although alcohol-impaired driving is still a serious concern, especially a concern with young people, the dynamics and trajectory of alcohol-impaired driving among young people remains unclear (Bingham & Shope, 2004a, 2004b; O'Malley & Johnson, 2007). Building upon previous literature on adolescent problem behaviors

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and alcohol-impaired driving, the present study explored how the trajectory of delinquency is associated with the growth curve of alcohol-impaired driving among young males using data collected from the Buffalo Longitudinal Survey of Young Men (BLSYM).

Research context

Although alcohol-impaired driving among adolescents is commonly considered as a type of delinquent act, it has different developmental trajectory. Studies indicated that alcohol-impaired driving is highest among persons at ages twenty-one to twenty-four and the percentage of fatal crashes that are alcohol-related is also highest in this age group (Hingson & Winter, 2003; National Highway Traffic Safety Administration, 2008b; Usdan, Moore, Schumacher, & Talbott, 2005; Williams, 2006). In contrast, the age curve of delinquency shows that the rate of delinquency begins rising at ages thirteen to fourteen, peeks at about age eighteen, and then declines sharply as adolescents enter into adulthood (Blumstein, Cohen, & Farrington, 1988; Farrington, 1986; Flanagan & Maguire, 1990; Hirschi & Gottfredson, 1983; Wolfgang, Figlio, & Sellin, 1972). When comparing these different developmental trajectories in alcohol-impaired driving and delinquent acts, a key research question is: "does an adolescent's trajectory of delinquent acts affect his trajectory of alcohol-impaired driving?"

A few theories of crime and deviance provide discussions of alcohol-impaired driving and other problem behaviors among adolescents (Donovan, 1993; Gottfredson & Hirschi, 1990; Jessor, Turbin, & Costa, 1997; Shope & Bingham, 2002). They believe that alcohol-impaired driving is part of the whole problem behavior syndrome among adolescents, but it is a distinct type of delinquent act. For example, problem behavior theory assumes that adolescent problem behaviors co-occur within individuals which leads to a behavioral syndrome during the transition from adolescence to adulthood (Donovan, 1993; Jessor, Turbin, & Costa, 1997; Shope & Bingham, 2002). Another example is the self-control theory which posits that alcohol-impaired driving is one of the multiple manifestations of a general construct – low self-control (Gottfredson & Hirschi, 1990). Such illegal behavior can be connected with other problem behaviors among adolescents because they share a common cause.

Building upon these theories, several empirical studies had assessed adolescent problem behaviors and the risk of alcohol-impaired driving (Barnes & Welte, 1988; Berger & Snortum, 1986; Bingham & Shope, 2004a, 2004b; Copeland, Shope, & Waller, 1996; Donovan, 1993; Escobedo, Chorba, & Waxweiler, 1995; Hingson, Heeren, Zakocs, Winter, & Wechsler, 2003; Lapham, Baca, McMillan, & Lapidus, 2006; O'Malley & Johnson, 2007; Sabel, Bensley, & Eenwayk, 2004; Valencia-Martin, Galan, & Rodriguez-Artalejo, 2008). These studies commonly focused on adolescent drinking, drug use, smoking, and their relationships with alcohol-impaired driving. The general findings were that alcohol misuse, drug use (e.g., marijuana use), and smoking are significantly associated with impaired driving. These findings were generated from analyses of cross-sectional and longitudinal data. When longitudinal data were used, studies either employed predictors of drinking, drug use, or smoking in previous waves to predict alcohol-impaired driving in later waves (e.g., Bingham & Shope, 2004a) or compared means or percentages of those problem behaviors and alcohol-impaired driving between waves (e.g., Hingson et al., 2003).

These analytical strategies significantly limit research to explore broader adolescent problem behaviors and their relationships with adolescent alcohol-impaired driving. As studies indicated (e.g., Elliott, Huizinga, & Ageton, 1985), adolescents engage in a wide range of problem behaviors from minor (e.g., disorderly conduct) to general (e.g., buy-sell-hold stolen goods) to serious delinquent acts (e.g., aggravated assault). This wide range of delinquent acts shows a particular age curve that differs from the growth curve of alcohol-impaired driving. Therefore, it is important to assess the association of these different growth curves to better understand the dynamics and trajectory of adolescent alcohol-impaired driving.

Current study

The present study addressed this research issue using latent growth modeling implemented by the structural equation modeling method (Duncan, Duncan, & Strycher, 2006; Hox & Stoel, 2005). As discussed above, the age curve of delinquency differs from that of alcohol-impaired driving among adolescents. Data consistently indicated that while many adolescents are likely to "mature out" of delinquent behavior starting at about seventeen to eighteen years old, some may continue delinquent behavior into adulthood. Such a "maturing out" or "not maturing out" process may be a significant factor that influences the growth curve of alcohol-impaired driving which may peak at ages twenty-one to twenty-four years or older. The major hypothesis for the present study was that adolescents who are not maturing out of delinquent behavior and have a significant increase in delinquency are likely to have a faster growth in alcohol-impaired driving than those who are maturing out of delinquent behavior and do not have an increase in delinquency.

For the proposed hypothesis, the dependent (endogenous) variable was the growth rate of alcohol-impaired driving. The independent (exogenous) variable was the growth rate of delinquency. The study also included the growth rates of drinking and drug use as two important variables to control for their possible confounding effects on the growth rate of alcohol-impaired driving. In addition, race and family socio economic status (SES) were also included as control variables in the analysis.

Data and methods

Data

The data used for the present study came from the three waves of the Buffalo Longitudinal Survey of Young Men (BLSYM) conducted from 1993 to 1997. The BLSYM was a panel study of adolescent substance use and delinquency with a probability sample of 625 males aged sixteen to nineteen from the Buffalo, New York area. The sample was recruited by random digit dial, with screening by a brief questionnaire to over-sample young men at risk for delinquency. Those who scored three or more items in the delinquent direction were always invited to participate; the others were recruited a random one-third of the time. The sample contained the full range of individuals in the general population, although the survey over-sampled those prone to problem behaviors. Face-to-face structured interviews were conducted by trained interviewers at the Research Institute on Addictions. The interviews for the first wave took place in 1993. The time interval between waves was eighteen months. The sample attrition rate was 4.6 percent for the second wave and 7.6 percent for the third wave. These sample attrition rates had no substantive effect on the representativeness of the sample (see Table 1 for a brief demographic description of the sample).

The BLSYM data provided a unique opportunity to assess the possible association of the trajectory of delinquency and the growth curve of alcohol-impaired driving among young people. The survey selected a male sample with an age range of sixteen to nineteen years old at the first wave. As previous studies indicated, males commit far more delinquent acts than females, and commit particularly high proportions of the most physically threatening crimes (Farrington, 1983). Young males also have much higher rates of alcohol-impaired driving and involvement in fatal crashes related to alcohol-impaired driving (National Highway Traffic Safety Administration, 2008b).

The survey chose the sixteen to nineteen age range for the male sample because the rates of delinquency peek at about seventeen to eighteen years old and then sharply decline, as documented previously.