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The Role of Peers and Parents in Predicting Alcohol Consumption among Chilean Youth

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Abstract

This study estimated marginal associations of parent- and peer-related measures to examine the different patterns of lifetime ever-use and frequency of alcohol consumption among adolescents in Santiago, Chile (*N*=918). Probit and negative binomial models were applied to predict the probability of ever-use and the average number of drinks consumed in the past 30 days. Results supported the profound role of peer-relationships in the development of youth drinking behavior. Particularly, peer pressure seemed more important in predicting alcohol ever-use than the frequency of drinking. Simultaneously, parents, especially fathers, played a crucial protective role. Policies aimed at preventing various drinking patterns may be more effective if they not only focus on the targeted adolescents, but also reach out to peers and parents.

Keywords

Adolescents; alcohol; Chile; parent; peer

Introduction

Youth-drinking behaviors are developed and manifested through social interactions with peers and parents. The role of *peers* in youth drinking patterns is critical, given the shift away from parental influence and the growing importance of friends and social relationships during adolescence. The homophily theory suggests that there is a tendency for youth to assimilate with similar-types of friends through channels of peer selection (i.e., alike individuals are drawn toward each other) and peer socialization (i.e., one influences the other) processes among individuals. Therefore, this theory maintains that peers are one of the most important elements in the development or maintenance of adolescent-related problems [1]. There has been evidence in favor of both selection and socialization processes. For example, proponents of peer selection underscore a unidirectional relationship in which alcohol-drinking youth seek to meet drinking peers [2], while supporters of the socialization process assert that alcohol-drinking peers induce drinking behavior of youths [3]. Furthermore, many researchers have found evidence for a bidirectional relationship, where both mechanisms of selection and socialization simultaneously link drinking patterns of youth and their peers, where alike-youths magnetize toward each other but also further develop unique drinking practices [4]. All of these findings have demonstrated that peers, whether a cause or consequence, have a significant relationship with adolescent alcohol consumption.

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Competing studies underscore the importance of *parenting and family* environment, such as parent-youth relationships, and parental alcohol use, in predicting youth drinking patterns [5]. Social control theory proposes attachment to institutions as an element to explain youth antisocial behaviors [6]. More specifically, primary mechanisms within the institution of the family that inhibit or control deviant behavior during adolescence, such as strong family bonds, propel youth in establishing greater proclivity to conform to family norms. This theory suggests that intimate family ties and support will operate as protective factors that facilitate non-drinking (or reduced drinking) despite counteractive peer (e.g., heavily drinking peers) and individual (e.g., male, older age, subject to conduct problems) risk factors. Not only is the family important as a unit, but the independent and concurrent role of mothers and fathers in preventing youth substance use have been found to be crucial, as well [7].

Recognizing the significance of both peer and parent, various statistical models have been used to identify these factors in the study of youth alcohol consumption. Duncan (1994), using latent growth curve modeling, found that family cohesion delays initiation of drinking, while peer encouragement expedites and increases the level of alcohol consumption [8]. Simons-Morton (2001) suggested that peer factors may be greater than parent factors in predicting drinking and smoking behavior by computing the odds ratios in logistic regression models [9]. Wood (2004) used hierarchical multiple regression analysis to examine direct associations between alcohol consumption and peer/parent influences among recent high school graduates [10]. However, there has been no precedent study that estimates the magnitude of the *marginal effects* of peer- and parent-related variables alongside on youth's alcohol consuming behavior. The estimation of marginal effects may clearly illustrate the effect sizes of various measures because it can express the change in youth drinking per unit change in peer and parent variables.

As rare as studies are estimating marginal associations of peer and parent factors, there has been even less research that compares these processes for adolescent drinking in Latin America [11]. The bulk of existing youth alcohol studies in Latin America has been limited to population surveys to obtain prevalence estimates with some investigation of behavioral processes. For example, a seven-country study reported that 52% of youth had the experience of consuming alcohol [12]. Also, there was a greater prevalence of ever having used alcohol, and of recent-use (past year), among males and older youth in Latin American countries [13]. Although lifetime prevalence of substance use among youth has been found to be lower in Latin American countries when compared to that of youth in the United States, patterns of associations between various individual characteristics and adolescent drinking patterns appear to be quite consistent across youth [12]. For example, reports from the Chilean governmental organization responsible for conducting the national school and household surveys of substance use [14] and the cross-national survey of substance use coordinated by the Organization of American States Inter-American [15] have found that a greater percentage of youth with peers who use alcohol are drinkers themselves, and a smaller proportion of youth who have a positive relationship with their parents report drinking. These findings are consistent with the body of research with populations in the U.S. However, these results are based on simple bivariate analysis, and none of these, as well as other studies in Latin America [16] have examined the role of peers or parents on youth alcohol or other substance use alongside. A careful review of this body of work indicates there is a particular gap in our understanding of the potentially competing influences of peers and parents on youth alcohol use with Latin American populations.

To contribute to the study of adolescent alcohol consuming behaviors in an international context, this paper addresses two research questions using self-reported youth data from Santiago, Chile. First, what is the magnitude of peer- and parent-related measures in

predicting the *probability of alcohol consumption* for youth? Second, does the importance of peers and parents change when predicting the *frequency of alcohol consumption* in the past 30 days? The hypotheses are as follows: Peers and parents will have a unique importance in determining alcohol consumption behavior when controlling for youth-specific demographic and behavioral characteristics. Also, since factors that are associated with ever consuming alcohol and those that increase the number of alcoholic drinks among youth who already drink are likely to be different, we expect the predictors of the probability of ever consuming alcohol to be different from that of the frequency of drinking.

Methods

The study, funded by the National Institute on Drug Abuse, interviewed 1,069 adolescents from municipalities of lower-middle to low-socioeconomic status in Santiago, Chile in 2007–2010. Participants were recruited from an earlier study of iron and nutritional status at the University of Chile [17]. Youths completed a 2-hour interviewer-administered questionnaire in Spanish with comprehensive questions on actual alcohol/drug use and opportunities, as well as demographic, familial, peer, and neighborhood characteristics. Analysis for the present study was based 918 youths with complete data on all the variables of interest (e.g., information on both mother and father).

Measures

This study used two dependent variables, each corresponding to the two research questions. The first dependent variable was “ever used alcohol,” which is a binary outcome of ever having consumed more than a few sips of alcohol ($y_i = 1$) or never having consumed more than a few sips of alcohol ($y_i = 0$) in the course of the respondent’s lifetime. The second one was a count outcome that indicated the average number of drinks consumed in the past 30 days ($y_i = 0$ if no drinks were consumed). This measure was obtained by the product of the number of days alcohol was consumed in the past month and the average number of drinks per alcohol-consuming day in the past month.

The control and independent variables comprised of three domains including, youth-specific demographic and behavioral variables, parent- and peer-related variables.

Youth—*Male* was a dichotomous variable of 1 if the respondent is male and 0 if female. *Age* represented the youth’s age at the time of interview. The *behavioral problems* measure was a composite score of the Youth Self-Report (YSR) problem scales ($\alpha = 0.85$) [18]. The stem question of the YSR was as follows: “Below is a list of items that describe kids. For each item that describes you now or within the past 6 months, please tell me if the item is ‘not true’ (0), ‘somewhat or sometimes true’ [1], or is ‘very true or often true’ [2].” The study included YSR as a control variable because mental health status has been found to predict youth’s substance use [19].

Parent—The family *socioeconomic status* measure consisted of thirteen questions which were combined to create a composite index score [20]. This measure of socioeconomic status has been used in developing countries, and particularly, in several studies in Chile [17]. These questions included information about the number of family members, head of household’s market activity, father’s occupation, father’s education, household assets, and household utilities. A higher score indicates a lower level of socioeconomic status. *Parent’s alcohol consumption* was measured by four dummy variables of “definitely no” (reference group), “probably no,” “probably yes,” “definitely yes” in response to a single question that asked the youth about their parents’ alcohol-drinking experience during the past 12 months. The *father-youth relationship* measure [21] was the average of 17 questions ($\alpha = 0.89$) that

operationalized the parent-child interaction into a four point scale ("never," "sometimes," "often," "always"). A higher value on this measure indicated that the youth's assessment of the interpersonal relationship between the father and youth was based on warmth and support rather than criticism and punishment. The *mother-youth relationship* was identified by an identical set of questions ($\alpha = 0.89$) asked in the father-youth relationship measure. An advantage of the present data set is that the father-youth and mother-youth relationship measures contained identical questions and scales, which allowed for concurrent comparison between father-youth and mother-youth relationships.

Peer—*Peer alcohol consumption* was represented by five dummy variables "none" (reference group), "a few," "some," "most," "all" that measured the degree to which friends consumed alcoholic beverages (e.g., beer, wine, liquor). The *peer alcohol pressure* measure was a dichotomous variable that asked the youth whether they ever received pressure to drink by friends.

Statistical Model

Using the probit model, the study examined the first research question of whether there are parent-related and peer-related marginal effects when predicting the *probability* of youth alcohol consumption. Here, the dependent variable was a binary outcome of whether or not the youth had ever consumed alcohol in their lifetime. Computation of marginal effects, unlike raw estimations of coefficients, allows the interpretation of probit results as an expected decrease or increase in the average predicted probability of ever-consuming alcohol with a unit change in the explanatory variable. Second, the negative binomial count models predicted the *frequency* of alcohol consumption. Using this model, the study investigated variables associated with the number of alcoholic drinks consumed per month. The negative binomial model is useful for modeling nonnegative integer outcome values that are mostly concentrated at the lower end of the distribution (e.g., zero, one, and two). In the current data set, for example, 89.65 % of the youth reported that they either did not consume any alcohol, or drank one or two cups/drinks during the past month ($y_i = 0, 1, 2$). Marginal effects of the negative binomial model was computed to interpret the coefficients as the increase or decrease in the expected number of drinks consumed, in addition to reporting raw coefficients that are interpreted as the difference in the log of expected counts.

Results

The average age of youth in the study sample was 14.44 years (see table 1).

There were an even number of males and females. Youth were from families of lower-middle to low socioeconomic status and most of their parents were consumers of alcohol. The higher mother-youth relationship relative to the father-youth relationship ($p<0.0001$) indicated that youths on average maintained a warmth/encouraging relationship with fewer punitive measures and criticism with mothers, compared to fathers. The majority of youth had at least a few friends who drank alcoholic beverages and few youth reported pressure to drink from peers. Finally, approximately 43.57% of youth had the experience of drinking alcohol in their lifetime and the average number of drinks consumed within the past 30 days was 1.79 drinks.

Multivariate Results: Probit Model

Table 2 reports the coefficients of three different models (parent, peer, comprehensive) using probit regression.

The parent model (Model 1) showed that only the father-youth relationship (not the mother-youth relationship) had a significantly negative association with the probability of adolescent drinking. Socioeconomic status and parent's alcohol consumption were not significant predictors. The peer model (Model 2) indicated that peers' drinking behavior and peer pressure was a strong predictor of alcohol consumption. Finally, the comprehensive model (Model 3) highlighted the strength of peer variables over parent-related variables in youth's probability of ever consuming alcohol. According to the comprehensive model, the average predicted probability of alcohol consumption for SLS youth was 43.59 %, which approximated the actual SLS sample average of 43.57 % reported in the descriptive summary.

Marginal Effects: Probit

Marginal effects were computed to interpret the coefficients in terms of the average probability of alcohol consumption for youth (see table 3). Consecutive analysis of average marginal effects of independent variables was based on the comprehensive model that includes both parent and peer domains (Model 3). Peers' alcohol consumption was the greatest predictor of alcohol consumption. In detail, having friends who all drink alcohol was associated with an average of 39.84 percentage points increase in the predicted probability of alcohol consumption than those with no friends who drink. On the other hand, associating with friends, "a few" of which who drink alcohol, was associated with 11.89 percentage points increase in the predicted probability of drinking relative to those with no peer-drinkers. Peer pressure to drink alcohol, on average, increased the likelihood of drinking by 9.51 percentage points. On the other hand, the father-youth relationship had a smaller marginal effect - one unit increase in the father-youth relationship measures was associated with 5.11 percentage points decrease in the predicted probability of consuming alcohol.

Multivariate Results: Negative Binomial

Table 4 reported the coefficients derived from three different specifications (parent, peer, comprehensive) of the negative binomial model that predicts the number of alcohol beverages consumed in the past 30 days.

The parent model (Model 4) indicated that parent's use of alcohol was associated with increased frequency of drinking among youth. The father-youth and mother-youth (at a trend) relationships were also significant. In the peer model (Model 5), peer alcohol consumption was statistically significant, but the peer pressure measure was not. In the comprehensive model (Model 6), parent's alcohol consumption, father-youth relationship, and peer alcohol consumption were strong predictors of youth's average number of drinks in the past 30 days. The average predicted number of drinks, using the comprehensive model, was 2.04, which is similar to the actual number of 1.79 drinks consumed among youth in the SLS sample.

Marginal Effects: Negative Binomial

The marginal effect of the negative binomial model was also based on the comprehensive model (Model 6). Engaging with peers who all drink was associated with 9.42 more drinks of alcohol consumption per month than having peers who do not drink at all (see table 5). On the other hand, engaging with a few peers who drink was associated with 2.346 more drinks of alcohol consumption in the past 30 days than engaging with friends who do not drink at all. Having parents who definitely have consumed alcohol was associated with 4.26 more drinks of alcohol consumption in the past 30 days relative to those whose parents never drunk at all. Finally, a point increase in the father-youth relationship measure was associated with 1.50 fewer drinks in the past 30 days.

Discussion

The different results between the probit and negative binomial models, suggested that predictors of the probability of ever consuming alcohol and the number of drinks may be somewhat different. By analyzing results from both probability and frequency models, the present study delineated the importance of parent and peer measures in Chilean youth's drinking behavior. The binary probit model estimated the magnitude of peer and parent factors that predict the probability of ever consuming alcohol, which encompasses a wide range of youths behaviors from one-time drinkers to heavy episodic drinkers. The negative binomial model predicted the number of alcoholic drinks consumed in the past 30 days and reported the contribution of peer and parent measures on the frequency of drinking. Since the models estimated the marginal effects of peers and parents with regards to two closely related aspects of drinking behavior, it is important to discuss the similar and dissimilar trends reported in the statistical results. Results from both probability and frequency models indicated that the youth's relationship with the father was a significant predictor of adolescent alcohol consumption, while the relationship with the mother was not. Understanding such mechanisms through which fathers play a substantial role in predicting youth's alcohol consuming behaviors have been an under studied, yet, important topic receiving great attention [7]. The current study provided meaningful results in light of the growing interest in examining the unique and independent role of mothers and fathers in the developmental literature. For example, Rohner and Veneziano (2001) reported that father's affection has been found to be a better predictor that mother's love in some studies regarding substance abuse, conduct problems, and psychological health and wellbeing [22]. One explanation for the significant father-youth measure may be the relative amount of time youths spend with their mother and father. More specifically, due to the relatively less time fathers spend with their children, father's influence may be more salient than that of mothers [23]. Given the growing attention placed on father's role in youth's upbringing, evidence from this study's analysis point to the need of better understanding their role, along with that of the children's mothers [24], in preventing their children from initiating the use of substances or helping them quit if already began using. Some association between parent's alcohol consumption and youth's drinking behavior was observed in the frequency models, only. Broadly, the findings from the present study highlighted the contribution of parental drinking in predicting youth's own drinking behavior. Yu (2003) also conducted a comprehensive study that investigated the factors associated with the probability of ever consuming alcohol and the frequency of youth drinking in the past 30 days. However, results from the current analysis were not consistent with Yu's (2003) study, which concluded that parental consumption of alcohol was significant in the probability model, but not in the frequency model. The discrepancy may be due to the different sample and methods that were employed in the two studies. For example, Yu's sample was restricted to older adolescents (ages 15–18), living in New York, and used OLS to predict the frequency model [25]. Therefore, there may be greater need to examine the divergent results between the probability and frequency models in the future. The peer alcohol consumption measures were consistently significant in the probability and frequency models. This result reaffirmed the strong association between youth and peers described in the literature [4]. Among all statistically significant measures, association with peers who have all had the experience of consuming alcohol had the largest marginal effect in predicting both the probability and frequency of youth drinking. This may suggest that during the unique development stage of adolescents, where interaction with peers start to become more prominent than family, the degree to which peers consume alcohol naturally becomes a strong predictor of the youth's own drinking behavior. Interestingly, peer pressure was not significant in predicting the number of drinks (Models 5 and 6), but was significant in predicting the probability of drinking (Models 2 and 3). This may pose the possibility that peer-selection theory (i.e., birds of a feather flock together) applies for more frequent drinkers, but peer-socialization

theory (i.e. flocking together, make birds of a feather) holds for one-time initiators. In other words, among more frequent drinkers it is possible that self-initiation or other factors that may present greater opportunities for alcohol-drinking rather than susceptibility to peer pressure, determines the number of drinking days in a single month. On the other hand, peer pressure may be the impetus for first initiations among vulnerable low-frequency drinkers and even among those who may never drink again.

Limitations

The findings need to be interpreted within the context of two limitations. First, this study analyzed cross-sectional data, preventing us from making statements about causal inference. There may be some common characteristic of the youths, not captured in the model, that induces them to choose alcohol consuming friends and also affect their decisions whether to consume or not. Similarly, the particular parenting styles may be enforced by certain behavioral characteristics of the youth. For example, rebellious alcohol-drinking youths may compel harsh parenting measures and over-estimate the marginal effect of the father-youth relationship. Future studies would benefit from longitudinal data and statistical models that measure the developmental trajectories in alcohol use in an attempt to adjust for selection bias.

Additionally, there were potential issues with operationalization. All information collected for the analysis was based on youth self reports, the exception being the SES data. Such perceived information by youths may not actually reflect the parents' behaviors. For instance, in case of the parent's alcohol consumption measure there may be a mismatch between the parent's actual alcohol consumption and the perceived consumption by their children which may lead to a different set of conclusions. In this particular study, youth were asked whether the parents "tried" alcohol resulting in a measure with limited variability and not capturing differences in deleterious alcohol consumption. This concern also applies for measures of perceived peer behavior. Therefore, the importance of using data from multiple informants cannot be overstated. Future research would benefit from using data collected from multiple informants such as parents, peers, other adults, and teachers.

Conclusion

In conclusion, the present study is unique as it estimated and compared the different marginal associations of parent- and peer-related measures to predict the probability of youth alcohol consumption, as well as the frequency of drinking and does so with a population not generally found in alcohol studies. It is also unique in that this investigation was conducted with an international sample of Chilean youth, further contributing to our understanding of alcohol use worldwide.

By investigating these intricately related factors, we were able to depict an enhanced understanding of the determinants of adolescent alcohol behavior and their relative importance.

The probit and negative binomial model results suggested the unique importance of peers and parents in youth's alcohol consumption behavior. The results do not necessarily indicate that alcohol-consuming friends cause drinking, or that the formation of friends is centered around those who are drinkers. They underline, however, that peer-relationship is profoundly associated with adolescent alcohol consumption behavior. The findings also highlighted the protective role that parents still play despite adolescents' developmentally appropriate emancipation tendencies. Finally, the role that fathers play vis-a-vis mothers in preventing their children from consuming alcohol, and in greater frequency, is a topic that merits further investigation. Policies aimed at preventing various drinking patterns may be

more effective if they not only focus on the targeted adolescents, but also reach out to their peers and involve parents.

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Table 1

Descriptive Summary (N = 918)

Variable	Mean	Standard Deviation
Parent		
Socioeconomic Status	0.12	2.19
Parent Alcohol Consumption		
Definitely No	0.10	0.30
Probably No	0.04	0.19
Probably Yes	0.23	0.42
Definitely Yes	0.64	0.48
Mother-Youth Relationship	3.26	0.49
Father-Youth Relationship	3.20	0.53
Peer		
Peer Alcohol Consumption		
None	0.30	0.46
A Few	0.25	0.43
Some	0.25	0.43
Most	0.16	0.36
All	0.05	0.21
Peer Alcohol Pressure	0.16	0.36
Youth		
Male	0.52	0.50
Age	14.44	1.50
Behavioral Problem	44.43	19.23
Alcohol Consumption		
Lifetime Alcohol Consumption	0.44	0.50
Number of Drinks Consumed in the Past 30 Days	1.79	7.25

Table 2

Probability Model: Predicted Probability of Ever Alcohol Consumption (N = 918)

Independent Variables	(1)	(2)	(3)
Parent			
Parent Alcohol Consumption[a]			
Probably No	−0.006 (0.275)		0.126 (0.288)
Probably Yes	−0.013 (0.179)		−0.024 (0.185)
Definitely Yes	0.190 (0.160)		0.187 (0.166)
Mother-Youth Relationship	−0.076 (0.107)		−0.010 (0.111)
Father-Youth Relationship	−0.234* (0.098)		−0.173† (0.101)
Socioeconomic Status	0.034 (0.021)		0.030 (0.022)
Peer			
Peer Alcohol Consumption[b]			
A Few		0.423** (0.130)	0.401** (0.131)
Some		0.765*** (0.135)	0.739*** (0.137)
Most		1.145*** (0.165)	1.094*** (0.167)
All		1.423*** (0.263)	1.344*** (0.268)
Peer Alcohol Pressure		0.289* (0.128)	0.321* (0.130)
Youth			
Male	0.271** (0.092)	0.311** (0.095)	0.306** (0.096)
Age	0.383*** (0.033)	0.276*** (0.036)	0.264*** (0.037)
Behavioral Problem	0.008** (0.003)	0.005† (0.003)	0.004 (0.003)
Constant	−5.337*** (0.531)	−5.142*** (0.734)	−4.430*** (0.702)

Note:

† p < 0.1;

* p < 0.05;

** p < 0.01;

*** p < 0.001 (Robust standard errors in parentheses).

[a] Reference group is “Definitely No”.

[b] Reference group is “None”.

Table 3

Average Marginal Effect from Probit Model (Based on Model 3)

Variable	Mean	Standard Deviation
Parent		
Father-Youth Relationship	−5.12%	2.99%
Peer		
Peer Alcohol Consumption (A Few)	11.89%	3.85%
Peer Alcohol Consumption (Some)	21.92%	3.89%
Peer Alcohol Consumption (Most)	32.45%	4.60%
Peer Alcohol Consumption (All)	39.84%	7.65%
Peer Alcohol Pressure	9.51%	3.82%
Youth		
Male	9.08%	2.79%
Age	7.82%	1.00%

Table 4

Frequency Model: Predicted Number of Alcoholic Drinks Consumed in past 30 Days (N = 918)

Independent Variables	(4)	(5)	(6)
Parent			
Parent Alcohol Consumption[a]			
Probably No	2.764*** (0.705)		2.090** (0.651)
Probably Yes	2.031*** (0.513)		1.565*** (0.463)
Definitely Yes	2.025***		1.503***
Independent Variables	(4) (0.474)	(5)	(6) (0.432)
Mother-Youth Relationship	−0.596† (0.318)		0.004 (0.261)
Father-Youth Relationship	−0.709** (0.239)		−0.733** (0.223)
Socioeconomic Status	0.051 (0.044)		−0.021 (0.041)
Peer			
Peer Alcohol Consumption[b]			
A Few		1.213*** (0.354)	1.150** (0.356)
Some		2.448*** (0.342)	2.261*** (0.350)
Most		3.882*** (0.379)	3.577*** (0.378)
All		4.643*** (0.471)	4.618*** (0.472)
Peer Alcohol Pressure		0.227 (0.253)	0.226 (0.249)
Youth			
Male	0.485* (0.223)	0.769*** (0.205)	0.664** (0.202)
Age	0.754*** (0.081)	0.267*** (0.072)	0.288*** (0.074)
Behavioral Problem	0.011 (0.007)	0.006 (0.006)	−0.002 (0.006)
Constant	−9.630*** (1.659)	−7.203*** (1.115)	−6.151*** (1.442)

Note:

† p < 0.1;

* p < 0.05;

** p < 0.01;

*** p < 0.001 (Robust standard errors in parentheses).

[a] Reference group is “Definitely No”.

[b] Reference group is “None”.

Table 5

Average Marginal Effect from Negative Binomial Model (Based on Model 6)

Variable	Mean	Standard Deviation
Parent		
Parent alcohol consumption (Probably No)	4.26	1.61
Parent alcohol consumption (Probably Yes)	3.19	1.15
Parent alcohol consumption (Definitely Yes)	3.07	1.08
Father-Youth Relationship	−1.50	0.61
Peer		
Peer Alcohol Consumption (A Few)	2.35	0.85
Peer Alcohol Consumption (Some)	4.61	1.09
Peer Alcohol Consumption (Most)	7.30	1.62
Peer Alcohol Consumption (All)	9.42	2.39
Child		
Male	1.36	0.53
Age	0.59	0.20