



## Short communication

# Social network drinking and family history contribute equally to first-onset alcohol dependence in high risk adults



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## ABSTRACT

**Background:** Adult alcohol consumption is influenced by peer consumption, but whether peer drinking is associated with first-onset alcohol dependence (AD) in adults after age 30 is unknown.

**Methods:** 703 adult participants in the St. Louis Epidemiologic Catchment Area Survey (ECA) with no prior history of AD, but with high risk based on previously reported drinking or family history, were re-interviewed 11 years after the last ECA assessment to detect new cases of AD (age at follow-up:  $M(S.D.) = 42.9 (8.2)$ ). Incident AD during the assessment interval was examined in relation to drinking patterns in the social network and history of alcohol problems in parents.

**Results:** Fifteen percent of the sample had a first-onset of AD; another 19.5% never developed AD but were high-risk drinkers at follow-up. Of those who developed AD, 32.1% were remitted and 67.9% were unremitted (current AD) or unstably remitted (asymptomatic high-risk drinkers). Compared to abstinent or low-risk drinkers who did not develop AD, high-risk drinkers with no AD and unremitted/unstably remitted individuals were 4 times as likely to report moderate drinkers in their networks and remitted individuals were nearly 3 times as likely to report network members in recovery from alcohol problems. Associations of social network drinking with remitted and current AD were similar in strength to those of parental alcohol problems.

**Conclusions:** Social network drinking patterns are associated with high-risk drinking and with the development of incident AD in adults, with effects equal to that of alcohol problems in both parents.

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## 1. Introduction

The development of alcohol use disorders (AUDs) in adolescents has been well characterized, but less is known about the development of AUDs in adults, since onset is more likely before age 30 than later (Grant et al., 2012; Kessler et al., 2005). Peer influences on alcohol consumption in adolescents are well documented (reviewed in Brechwald and Prinstein, 2011), and evidence supports peer influences in adults as well. Longitudinal studies in population-based samples suggest that adults select peers with similar drinking habits but are also influenced by peer drinking at ages 21 and older (Bullers et al., 2001) and at a mean age of 51 (Rosenquist et al., 2010). Adults aged 55–65 at baseline who were followed over 20

years were more likely to have drinking problems at follow-up if they had higher alcohol consumption at baseline and more friends who were drinkers or who approved of heavy drinking (Moos et al., 2010). Although peer drinking is associated with adult alcohol use and problems, whether it is associated with alcohol dependence (AD) is unknown. The current study examines the contribution of network drinking to a first-onset of AD in adults, using a sample which was assessed at 2 time points in adulthood and followed up 11 years later.

## 2. Methods

### 2.1. Sample

Data are from a follow-up study of a subsample of the St. Louis Epidemiologic Catchment Area Survey (ECA), a five-site study conducted from 1980 to 1982 and funded by the National Institute of Mental Health (NIMH) to estimate the prevalence of DSM-III psychiatric disorders in the community (Regier et al., 1984). Subjects for the ECA study were selected by a multistage probability sampling and

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were interviewed at baseline and approximately one year later using a structured, psychiatric interview (Robins et al., 1981) which yielded DSM-III (American Psychiatric Association, 1980) psychiatric and substance use disorders. A subsample from the household sample of the St. Louis ECA study was selected for follow-up 11 years after the second ECA interview for a study designed to detect new cases of AD among adults with no prior history of AD, based on the ECA information. A group of 732 individuals at high risk of developing AD was selected using the following criteria: they reported an alcohol problem at either ECA interview or were heavy drinkers (7 or more drinks daily for 2 weeks, or weekly for several months), they identified first degree relatives who had alcohol problems, or they scored above the median on a multivariate risk equation for alcohol dependence. Also included were 134 individuals randomly selected from the sample remaining after selection of high-risk participants and 63 individuals who met minimum DSM-III criteria for alcohol abuse or dependence (Bucholz et al., 1996). Of the 929 individuals targeted for follow-up, 81.1% (753) were interviewed, 14.3% refused, and the remainder were deceased (2.8%), not located (1.2%), or otherwise uninterviewable. Of those living and located, 84.4% were interviewed. No relationship between high risk status and interview rates was observed (Bucholz et al., 1996). Because the focus of the present report was on new cases of AD, we removed individuals who met minimum criteria for AD at ECA, leaving 703 participants for analysis herein.

## 2.2. Measures

**2.2.1. Remission from alcohol dependence.** Individuals who met AD criteria during the interval between the last ECA interview and follow-up were categorized as remitted if at follow-up their most recent symptom was at least one year ago and they were abstinent or drinking at low-risk levels (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2010), as asymptomatic high-risk drinkers if their drinking exceeded low-risk levels during the previous year, and as having current AD if they had symptoms within the last year. Because the typical weekly alcohol consumption of male ( $M = 38.1$ ,  $S.D. = 24.3$ ) and female ( $M = 28.9$ ,  $S.D. = 25.0$ ) asymptomatic high-risk drinkers far exceeded NIAAA low-risk limits for men (no more than 14/week) and women (no more than 7/week), these individuals were grouped with unremitted, rather than remitted, individuals. A separate category was created for individuals who drank at high-risk levels but who never met AD criteria. The dependent variable thus had 4 categories: never developed AD and was (1) abstinent or a low-risk drinker (reference category), or (2) a high-risk drinker; or developed AD and at follow-up was (3) abstinent or a low-risk drinker ("remitted"), or (4) had current symptoms or was a high-risk drinker ("unremitted/unstably remitted").

**2.2.2. Parental alcohol problems at follow-up assessment.** History of alcohol problems in one or both parents was based on an affirmative response to the question at 11-year follow-up, "Have any of the following relatives drunk heavily or had any drinking problems, like problems with health, family, job or police?"

**2.2.3. Current network drinking characteristics.** Social network drinking was based on respondent reports of drinking patterns in closest male and female friends and current spouse or partner (range 0–3) and in the broader friendship network. Close network drinking was queried by "Now I'd like to know about the current drinking habits of the people you may be close to." Respondents were asked to choose which of 7 drinking patterns best fit each individual in the close network ("lifelong abstainer," "non-drinker," "occasional or light drinker," "moderate drinker," "heavy drinker," "problem drinker or alcoholic," "recovering problem drinker or alcoholic who doesn't drink now"). Dichotomous variables representing any network members in each drinking category were created, since the number of close network members varied. Respondents were then asked whether any friends in the broader network fit the drinking patterns (yes/no). Associations of the close and broad network variables with each category of the outcome variable were similar (e.g., comparing the associations of heavy drinking in the close and broad network with remitted AD yielded  $\chi^2_{(1)} = 0.7$ ,  $p = .40$ ) and so were combined. The final network drinking variables thus represented the presence in the network of any person who was a (1) moderate drinker, (2) heavy drinker, (3) problem drinker or alcoholic, or (4) recovering problem drinker or alcoholic who no longer drinks. Non-drinkers and occasional or light drinkers comprised the reference group.

## 2.3. Statistical methods

Associations of network drinking and parental alcohol problems with high-risk drinking without AD and with remitted and unremitted/unstably remitted first-onset AD were tested using multinomial logistic regression. Regressions were adjusted for gender, age, ethnicity, marital status, and childhood psychiatric disorder (attention deficit hyperactivity disorder, conduct disorder, or oppositional defiant disorder).

## 3. Results

First-onset AD was detected in 15.5% ( $n = 109$ ) of the sample (21.0% of men, 12.4% of women), and 19.5% never developed AD but

were drinking at high-risk levels at follow-up. Of those who developed AD, one-third ( $n = 35$ ) had remitted by follow-up and were abstinent or drinking at low-risk levels, and 67.8% were unremitted/unstably remitted ( $n = 54$  with current AD;  $n = 20$  asymptomatic high-risk drinkers). Younger age and self-reported excessive drinking were more prevalent in all categories relative to abstinent or low-risk drinkers without AD (Table 1). High-risk drinkers without AD were less likely to be female, to have married, and to have sought help for psychiatric or substance use problems. Individuals who developed AD, whether remitted or not, had higher rates of childhood psychiatric disorder. Unremitted/unstably remitted individuals were less likely to be female and to have married. High-risk drinkers without AD and unremitted/unstably remitted individuals were less likely to report non-drinkers and more likely to report moderate, heavy, and problem drinkers or alcoholics in their networks. Remitted and unremitted/unstably remitted individuals were more likely to report recovering problem drinkers or alcoholics who no longer drink in their networks, relative to abstinent or low-risk drinkers without AD.

In the multivariate equation, high-risk drinkers without AD were characterized by moderate and problem drinkers or alcoholics in their networks (Table 2). Remitted individuals were characterized by recovering former drinkers in the network and by alcohol problems in both parents. Unremitted/unstably remitted individuals were characterized by moderate drinkers in the network and alcohol problems in both parents. The associations of alcohol problems in both parents with remitted and unremitted/unstably remitted AD were statistically similar ( $\chi^2_{(1)} = 0.1$ ,  $p = 0.71$ ). The associations with remitted AD of network recovery and alcohol problems in both parents were statistically similar ( $\chi^2_{(1)} = 0.2$ ,  $p = 0.61$ ), as were the associations with unremitted/unstably remitted AD of moderate drinking and parental alcohol problems ( $\chi^2_{(1)} = 0.1$ ,  $p = 0.74$ ).

## 4. Discussion

In this follow-up study of ECA participants, 15.5% of high-risk adults with no prior history of AD developed AD over an 11-year interval. One-third of these remitted within that interval, 18.3% were in unstable remission, characterized by high-risk drinking with no current AD symptoms, and 49.5% had current AD at follow-up. Twenty percent of the sample never developed AD but was drinking at high-risk levels at follow-up. Social network drinking patterns were associated with high-risk drinking without AD and with remitted and unremitted/unstably remitted AD after adjustment for parental alcohol problems and childhood psychiatric disorder. Network drinking patterns were differentially associated with each outcome category: moderate and problem drinking with high-risk drinking without AD, recovering problem drinkers with remitted AD, and moderate drinking with unremitted/unstably remitted AD, suggesting peer assortment by drinking habit.

The rate of incident AD in this sample of high-risk adults was higher than that found in population-based samples, as would be expected. In the Framingham Heart Study, a population-based study with multiple assessments over 50 years, 12.8% of men and 3.8% of women who were aged 40 and older developed a first onset of alcohol abuse or dependence (Zhang et al., 2008). By contrast, the current study found 21.0% of men and 12.4% of women had a first onset of AD, more severe than abuse, at an earlier age, consistent with their high-risk status.

Network drinking was associated with incident AD after adjustment for parental alcohol problems, which is associated with increased risk for AD (Hartman et al., 2006; Prescott et al., 1994), and with childhood disorders which have genetic components in

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