Peer Effects on Alcohol Drinking Among Adolescents in U.S.

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Introduction

Underage drinking is a leading public health problem in numerous countries and cultures including the United States (Ahlstrom and Osterberg 2004). A large number of studies indicate that drinking may cause serious negative consequences in both health and social aspects among adolescents. Due to the immature development of the body, large amount of alcohol adoption will result in more serious health problem to youth than to adults (Guo and Ren 2010). Meanwhile, alcohol is also one of the drug choices among the young people which may lead to other health-risk behaviors. For example, youth who drink alcohol are more likely to be associated with several bad habits like cigarette smoking, use of marijuana, even cocaine and heroin (Greggo, Jones, and Kann 2005). In addition, early onset of alcohol use is closely associated with continuing use of alcohol and drugs in future life (Grant and Dawson 1997). Besides the harmfulness to the health condition of young people, underage drinking is also highly related to certain risk behaviors because of possible impairing to the judgment or cognitive ability (French and Maclean 2006). It includes but not limited to drunk driving, fighting, and homicides. Each year, there are approximately 5,000 young people under the age of 21 die as a result of underage drinking and dangerous behaviors in relation to drinking, including about 1,900 deaths from motor vehicle crashes, 1,600 as a result of homicides, 300 from suicide, as well as hundreds from other injuries such as falls, burns, and drowning (NIH Alcohol Alert, 2006).

All the truth indicates the importance and meaningfulness of controlling and mitigating the situation of underage drinking. A number of government policies and regulations have been made to curb the underage drinking problem; meanwhile large amounts of public efforts have been devoted into activities aiming to reduce the childhood drinking. Obviously, all of the regulations and efforts aiming at reducing underage drinking are based on the comprehensive and thorough understanding of childhood drinking behavior. And it calls studies to distinguish the factors that are associated with adoption and habit of drinking among adolescents. Therefore, objectives of this present study are to identify determinants of alcohol drinking among U.S. youth, and further check whether peer effects (or peer pressure) have a significant effect in influencing the drink behavior.

Data

In order to assess the impact of individual, peer, and school influences on the frequency of alcohol consumption among US youth, the Youth Risk Behavior Surveillance System (YRBSS) published by Centers for Disease Control and Prevention (CDC) is employed in this present study. YRBBS is an epidemiologic surveillance system established by CDC to monitor the prevalence of youth behaviors that most influence health, including alcohol and other drug use, tobacco use, unhealthy dietary behaviors, behaviors that contribute to unintentional injuries and violence, etc. The data set used in the study was YRBSS in 2011. This survey uses a three-stage cluster sample design to produce a representative sample of 9^{th} through 12^{th} grade student through all public, Catholic and

other private school students. With 81% school response rate and 87% student response rate, the final data includes 15,425 valid respondents.

The key survey question this paper investigated into is “During the past 30 days, on how many days did you have at least on drink of alcohol”, which describes the frequency behavior of youth alcohol consumers. For the convenience of analysis, the answer of this question is coded into four categories in relation to the alcohol using consumption (1=0 days, 2= 1to 9 days, 3= 10 to 19 days, and 4= 20 days or more). It varies from “non-drinker” to “frequent drinker”. In terms of the explanatory variables, several survey responses are included in the analysis, which are believed to influence the alcohol using behaviors. They include demographic information (i.e., age, race, gender, and BMI), personal life habit (i.e., sleep quality, diet regularity, other dangerous habit like smoking), social environmental factors, and also peer effect factors.

In order to control for drinking history, alcohol access, environmental factors, and peer effects, a number of variables are taken into consideration. Age when a child had a first drink is a key variable since early age drinking will bring up the probability of developing alcohol dependence (Hingson, Heeren, and Winter 2006); meanwhile due to the immature development of the health condition in adolescence, early age drinking may cause much more harm to their health compared with that to the adult both mentally and physically (Jonas, Dobson, and Brown 2000, Sturm et al. 1998). In the present study, the average age of respondents first tried smoking is between 14 to 15 years old. Another group of variables describes the way the young people get their drinks. Based on the

descriptive statistics of variables listed in Table 1, one can find that the most common ways of getting alcohol is through someone else, either buy for them or give them the drink. The second major source is given by some family member, followed by buying himself. Evaluating the roles of those different alcohol access way will provide us help make specific suggestion on controlling the adolescence alcohol accessing.

In addition, several factors related to person health conditions and habits are also included in the analysis. Over drinking of course will harm people's health, but sometimes bad habits may in some level contribute to the early age drinking since it reflects the problems of less self-control and attitudes to the ill-behaviors. In this study, BMI by sex and age is considered to be a measure of a respondent's health level. Two other variables, whether a respondent eats breakfast on all of the past seven days and whether he gets eight or more hours of sleep on average school night, are thought to be a reflection of habits. Surprisingly, from the Table 1, only 29.7% students have breakfast every day. These variables may explain the relationship between young people alcohol consumption and unhealthy habits and customs.

Finally, several variables are selected to capture peer and school effects. For the questions originally in the survey, "During the past 12 months, did the boyfriend of girlfriend ever hurt you", was included in the model, since the conflict between couples may bring psychological pressures to both side and may further involve to more aggressive behavior (Capaldi, Shortt, and Crosby 2003). Sometimes this conflict will lead young people to alcohol consumption for relaxing, so it is of great interest to investigate

the effect of this variable. Another original question included is about the possible fight in the school. We also construct a variable to capture the school effects: the rate of alcohol-drinking students in the respondent's school area. This variable is particular important, since it captures the peer influences of attending a school where alcohol drinking is a common phenomenon. Another question that may somewhat suggests the importance of school in controlling the unhealthy behaviors among adolescence is, during the past 12 months, whether a respondent talked his problem to a teacher or any other adults in the school. Psychological education and counseling play an important role in children's development (Lecavalier, Leone, and Wiltz 2006) and schools should focus a lot on this work, like providing regular classes and other ways to teach and help student solving kinds of problem and adjusting their mood. Failing to do so may force students seeking unhealthy behavior like drinking in order to relief. Thus it is important to investigate the effect of this variable in our analysis as well.

Methods

As mentioned in the previous section, the key response variable is the days in the past months that a respondent had at least on drink, and the answers are categorized into four groups according to the frequency level. The ordered probit model which can be derived from a latent variable model (Greene 2003) is employed in this study to analyze the alcohol consumption of the young people. In this section we briefly discuss this model. Denote y^* is the unobserved latent variable and believed can be explained by explanatory variables denoted as X (Greene 2003):

$$y^* = \mathbf{x'\beta} + \boldsymbol{\varepsilon} \tag{1}$$

What people can observe is:

$$\begin{aligned} y &= 0, \ \ if \ \ y^* \le 0 \\ &= 1, \ if \ \ 0 < y^* \le \mu_1 \\ &= 2, \ if \ \ \mu_1 < y^* \le \mu_2 \\ &\ \ \vdots \\ &= J, \ if \ \ \mu_{J-1} \le y^* \end{aligned} \tag{2}$$

The $\mu's$ are unknown cut point parameters which need to be estimated, and stratifies the following condition:

$$0 < \mu_1 < \mu_2 < ... < \mu_{J-1}. \tag{3}$$

If error term ε is assumed to follow normally distribution, the following probabilities can be used to estimate the model:

$$\begin{aligned} &Prob(y = 0 \mid \mathbf{x}) = \Phi(-\mathbf{x'\beta}), \\ &Prob(y = 1 \mid \mathbf{x}) = \Phi(\mu_1 - \mathbf{x'\beta}) - \Phi(-\mathbf{x'\beta}), \\ &Prob(y = 2 \mid \mathbf{x}) = \Phi(\mu_2 - \mathbf{x'\beta}) - \Phi(\mu_1 - \mathbf{x'\beta}), \\ &\vdots \\ &Prob(y = J \mid \mathbf{x}) = 1 - \Phi(\mu_{J-1} - \mathbf{x'\beta}). \end{aligned} \tag{4}$$

The log-likelihood of observation i is:

$$\ln \ell_i = \sum_{p=1}^{J} 1(y_i = p) \ln \Pr(y_i = p \mid \mathbf{x}) \tag{5}$$

Aggregating over the individual likelihood functions for the entire sample, we can derive the coefficient estimates using maximum likelihood method. Like most cases of discrete choice models the marginal effect of each exogenous variable is of more interest and will be calculated by taking derivative to reveal the exact effects on the dependent variable.

Result

The coefficients along with their standard error from estimation are shown in Table 2. It is notable that in the ordered probit model the magnitude of coefficients does not have an immediate interpretation, the sign of the coefficients reveal the direction of the effect of certain explanatory variables of interest. For these reasons we will not discuss the coefficient estimation in details; instead, the marginal effects of explanatory variables to each categories of response are computed, which will provide precise effect measure. The result of the marginal effects and their standard errors are shown in Table 3. Since the main focus of our paper is to analyze the factors that influence the young people drinking behavior, we will not spend much time discuss these influences on the non-drinking people category. Among those who did have alcohol in the past month, for the convenience of discussion, we call people who belong to the fourth group (20 days or more) “regular drinkers”. Furthermore, our discussion will mainly concentrate on the effects on people who belong to the second and fourth group. Since for those who are in the second group, they are likely to only drink several times a month, which corresponds to less drinking problem, but they may be in the initiation stage of drinking. So it is important to discover the characteristics of behaviors in this stage and give suggestions in order to stop the problem in its early age. On the other hand, the students who fall into the fourth group show that they may have alcohol drink every day, which indicates they are heavily addicted to alcohol and may need medical intervention. Knowing the characteristics of this group will also help us provide certain strategies to prevent situation goes so far.

The first important implication is the significant negative effect of age when first drinking to the fourth category. That is, the later one starts drinking, the less probability he or she will become a heavy drinker. This may contribute to more developed nervous system of older youth, as well as more education and life experience, which may help them to resist the effect of alcohol. Although this sounds intuitively, it strengthens the importance of keeping adolescence from alcohol, since underage drinking, especially heavy drinking will cause a series of dangerous results such as accidental death and injury, or the alcohol may impair the nervous system and this effect may accumulate and create chronic problems (Bonnie 2004). This requires different social groups to work together, including government, school, community and family and so on.

A good habit of living will benefit the young people in lots of aspects, including reducing the alcohol drinking. From the marginal effects estimation of two habit related factors, we know that those people who keep eating breakfast everyday and ensure sufficient sleep hours in school days, have significant less probability to become heavy drinkers. Good habits in relation to both eating and sleeping will not only guarantee a well physical condition, it will also reflect a strong mental status, a good ability of self-control and self-management, which are helpful to resist the temptation of alcohol. On the contrary, young people who do not hold good living habit may be lack of those good qualities which may cause them vulnerable to other unhealthy behaviors. For instance, one can notice that from the model estimation results in Table 3, those who also smokes have higher probabilities to become heavy drinkers. Efforts of curbing alcohol using from this

aspect would require more involvement from school and family, not only to inform the importance of regular and good living habits to the young people, but also create a good environment and supervise them to do so. It is a little surprise from the data summary that only 29.7% of the surveyed students have breakfast every day. This situation could be better if the family pay more attention on this issue.

Although the legal age for purchasing alcohol is 21 in all the 50 states in the U.S., the data summary in Table 1 indicates that there are still large percentage of young people can purchase alcohol or easily receive drink from others. For example, 1.8% people can buy alcohol from store, notice that this is the ratio based on the whole sample, if we normalize it to only consider those who drinks, this ratio is actually almost 8%. Also from the model estimates in Table 3, buying from store has the largest marginal effects corresponding to the fourth group, that is, the heavy drinkers tends to buy the alcohol by himself from stores. This indicates that it is necessary to reinforce the control and supervision of alcohol selling path and may implement substantial penalties to the stores and individuals who sell alcohol to the underage drinkers. We also notice that almost 13% of the young drinkers (after normalization) get their alcohol from family members. This shows that family also plays a significant role in fighting against underage drinking. The school or the public service agencies, or the media need to inform parents the dangerous of underage drinking and advocate the right way parents should follow. Although some of the sates laws permit people who are under 21 drink under the parents presence, we believe it is still strongly recommended to the parents that do not let children get involved in drinking since they may easily get addicted.

Last but not the least, the peer and school effects are analyzed, which are also the center topic of this paper. The most important peer effect is revealed from the two variables that close related to school environment. The likelihood of a student being a heavy drinker is significantly positive related to the ratio of drinkers in the same school area. Also, the percentage of drinkers in school has large positive marginal effects on the probability of being a heavy drinker, from the estimation results in Table 3. This suggests that schools that fail to control the number of drinkers of their students may increase the probability of other students becoming heavy drinkers. Although this drinking case may not happen onset, school should be required to and be capable to pay more attention on their management on alcohol drinking. The strict regulations on drinking to guarantee a non-alcohol school environment are necessary. Besides, lots of programs and education curricula could be chosen from to reduce the prevalence of alcohol use, including but not limited to (Komro and Toomey 2002): developmentally appropriate information about alcohol, drugs; active family and community involvement; teacher training and support from program developers or prevention experts, and the development of personal, social and resistance skills to help students identify internal pressures (anxiety and stress) and external pressures (peer pressure and advertising). There are several successful alcohol prevention curricula exist, and some papers followed up to evaluate the effect and result of these project, for example, project northland (Perry et al. 1996), project SMART (Hansen and Graham 1991), and so on. Foxcroft and Tsertsvadze (2011) provide an elaborate review on universal school-based prevention programs for alcohol misuse in young people. Another evidence from our analysis indicate the necessity of clean school

environment is the positive effect of school fight, although not significant, it will increase the probability of underage drinkers becoming heavy drinks. Besides, school fight will not only cause direct physical injuries but also bring psychological pressure to both fighters and their classmates. From the descriptive statistics, the average time of fight on school property a student experienced in about 2, which clearly a problem need to be considered.

Relationships are influential to young people and a significant part of their social life. Being in a relationship is said to be in a process of "developmental transitions" (Schulenberg and Maggs 2002) which is critical stage to the young people. There will be more diversity in their life, and they will face both gains and losses to learn to choose by themselves (Baltes 1988). Research shows alcohol use tend to escalate in this transition status (Schulenberg and Maggs 2002). We find similar result from our estimation. The survey question "whether you hurt by boyfriend/girlfriend" is included in the model and the result shows it has a significantly affect in the possibility of becoming a heavy drinker. The hurt from intimate people will cause more damage, and this negative effect will lead one to seek some unhealthy behavior if it is not handled properly. Generally speaking, it is not only restricted to the case here (hurt by boyfriend/girlfriend), any unhappiness or bad mood may lead to drinking problem if the school/family do not treat them in time and properly. This can be revealed from the estimation result. In the survey, the student were asked that "did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities". Our model shows that the students who have this situation are statistical significant 1.8% higher to

become heavy drinker compared with those who do not have. And more importantly, there are nearly 29% of the respondents claimed that they had this experience before. It is a large amount but understandable. Teenagers need a relative long time to establish identities and value systems on which to base their opinions (Jezl, Molidor, and Wright 1996) and before this foundation being firm it is not surprise to see confusion, anxiety and tension around dating or any other incidents that they may encounter for the first time. Thus it is not fear or prevention that we should do, but provide a good education and guide to help them facing and solving the problem in a correct way instead of turning to unhealthy behaviors. This requires the efforts from both school and family. Besides the possible school program mentioned in previous graph, the family and school may contact frequently to discuss and monitor children's activities during adolescence (Komro and Toomey 2002). They should also strengthen the bonding with the children and let the young people trust them and willing to share their thoughts, consulting to them when confronting problems. As shown in our estimation results, talking to a teacher or other adult about personal problems will lower the chance of becoming heavy drinkers.

Finally, looking at the impact of gender and racial backgrounds, the model estimates suggests that there is no significant difference between male and female in terms of the drinking frequency. In the racial aspect, the result shows that Latino or Hispanic student has lower probability of being heavy drinkers. However, although some of the researches mentioned the differences of drinking behavior between racial groups (Miller et al. 2007) we do not find any previous studies that have been able to explain this difference well.

Conclusion

There is no doubt that alcohol drinking among adolescents is a significant health issue. The present study investigated the underage drinking behavior and its determinants, using 2011 Youth Risk Behavior Surveillance System data published by Centers for Disease Control and Prevention. The impact of different categories of factors to the drinking frequency has been explored, including demographic variables, personal habit variables, and social environmental factors.

Results of the study suggest that on the school level, strict policies should be made to prohibit alcohol drinking and improve school management. This will reduce the bad peer effect, or peer pressure among the students, and further decreases the number of drinking students. The effective management will not only benefit the underage drinkers themselves, but also the rest of the school due to a spillover effect.

In addition, there is still a large portion of students can achieve alcohol through purchasing from store or receiving from others. Surprisingly, there are even numbers of student who can get drink from their parents. So strict controls on youth alcohol access and parental involvement can significantly improve the drinking problem among adolescents.

Furthermore, the existing of bad mood and high pressures may push adolescence towards alcohol drinking. Therefore, the school and family should cooperate to discover and

notice the unusual mood of students and build a foundation of harmony and trust, so that the children can share and discuss their problems with adults; then help them solve the issues and release pressures through a proper and correct way instead turning to unhealthy behaviors.

Reference

Ahlstrom, Salme K, and Esa L Osterberg. 2004. "International perspectives on adolescent and young adult drinking." *Alcohol Research and Health* no. 28 (4):258.

Baltes, Margret M. 1988. "The etiology and maintenance of dependency in the elderly: Three phases of operant research." *Behavior Therapy* no. 19 (3):301-319.

Bonnie, Richard J. 2004. *Reducing underage drinking: A collective responsibility*: National Academies Press.

Capaldi, Deborah M, Joann Wu Shortt, and Lynn Crosby. 2003. "Physical and psychological aggression in at-risk young couples: Stability and change in young adulthood." *Merrill-Palmer Quarterly* no. 49 (1):1-27.

Foxcroft, David R, and Alexander Tsertsvadze. 2011. "Universal school-based prevention programs for alcohol misuse in young people." *Cochrane Database Syst Rev* no. 5.

French, Michael T, and Johanna C Maclean. 2006. "Underage alcohol use, delinquency, and criminal activity." *Health Economics* no. 15 (12):1261-1281.

Grant, Bridget F, and Deborah A Dawson. 1997. "Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey." *Journal of substance abuse* no. 9:103-110.

Greene, William. 2003. "H.(2003): Econometric Analysis." *New Jersey, ua: Prentice Hall*.

Greggo, Jennifer, Sherry Everett Jones, and Laura Kann. 2005. "Population density and alcohol-related risk behaviors among US high school students." *Journal of Health Education* no. 36 (3):148-154.

Guo, Rui, and Jun Ren. 2010. "Alcohol and acetaldehyde in public health: from marvel to menace." *International journal of environmental research and public health* no. 7 (4):1285-1301.

Hansen, William B, and John W Graham. 1991. "Preventing alcohol, marijuana, and cigarette use among adolescents: Peer pressure resistance training versus establishing conservative norms." *Preventive medicine* no. 20 (3):414-430.

Hingson, Ralph W, Timothy Heeren, and Michael R Winter. 2006. "Age at drinking onset and alcohol dependence: age at onset, duration, and severity." *Archives of pediatrics & adolescent medicine* no. 160 (7):739-746.

Jezl, David R, Christian E Molidor, and Tracy L Wright. 1996. "Physical, sexual and psychological abuse in high school dating relationships: Prevalence rates and self-esteem issues." *Child and Adolescent Social Work Journal* no. 13 (1):69-87.

Jonas, Helen A, Annette J Dobson, and Wendy J Brown. 2000. "Patterns of alcohol consumption in young Australian women: socio-demographic factors, health-related behaviours and physical health." *Australian and New Zealand Journal of Public Health* no. 24 (2):185-191.

Komro, Kelli A, and Traci L Toomey. 2002. "Strategies to prevent underage drinking." *Alcohol Research and Health* no. 26 (1):5-14.

Lecavalier, L, S Leone, and J Wiltz. 2006. "The impact of behaviour problems on caregiver stress in young people with autism spectrum disorders." *Journal of Intellectual Disability Research* no. 50 (3):172-183.

Miller, Jacqueline W, Timothy S Naimi, Robert D Brewer, and Sherry Everett Jones. 2007. "Binge drinking and associated health risk behaviors among high school students." *Pediatrics* no. 119 (1):76-85.

Perry, Cheryl L, Carolyn L Williams, Sara Veblen-Mortenson, Traci L Toomey, Kelli A Komro, Pamela S Anstine, Paul G McGovern, John R Finnegan, Jean L Forster, and Alexander C Wagenaar. 1996. "Project Northland: outcomes of a communitywide alcohol use prevention program during early adolescence." *American Journal of Public Health* no. 86 (7):956-965.

Schulenberg, John E, and Jennifer L Maggs. 2002. "A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood." *Journal of Studies on Alcohol and Drugs* (14):54.

Sturm, Roland, Carole Gresenz, Cathy Sherbourne, Katy Minnium, Ruth Klap, Jay Bhattacharya, Donna Farley, Alexander S Young, M Audrey Burnam, and Kenneth B Wells. 1998. "The design of Healthcare for Communities: a study of health care delivery for alcohol, drug abuse, and mental health conditions." *Inquiry: a journal of medical care organization, provision and financing* no. 36 (2):221-233.

Table 1. Descriptive statistics of variables included in the empirical model

Variable name	Variable description	Mean	Std. dev.
Dependent variable:			
Fre_drink	During the past 30 days, on how many days did you have at least one drink of alcohol? 0 days =1; 1 to 9 days=2; 10 to 19 days=3; 20 days or more=4	2.204	1.044
Independent variables:			
	Peer effect factor		
Drinkrate	Percentage of alcohol-drinking students in the respondent's school area	.734	.044
Schoolfight	During the past 12 months, how many times were you in a physical fight on school property? 0 times=1; 1time=2; 2 or 3 times =3; 4 or 5 times =4; 6 or 7 times =5; 8 or 9 times =6; 10 or 11 times =7; 12 or more times =8	1.191	.694
Boy_girlfriend_hurt	During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose? Yes=1; No=0	.094	.291
	Demographic factors		
Age	Actual age in years	5.111	1.223
Male	=1 if a respondent is a male	.493	.500
Latin	=1 if a respondent if a Hispanic or Latino	.676	.468
Beginage	How old were you when you had your first drink of alcohol other than a few sips? 8 years old or younger =1; 9 or 10 years old =2; 11 or 12 years old =3; 13 or 14 years old =4; 15 or 16 years old =5; 17 years old or older =6; I have never had a drink of alcohol other than a few sips=7	4.888	1.818
D_sad	During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities? Yes=1; No=0	.289	.453
days_smoke	During the past 30 days, on how many days did you smoke cigarettes? 0 days=1; 1 or 2 days=2; 3 to 5 days=3; 6 to 9 days=4; 10 to 19 days =5; 20 to 29 days=6; All 30 days=7	1.442	1.085
bmipct	Body Mass Index percentage by sex and age	63.051	28.346
d_talk	During the past 12 months, did you talk to a teacher or other adult in your school about a personal problem you had? Yes=1; no=0	.237	.425
	Habit factors		
D_breakfast	=1 if a student ate breakfast on all of the past seven days	.297	.457
D_sleep	=1 if a student gets eight or more hours of sleep on average school night	.258	.437
	Way to get alcohol		
D_store	During the past 30 days, how did you usually get the alcohol you drank? bought it in a store such as a liquor store, convenience store, supermarket, discount store, or gas station=1; otherwise=0	.018	.135
D_public	During the past 30 days, how did you usually get the alcohol you drank? bought it at a restaurant, bar, club, or a public event such as a concert or sporting event =1; otherwise=0	.006	.078
D_other	During the past 30 days, how did you usually get the alcohol you drank? I gave someone else money to buy it for me or someone gave it to me=1;otherwise=0	.217	.412
D_family	During the past 30 days, how did you usually get the alcohol you drank? I took it from a family member=1; otherwise=0	.038	.192

Table 2. Estimation results of alcohol drink frequency

Variable name	Coefficients	Std. error
	Peer effect factor	
Drinkrate	5.678***	0.242
Schoolfight	0.010	0.018
Boy_girlfriend_hurt	0.081**	0.037
	Demographic factors	
Age	0.211***	0.009
Male	-0.014	0.022
Latin	-0.197***	0.026
Beginage	-0.412***	0.007
D_sad	0.108***	0.025
Days_smoke	0.212***	0.011
Bmipct	0.423 e-03	0.379 e-03
D_talk	-0.038	0.026
	Habit factors	
D_breakfast	-0.128***	0.024
D_sleep	-0.097***	0.026
	Way to get alcohol	
D_store	0.957***	0.088
D_public	0.593***	0.132
D_other	0.699***	0.028
D_family	0.414***	0.055
Cut1	2.614	0.190
Cut2	4.519	0.192
Cut3	4.926	0.193

Note: *, ** and *** denote significant at 10%, 5%, and 1% levels, respectively.

Table 3. Marginal effect in peanut eating frequency

Variable name/ dy/dx	0 day	1-9 days	10-19 days	20 days or more
	Peer effect factor			
Drinkrate	-1.400	-0.077	0.544	0.933
	(0.061)	(0.030)	(0.028)	(0.042)
Boy_girlfriend_hurt*	-0.019	-0.0024	0.008	0.0138
	(0.008)	(0.0018)	(0.004)	(0.007)
SchoolFight	-0.0025	-0.0001	0.00096	0.0016
	(0.0045)	(0.00026)	(0.0018)	(0.003)
	Demographic factors			
Age	-0.052	-0.003	0.020	0.035
	(0.002)	(0.001)	(0.001)	(0.002)
Latin*	0.047	0.006	-0.018	-0.034
	(0.006)	(0.002)	(0.003)	(0.005)
Beginage	0.102	0.006	-0.039	-0.068
	(0.002)	(0.002)	(0.001)	(0.002)
D_sad*	-0.026	-0.003	0.010	0.018
	(0.006)	(0.001)	(0.002)	(0.004)
Days_smoke	-0.052	-0.003	0.020	0.035
	(0.003)	(0.002)	(0.001)	(0.002)
D_talk*	0.0095	0.0003	-0.0036	-0.0062
	(0.0065)	(0.0002)	(0.0025)	(0.0041)
	Habit factors			
D_breakfast*	0.032	0.0001	-0.012	-0.020
	(0.006)	(0.00074)	(0.002)	(0.004)
D_sleep*	0.024	0.0002	-0.009	-0.0154
	(0.007)	(0.00056)	(0.002)	(0.004)
	Way to get alcohol			
D_store*	-0.140	-0.192	0.074	0.259
	(0.006)	(0.029)	(0.004)	(0.032)
D_public*	-0.106	-0.086	0.054	0.138
	(0.016)	(0.034)	(0.010)	(0.040)
D_other*	-0.140	-0.072	0.065	0.148
	(0.005)	(0.006)	(0.003)	(0.007)
D_family*	-0.083	-0.042	0.039	0.086
	(0.009)	(0.010)	(0.005)	(0.014)

Note: This table only reports the results at 10% levels. Standard errors are in parentheses. (*) dy/dx is for discrete change of dummy variable.