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## CHILD PHYSICAL AND SEXUAL ABUSE: A COMPREHENSIVE LOOK AT ALCOHOL CONSUMPTION PATTERNS, CONSEQUENCES AND DEPENDENCE FROM THE NATIONAL ALCOHOL SURVEY

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### Abstract

**Background**—Previous research has documented a relationship between child sexual abuse and alcohol dependence. This paper extends that work by providing a comprehensive description of past year and lifetime alcohol consumption patterns, consequences and dependence among women reporting either child physical and sexual abuse in a national sample of women.

**Methods**—This study used survey data from 3,680 women who participated in the 2005 U.S. National Alcohol Survey. Information on physical and sexual child abuse and its characteristics were assessed in relation to 8 past year and lifetime alcohol consumption measures.

**Results**—Child physical or sexual abuse was significantly associated with past year and lifetime alcohol consumption measures. In multivariate analyses, controlling for age, marital status, employment status, education, ethnicity and parental alcoholism or problem drinking, women reporting child sexual abuse vs. no abuse were more likely to report past year heavy episodic drinking ( $OR_{adj}=1.7$ ; 95% CI 1.0–2.9), alcohol dependence ( $OR_{adj}=7.2$ ; 95% CI 3.2–16.5), and alcohol consequences ( $OR_{adj}=3.6$ ; 95% CI 1.8–7.3). Sexual abuse (vs. no abuse) was associated with a greater number of past year drinks (124 vs. 74 drinks respectively,  $p=.002$ ). Sexual child abuse was also associated with lifetime alcohol related consequences ( $OR_{adj}=3.5$ ; 95% CI 2.6–4.8), and dependence ( $OR_{adj}=3.7$ ; 95% CI 2.6–5.3). Physical child abuse was associated with 4 of 8 alcohol measures in multivariate models. Both physical and sexual child abuse were associated with getting into fights, health, legal, work and family alcohol related consequences. Alcohol related consequences and dependence were more common for women reporting sexual abuse compared to physical abuse, 2 or more physical abuse perpetrators, non-parental and non-family physical abuse perpetrators and women reporting injury related to the abuse.

**Conclusion**—Both child physical and sexual abuse were associated with many alcohol outcomes in adult women, even when controlling for parental alcohol problems. The study results point to the need to screen for and treat underlying issues related to child abuse, particularly in an alcohol treatment setting.

### Keywords

child sexual abuse; child physical abuse; alcohol consequences; alcohol dependence; intoxication; binge drinking

## Introduction

Consequences related to child abuse represent a major public health problem with significant economic and human costs. The US Department of Justice estimates costs to be \$24 billion per year (Mercy, 1999) for legal, social and health expenses related to child abuse. These consequences are far reaching and include health, social, behavioral and mental health problems for both children and adults. Mental health distress is a prominent issue for those reporting child abuse including elevated anxiety, mood (Chaffin et al., 2005), drug use disorders (Molnar et al., 2001; Silverman et al., 1996), and long-term biological manifestations of stress (De Bellis et al., 1994). Most previous research focuses on the relationship between child sexual abuse and alcohol use disorders (AUD) in general population samples (Burnam et al., 1988; Kilpatrick et al., 1997; Lown and Vega, 2001c; Molnar et al., 2001; Nelson et al., 2002; Silverman et al., 1996; Spak et al., 1997; Stein et al., 1988; Wilsnack et al., 1991; Wilsnack et al., 1997), student samples (Pedersen and Skrondal, 1996), and alcohol treatment samples (Miller et al., 1993; Moncrieff et al., 1996; Swift et al., 1996).

A variety of alcohol-related consequences have been identified and classified (Hilton, 1991a; Hilton, 1991b) and include interpersonal, health, legal and job related consequences due to alcohol consumption. Different from alcohol dependence, consequences can reflect early drinking pathology that does not necessarily involve addiction or loss of control over drinking (Cahalan, 1970). Alcohol-related consequences affect the drinker, their families and communities and tend to be associated with acute rather than chronic alcohol outcomes (Rehm and Gmel, 1999). Identification of consequences can facilitate early treatment and prevention of dependence. Childhood sexual abuse is associated with past year alcohol-related consequences ( $OR_{adj}=2.39$ ) in a national sample of 1,099 women (Wilsnack et al., 1997) and in an alcohol treatment sample (Moncrieff et al., 1996).

Heavy episodic drinking, also known as binge drinking, is increasing among adult women (Naimi et al., 2003), pregnant women (Ebrahim et al., 1998) and among women college students (Wechsler et al., 2000). This pattern of heavy drinking is associated with increased risk of physical injuries, hepatitis and cirrhosis, multiple sexual partners (Bradley et al., 2001), lower self-efficacy for use of condoms and birth control among women (Lauby et al., 2001), birth defects (Maier and West, 2001), and alcohol consequences (Gmel et al., 2000) and dependence (Dawson, 2000). Child abuse is associated with heavy episodic drinking in a sample of African American women (Jasinski et al., 2000), primary care patients (McNutt et al., 2002) and in community samples of adult women (Mullen and Romans-Clarkson, 1988; Timko et al., 2008). Most studies have not controlled for the role of parental drinking in the association between alcohol use and child abuse.

Higher alcohol use among victims of child abuse may be influenced by three phenomena. First, child abuse frequently occurs in a home environment where alcohol is used (Hanson et al., 2006). Such an environment may be disruptive and emotionally damaging for children and often involves neglect, parental psychopathology and modeling of alcohol use. Second, parents may pass on the genetic predisposition to substance abuse. Third, child abuse can create long-term psychological distress and alcohol is used for tension reduction (Cappell and Greeley, 1987). Alcohol can relieve painful or intrusive memories or help decrease stress. Thus the self-medication theory may explain heavier alcohol use among child abuse survivors (Fergusson et al., 2009; Simpson, 2003; Ullman et al., 2005). These three factors may separately or synergistically contribute to heavier alcohol use among adults who were abused as children.

Child abuse is associated with earlier age of initiation of alcohol use (Moncrieff et al., 1996) and this, in turn, is associated with higher probability of later alcohol misuse (Fergusson et al., 2008; Grant and Dawson, 1997; Swadi, 1992). Early alcohol use is an important marker for distress and presents a window of opportunity for intervention (Grant and Dawson, 1997; Simpson, 2003; Swadi, 1992; Young et al., 2006). There has been considerably less examination of drinking patterns that do not meet the full criteria for an AUD, but nonetheless can result in personal and social consequences.

In this study, a reported history of physical and or sexual child abuse is described in association with current drinking status and with five current and two lifetime alcohol measures. While the paper includes alcohol dependence, facilitating comparisons with past research, it also describes less often examined alcohol outcomes including current drinking, alcohol-related consequences, drinking to intoxication, and binge/heavy episodic drinking. Alcohol-related consequences are explored in-depth identifying five types of consequences in relation to child abuse. Key characteristics of abuse (physical or sexual, type of perpetrator, number of perpetrators, injury and age of first abuse) are described in relation to both lifetime alcohol-related consequences and lifetime alcohol dependence.

## Materials and Methods

This study utilized data from the 2005 NAS which included 3,680 women participants. The NAS surveys were conducted in English or Spanish and took approximately one hour to complete. Fieldwork was completed for the NAS by the Institute for Survey Research at Temple University. Data from the 2005 NAS were based on random-digit Computer Assisted Telephone Interviews of a total of 7,612 respondents, from all 50 US states and the District of Columbia, including an oversample of black and Hispanic respondents (N=1,250). The 2005 NAS had a 58% response rate, consistent with declining response rates in recent telephone surveys (Curtin et al., 2005). Methodology studies reported that higher non-response in telephone surveys does not result in biased population estimates (Groves, 2006; Keeter et al., 2006). No differences for the alcohol-related variables included herewith were noted between telephone surveys and prior in-person NAS surveys with higher response rates (Midanik and Greenfield, 2003). Participants were not offered financial incentives. All study protocols and procedures were reviewed and approved by relevant Institutional Review Boards.

## Participants

Sample characteristics are described in relation to child abuse type in Table 1. Data on child abuse was provided by 3,601 women. Some demographic factors differed by child abuse status. Child physical and sexual abuse were more likely to be reported by 35–54 year olds, by single women, and American Indians. There were no significant differences between women who answered questions about child abuse (n=3,617) versus those who did not (n=63) by age, marital status, or employment. Responders were more likely to be Asian and to have less education.

## Measures

**Demographic and social characteristics** were measured including age (18–29, 30–49 and 50+), marital status (married or living with a partner, separated/divorced/widowed, and never married), race (Black, white, Hispanic and other), education (less than high school graduate, high school graduate, some college/college graduate), employment (employed, unemployed, retired/homemaker) and income.

**Child abuse measures: Child physical abuse (CPA)** was assessed using the Conflict Tactics Scale question (Straus, 1990c) with follow-up questions about age of first abuse and perpetrators. “During your childhood and adolescence, did anyone ever hit you with something, beat you up, intentionally burn or scald you, or use a knife or gun to threaten you?” Followed by, “Who did this to you?” with response options including “a parent or a person who raised you, some other family member and someone other than a family member.” Age of first abuse was asked, “How old were you the first time it happened,” for each type of perpetrator. **Child sexual abuse (CSA)** was assessed using a question by Sorenson (Sorenson et al., 1987), “During your childhood and adolescence, did anyone ever force you to have sex against your will? By sex, I mean their touching your sexual parts, your touching their sexual parts, or sexual intercourse.” Similar to above, follow-up questions ascertained perpetrator and age of first event. All women were asked about whether an injury occurred as a result of the child abuse.

Two **composite child abuse variables** were created, both with mutually exclusive categories. The primary variable used throughout the paper reflects 3 types of abuse including no abuse, CPA only or any CSA (with or without CPA). The use of this 3 category variable increases comparability to the wide literature on CSA (where co-occurring CPA is the norm) (Moncrieff, 1994; Sorenson et al., 1987; Swift et al., 1996; Widom et al., 1995). Further, this categorization allows for the unique assessment of CPA as a distinct category. A second 4 category composite variable was formulated and includes no abuse, CPA only, CSA only and both CPA and CSA. This variable is described in Table 2 and used in the final table only.

Five primary **alcohol measures** are used to assess current alcohol misuse and two measures assess lifetime alcohol misuse. The current drinking measures are: 1) any current drinking, 2) drinking to intoxication, 3) heavy episodic drinking, 4) alcohol dependence and 5) alcohol-related consequences. Additional measures report age of first drink, total number of drinks in the past 12 months and whether a parent (including biological or non-biological parents) “was a problem drinker or an alcoholic.” Two measures describe lifetime drinking: 1) alcohol-related consequences and 2) alcohol dependence. 1) Frequency and amount of drinking was assessed using the graduated frequencies (GF) approach which assesses consumption of any type of alcohol beverage (Greenfield et al., 2000; Room, 1990). The GF has been validated against drinking diaries (Hilton, 1989) and captures harmful and hazardous drinking better than typical quantity-frequency measures. Daily drinking is multiplied by days in the year for the **total volume** of drinks per year. 2) Drinking to **intoxication** is a response to the question, “how often in the last twelve months did you drink enough to feel drunk?” with responses ranging from “every day” to “never in the last 12 months.” 3) **Heavy episodic drinking** in the past year is defined as consumption of 4 or more drinks in a day on a monthly basis based on the physiological metabolism of alcohol for women (Rehm, 1998; Wechsler and Austin, 1998; Wilsnack et al., 1986). 4) The **alcohol dependence** measure has 17 items that assess 7 domains of symptom content defined by DSM-IV. The domains include withdrawal symptoms; alcohol tolerance; drinking despite physical or psychological consequences; unsuccessful efforts to reduce drinking; drinking in larger amounts than intended; time spent drinking or recovering from drinking; and giving up activities because of drinking. DSM-IV criteria have demonstrated high reliability and validity for dependence classification (Hasin et al., 2003). Consistent with the DSM-IV criteria for establishing alcohol dependence, 12 month occurrence of at least 1 symptom is needed from each of 3 domains to meet dependence criterion. Because the DSM-IV 2-week co-occurrence criterion was not used, our dependence measure, while standardized for surveys (Caetano et al., 1997; Caetano and Tam, 1995), is not a diagnostic measure. A dichotomous variable will be used to indicate whether the respondent has ever experienced dependence or in the past 12 months. 5) **Alcohol-related consequences** or problems is

defined as having experienced two or more negative consequences of drinking (Cherpitel, 2002; Midanik and Greenfield, 2000). A 15-item scale assesses 5 important alcohol related problem areas: work problems (3 items), fights/arguments (2 items), family reactions (2 items), vehicular accidents or trouble with the law (5 items), and health problems (3 items) (Greenfield et al., 2006; Midanik and Greenfield, 2000). Prior NAS data indicates good internal consistency (0.71) for the consequences measure, including those for subscales (Midanik and Greenfield, 2000).

## Analysis

Analysis included the 3,680 women in the 2005 NAS. Post stratification weights reflected the actual distribution of respondents by gender, age, region and race/ethnicity. In addition weights were applied to reflect the population by state, households with multiple phone lines or more than one eligible respondent, and non-response. An additional weight adjusted standard errors to reflect the clustered phone sampling strategy.

All bivariate and logistic regression procedures were carried out using SPSS 12.0 (SPSS Inc. Chicago, IL). Demographic characteristics are described for the sample, followed by chi square significance levels for abuse categories (no abuse, CPA or CSA) by demographics (Table 1). The number, percent and age of first event for each type of child abuse and its characteristics was reported (Table 2). The prevalence and crude odds ratios ( $OR_{crude}$ ) and 95% confidence intervals (CI's) were described for each alcohol characteristic by the 3 category child abuse variable (Tables 3). Separate multivariate models were created for each of the current and lifetime alcohol outcomes to examine the role of CPA only or CSA compared to no abuse. Each model controlled for age, marital status, employment status, education, ethnicity and parental alcoholism (Table 4). Adjusted odds ratios ( $OR_{adj}$ ) and 95% CI's for each alcohol outcome were used as summary measures.

For the one continuous drinking variable an ANOVA model was created to assess differences in past year drinking volume by child abuse status along with control variables. Detailed information on types of alcohol related consequences in relation to the primary child abuse variable are presented in Table 5. Further bi-variate and multivariate models (including all the covariates listed above) were developed using data from the 885 women reporting any child abuse, to examine specific characteristics of abuse in relation to lifetime alcohol measures.

## Results

Table 2 describes the prevalence of child abuse by type and other characteristics. Any child abuse was reported by 25% of women. Any CPA (with or without CSA) was reported by 19% of women and any CSA (with or without CPA) by 12%. (It is noteworthy that 52.5% of women reporting CSA also reported CPA. Thirty-four percent of women reporting CPA also reported CSA). The primary 3 category child abuse variable is described. CPA exclusively was reported by 12% and CSA (with or without CPA) by 12% of women. A 4 category composite variable show that only 6% of women reported experiencing CSA only and 7% report both CPA and CSA.

Two or more perpetrators were reported by 30% of women with any CPA, and 23% of women with any CSA. Mean age for first CPA and CSA was 7.2 years old and 9.4 years old respectively. For CPA, parents were most commonly reported as the perpetrator (75%). For CSA, non family members were the most common perpetrators (60%).

Table 3 describes alcohol consumption patterns by the 3 category child abuse status. Percents and crude odds ratios are presented. Both CPA and CSA were associated with a



higher prevalence of alcohol misuse compared to no abuse. In general, women reporting CSA reported the highest prevalence of each alcohol measure, followed by women reporting CPA and then no abuse. There were significant differences between physically and sexual abused women for past year and lifetime alcohol consequences and lifetime alcohol dependence. CSA, compared to no abuse, placed women at greater risk for current heavy episodic drinking, and current and lifetime alcohol dependence and consequences. CPA was also significantly associated with current intoxication, dependence and consequences (trend,  $p=.06$ ) and with lifetime alcohol dependence and consequences. Women who reported either type of child abuse were significantly more likely to also report parental alcoholism or problem drinking.

Multivariate results were consistent with bi-variate results (Table 4). Compared to women with no abuse history, lifetime alcohol-related consequences (2+) were more common in women reporting CPA ( $OR_{adj}=2.1$ , 95% CI 1.5–3.0) and CSA ( $OR_{adj}=3.5$ , 95% CI 2.6–4.8) compared to no abuse. Lifetime alcohol dependence was also more common among women with CPA ( $OR_{adj}=2.1$ , 95% CI 1.4–3.1) and CSA ( $OR_{adj}=3.7$ , 95% CI 2.6–5.3) compared to no abuse, even when controlling for key predictors for alcohol misuse, such as demographic factors and parental alcoholism. In the ANOVA model, the same pattern emerged with higher drinking volume among those with sexual abuse compared to no abuse. There were not significant differences between the physical and sexual abuse groups for volume.

Table 5 presents categories of alcohol-related consequences by type of child abuse among ever drinkers. Getting into alcohol related fights were the most common lifetime alcohol-related consequences with 37% of sexually abused women, 25% of physically abused women and 13.1% of women without child abuse reporting fights ( $p<.001$ ). Consequences with the law, work and family problems were all highly significant and followed the same pattern. In separate analyses of each of the 15 alcohol consequences (data not shown) all consequences showed a similar gradient where women with a history of CSA were significantly more likely to report each consequence and each of the five categories of consequences compared to CPA and compared to no abuse.

Increased alcohol consequences may be the result of abused women drinking more, but could also reflect interpersonal difficulties among abused women with resultant trouble with the law, home, work or fights. In order to assess this possibility we performed an additional multivariate model (data not shown) to predict lifetime consequences (as in Table 4), but this time controlling for total volume of drinking to determine whether increased consequences are related to increased volume of alcohol consumption in abuse women. In this model CPA and CSA predicted lifetime consequences ( $OR_{adj}=2.0$ ; 95% CI 1.4–2.9) and  $OR_{adj}=3.4$ ; 95% CI 2.5–4.6) respectively with similar odds ratios as the model without alcohol volume, signifying that the consequences are not solely due to increased consumption of alcohol. However, alcohol volume was also a significant predictor of consequences.

In order to assess characteristics of abuse most associated with lifetime alcohol-related consequences and alcohol dependence, analyses were conducted for the 885 women reporting any child abuse (Table 6). Two composite abuse variables were examined to provide more fine-tuned information about type of abuse and lifetime alcohol consequences and dependence. Analyses with the 3 category primary composite variable used throughout the paper showed that women reporting CSA (with or without CPA) were significantly more likely to report lifetime alcohol consequences ( $OR_{adj}=1.7$ ) and lifetime alcohol dependence ( $OR_{adj}=1.8$ ) compared to women reporting CPA alone. Further analyses used the 4-tiered categorization of child abuse that showed women reporting both CPA and CSA were 3.3 times more likely to report consequences and at least 2.5 times more likely to report

dependence compared to women reporting a single type of abuse. There were no significant differences in lifetime alcohol outcomes between CPA only and CSA only. Multivariate analyses could not be performed due to small numbers in the exclusive categories.

Having two or more CPA perpetrators was associated with increased risk for both lifetime alcohol outcomes in multivariate models. Physical abuse perpetrated by non-parental family members or non-family was significantly associated with both lifetime alcohol outcomes in multivariate models whereas CPA by a parent was not associated with lifetime alcohol outcomes. For women reporting CSA, type of and number of perpetrators did not predict lifetime alcohol outcomes. Injury as a result of child abuse was a significant predictor for lifetime alcohol dependence. Age at first CPA or CSA was not associated with either alcohol outcome.

## Discussion

Findings from this study provide original data on a wide range of alcohol patterns and consequences in relation to both child physical and sexual abuse using new and comprehensive data on alcohol-related consequences as well as information on CPA. Both physical and sexual child abuse were significantly associated with most past year and all lifetime alcohol measures in bivariate and multivariate analyses, even when we controlled for parental alcoholism and other demographic factors. The findings provide clear new data showing the damaging impact of CPA alone and confirmed findings supporting the damaging impact of CSA. Sexual abuse was a significantly stronger predictor for lifetime alcohol outcomes compared to CPA in bivariate and multivariate models, though this finding may be because CSA so often co-occurs with CPA. When mutually exclusive categories of physical and sexual abuse were compared in bivariate analyses, there appeared to be no differences in lifetime alcohol misuse, however due to limitations of statistical power no multivariate analyses were performed. Previous studies rarely assess mutually exclusive categories of abuse, probably due to difficulty with power. Importantly, in real life, fewer women report only one form of child abuse. As a result the assessment of distinct categories of abuse may not represent their typical manifestation.

Certain child abuse characteristics appear to more strongly predict lifetime alcohol outcomes including CSA compared to CPA, injury, when physically abused women had two or more perpetrators or when the CPA perpetration was by non-parents or non-family. Parental CPA may signify parental discipline, and when of moderate severity, may be culturally accepted whereas CPA from outside the family is likely to be more upsetting. Alternately CPA outside the family may be a marker for family disturbances. Increased alcohol use associated with more upsetting experiences is consistent with theories of alcohol being used to relieve painful or intrusive memories (Fergusson et al., 2009; Simpson, 2003; Ullman et al., 2005).

The findings from the present study can be compared to the one other population-based study that examined past year alcohol patterns. (Wilsnack et al., 1997) Heavy episodic drinking, alcohol dependence and alcohol consequences were significantly more common in those with CSA for both studies, with higher adjusted odds ratios for the present study. In general, the Wilsnack's lower cut-points for their measures probably led to slightly reduced odds ratios compared to the present study. The present study extends upon the work of the Wilsnacks by including lifetime alcohol measures, data on CPA and the inclusion of parental alcoholism. Given the strong relationship between parental alcoholism and both child abuse and adult alcohol outcomes, its inclusion in the present study allows to more directly assess the effects of child abuse upon adult alcohol misuse.

Lifetime alcohol dependence was significantly associated with CSA in the current study ( $OR_{adj}=3.7$ ) and the National Comorbidity Study (NCS) ( $OR_{adj}=1.5$ ) (Molnar et al., 2001). The NCS controlled for a comprehensive number of parental factors that are likely related to both independent and dependent variables including parental psychopathology, divorce, verbal and physical abuse and substance use and dependence. Adjusted odds for CSA and alcohol consequences in the present study and alcohol abuse in the NCS were similar. The NCS examined different abuse characteristics from the present study (type of perpetrator, isolated vs. chronic abuse, molestations vs. rape) but found that these characteristics were not significant predictors for alcohol outcomes.

In general, young age of abuse is associated with greater probability of alcohol abuse and dependence (Pedersen and Skronidal, 1996; Spak et al., 1997). Our findings did not confirm this. Other characteristics of abuse appeared to play a stronger role in later alcohol consumption patterns.

Presentation of information on less studied alcohol measures such as intoxication, heavy episodic drinking and alcohol-related consequences alongside information on alcohol dependence allows for the unique assessment of the contribution of child abuse to multiple patterns of drinking and facilitates comparisons between different patterns.

### Strengths and Limitations

The present study benefits from the large number of participants, the comprehensive assessment of lifetime and twelve-month alcohol consumption and the focus on alcohol related consequences, not previously reported in such detail. The present study also includes information on CPA as well as other detailed characteristics of CPA using multivariate models that control for key risk factors, such as parental alcoholism and demographics.

The study is subject to the usual limitations of self-report. Recall bias could alter findings given evidence that traumatic events such as CSA can be repressed even in substantiated cases of abuse (Widom and Morris, 1997; Williams, 1994). This recall bias would tend towards type I error where associations that exist may not be detected resulting in overly conservative findings. There is little evidence of over-reporting (Widom and Morris, 1997) among victims of child abuse. A further limitation is the use of a single question to assess each category of physical and sexual abuse, and the absence of information on psychological abuse and neglect. As a result the article does not fully capture all aspects of child abuse in relation to adult alcohol consumption.

The finding related to higher odds of lifetime alcohol misuse in women reporting both CPA and CSA may indicate a more disruptive childhood. Small numbers limit our ability to carry out multivariate analysis but future larger studies should control for parental drinking, as well as other forms of child abuse, such as verbal and emotional abuse and neglect in order to accurately assess the independent effects of multiple forms of abuse.

Cross sectional data have inherent limitations, particularly related to causality. However, it can be presumed in the vast majority of cases that the child abuse occurred before the initiation of alcohol consumption. The finding that both types of child abuse are related to alcohol consequences could be explained by unmeasured childhood events (other than parental alcoholism) and these unmeasured factors may contribute to later alcohol use. However, previous analyses (Kendler et al., 2000; Molnar et al., 2001) found that CSA still predicted alcohol outcomes even when taking many other family factors into account. Thus, it is unlikely that extensive information on family factors would substantially change our findings.



Lastly, it is unclear whether the moderate response rate resulted in biased results. Because the study focused on associations between child abuse and alcohol, rather than prevalence, it is less likely that findings would vary. The impact of different response rates was examined in a simulation study of interpersonal violence and welfare program. Higher response rates (obtained through use of extensive tracking in a longitudinal study) resulted in stronger measures of association compared to analyses done on the portion of the sample that excluded the hard to reach and lost to follow up participants (Odierna and Schmidt, 2009). Lower response rates then were associated with conservative findings.

## Implications

Both types of child abuse, physical and sexual, were associated with all alcohol measures. In alcohol treatment settings, screening for a history of child abuse is recommended. A follow up plan for addressing underlying problems related to child abuse should be in place. Prevention efforts in schools, prenatal care clinics or other settings should identify women with child abuse histories as being at higher risk for a variety of alcohol behaviors including heavy episodic drinking, alcohol dependence and alcohol-related consequences. Particular attention should be paid to women reporting CSA, multiple CPA perpetrators and/or injury related to child abuse experiences.

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Table 1

Demographics, percent by child abuse status, (Weighted %, Unweighted n=3680)

Variables	Total sample N=3,680	No child abuse n=2,752 75.2 %	Physical abuse only n=436 12.4%	Sexual abuse n=433 12.4 %
Age***				
18-34	1097	79.6	10.4	10.1
35-54	1392	67.7	15.6	16.7
55+	1106	79.7	11.1	9.2
Marital status***				
Married/living as married & Widowed	2598	77.1	11.2	11.7
Never married separated, divorced	1063	70.4	15.4	14.2
Ethnicity				
White	2624	75.3	12.5	12.1
Asian	72	84.7	11.1	4.2
Black	438	75.2	10.3	14.6
Hispanic	421	75.7	12.5	11.8
American Indian	75	62.5	16.7	20.8
Other	50	72.5	19.6	7.8
Employment*				
Employed	2069	73.3	13.7	13.1
Unemployed/Retired/Homemaker	1436	77.7	10.9	11.4
Education*				
Less than HS graduate + HS graduate	1674	77.1	10.8	12.1
Some college + College graduate	1985	74.0	13.4	12.6

\* p=≤.05

\*\* p=≤.01,

\*\*\* p=≤.001.

Numbers do not always add to 3680 due to missing data. 3601 women responded to the question about child abuse.



Table 2

Among 3,601 women, the number and percent reporting each type of child abuse, type and number of perpetrators for each type of abuse, and mean age in years at first occurrence

	N unweighted	Percent reporting	Mean Age, at 1 <sup>st</sup> event (SD)
Any Childhood Physical or Sexual Abuse	885	25.1	
Any Childhood Physical abuse	673	19.1	7.2 (4.1)
<i>Among women reporting physical abuse: Type of perpetrator (more than 1 is possible)</i>			
Parent or person who raised you	491	75.2	6.2 (3.4)
Other family member	221	30.1	7.2 (3.7)
Not a family member	202	29.8	11.1 (4.5)
Among physically abused:			
Number of perpetrators			
1	454	70.2	
2+	205	29.8	
Any Childhood Sexual abuse	433	12.3	9.4 (4.5)
<i>Among women reporting physical abuse: Type of perpetrator (more than 1 is possible)</i>			
Parent or person who raised you	96	22.2	9.1 (3.5)
Other family member	179	42.9	8.1 (3.8)
Not a family member	266	59.6	11.0 (4.7)
Among women reporting sexual abuse:			
Number of perpetrators			
1	327	77.5	
2+	100	22.5	
Among women reporting any child abuse			
Injury related to child abuse--			
No	661	75.8	
Yes	211	24.2	

	N unweighted	Percent reporting	Mean Age, at 1 <sup>st</sup> event (SD)
<i>Type of abuse – composite variable 1</i>			
No Childhood abuse	2732	75.2	
Physical abuse only	436	12.4	
Sexual abuse (with or w/o physical abuse)	433	12.4	
<i>Type of abuse—composite variable 2</i>			
No child abuse	2732	75.2	
Physical abuse only	436	12.4	
Sexual abuse only	208	5.8	
Physical and sexual abuse	221	6.5	

Table 3

Alcohol consumption and patterns by child abuse status: percents, crude and adjusted odds ratios. (Weighted percentages and unweighted N=3601, women responding to questions about child abuse)

Variables	Overall status	No child abuse N=2732 (75.2%)	Physical child Abuse only N=436 (12.4%)	Sexual child Abuse N=433 (12.4%)	Physical child abuse vs. no abuse	Sexual child abuse vs. no abuse
<i>Continuous measures</i>	X(S.E.)	X(S.E.)	X(S.E.)	X(S.E.)		
<i>Age at first drink<sup>ab</sup></i>	19.8 (0.1)	20.0 (0.1)	19.8 (0.3)	18.6 (0.3)	<i>Ns</i>	<i>P&lt;.001</i>
<i># drinks in the past 12 months<sup>a</sup></i>	115.6 (4.9)	104.1 (5.0)	148.1 (18.0)	153.3 (17.7)	<i>P=.01</i>	<i>P=.003</i>
<b>Past year drinking history</b>	Percent by drinking status	Percent	Percent	Percent	OR <sub>crude</sub> (95% CI) Physical child abuse vs. no abuse	OR <sub>crude</sub> (95% CI) Sexual child abuse vs. no abuse
<b>Drinking Status<sup>a</sup></b>						
Not a current drinker	35.8	37.0	28.0	36.2		
Current Drinker	64.2	63.0	72.0	63.8	1.5 (1.2-1.9)***	1.0 (0.8-1.3)
<b>Drinking to Intoxication<sup>a</sup></b>						
Lt Monthly	97.7	96.5	94.0	95.5		
Monthly+	2.3	3.5	6.0	4.5	1.9 (1.2-2.8)**	1.3 (0.8-2.1)
<b>Heavy Episodic Drinking (4+/day once a month)<sup>a</sup></b>						
No	96.4	96.9	95.1	94.6		
Yes	3.5	3.1	4.9	5.4	1.6 (0.9-2.6)	1.8 (1.1-2.8)*
<b>Alcohol Dependence<sup>a,c</sup></b>						
No	97.6	98.5	96.6	93.4		
Yes	2.4	1.5	3.4	6.6	2.4 (1.2-4.9)*	4.8 (2.6-8.9)***
<b>2+ Alcohol Consequences<sup>a,b</sup></b>						
No	98.5	99.0	98.0	95.7		
Yes	1.5	1.0	2.0	4.3	2.0 (1.0-4.4)	4.4 (2.4-8.0)***

Variables	Overall status	No child abuse N=2732 (75.2%)	Physical child Abuse only N=436 (12.4%)	Sexual child Abuse N=433 (12.4%)	Physical child abuse vs. no abuse	Sexual child abuse vs. no abuse
<b>Lifetime drinking history</b>						
Alcohol Dependence <sup>a,b</sup>						
No	92.8	95.2	90.0	81.2		
Yes	7.2	4.8	10.0	18.8	2.2 (1.6–3.2)***	4.6 (3.4–6.2)***
2+ Alcohol Consequences <sup>a,b</sup>						
No	90.5	93.6	86.0	76.3		
Yes	9.5	6.4	14.0	27.3	2.4 (1.8–3.3)***	4.6 (3.5–6.0)***

**Table 4**

Multivariate models showing odds ratios (or mean number of past year drinks) for each alcohol consumption pattern by type of child abuse reported.

	Current Alcohol Pattern					Lifetime Alcohol Pattern		
	Number drinks/past yr	Intoxication OR <sub>adj</sub>	Heavy Episodic Drinking OR <sub>adj</sub>	Alcohol Dependence OR <sub>adj</sub>	2+ Alcohol Consequences OR <sub>adj</sub>	Alcohol Dependence OR <sub>adj</sub>	2+ Alcohol Consequences OR <sub>adj</sub>	2+ Alcohol Consequences OR <sub>adj</sub>
Child Abuse								
None	74.5 (55.3–93.8)	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Physical only	107 (77.0–138.0)	1.8 (1.1–2.9)*	1.6 (0.9–2.7)	5.0 (2.1–11.7)***	2.1 (0.9–4.8)	2.1 (1.4–3.1)***	2.1 (1.5–3.0)***	2.1 (1.5–3.0)***
Sexual (w/or w/o physical abuse)	124.4 (93.4–155.4)	1.4 (0.8–2.3)	1.7 (1.0–2.9)*	7.2 (3.2–16.5)***	3.6 (1.8–7.3)**	3.7 (2.6–5.3)***	3.5 (2.6–4.8)***	3.5 (2.6–4.8)***

\* p=≤.05,

\*\* p=≤.01,

\*\*\* p=≤.001.

Each cell represents a separate model that adjusts for age, marital status, employment status, education, ethnicity and parental alcoholism or problem drinking.



**Table 5**

Summary measures of lifetime alcohol related consequences of drinking among ever drinkers by Child Abuse Status, (Weighted %, Unweighted N=2,772)

Types of Alcohol Consequences	Total N (%) reporting each category of alcohol consequences	No child abuse n=2,035 %	Physical abuse only n=361 %	Sexual abuse n=376 %
Fights <i>a,b, c</i>	451 (17.8)	13.1	24.9	36.5
Legal problems <i>a,b, c</i>	140 (5.2)	3.7	7.1	11.8
Health problems <i>a,b, c</i>	168 (5.9)	3.4	9.4	16.3
Work problems <i>a,b, c</i>	51 (1.9)	0.7	3.1	7.1
Family problems <i>a,b,c</i>	164 (6.8)	5.0	7.1	16.3

*a* =significant chi square trend  $p \leq .001$  by type of abuse,

*b* =significant difference between sexual and no abuse,

*c* =significant difference between physical abuse and sexual abuse.

Table 6

Among women reporting any child abuse (n= 885), characteristics of child abuse and their association with having 2+ lifetime alcohol-related consequences or lifetime alcohol dependence, bi-variate and multivariate models.

	OR <sub>crude</sub> 95% CI Alcohol consequences	OR <sub>adj</sub> 95% CI <sup>a</sup> Alcohol consequences	OR <sub>crude</sub> 95% CI Alcohol dependence	OR <sub>adj</sub> and 95% Alcohol dependence
Child Abuse type				
CPA (only)	(ref)	Ref	(ref)	Ref
CSA (w or w/o physical abuse)	1.9 (1.4–2.7)***	1.7 (1.2–2.4)**	2.1 (1.4–3.0)***	1.8 (1.2–2.7)**
Child abuse categories 2		<i>b</i>		<i>b</i>
CPA only vs. CSA only	1.0 (0.6–1.7)		1.0 (0.7–1.8)	
CPA only vs. CPA+CSA	3.3 (2.2–5.0)		2.8 (1.9–4.1)	
CSA only vs. CPA+CSA	3.3 (1.9–5.7)		2.5 (1.6–4.0)	
Physical abuse				
Age (continuous) of first child physical abuse	1.0 (1.0–1.1)	1.0 (1.0–1.1)	1.0 (1.0–1.1)	1.0 (1.0–1.1)
physical abuse- # perpetrators				
1 perpetrator	(ref)	Ref	(ref)	Ref
2+ perpetrators	1.5 (1.0–2.2) <sub>p.06</sub>	2.3 (1.4–3.6)**	2.3 (1.5–3.4)***	2.3 (1.4–3.6)***
Type of physical abuse perpetrator				
Parent vs other	0.6 (0.4–0.9)**	0.5 (0.3–0.8)***	0.6 (0.4–1.0)*	0.6 (0.3–1.0)*
Other family vs. other	1.3 (0.9–2.0)	1.5 (1.0–2.4)*	1.9 (1.3–2.9)**	2.3 (1.4–3.6)***
Non-family vs. other	2.1 (1.4–3.1)***	2.1 (1.3–3.2)***	2.2 (1.4–3.3)***	2.0 (1.3–3.3)***
Sexual abuse				
Age (continuous) of first child sexual abuse	1.0 (1.0–1.1) ns	1.0 (1.0–1.1)	1.0 (0.9–1.0) ns	1.0 (1.0–1.1)
sexual abuse- # perpetrators				
1 perpetrator	(ref)	Ref	(ref)	Ref
2+ perpetrators	1.5 (0.9–2.5)	1.4 (0.8–2.4)	1.3 (0.7–2.2)	1.0 (0.5–1.9)

	OR <sub>crude</sub> 95% CI Alcohol consequences	OR <sub>adj</sub> 95% CI <sup>a</sup> Alcohol consequences	OR <sub>crude</sub> 95% CI Alcohol dependence	OR <sub>adj</sub> and 95% Alcohol dependence
Type of sexual abuse perpetrator				
Parent vs not	1.0 (0.6–1.7)	0.8 (0.4–1.5)	1.1 (0.6–1.9)	0.8 (0.4–1.6)
Other family vs. not	1.2 (0.8–1.9)	1.3 (0.8–2.2)	1.0 (0.6–1.6)	1.1 (0.6–1.9)
Non-family vs. not	1.4 (0.9–2.2)	1.3 (0.8–2.3)	1.2 (0.7–2.0)	1.0 (0.6–1.9)
Injury with child abuse	1.7 (1.2–2.5)**	1.2 (0.8–1.8)	2.5 (1.7–3.7)***	2.0 (1.3–3.1)**

\*  $p \leq .05$ ,\*\*  $p \leq .01$ ,\*\*\*  $p \leq .001$ .<sup>a</sup>Each cell represents a separate model that adjusts for age, marital status, employment status, education, ethnicity and parental alcoholism or problem drinking.<sup>b</sup>, multivariate models could not be performed due to small numbers in some cells.