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Exploring the Relationship between Levels of Alcohol Use and Child Physical Abuse

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EXPLORING THE RELATIONSHIP BETWEEN LEVELS OF ALCOHOL USE AND CHILD PHYSICAL ABUSE.

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ABSTRACT

Objectives. This study examined how different levels of drinking were related to the perpetration of child physical abuse in California.

Methods. A general population telephone survey of 3,023 parents or legal guardians 18 years or older was conducted across 50 cities in California during March 2009 through October 2009. The telephone survey included items data on physically abusive parenting practices, drinking behaviors, and socio-demographic characteristics.

Results. Ordered probit models found that heavier moderate drinkers, infrequent heavy drinkers, occasional heavy drinkers, and frequent heavy drinkers were all more likely to report engaging in physically abusive behaviors over the past year than were lifetime abstainers. The marginal effects for some demographic variables were statistically significant for participants who reported no and minor physical abuse.

Conclusion. Parents who drink heavily infrequently or occasionally are not likely to meet the diagnostic criteria for alcohol abuse or dependence. Children of these parents may be overlooked by both the substance abuse treatment and child welfare systems, meaning that without intervention or services they are at greater risk for future problems.

Child maltreatment costs the United States about $103 billion in direct (e.g., mental health services) and indirect (e.g., juvenile delinquency) costs each year (Wang & Holton, 2007). Estimates of the number of children who suffered from child physical abuse ranged 2006 from 150,000 children (U.S. Department of Health and Human Services, 2008) to over 300,000 (Sedlak et al., 2010). Both of these estimates are likely to undercount the true incidence of child physical abuse as they rely on data from official reports of abuse or on information from "sentinels[1]" Straus and colleagues' (1998) general population report of maltreatment were generally 11 and 9 times higher than these official estimates. One enduring contributing factor to child physical abuse is alcohol use by parents and caregivers.

In general, rates of physical abuse are higher among individuals reporting heavy drinking or identified as alcohol abusers or dependents (Berger, 2005; Famularo et al., 1986; Freisthler, in press; Murphy et al., 1991, Kelleher et al., 1994; Sun et al., 2001). The Fourth National Incidence Study found that alcohol was a factor in about 11.1% of cases where at least moderate harm by physical abuse occurred (Sedlak et al., 2010). Similarly, among cases investigated for child maltreatment, 7.3% of caregivers had a positive screen for alcohol problems and an additional 2.2% were identified as alcohol dependent (Gibbons et al., 2005). Parents who were identified as alcohol dependent or alcohol abusers were 4.7 times more likely to physically abuse their children than matched controls (Kelleher et al., 1994). Further 52% of the families with open child maltreatment cases had at least one parent with a current or past problem with alcoholism compared to only 12 percent among the control families in a court sample of child

[1] Sentinels are "community professionals who work in certain categories of agencies and who typically encounter children and families in the course of their job duties serve as lookouts for victims of child abuse and neglect" (Sedlak et al., 2010).

abuse and neglect cases (Famularo et al., 1986). Alcohol-abusing parents are more likely to be reported multiple times to the child welfare system for child maltreatment than those parents who do not abuse alcohol (Fluke et al., 2008; Murphy et al., 1991; Wolock & Magura, 1996). In 1997, parents were mandated to undergo treatment for alcohol or drugs for 65% of all foster care cases in California (U.S. Government Accounting Office, 1998). Over half of the mothers in this sample reported abusing alcohol.

Yet not all studies found a positive relationship between alcohol use and child physical abuse (Widom & Hiller-Sturmhöfel, 2001). In a retrospective cross-sectional study, Harter & Taylor (2000) found that parental alcoholism and victimization from child abuse were not related. Further, a cohort study of children involved with the child welfare system in Florida found that reoccurrence of abuse was less likely in families that where perpetrator had used alcohol (Yampolskaya & Banks, 2006).

There are several reasons for these disparate findings including the measurement of alcohol use and the populations being studied. For example, studies of the relationship between alcohol use and child maltreatment are limited in that they generally use clinical populations of individuals already involved with the child welfare system or in treatment for alcohol abuse or dependence thereby limiting the generalizability of studying findings (Testa & Smith, 2009). General population estimates of how alcohol use is related to child physical abuse remains largely unknown. However, as estimates suggest that somewhere between 1 and 7 or 1 and 10 children currently resides in the home of a parent who can be considered dependent on alcohol and other drugs (Grant, 2000; Huang, Cerbone, & Gfoerer, 1998), the effects of parental drinking on child maltreatment is likely to be extensive.

While it appears that alcohol abuse or dependence is related to child physical abuse, are there other patterns of drinking that put children at greater or lesser risk for maltreatment? Risks to children may be elevated even for parents who drink less frequently if parents drink heavily when they do drink. If so, those are the parents that may be less likely to become involved with the child welfare system as their children may be abused less frequently. For example, parents who may only drink one or two times a year, possibly at weddings or other special events, but drink heavily when they do (e.g., five drinks or more in one setting) may commit physical abuse but may not be reported to the child welfare system because the abuse occurs so sporadically it is undected.

The current study will go beyond previous research by examining how level of alcohol use is related to committing child physical abuse while controlling for child, caregiver, and family characteristics in a general population survey in California. Thus, this study reduces the biases introduced when specialized populations such as parents already in the child welfare system and alcoholic parents are used and contains multiple measures of alcohol consumption, including measures of quantity, frequency, and maximum number of drinks that allows for an examination of whether and how different levels of alcohol use are related to committing child physical abuse.

METHODS

Study Sample

This study consists of data from 3,023 parents or legal guardians of at least one child 12 years old or younger collected during March 2009 through October 2009. The child had to live with the parent or legal guardian at least 50% of the time. A general population telephone survey of parents or legal guardians 18 years or older was conducted across 50 cities in California

designated for the study with about 60 participants in each city (range 47 – 74). Participants were chosen from listed samples of addresses and telephone numbers of households. Participant pools generated from listed samples appear to be unbiased relative to random digit dialing techniques (Brick et al., 1995; Kempf & Remington, 2007; Tucker et al., 2002). As a way to improve response rate, pre-notification letters that described the study purpose and contained a fact sheet about the study were sent to all individuals from the listed samples.

The 50 cities were selected from a sampling frame of all 138 cities in California with a population size between 50,000 and 500,000 residents. These cities were geographically distinct and exhibited the wide variation in population and environmental characteristics at the Census block group level typical among cities of this size. The sample was a purposive geographic sample of cities intended to maximize validity with regard to the geography and ecology of the state (Thompson, 1992). Poststratification survey weights were constructed to increase generalizability to all 138 cities of this size in California. The survey took approximately 30 minutes to complete and was given using computer assisted telephone survey (CATI) procedures. Interviewers obtained verbal consent for each of the participants. Participants were mailed a $25 check for participation to an address they specified.

The response rate was calculated using standard definitions from the American Association for Public Opinion Research (AAPOR, American Association for Public Opinion Research Standard Definitions, 2002). AAPOR response rates divide the number of completed interviews by the sum of the number of completed interviews, the number of refusals, the number of non-contacts, and a proportion of cases with unknown eligibility. Unknown eligibility was assessed as the ratio of the number of completed and eligible non-interviews to the number of completed and eligible non-interviews plus the number of known non-eligible respondents.

Potential respondents who did not speak English or Spanish were counted as not eligible, as the sampling frame included all English or Spanish speaking parents of children 0 to 12 years. Using this methodology, the response rate for this survey was 47.4%.

Measures

Dependent variable. Child physical abuse was measured using the Parent-Child Conflict Tactics Scale (Straus et al., 1998) which asked questions about minor physical abuse (e.g., hitting a child on the bottom with something like a hairbrush or belt) and severe physical abuse (e.g., slapping the child on the face, head, or ears, and throwing or knocking the child down). Respondents answered via categories about number of times these behaviors occurred (ranging from "Never" to "more than 10 times"). These scales have good internal consistency (α = .55 to .70) and have shown both construct and discriminant validity in a general population telephone survey (Straus et al., 1998). Respondents were instructed to answer the question about parenting behaviors for the child who had the most recent birthday, called the "focal child".

As these items were sensitive in nature and could reflect a parent's willingness to report abusive behavior, several strategies were employed to minimize and control for socially desirable responses. First, items related to child physical abuse were asked via interactive voice response technology (IVR) and then encrypted in the data corresponding to the participant. IVR is a survey administration methodology that allows a survey participant to respond to a question from a computerized voice menu. Midanik & Greenfield (2006) show respondents disclose higher rates of behaviors around sensitive subjects when using IVR compared to a live-person telephone interview. The survey interviewers and the survey programmer had no direct access to information on abuse or neglectful behaviors and the research personnel did not have identifying information on who committed abusive and neglect acts. This provided respondents with a

greater level of security with regards to answering sensitive questions, and exempted survey and research staff from having to report respondents to Child Protective Services. Second, items from the CTSPC will be interspersed in the order recommended by Straus et al. (1998) such that an abusive behavior may be followed by a non-violent strategy. Third, each scale is made up of multiple items, allowing for a more complete measure of child physical abuse and discipline behaviors.

The dependent variable was coded as 0 for those individuals who did not engage in any of the physically assaultive behaviors, 1 for those parents who reported they participated in only minor physically assaultive behaviors or 2 for those parents who reported engaging in severe physical assault. Individuals who reported engaging in both minor and severe assault were coded as a 2. About 54% of respondents reported no physically abusive behaviors, 39% only minor physical abuse, and 7.1% severe physical abuse.

Alcohol Use Categories. Respondents were asked about how often they drank alcohol and given twelve response categories ranging from "every day" to "never had a drink of alcohol in my life." Respondents were asked the frequencies with which they had 1 or more, 2 or more, 3 or more, 6 or more, and 9 or more drinks in the past 4 weeks. For those who report not drinking in the past four weeks, they are asked the same questions over the past year (allowing the method to be extended to low frequency drinking). Respondents were also asked the maximum number of drinks they consumed on any occasion during the same time frame, monthly or yearly, on which their self-reports were based. A "drink" was defined for the respondents as a 12-ounce can of beer, a 5-ounce glass of wine, or a 1-ounce shot of liquor.

Responses were then recoded into the following seven categories: (1) lifetime abstainers (never drank alcohol); (2) ex-drinkers (did not drink alcohol in past year, but drank alcohol

during his/her lifetime); (3) moderate drinkers (drank either in the past month or past year but never more than 1-2 drinks per occasion); (4) heavier moderate drinkers (drank 3-4 drinks at least once during past month but never drank more than 4 drinks); (5) infrequent heavy drinkers (drank 5 or more drinks once a month or less); (6) occasional heavy drinkers (drank 5 or more drinks 2-3 days a month or 1-2 days per week); and (7) frequent heavy drinkers (drank 5 or more drinks 3-5 days per week or daily). These categories have been used to previous work examining intimate partner violence and depression (Kaufman Kantor & Straus, 1987; Lipton, 2001; Paschall et al., 2005). About 42% of respondents report engaging in moderate drinking behaviors with about 29% who report drinking moderately heavy or heavily on at least on occasion.

Depression and anxiety. Depression and anxiety were measured using the Primary Care Evaluation of Mental Disorders (PRIME-MD). Depression was measured using two items that asked about whether or not the respondent had little interest or pleasure in doing things and whether or not he or she felt down depressed or hopeless in the past month. A positive response for either question resulted in being coded as depressed. Anxiety was measured as past month behavior for three items: (1) having "nerves," feeling anxious or on edge; (2) worrying about a lot of different things; and (3) having an anxiety attack. Responding yes to any item indicated anxiety. Nineteen percent of respondents reported feeling depressed and 47.4% reported feeling anxious.

Impulsivity. Impulsivity was measured using a modified version of Dickman's Dysfunctional Impulsivity Scales (Dickman, 1990). Dysfunctional impulsivity refers to acting rapidly and inaccurately (e.g., I often get into trouble because I don't think before I act) and was measured by 7 items. Respondents are asked to reply "yes" if the statement described them or

"no" if it did not. Responses were then reverse coded when necessary and summed with higher values on the scale indicating higher levels of impulsivity. Internal consistency for this version of the scale was .73.

Demographic Variables. Demographic control variables include focal child's gender, respondent's age in years, gender and race/ethnicity, number of children in the home, and household income. Race/Ethnicity was dummy coded as Non-Hispanic White, Non-Hispanic Black, Hispanic, Asian, multi-racial or other race/ethnicity. Household income was measured by seven categories and recoded so that households with an income of $20,000 or less (representing low income households) were "1" and incomes over $20,000 as "0."

---INSERT TABLE 1 ABOUT HERE---

Statistical Analysis

Data were analyzed using ordered probit analyses. The ordered probit model accounts for the natural ordering of the severity of physically abusive incidents from no abuse to minor (i.e., corporal punishment) to more severe incidents (Greene, 1993). In this case, the ordered probit model takes into account the fact that underlying the ordering is a continuous descriptor of the dependent variable and the random error associated with this is normally distributed. Marginal effects of the model are also estimated at the mean of the independent variable. Data were analyzed using LimDep 8.0 (Greene, 2002). Each marginal effect is interpreted as the percentage point change in the probability of a "positive" outcome (i.e., the probability of engaging in the level of violence being measured by the outcome variable) that is associated with a one unit change in the predictor variable.

Missing data. Missing data on most variables was negligible at less than four percent. However, due to the sensitive nature of the physical abuse items and the likely concerns about

reporting, about nine percent of cases had missing data on this variable. In order to assess the effects of the missing data on the final analysis, a two-stage procedure that tests for and corrects for effects related to biases associated with sample selection was completed (Greene, 1993; Heckman, 1979). In the first stage, a variable was created where "1" indicated the respondent had missing data for the physical abuse variable and a "0" indicated no missing data. A probit model was then conducted that assessed correlates of this pattern of missingness with demographic variables. Respondents who had missing data for the items asking about physically abusive behaviors were significantly more likely to be Hispanic ($b = 0.27$, $p < .001$), Asian ($b = 0.26$, $p = .026$), and have more children ($b = 0.08$, $p = .024$) and less likely to be married ($b = -0.20$, $p = 0.014$). In the second stage of this procedure, the Inverse Mill's ratio (IMR) was created from the results of the probit model and used as a covariate in the full model assessing the relationship of alcohol use to child physical abuse. The variable served as an exogenous variable reflecting effects related to self-selection bias (Heckman, 1979). The IMR was not statistically significantly related to child physical abuse the final model ($b = 3.18$, $p = .481$). Thus selection bias was not a problem in the final model presented here. Cases with missing data were dropped from the ordered probit analyses.

RESULTS

Table 1 presents the bivariate relationship between child physical abuse and each of the dependent variables. Chi-square tests show a statistically significant relationship between child physical abuse and alcohol use ($\chi^2 = 38.27$, $p = <.001$), marital status ($\chi^2 = 8.25$, $p = .016$), depressed mood ($\chi^2 = 34.87$, $p = <.001$), and anxiety ($\chi^2 = 51.86$, $p = <.001$). Additionally, respondent age ($F = 7.95$, $p = <.001$) and impulsivity levels ($F = 6.33$, $p = .002$) were also

significantly associated with levels of physical abuse. Respondents gender and race/ethnicity, household income, and number of children were not related to levels of child physical abuse.

Table 2 presents the results of the ordered probit analysis. With respect to alcohol use, heavier moderate drinkers, infrequent heavy drinkers, occasional heavy drinkers, and frequent heavy drinkers were all more likely to report engaging in physically abusive behaviors over the past year than were lifetime abstainers. Respondents who were depressed or anxious were also more likely to report physically abusive behaviors than those who were not. None of the demographic variables were related to levels of physical abuse in probit model.

---INSERT TABLE 2 ABOUT HERE---

Marginal effects are presented in Table 3. In contrast to the overall probit model, the marginal effects for some demographic variables were statistically significant for participants who reported no and minor physical abuse. Black respondents and respondents with household income less than $20,000 were more likely to use no forms of physical abuse with their child. Asian, multi-race and other racial/ethnic groups were less likely to report using no physically abusive behaviors. Similarly, respondents who were depressed, anxious, or had a male focal child were significantly less likely to not use any type of physically abusive behaviors with their child. Finally, respondents in all drinking categories reported less use of no physically abusive behaviors than lifetime abstainers.

With regards to minor physically abusive behaviors, respondents with a male focal child, who were Asian or in the other racial/ethnic category, depressed or anxious were more likely to use minor physical abuse. While Black respondents and those with incomes less than $20,000 were less likely to use minor physical abuse. Compared to lifetime abstainers, all former and current drinkers were more likely to report using minor physical abuse with their focal child. In

fact, being a heavy drinker (of any type) increased the probability of using minor physical abuse by about 10%. A male focal child is about 8% more likely to experience severe physical abuse while heavy drinkers are more likely to perpetrate severe physical abuse about 6% (infrequent heavy) and 9% (occasional and frequent) more than abstainers.

---INSERT TABLE 3 ABOUT HERE---

DISCUSSION

Alcohol abuse and dependence is a risk factor for committing physically abusive parenting practices as found by studies with samples of alcoholic parents or among parents already involved with the child welfare system (Famularo et al., 1986; Murphy et al., 1991, Kelleher, 1994; Sun et al., 2001). Yet these previous studies were limited because they did not use general population samples and did not examine how other levels of alcohol use may be related to child physical abuse. By using a general population of parents in California, controlling for child, parent, and family characteristics, and examining a full range of alcohol use behaviors, this study is able to shed new light on those drinking behaviors that may place children at greater risk for physical abuse.

The marginal effects show that all categories of drinkers, even those that have abstained from drinking in the past year, are less likely to use no physically abusive parenting practices and more likely to use at least minor physical abuse (i.e., corporal punishment) with their children. In addition both the ordered probit model and the marginal effects show that heavy drinkers as defined by drinking more than five drinks in one setting, regardless of how often they drink heavily, are more likely to commit severe physical abuse. This is interesting because parents who drink heavily infrequently or occasionally are not likely to meet the Diagnostic and Statistical Manual of Mental Disorders criteria for alcohol abuse or dependence. Children of

these parents are likely to be overlooked by both the substance abuse treatment and child welfare systems, meaning that without intervention or services they are at greater risk for juvenile delinquency, arrests for violent crime, and alcohol and drug abuse (Kaplan et al, 1999; Widom, 1989; Widom, Ireland & Glynn, 1995).

Limitations

Although this study does represent an advance in understanding how alcohol use levels may affect child physical abuse, the study does have some limitations. The use of telephone surveys reduces the biases of only using populations in the child welfare and substance abuse treatment systems, telephone survey procedures may underrepresent populations who do not have phones or rely exclusively on cell phones. To mitigate the problems associated with the telephone survey, post-stratification survey weights were created and applied to the analyses. Further results of this study may not be generalizable to other states or to cities larger than 500,000 and smaller than 50,000 residents. The study is cross-section in nature, meaning information on the timing and sequencing of both the alcohol use and physical abuse it was not possible to ascertain if heavy alcohol use causes child physical abuse. Finally, this study may not account for all other variables related to both the perpetration of child physical abuse and alcohol that may affect findings. Further research that includes a more comprehensive set of variables is warranted to confirm the relationship between levels of drinking and child physical abuse.

Conclusions

The current study was well suited to understand how different levels of alcohol and child physical abuse, but more questions remain. Future research is needed that examines the relationship of alcohol use for other types of maltreatment or incorporates where parents drink

and its effects on child physical abuse as these may provide insight into new avenues to develop and focus prevention efforts.

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Table 1: Descriptive Statistics and Bivariate Relationships for Study Variables and Physical Abuse Levels

Variable Name	Weighted % or $\bar{x}$ (sd)	Sample n	Physical Abuse Levels None	Minor	Severe
Child Physical Abuse (n = 2768)					
None	54.0	1512			
Minor Physical Abuse	39.0	1071			
Severe Physical Abuse	7.1	185			
Alcohol Use Categories (n= 3008)***					
Lifetime Abstainer	9.3	292	56.9	38.8	4.3
Ex-Drinker	19.2	564	55.2	38.9	5.9
Moderate Drinker	41.9	1357	57.2	35.6	7.3
Heavier Moderate Drinker	18.4	517	52.4	40.1	7.4
Infrequent Heavy Drinker	4.0	101	39.7	55.2	5.2
Occasional Heavy Drinker	4.4	106	45.6	47.3	10.1
Frequent Heavy Drinker	2.7	71	41.3	45.0	13.8
Gender (n = 3023)					
Female	52.1	1973	54.4	38.2	7.3
Male	47.9	1050	53.5	39.7	6.8
Marital Status (n = 3023)*					
Single, Divorced, Widowed	23.3	350	53.7	36.7	9.6
Married or Cohabiting	76.7	2673	54.0	39.6	6.4
Race/Ethnicity (n = 3009)					
Non-Hispanic White	50.5	1753	56.0	35.2	8.8
Non-Hispanic Black	5.0	111	57.0	37.8	5.2
Hispanic	29.4	733	51.7	41.1	7.2
Asian	10.0	236	54.3	39.0	6.7
Multi-Racial	2.5	92	52.2	42.0	5.8
Other	2.6	84	54.9	35.2	9.9
Income (n = 2908)					
Income < $20,000	10.6	258	53.9	38.8	7.3
Income ≥ $20,000	89.4	2650	53.3	40.9	5.8
Depressed (n = 2984)***					
No	80.9	2480	56.4	37.5	6.1
Yes	19.1	504	43.9	44.5	11.6
Anxiety (n= 3006)***			60.4	34.3	5.3
No	52.6	1605	47.0	44.0	9.0
Yes	47.4	1401			
Age (n = 3023)***	39.45 (8.5)	3023	39.90	38.67	40.39
Number of Children (n = 3023)	2.19 (0.9)	3023	2.17	2.20	2.17
Impulsivity Level (n = 2975)**	0.78 (1.3)	2975	0.73	0.79	1.09

*p < .05, **p < .01, ***p < .001

Table 2: Results of Ordered Probit Model of Child Physical Abuse with Alcohol Use, and Potential Confounders

Variable Name	b	SE	p-value
Constant	-0.456	0.172	0.008
Focal child male gender	0.307	0.047	< .001
Respondent male gender	-0.023	0.050	0.642
Age, y	-0.005	0.003	0.099
Number of children	0.018	0.026	0.476
Currently married or cohabiting	0.039	0.063	0.538
Race/Ethnicity (reference group: White)			
Non-Hispanic Black	-0.164	0.117	0.161
Hispanic	0.050	0.057	0.384
Asian	0.134	0.084	0.110
Multi-Racial	0.054	0.145	0.708
Other	0.156	0.151	0.301
Income ≤ $20,000	-0.096	0.089	0.279
Depressed	0.192	0.066	0.004
Anxiety	0.208	0.052	< .001
Impulsivity Level	0.008	0.018	0.647
Alcohol Use (reference group: lifetime abstainer)			
Ex-Drinker	0.153	0.104	0.140
Moderate Drinker	0.141	0.096	0.141
Heavier Moderate Drinker	0.204	0.104	0.050
Infrequent Heavy Drinker	0.390	0.140	0.005
Occasional Heavy Drinker	0.487	0.136	< .001
Frequent Heavy Drinker	0.511	0.163	0.002

Table 3: Marginal Effects for Ordered Probit Model of Child Physical Abuse with Alcohol Use, and Potential Confounders

Variable Name	Physical Abuse None		Minor		Severe	
Focal child male gender	-0.121	***	0.082	***	0.039	*
Respondent male gender	0.009		-0.006		-0.003	
Age, y	0.002		-0.001		-0.001	*
Number of children	-0.007		0.005		0.002	
Currently married or cohabiting	-0.016		0.011		0.005	
Race/Ethnicity (reference group: White)						
Non-Hispanic Black	0.064	***	-0.046	***	-0.019	
Hispanic	-0.020		0.013		0.006	
Asian	-0.053	***	0.035	***	0.019	
Multi-Racial	-0.022	*	0.014		0.007	
Other	-0.062	***	0.040	***	0.022	
Income ≤ $20,000	0.038	***	-0.027	***	-0.012	
Depressed	-0.076	***	0.049	***	0.027	
Anxiety	-0.083	***	0.056	***	0.027	
Impulsivity Level	-0.003		0.002		0.001	
Alcohol Use (reference group: lifetime abstainer)						
Ex-Drinker	-0.061	***	0.040	***	0.021	
Moderate Drinker	-0.056	***	0.038	***	0.018	
Heavier Moderate Drinker	-0.081	***	0.053	***	0.029	
Infrequent Heavy Drinker	-0.154	***	0.090	***	0.065	**
Occasional Heavy Drinker	-0.191	***	0.106	***	0.086	***
Frequent Heavy Drinker	-0.200	***	0.108	***	0.092	***

*p < .05, **p < .01, ***p < .001