



# A natural experiment of peer influences on youth alcohol use



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## ABSTRACT

This study estimates peer effects on alcohol use, drawing from a database of about 2000 randomly-assigned roommates on a college campus. The estimation of peer influences also takes into consideration ego's history of alcohol use and friendship with the peer. College students averaged an additional two-fifths of a binge drinking episode per month and an additional one-half of a drinking episode per month when randomly assigned a roommate who drank in high school than when assigned a roommate who did not drink in high school. An individual's prior history of alcohol use proves important. Peer effects on binge drinking as well as drinking for those who already drank in high school were about twice as large as average peer effects. When one did not have a history of alcohol use, negative peer influences were absent. Also important is the friendship between peers. When a peer is considered a best friend, the step-up effect (or positive interaction effect) increased by 1.25–1.61 drinking episodes per month. However, even when a peer is not considered a best friend, a drinking peer still increased ego's drinking episodes by 0.75–1.00 per month.

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## 1. Introduction

Mouw (2006 p. 79) calls peer influences “network” social capital and defines them as “the effect of characteristics of friends, acquaintances, or groups on individual outcomes.” He emphasizes that as social capital, peers are part of larger social structures and outside the domain of individual traits. In the study of youth delinquent behavior, peer influences have been a central concern and the observed correlation among peers in delinquent behavior is one of the most enduring findings (e.g., Giordano et al., 1986; Haynie, 2001; Kreager and Haynie, 2011; Matsueda and Anderson, 1998; Matsueda et al., 2006).

Although commonly recognized as one of the most potent social contexts, peer influences are difficult to investigate. The main complexity is caused by social homophily—individuals' tendency to choose those similar to themselves as friends (Cohen and Jere, 1977; Kandel, 1978; McPherson et al., 2001; Moffitt, 2001; Mouw, 2006). As a result, it is difficult to determine how much of the observed similarity among friends in survey studies is due to causal peer effects and how much is due to the fact that “birds of a feather flock together.” When Christakis and Fowler, 2007 published their widely publicized finding that an individual's probability of becoming obese increased by 57% when he or she had an obese friend, critics quickly pointed out that the survey data used in the study are incapable of separating friend effect from friend selection in the survey data (Cohen-Cole and Fletcher, 2008).

In this study, using data from a natural experiment of randomly assigned roommates at a large public university (the College Roommate Study or ROOM), we address the issue of friend selection for one type of youth behavior—alcohol use—in the

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United States. We estimated peer effects on binge drinking (defined as having five or more drinks in a row for men and four or more for women, or 5+/4+) as well as drinking. Natural experiments such as randomly-assigned roommates on a college campus provide an invaluable opportunity for estimating peer influences (e.g., [Sacerdote, 2001](#)). Natural experiments rely on study design to remove potential bias caused by friend selection.

Our overall objective is two-fold. We generated credible estimates of peer effects. We also provided the evidence as to how history of alcohol use and friendship among peers influence the strength of peer effects. Because an experimental study design controls for potential bias from selection, the analysis is expected to yield credible estimates of peer effects.

We performed three analyses. First, we estimated average peer effects controlling for ego's history of alcohol use in high school. Second, we estimated peer effects conditional on ego's history of alcohol use in high school, hypothesizing that individuals with a history of alcohol use were more easily swayed by a drinking roommate than those without such a history. Third, we estimated the average effects and the conditional effects for those who considered his or her roommate a best friend and for those who did not consider his or her roommate a best friend. For the third analysis, peer effects among friends are expected to be substantially larger than peer effects among non-friends.

## 2. Background

### 2.1. Alcohol use among youth and peer influences

It should be noted that college drinking is sometimes considered developmentally normative rather than delinquent because a large majority of college students experiment with it. [Schulenberg and Maggs \(2002\)](#) describes five developmental models explaining college drinking. Among them, the transition catalyst and heightened vulnerability to chance events model suggests that cultural norms in college promote a period of normative experimentation in the form of alcohol use. Nevertheless, binge drinking is generally considered a high-risk form of alcohol use.

High-risk drinking among youth can have severe negative consequences for those who drink and even for those around them—academic difficulties ([Singleton and Wolfson, 2009](#)), health issues ([Wechsler et al., 1994](#)), suicide attempts ([Schilling et al., 2009](#)), physical and sexual aggression ([Roudsari et al., 2009](#)), sexual victimization ([Palmer et al., 2010](#)), and fatal traffic crashes ([Hingson et al., 2009](#)). Alcohol use is associated with more than 50% of sexual assaults among college students. Alcohol use is linked with serious personal injuries and accidents. Approximately one-third of 18–24 year olds admitted to emergency rooms for severe injuries are under the influence of alcohol. Heavy drinking is related to homicides, suicides, and drownings. Alcohol is involved in about 50% of all fatal traffic accidents. Consequences of heavy drinking also have “second-hand effects” similar to the effects of secondhand smoking including noise, property damage, vomit, and littering.

Alcohol use is widespread on U.S. college campuses. It is a major part of the college culture and present at many social occasions and peer interaction functions ([Thombs, 1999](#)). College students tend to consider alcohol use an acceptable behavior ([Eastman, 2002](#); [Johnson, 1989](#)). Many view college years as a period during which they can use alcohol excessively before taking on the responsibilities of adulthood.

College is a transition period between adolescence and full adulthood. Most college students start living in a residence hall or rented apartment away from parents, intensifying a process of independence begun during adolescence ([Borsari and Carey, 2001](#)).

[Borsari and Carey \(2001\)](#) outline a number of mechanisms through which peers influence college drinking. Direct peer influence can take the form of friendly gestures (e.g., buying a drink or a round of drinks) or overt pressures to drink (e.g., pressuring peers to play drinking games). Peers may also influence college drinking indirectly by acting as role models. Through their own drinking behavior, peers indicate what behaviors are accepted and appropriate.

### 2.2. Theoretical framework

The social learning perspective and the social control perspective on delinquency have had a great deal of influence on the interpretation of peer influence. The social learning perspective considers peer influence critically important. [Sutherland's \(1947\)](#) differential association theory maintains that delinquent behavior is acquired through close association with peers where the attitudes and norms of delinquent peers are learned.

Social learning theory is an expansion of Sutherland's theory. According to [Bandura \(1971, 2–3, 13–15, 26–27\)](#)'s social learning perspective, human behavior is a result of an interaction between an individual's internal forces and external conditions. In contrast to the differential association theory, the social learning perspective believes that humans are capable of developing hypotheses about which behavior may be beneficial and acceptable. Social learning theory emphasizes two additional concepts: imitation and operant conditioning ([Akers, 2001, 1985](#)). When first initiated, delinquent behavior is often imitated or learned from the observation of similar behavior in others. Operant conditioning is also a form of learning in which an individual's behavior is shaped by its consequences. A positive consequence of a delinquent act encourages delinquency and a negative consequence discourages the behavior. Social learning theory highlights social aspects of behavior-learning. Delinquent behavior is more likely to be sustained when an individual is embedded in a social environment where delinquency is rewarded and unlikely to be punished. The social learning perspective suggests that excessive drinking

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