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Alcohol and marijuana use in early adulthood for at-risk men: Time-varying associations with peer and partner substance use

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ABSTRACT

Background: Time-varying associations of 185 at-risk men's (from the Oregon Youth Study) substance use with that of their peers and partner over a 10-year period (ages 23 to 32 years) were examined. Moderation of effects by time with peers and partner and their age were tested.
Method: Growth models were used to predict changes in heavy episodic drinking (HED) alcohol use and marijuana use as a function of substance use by their female partners and male peers.
Results: Time with peers and peer substance use significantly predicted HED (*OR*s = 1.6, 2.3), alcohol use (*OR*s = 1.6, 2.1), volume of alcohol use (*IRR*s = 1.5, 1.3), and marijuana use (*OR*s = 12.8, 1.7); peer marijuana use predicted volume of marijuana use (*B* = 2.5). Partner substance use significantly predicated marijuana volume (*B* = 2.7). Partner alcohol use predicted alcohol volume (*IRR* = 1.1), but was moderated by time with partner and age (*IRR* = 1.0). Time with partner and partner marijuana use predicted marijuana use (*OR* = 0.5, 2.7), as did the interaction of the two (*OR* = 3.8).
Conclusions: Outcome-specific substance use of peers and partners was significantly associated with indicators of alcohol and marijuana use in men's early adulthood, with robust effects of peer substance use through age 30 years and with time spent with peers influencing alcohol use. Time with partner was protective against marijuana use unless the partner used marijuana. Peers and partners should be considered in intervention efforts to effectively reduce men's substance use in early adulthood.

1. Introduction

Heterogeneity in growth, persistence, and desistance of substance use in early adulthood has major consequences for health, and greater understanding is needed of proximal predictors of such variability for community samples. Guided by the dynamic developmental systems (DDS; Capaldi et al., 2005) approach that takes into account individual developmental history and social interaction (see also Kendler et al., 2011), we have formulated a model of the development of men's substance use across adolescence and early adulthood. This approach focuses both on general risk associated with the development of psychopathology, particularly antisocial behavior (Sher, 1991; Sher and Trull, 1994; Zucker, 2008), and on outcome-specific risk related to the substance used (e.g., partner alcohol use predicting men's alcohol use). In studies of growth in alcohol use in adolescence (Capaldi et al., 2009) and heterogeneity in alcohol use in early adulthood (Capaldi et al., 2013), we found that predictors of use in adolescence, such as parent substance use and youth antisocial behavior, showed limited prediction to heterogeneity in alcohol use in the 20s. Thus, the present study focused on proximal time-varying predictors of two key indicators of alcohol use—heavy episodic drinking (HED) and volume of use—and a single indicator of marijuana use—volume of marijuana use—each of which were assessed across ages 23–24 to 31–32 years for men at risk for antisocial behavior (the Oregon Youth Study [OYS]).

Social influence is a relatively consistent predictor of substance use, particularly alcohol use (Wood et al., 2001). Capaldi et al. (2009) found that peer use predicted significant growth in alcohol use in adolescence. Andrews et al. (2002) found that concurrent use of both same- and opposite-gender peers predicted alcohol use, binge drinking, and marijuana use in young adulthood. Fleming et al. (2010) found that exposure to substance-using peers in young adulthood predicted increases in heavy drinking and marijuana use. The influences of partner alcohol use have also been found over relatively short periods of time for young adults. Mushquash et al. (2013) found small partner effects to men's and women's HED over a 28-day period for a young-adult sample. In a prior study with a

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subset of OYS men who consistently had a partner ($N = 110$ couples), Kim et al. (2013) examined across ages 20 to 29 years the associations of romantic partners' alcohol use with men's alcohol use. Findings indicated that partners' alcohol use was positively related to men's concurrent alcohol use across their 20s, regardless of relationship type (e.g., married vs. dating).

Some studies have examined influences of both peers and partners on substance use. D'Amico et al. (2005) examined influences of best friend and partner use of substances on alcohol or drug disorders (combined) in adulthood, and prediction was found from closest friends but not from partners' use of substances. Leonard and Mudar (2003) examined selection and influence processes related to peer and partner drinking over the transition to marriage (newlywed and first anniversary) and found mainly concurrent associations and influence over time only from husbands' drinking to wives' drinking. Past the period of young adulthood, the study of prediction from partner and peer influences to marijuana use is rare. Homish et al. (2007) found that spouses' use of marijuana prior to marriage was a strong predictor of their partners' increased risk for marijuana use during the first 4 years of marriage (controlling for time and individual risk factors).

The present study extends the study of influences on the course of adult substance use by examining men's partners' and peers' alcohol and marijuana use as predictors of their alcohol (both volume and HED) and marijuana use (respectively), and whether these associations are moderated by the amount of time the men spent with their friends and partners. The influence of peers and moderation by time was not tested in the study by Kim et al. (2013). Random intercept growth models were used for all three indicators of substance use, using a logistic model (HED), a zero-inflated count model (alcohol volume), or two-part semicontinuous model (marijuana volume). Alcohol and marijuana use by both peers and partners were included in the alcohol and marijuana prediction models, respectively. In the developmental period from ages 23–24 to 31–32 years, the amount of time spent with partners and peers is not well known, but time spent has been shown to be important for both forms of association (Haynie and Osgood, 2005). Men spending little time with peers may be less influenced by their drinking behavior than men spending more time with peers, even if the drinking behavior of the peers is similar. Thus, the interaction of time spent with peers and peers' drinking (assessed in the present study by the number of peers who get drunk) was examined; a similar interaction was examined for time with partners and partner drinking (assessed as amount of alcohol used by partner because matching alcohol indicators were not available for peers and partners).

Men were expected to vary in time spent with peers and partners as they matured across the 8-year period under study because the men were increasingly likely to be married (Shortt et al., 2012) and have children as they aged, and these familial changes are associated with decreases in substance use (Kerr et al., 2011). Thus, it was hypothesized that influences from partners may increase across this period whereas those from peers may decrease. It is important to note that Kim et al. (2013) found stable influences over a similar period while taking into account the relationship duration but without controlling for time men spent with their partners.

It was also predicted that differential influence would be found from peer and partner use to the differing indicators of substance use examined. Two thirds of the OYS men followed a high sustained trajectory of volume of alcohol use across the 20s, whereas relatively few men showed high levels of HED (Capaldi et al., 2013). We expected that sustained volume or regular drinking would be a behavior shared with and influenced by partner's drinking levels. For many men the more extreme behavior of HED may be likely to occur with friends, at bars, or other social gatherings. We thus predicted that partner's alcohol use would be more influential on volume of use, whereas peer's alcohol use would be more influential in prediction to HED. Assortative partnering has been found by marijuana use (Boutwell et al., 2012) and, for men to be using at all, denotes some tolerance for this illegal substance use on the part of their partners. Thus, we expected that both partner and peer marijuana use would be predictive of men's marijuana use.

2. Methods

2.1. Sample

Schools in neighborhoods with higher incidences of juvenile delinquency were identified in a medium-sized metropolitan area, and boys in Grade 4 (ages 9–10 years) were invited to participate in the study with their families. The OYS recruitment rate was 74.4% ($N = 206$), the sample was predominantly White (90%), and 75% were of lower socioeconomic status. The boys were followed yearly into their 30s. When the men were aged 17–19 years, the Couples Study was initiated to examine their romantic relationships and continued with assessments approximately every 2 years. The five waves for the present study were from the Couples Study covering ages 23 to 32 years and were combined with the synchronized assessments of the men from the OYS. All procedures were approved by the Institutional Review Board of the Oregon Social Learning Center.

Of the original 206 men, 185 had a female partner at least once in the period, with 639 observations across the 5 waves of data and an average of 3.5 observations (max = 5; min = 1); for the sample, 71% had 3 or more observations, 91% had 2 or more observations, and only 9% had a single observation. Men who never had a female partner during this period and two men with male partners were excluded from the analysis—in the latter case, to clarify that partner influences were from women. Men varied in relationship status; 19% of the observations were with a dating partner, 33% with a cohabiting partner, and 48% with a married partner.

2.2. Measures

Outcome variables. HED by the men involved consumption of five or more drinks at a time in the past 2 weeks (coded 0 = *no* and 1 = *yes*). Volume of alcohol use was calculated by multiplying frequency of use by the usual amount of alcohol consumed (both measured as natural numbers, i.e., no fractions) giving a count of the number of units consumed in a year. The distribution showed zero inflation and over dispersion. Volume of marijuana use was calculated by multiplying frequency of use (a natural number) by the usual amount of marijuana consumed (a rational number) – giving a continuous variable in grams with a natural zero – and was treated as a two-part semicontinuous variable (Olsen and Schafer, 2001). Both alcohol volume and marijuana volume were winsorized (Reifman and Keyton, 2010).

Partner and peer substance use. Partners were asked, on average, the number of drinks they drank at one time; across the period, partners drank 2.49 (median = 2) drinks at a time with a standard deviation of 1.91. Partner drinking was grand-mean centered for the analysis. A relatively small percentage of partners reported marijuana use; therefore, the variable was dichotomized (0 = *no* and 1 = *yes*). An average proportion of 0.33 partners reported marijuana use across the period, with a standard deviation of 0.47.

The peer alcohol use question addressed how many of the OYS men's friends got drunk once in a while (1 = *none of them*, 2 = *very few of them*, 3 = *some of them*, 4 = *most of them*, or 5 = *all of them*). Peer drunkenness had a mean of 3.33 (median of 3) across the period ($SD = 1.25$). For marijuana, the question concerned how many of their friends used marijuana, with the same response options. Peer marijuana use had a mean across the period of 2.27 (median of 2), with a standard deviation of 1.27. Both variables were grand-mean centered before analysis. Both variables were highly associated with one time reports from a close male peer.

Time spent with partner and peers. The men were asked the amount of free time they spent with their partner and in a separate question the amount of free time spent with male friends. Response options were coded as 1 = *none or almost none of the time*, 2 = *some or little of the time*, 3 *about one half my time*, 4 = *a lot of my time*, 5 = *all or most of my time*. Across the period, partners (and peers) showed a mean of 3.81 (2.36), medians 4 (2), and standard deviation 1.19 (0.81). Both variables were grand-mean centered before analysis.

Age and interaction variables. Men's age at the time of interview (which varied with time) was grand-mean centered, and then interactions between age and substance use variables for both partner and peer were created. No interactions between partner and peer variables were hypothesized or included.

2.3. Data analytic plan

The analyses involved longitudinal growth models, with modifications depending on the distributional properties of the dependent variable. For each outcome, two series of models were run in Mplus 7.1 (Muthén and Muthén, 1998–2012): (1) prediction from partner variables and (2) prediction from both partner and peer variables. For each series, a full model with all planned interactions was first estimated. Interactions were removed if nonsignificant ($p < .05$). Nonsignificant two-way interactions were retained if related three-way interactions were significant.

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