



Cross-domain influences on youth risky driving behaviors: A developmental cascade analysis



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ABSTRACT

We apply a developmental cascade approach to study the longitudinal, cross-domain effects of negative family influence, deviant peer associations, and individual substance use on risky driving among a sample of low-income African American youth. Participants ($N = 681$) were followed from age 16 to age 21. Using structural equation modeling, we examined conceptual models of pathways to risky driving. Results indicated strong associations between domains within time points among negative family environment, deviant peer associations, individual substance use, and risky driving. Deviant peer associations were related to future risky driving. Alcohol and marijuana use also predicted later deviant peer relationships. The pathways were observed both between ages 16 and 18 and between ages 18 and 21. Consistent with the cascade hypotheses, we found that risks in one domain manifested as risks in the same domain across time in addition to spreading to other domains.

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Developmental cascades refer to the notion that developmental effects in one ecological domain may spill over to influence multiple domains later in development (Garmezy, Masten, & Tellegen, 1984; Masten, Desjardins, McCormick, Kuo, & Long, 2010; Masten et al., 2005; Obradovic, Burt, & Masten, 2010). Although researchers have examined how mechanisms in both family and peer domains during late adolescence influence substance use (Staff et al., 2010; Van Ryzin, Fosco, & Dishion, 2012), few researchers have focused on the co-occurrence of family factors, peer substance use, and risky driving during late adolescence and early adulthood using the cascade framework. Examining a variety of risk behaviors, instead of a single problem behavior, has been emphasized in previous studies indicating that different types of risk behaviors were consistently correlated with one another. Researchers have found that high risk driving during youth is associated with other risk-taking behaviors, such as delinquency, unprotected sex, drinking and the use of drugs (Donovan, 1993; Pharo, Sim, Graham, Gross, & Hayne, 2011; Shope, Waller, Raghunathan, & Patil, 2001b). Researchers have also supported the notion that a certain

constellation of related risk behaviors exists for young adults, meaning that people who engage in one type of risk behavior are likely to engage in others as well (Arnett, 1998; Ketterlinus & Lamb, 1994; Schwartz et al., 2009). Examining whether common factors exist that explain co-occurring problem behaviors adds to our understanding of problem behaviors during adolescence. In this study, we examine the cascading effects of negative family influence, deviant peer associations, and individual substance use on risky driving behaviors (e.g., speeding and unsafe driving) in an urban, African American sample of adolescents/young adults.

Substance use and risk behavior in adolescence

During late adolescence and early adulthood, youth experience considerable social role transitions, which involve a high frequency of person–context interactions (Shanahan, 2000; Staff et al., 2010). During this developmental period, youth actively explore life's options with social interactions, thus commonly engaging in more risk-taking activities and behaviors (Bingham & Shope, 2004a; Constantinou, Panayiotou, Konstantinou, Loutsiou-Ladd, & Kapardis, 2011; Jessor, 1987; Pharo et al., 2011; Staff et al., 2010). Rates of substance use and heavy drinking, for example, increase dramatically during adolescence and the transition to adulthood, and then decline afterwards (Chassin, Hussong, & Beltran, 2009). Substance use in adolescence is associated with habitual use later in life with concomitant negative health consequences (National Center on Addiction & Substance Abuse, 2012). Although

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African American youth typically report lower rates of alcohol and tobacco (but not marijuana) use as compared to both Hispanic and non-Hispanic youth, they experience a disproportionate burden of substance use related consequences such as incarceration and school drop-out (Kakade et al., 2012).

Within this dynamic context for individual developmental change, many of the individual-level changes can be viewed as a function of the cascading effects from earlier risk and protective factors within the social contexts involving family and peers (Schulenberg, Maggs, & Hurrelmann, 1999). Negative peer and family influences on individuals' substance use and risk-taking behavior are intertwined because most adolescents draw upon both their families and peers for support and modeling behavior. Families and peers play a critical role in influencing adolescents' decisions to initiate substance use. Moreover, family and peer influences may determine adolescents' subsequent developmental trajectories toward substance use behavior, including continued experimentation and escalation toward abuse (Darling & Cumsille, 2003). Examining the multiple-domain influence of family, peer and individual behaviors over time using the developmental cascade framework facilitates an understanding of how ecological domains influence each other at different stages of development, which may ultimately predict behavioral outcomes.

Family and peer influence on risky behaviors during adolescence and young adulthood

Family factors influencing problem behavior

Family conflict has been found to be associated with negative developmental outcomes (Vandewater & Lansford, 2005). Family conflict during childhood predicts negative interactions during adolescence, which further predicts negative interactions in early adulthood (Belsky, Jaffee, Hsieh, & Silva, 2001). Hostility between parents and adolescents is also associated with externalizing behavior during mid-adolescence (Kim, Conger, Lorenz, & Elder, 2001), and poorly managed parent-child conflict is associated with adolescent delinquency (Caughlin & Malis, 2004).

Parental substance use also contributes to adolescent problem behavior. Parental substance use has been linked to drug and alcohol initiation during adolescence (Darling & Cumsille, 2003; Jang & Johnson, 2011). In addition, Biederman and colleagues found that, independent of socio-economic status, adolescents exposed to parents with substance use disorders were more likely to develop substance dependence (Biederman, Faraone, Monuteaux, & Feighner, 2000). Similarly, Li, Pentz, and Chou (2002) found that adolescents of substance-using parents were at greater risk for using substances themselves and were more susceptible to peer pressure around substance use than adolescents with non-using parents. With regard to driving behavior, researchers have also found that parents' drinking and lenient attitudes toward young people's drinking were associated with serious youth traffic offenses or crashes (Shope, Elliott, Raghunathan, & Waller, 2001a; Shope et al., 2001b). Furthermore, low parent connectedness is associated with high-risk driving in early adulthood (Shope et al., 2001a,b).

Peer factors influencing problem behavior

Peer relationships are a strong predictor of antisocial behavior, particularly during adolescence when peers become increasingly influential relative to parents (Allen & Brown, 2008; Bogenschneider, Wu, Raffaelli, & Tsay, 1998). Although socializing with deviant peers is strongly associated with antisocial behavior, this correlation may be reciprocal, as gravitation toward deviant peers is predicted by early peer rejection and poor social skills (Laird, Jordan, Dodge, Pettit, & Bates, 2001).

During this developmental stage, adolescents may have higher susceptibility to peer pressure than when they are younger (Cauffman et al., 2010; Steinberg et al., 2008) partly because they have a heightened

responsiveness to social reward and desire to fit in among peers (Spear, 2000). Concurrent with this increased peer involvement, adolescents frequently initiate experimentation with smoking and drinking (Flory, Lynam, Milich, Leukefeld, & Clayton, 2004). Most adolescent risk-taking (e.g., drinking, reckless behavior), takes place when other teenagers are present and adolescents are more likely to take risks in the presence of their friends (Steinberg, 2008). After examining a nationally representative sample of 677 teen drivers involved in serious motor-vehicle crashes, for example, Curry and colleagues (2012) found that male drivers with peer passengers had higher risk-taking behaviors compared with males driving alone.

Further, researchers have linked peer substance use behavior and adolescents' own substance use (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Elkington, Bauermeister, & Zimmerman, 2011a; Petraitis, Flay, & Miller, 1995). Involvement with deviant or substance-using peers can increase the likelihood of adolescents' drug use through social learning, facilitation, peer pressure, and deviancy training (Dishion & Owen, 2002; Patterson, Dishion, & Yoerger, 2000). Yet, the direction of this association remains unclear. Specifically, adolescents may initiate or escalate their substance use or delinquent behaviors through their relationships with deviant peers.

Co-occurrence of adolescent substance use and risky driving

Motor vehicle crashes are the leading cause of mortality and morbidity among adolescents in the U.S. (National Highway Traffic Safety Administration, 2009). Although inexperience and distracted driving are the leading risk factors for teen drivers' motor-vehicle crashes (Centers for Disease Control & Prevention, 2014; Curry, Hafetz, Kallan, Winston, & Durbin, 2011; Mcknight & Mcknight, 2003; Olsen, Shults, & Eaton, 2013), risky driving (e.g., speeding and aggressive driving) and substance-impaired driving may exacerbate the already high risk for crashes, injuries, and deaths. Increased sensation-seeking and the emphasis on social benefits of their behaviors during adolescence may lead to risk-taking behaviors, especially in the presence of peers (Halpern-Felsher, Biehl, Kropp, & Rubinstein, 2004; Steinberg, 2008). Alcohol and drug use are associated with risky driving (Bingham & Shope, 2004a; Copeland, Shope, & Waller, 1996; Donovan, 1993; Shope et al., 2001a). Bingham and Shope (2004a), for example, found a consistent association between substance use behaviors and young adult risky driving behaviors. Specifically, the most risky young adult drivers reported the most substance use, while the lowest risk young drivers were least likely to report substance use behavior. In another longitudinal study of 1845 young adults, risky driving was predicted by greater alcohol misuse and tolerance of deviance during adolescence; moreover, drinking-driving and drug-driving were predicted by marijuana use and alcohol misuse during adolescence (Bingham & Shope, 2004b).

Risky driving behaviors among African American adolescents

Despite traveling less in motor vehicles, researchers have reported that African Americans are at greater risk for vehicular injury and death than their White counterparts across a range of risky driving behaviors (Braver, 2003). Researchers have found that African American teens were less likely to wear seatbelts (Everett et al., 2001; H. K. Kim, Pears, Capaldi, & Owen, 2009) and motorcycle helmets (Kim et al., 2009) than their White counterparts. African Americans (especially males) were also more likely to be involved in an alcohol-related traffic accident and were at greater risk for vehicular death than White drivers (Braver, 2003; Popkin & Council, 1993), but researchers have reported that African American teens may be less likely to either ride with a driver who has been drinking or drive after consuming alcohol (Everett et al., 2001). This data, collected from 1991 to 1997, however, may not reflect changing patterns of substance use in African Americans. While still less likely to drink alcohol relative to their White and Hispanic peers,

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