



# Temporal associations between substance use and delinquency among youth with a first time offense



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## ARTICLE INFO

Available online 12 March 2014

**Keywords:**  
Adolescents  
Delinquency  
Alcohol use  
Marijuana use  
Temporal associations

## ABSTRACT

**Objective:** Substance use and delinquency among adolescents have been shown to be positively associated; however, the temporal relationship is not well understood. Examining the association between delinquency and substance use is especially relevant among adolescents with a first-time substance use related offense as they are at-risk for future problems.

**Method:** Data from 193 adolescents at time of diversion program entry and six months later was examined using cross-lagged path analysis to determine whether substance use and related consequences were associated with other types of delinquency across time.

**Results:** Results demonstrated that delinquency at program entry was related to subsequent reports of heavy drinking and alcohol consequences, but not marijuana use or its consequences. In contrast, alcohol and marijuana use at program entry were not related to future reports of delinquency.

**Conclusions:** Findings emphasize the need to build in comprehensive assessments and interventions for youth with a first time offense in order to prevent further escalation of substance use and criminal behaviors.

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## 1. Introduction

Positive associations between alcohol, other drug use and delinquency among youth have been well documented (Barnes, Welte, & Hoffman, 2002; Huizinga, Loeber, & Thornberry, 1993). For example, arrested adolescents are more likely to use alcohol and other drugs than non-arrestees (Horowitz, Sung, & Foster, 2006), and studies suggest that over two-thirds of incarcerated adolescents exhibit at least one substance use disorder (Teplin, Abram, McClelland, & Dulcan, 2002). The longitudinal association between substance use and delinquency, however, is not clearly understood. For example, some studies demonstrate that substance use precedes delinquency (Brook, Whiteman, Finch, & Cohen, 1996; Loeber, 1988) whereas other studies show that delinquency precedes substance use (Deitch, Koutsenok, & Ruiz, 2000; Doherty, Green, & Ensminger, 2008; White & Gorman, 2000). Further, some studies have found reciprocal relationships between delinquency and substance use (Mason & Windle, 2002) whereas other studies have not (Dembo, Williams, Wothke, & Schmeidler, 1994; Dembo et al., 1995). In general, studies in this area differ in terms of the substances examined (e.g., alcohol, drugs, or some combination), the time periods investigated, and samples utilized, such as school based youth (e.g., Barnes et al., 2002; Mason & Windle, 2002), high risk, juvenile justice involved youth (e.g., Clingempeel, Henggeler, Pickrel, Brondino,

& Randall, 2005; D'Amico, Edelen, Miles, & Morral, 2008), homeless youth (e.g., Paradise & Cauce, 2003); and youth with mental health concerns (e.g., Becker et al., 2012). Understanding the temporal ordering of substance use and delinquency in adolescence is critical in order to effectively intervene and prevent these behaviors from further escalation (Dembo, Wareham, Greenbaum, Childs, & Schmeidler, 2009).

The association between delinquency and substance use is particularly important to understand for adolescents who have committed a first time offense for a substance-related event. Youth who engage in delinquent behavior at early ages are at risk for future substance use and further delinquency (Mason et al., 2010; Simons, Stewart, Gordon, Conger, & Elder, 2002); thus it is likely that youth with a first time offense may be at risk for continued substance use and delinquent behaviors. However, there is little research on this at-risk population, which makes it difficult to understand how early delinquency may lead to future problems (Rasmussen, 2004; Smith & Chonody, 2010). In addition, adolescents with a first time misdemeanor offense (i.e., non serious offenses) are typically not formally prosecuted and/or detained and therefore rarely receive further intervention (Rasmussen, 2004). However, given that these youth are just starting to experience negative consequences from their use, this is a critical juncture in which to intervene with early intervention and prevention efforts. Targeting interventions for youth early in their criminal justice careers may offer an efficient and effective means to prevent the further escalation of problem behaviors (Carney, Myers, Louw, Lombard, & Flisher, 2013; D'Amico, Hunter, Miles, Ewing, & Osilla, 2013; D'Amico, Osilla, & Hunter, 2010; Feldstein & Ginsburg, 2007; Schmiede, Broaddus, Levin,

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& Bryan, 2009). Thus, research describing the temporal association between early delinquency and subsequent substance use among at-risk youth can help inform intervention and prevention efforts.

Few studies have looked at the short-term association (i.e., within a six month period) between substance use and delinquency. Studying this time period may be advantageous to understanding the immediate, clinically relevant and reciprocal effects (Paradise & Cauce, 2003) as compared to studies that look at these associations over longer periods of time. Analyses that focus on year or longer time periods may fail to capture the more immediate fluctuations in behavior and may miss important information during a critical time of development when teens move from a first time offense to more serious offenses. That is, capturing this association closer in time to a first time alcohol or drug offense for at-risk youth is important given the potential impact of this offense on subsequent behavior.

In the field of substance use prevention, programs are classified as 'universal', designed for the general population; 'selective', designed for at-risk subgroups, such as youth are experimenting with substance use; or 'indicated', designed for youth who have been treated but are at high risk for relapse (Institute of Medicine, 1994) (National Institute on Drug Abuse, 1997). This paper presents secondary analyses from a randomized clinical trial (RCT) where youth with a first-time alcohol or other drug offense received one of two group selective interventions in the context of a juvenile justice diversion program called Teen Court (D'Amico et al., 2013). Teen Courts are typically utilized by communities for youth with a first-time nonviolent offense as an alternative to formal processing (Butts, Buck, & Coggeshall, 2002). We examined self-reported delinquent behaviors and substance use upon entry into the program and then six months later. Secondary analyses from randomized clinical trials may help to identify potential predictors of substance use and related behaviors that could lead to enhancements in intervention strategies and help inform theories of behavioral change (Clingempeel et al., 2005).

The goal of this paper is to understand whether adolescents who have experienced some negative consequences from their substance use (i.e., a first time offense) show a temporal relationship between their alcohol and other drug use and other delinquent behaviors over the short-term (i.e., six month period). This study examines longitudinal associations between alcohol use, marijuana use, and reported consequences from alcohol or marijuana use with other delinquent behaviors using a cross lagged regression design (Finkel, 1995; Kenny, 2005). The cross-lagged model explains the amount of variation in one variable at time  $t$  that is associated with change in a second variable at time  $t + 1$ . We examine the effects of alcohol and marijuana use separately from consequences from use, as recent research has demonstrated that these constructs appear to be distinct (Becker et al., 2012; Blanchard, Morgenstern, Morgan, Lobouvie, & Bux, 2003; Paradise & Cauce, 2003). Thus, it is worth determining if the association between consequences from use and delinquency is different from the association between delinquency and reported use. Moreover, studies have shown that problematic substance use may be more strongly related to delinquency than frequency of use (Mason, Hitchings, & Spoth, 2007), thus we examine both frequency of drinking and alcohol-related consequences. Furthermore, many studies have examined the association between a combination of substances with delinquency that may obfuscate the association and temporal ordering (e.g., Paradise & Cauce, 2003). We therefore examined alcohol and marijuana use separately. We hypothesized that use of both substances (i.e., alcohol and marijuana) and related consequences would be associated with delinquency over time.

## 2. Method

### 2.1. Setting

The study was conducted in collaboration with the Santa Barbara Teen Court, a diversion program operated by the Council on Alcoholism

and Drug Abuse (CADA), a nonprofit community-based organization. The Teen Court program is offered to youth who commit a first-time alcohol or other drug offense and are deemed not in need of more serious intervention or treatment by the local probation department. The program consists of an intake interview of the teen and guardian(s) with teen court staff followed by a court hearing in front of a peer jury where sanctions that include psychoeducational group sessions, peer jury and community service are determined for the offending adolescent. The adolescent is given up to 90 days to address the sanctions and in our sample, 95% of youth completed the sanctions within 90 days. This study was part of a randomized controlled trial examining the efficacy of groups that utilized Motivational Interviewing approach compared to usual care psychoeducational groups delivered to teens in this setting, which is accounted for in the analyses (D'Amico et al., 2010, 2013). Study protocols were approved by the institution's internal human subjects review board.

### 2.2. Participants

Adolescents between 14 and 18 years old referred between January 2009 and September 2011 for a first-time AOD offense (e.g., possession of alcohol or other drugs, driving under the influence, driving with an open container) to the Teen Court were recruited for participation. Study inclusion criteria included English proficiency; study exclusion criteria included multiple offenses, referral to another program or possession of a medical marijuana card. We enrolled 193 adolescents out of 216 eligible youth during the enrollment period (11% was either not interested or unable to participate). There appeared to be no demographic differences between those who refused and those who participated in the study; the sample was too small to test for differences statistically. The sample consisted of 67% males, 45% non-Hispanic White, 45% Hispanic, and 10% mixed or other race/ethnicity. Alcohol offenses made up 56% of the cases and marijuana offenses made up 38% of cases, with the remainder of youth cited for concurrent alcohol and marijuana use infractions (4%) or other drug offenses (2%). The mean age of participants at intake was 16.64 ( $SD = 1.05$ ). Ninety-seven percent of the sample completed a follow-up assessment six months later.

### 2.3. Procedures

#### 2.3.1. Data collection

Adolescents completed a baseline survey administered by trained research staff after the Teen Court intake interview and before their court hearing. Participants completed a follow-up survey approximately 6 months from the time of the baseline survey (and approximately 3 months following the group program). Participants were compensated \$25 at baseline and \$45 at follow-up. A National Institute of Health Certificate of Confidentiality was obtained to protect participant privacy. As a result, all participants were informed that the data collected were confidential and not to be shared with the probation or criminal justice system, the Teen Court program, their parents or other individuals not associated with the research staff.

### 2.4. Measures

Participants completed measures of demographic information, substance use and delinquency. Demographic information included items about age, gender, and race/ethnicity. Other related measures (not analyzed for this study) were also collected (e.g., attitudinal measures regarding self efficacy and substance use expectancies, employment, parental factors, and sexual behaviors) and are reported elsewhere (D'Amico et al., 2013; Osilla et al., 2013; Pedersen et al., 2013).

#### 2.4.1. Delinquency

We used items from previous adolescent surveys (Ellickson, McCaffrey, Ghosh-Dastidar, & Longshore, 2003) that asked adolescents

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