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# Risk for Suicidal Thoughts and Behavior after Childhood Sexual Abuse in Women and Men

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Earlier studies have found an elevated risk for psychopathology and suicidal behavior associated with childhood sexual abuse (CSA); however, the degree to which risk is mediated by depression and posttraumatic stress disorder (PTSD) in women and men remains unclear. We examined these issues in data from a family study of childhood maltreatment ($N$ = 2,559). We found significant CSA-associated risk for depression, PTSD, and suicidal behavior for women and men. In survival analyses controlling for these disorders, we observed persistent but somewhat reduced CSA-associated risk for suicidal ideation and suicide attempt. Our findings suggest that these disorders partially mediate CSA-associated risk.

A history of childhood sexual abuse (CSA) is associated with increased risk of suicidal ideation (Basile et al., 2006; Briere & Runtz, 1986; Ullman & Najdowski, 2009) and suicide attempt (Briere & Runtz, 1986; Fergusson, Lynskey, & Horwood, 1996; Hardt et al., 2008; Martin, Bergen, Richardson, Roeger, & Allison, 2004; Nelson et al., 2002; Peters & Range, 1995; Ullman & Najdowski, 2009). Investigators have also reported CSA-associated risks for psychopathology including (but not limited to) major depressive disorder (MDD) and posttraumatic stress disorder (PTSD), disorders on which this report focuses (Fergusson, Lynskey et al., 1996; MacMillan et al., 2001; Molnar, Buka, & Kessler, 2001; Nelson et al., 2002, 2006; Sartor et al., 2007). As risk of suicidality is also found with these disorders, it remains unclear whether additional risk exists due to a history of CSA apart from that attributable to psychiatric illness. For example, Breslau and colleagues (Breslau, Davis, Peterson, & Schultz, 2000; Wilcox, Storr, & Breslau, 2009) have reported that risks for MDD and suicide attempt observed in individuals with traumatic event exposure are largely limited to those who develop PTSD.

CSA-associated risk for suicidal behavior in men as well as women is well established. A strong association of CSA with suicidal behavior has been reported in college students (Peters & Range, 1995) and psychosomatic clinic patients (Hardt et al., 2008) of both genders. In the Christchurch Health and Development Study (Fergusson, Horwood, & Lynskey, 1996), a longitudinal study in a population-representative adolescent sample, significant CSA-associated risk of suicidal ideation and suicide attempt was found for both young men and women.

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A similar U.S. study (Silverman, Reinherz, & Giaconia, 1996) observed risk only for women; however, only two men reported a history of CSA. Other investigations have had samples composed of a single gender. In Australian men, those who reported CSA were 10 times more likely to report suicidal ideation (O'Leary & Gould, 2009). Studies with samples limited to women have found similar risk associated with self-reported CSA (e.g., see Ullman & Najdowski, 2009).

Gender differences complicate interpretation of the role of psychiatric illness in the association of CSA with suicidal behavior, as somewhat inconsistent results to date have been reported for both women and men. Sigfusdottir, Asgeirsdottir, Gudjonsson, and Sigurdsson (2008) examined whether depressed mood and anger mediated the relationship between CSA and suicidal behavior in high school students. They found stronger effects of CSA on suicidal behavior in girls than in boys, which were partially mediated by anger and depressed mood. Another study controlled for depression, family dysfunction, and hopelessness in an examination of the effects of CSA on suicidal behavior in students with an average age of 14. Boys with a history of CSA compared with those with no such history had a ten fold increased risk for suicide plans and threats as well as a fifteen fold increased risk for suicide attempt. However, in girls, depression completely mediated the association between CSA and suicidality (Martin et al., 2004). The substantially lower prevalence of CSA in men, which probably leads to more variable estimates of effects due to smaller numbers of exposed individuals and thus lower power, may be contributing to the inconsistent results found in the limited studies to date that have examined mediation.

For this report we examined risk for suicidal behavior associated with a history of CSA using data from the Childhood Trauma Study, a family study for which participants were ascertained from an Australian young adult twin sample on the basis of twins' retrospective reports of childhood maltreatment. The large number of CSA-positive men and women in the sample enabled examination of whether observed risks vary as a function of gender. Survival analyses with depression and PTSD as time-varying covariates were used to examine whether CSA-associated risk for suicidal thoughts and behavior was mediated by these disorders.

## METHOD

The methods of the Childhood Trauma Study have been described in detail elsewhere (Nelson, Lynskey, Heath, Madden, & Martin, 2010); a summary is provided here. Families were ascertained for this study based on responses from a semistructured psychiatric diagnostic assessment conducted via telephone from 1996 to 2000 (Heath et al., 2001) with 6,265 members (2,765 pairs and 735 singletons) of a large Australian volunteer twin panel (Cohort II, born between 1964 and 1971) maintained by the Australian National Health and Medical Research Council. Families in which one or more twin endorsed a screening question on CSA (five total questions) or childhood physical abuse (CPA; four total questions) were considered high-risk; control families were those in which all interviewed twins did not report either form of abuse. High-risk families in which male twins reported a history of CSA were prioritized for inclusion. A random number generator program that frequency-matched on the basis of twin gender and zygosity was otherwise used to select high-risk and control families.

The design initially involved interviewing all available twins, full siblings, and parents from 500 high-risk families and from 500 control families. Funding limitations resulting from a major decline in the relative valuation of the U.S. to the Australian dollar necessitated scaling back enrollment by prioritizing high-risk family twins.

Interviewers for the study, primarily master's level psychologists, underwent an extensive training process supervised by an experienced clinical psychologist. Data collection began in 2003 and continued through 2008. Contact was first made with twins

from whom permission was requested to invite family members to participate. If both twins agreed to allow family members to be contacted, and at least one twin agreed to participate, the family was enrolled in the study. Before starting the interview, verbal consent was obtained. Afterward, respondents signed and returned a consent form that allowed use of their interview data. These procedures were approved by the Ethics Committee of the Queensland Institute of Medical Research and by the Washington University School of Medicine Human Subjects Committee.

Interviews were completed by 3,434 respondents from 524 high-risk and 373 control families. Data from interviewed respondents who either returned consents requesting that their data not to be used for analysis ($N = 17$) or failed to return their consents ($N = 10$) were not analyzed or reported. Data from the 813 interviewed parents are not reported here, as parental interview did not assess CSA. Although respondents were told that they could refuse to answer any items, relatively few (0.4%) refused to answer CSA questions. This report focuses on the 2,559 twin and sibling respondents for whom CSA data are available. These individuals include 976 female and 533 male twins and 618 female and 432 male nontwin siblings. The mean age at interview was 37.2 years (*SD* 2.3) for twins and 40.6 years (*SD* 6.3) for siblings.

### *Assessment*

The Childhood Trauma Study's computer-assisted diagnostic interview was completed via telephone. Data on lifetime Axis I disorders (MDD and PTSD) and suicidal thoughts and behavior reported here were obtained using a modified Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA). The SSAGA's reliability (Bucholz et al., 1994) and validity (Hesselbrock, Easton, Bucholz, Schuckit, & Hesselbrock, 1999) are well established. Age at onset was obtained for MDD, PTSD, suicidal ideation, and suicide attempt, but not for the other suicidal thought and behavior items. To decrease respondent burden, sections of the interview that were unchanged from prior assessment were not readministered to twins previously interviewed (1996–2000) in the Cohort II assessment (Heath et al., 2001) or subsequent genetic studies (2001–2005) that focused on nicotine and alcohol (Agrawal et al., 2008; Saccone et al., 2007) or to siblings who participated in the latter projects. For the current report, this included only the depression and suicidal thoughts and behavior sections. Sources of the depression assessment for these analyses include the Childhood Trauma Study ($N = 2,042$), nicotine and alcohol genetic studies ($N = 533$), and Cohort II assessment ($N = 4$). The similar breakdown for suicidal thoughts and behavior assessment is Childhood Trauma Study ($N = 1,089$), nicotine and alcohol genetic studies ($N = 39$), and Cohort II assessment ($N = 1,462$). No differences in gender distribution were found between those with depression assessed in the Childhood Trauma Study versus those assessed in a prior project ($p > .14$); the similar comparison for suicidal thoughts and behavior was significant ($p < .001$; Childhood Trauma Study 41% male; prior projects 35% male). In instances where lifetime suicidal thoughts and behavior or MDD were assessed in more than one project, the most recent assessment was used.

The modified Christchurch Trauma Assessment's (Fergusson, Horwood, & Lynskey, 1997; Fergusson, Horwood, Shannon, & Lawton, 1989; Fergusson, Horwood et al., 1996; Fergusson, Lynskey et al., 1996) very detailed CSA questions (see Table 1) were used to determine CSA status for this report; the stem for the 17 CSA items asked about unwanted sexual experience occurring before age 18. Individuals who endorsed any unwanted sexual contact (i.e., excluding noncontact forms of abuse) that occurred before the age of 18 were coded for these analyses as having experienced contact CSA. We found (Nelson et al., 2010) reasonable agreement [kappa = 0.64; 95% confidence intervals (CI) 0.60–0.69] across an average interval of more

**TABLE 1**
*Christchurch Trauma Inventory CSA Items*

| Before you were 18 did anyone do or involve you in any of the following (when you did not want this to happen)? |
|---|
| 1. Show or expose their sex organs (private parts) to you |
| 2. Masturbate (play with themselves) in front of you |
| 3. Touch your breasts in a sexual way (women only) |
| 4. Touch your sex organs outside your clothing |
| 5. Touch your sex organs inside your clothing |
| 6. Try to have you touch their private parts |
| 7. Rub their private parts against you in a sexual way |
| 8. Try to remove your clothing to involve you in sexual behaviors |
| 9. Remove their clothing to have sex with you |
| 10. Threaten to have sex with you or to involve you in some other sexual activity against your will |
| 11. Attempt to have sexual intercourse with you |
| 12. Have sexual intercourse with you |
| 13. Try to have you perform oral sex on them or with them |
| 14. Had you perform oral sex on them or with them |
| 15. Try to perform anal sex on you or with you |
| 16. Perform anal sex on you or with you |
| 17. Any other sort of sexual approach/behavior specific |

CSA, childhood sexual abuse.

than 7 years between the composite variable (any endorsement of a Cohort II interview CSA screening item) and CSA at the Childhood Trauma Study reinterview (defined as earlier). Lack of agreement derived from two distinct sources: (1) individuals who had not endorsed any screening questions, but reported CSA in their Christchurch Trauma Assessment responses ($N$ = 139); and (2) those who endorsed one or more screening questions, but denied Christchurch Trauma Assessment CSA questions ($N$ = 78). The limitations of the CSA screening questions and the tendency for some individuals to have difficulty divulging a history of abuse could be contributing to both types of disagreement. Fergusson, Horwood, and Woodward (2000) attributed observed disagreement to false negative reports in their examination of the instrument's temporal stability over a 3-year interval in young adults.

*Data Analysis*

All analyses were performed using SAS version 9.2 software (SAS Institute Inc., Cary, NC, 2009). For all regression analyses, robust variance estimators were used to adjust 95% CI for the presence of multiple members of individual families in the sample. Logistic regression analyses were used to examine the CSA-associated risk for outcomes, initially in separate models for women and men and later controlling for gender and psychiatric covariates. As logistic regression analyses examine whether outcomes are associated without considering their relative order of occurrence (e.g., the onset of MDD or suicidal behavior might have predated the first incident of CSA), survival analyses were then performed that considered the relative temporal ordering of those outcomes for which onset was assessed. Cox proportional hazards regression models were used to examine risks associated with time-varying covariates. Individuals with missing onset information for dependent variables or covariates could be not included in the survival analyses. The number of respondents missing onset, by variable, is as follows: CSA (10), MDD (0), PTSD (23), suicidal ideation (12), and suicide attempt (1). Models were rerun with the addition of interaction terms (CSA × Gender) to determine whether CSA-associated risks differed between women and men.

## RESULTS

The prevalence of contact CSA in the Childhood Trauma Study is 37% for women and 17% for men, reflecting the sample's enrichment for individuals who experienced abuse. Women reported a slightly earlier ($p$ = .014) first occurrence of CSA (mean

10.23, *SD* 4.06) than men (mean 11.11, *SD* 3.73).

MDD was significantly more common in women than in men [lifetime prevalence 38% versus 27%, odds ratio (OR) = 1.63, 95% CI 1.37–1.93, $p < .0001$]. The mean onset of MDD was 25.1 (*SD* 8.7); it did not differ significantly by gender. PTSD was significantly more common in women than in men (lifetime prevalence 14% vs. 7%, OR = 2.03, 95% CI 1.54–2.67, $p < .0001$). The mean onset of PTSD was 15.0 (*SD* 9.6); it also did not differ significantly by gender.

The lifetime prevalence of suicidal thoughts and behaviors were similar for women and men, respectively, for suicidal ideation (30% and 34%), persistent suicidal thoughts (12% and 13%), suicide plan (9% and 11%), and suicide attempt (6% for each). Although a several-fold difference in magnitude was observed for multiple suicide attempts (3% and 1%), it did not reach significance. The mean onset of suicidal ideation was 21.3 (*SD* 7.8); it also did not differ by gender. The mean age of first suicide attempt was 20.0 (*SD* 7.9) for women, which is significantly ($t = 2.38$, $p = .018$) earlier than the similar value for men [23.2 (*SD* 7.9)]. However, when this examination was repeated separately by CSA status, no significant gender-related differences were found for those not reporting CSA [women: mean 23.2 (*SD* 9.3); men: mean 22.9 (*SD* 7.6); $p > .86$]. In contrast, a large gender difference was found in individuals with a history of CSA [women: mean 18.5 (*SD* 6.6); men: mean 23.9 (*SD* 8.6); $p < .007$].

MDD, PTSD, and suicidal ideation were commonly endorsed by individuals reporting a history of abuse (see Table 2). As suicidal outcome severity increased from suicidal ideation through multiple suicide attempts, the odd ratios tended to increase for women; OR for men remained more consistent regardless of outcome severity. Controlling for lifetime history of MDD resulted in some attenuation of risk, but risk remained significant across outcomes in women. In men, risk for multiple attempts was not found and risk for persistent suicidal

**TABLE 2**
*Prevalence of Depression, PTSD, and Suicidal Behavior by CSA Status and Gender—Unadjusted Odds Ratios (OR) and Odds Ratios Adjusted for the Presence of MDD (AOR)*

| | Female ($n$ = 1,586–1,594) | | | | Male ($n$ = 957–964) | | | |
|---|---|---|---|---|---|---|---|---|
| | Abused $N$ = 584 | Nonabused $N$ = 1,010 | OR (95% CI) | AOR (95% CI) | Abused $N$ = 162 | Nonabused $N$ = 803 | OR (95% CI) | AOR (95% CI) |
| MDD | 49% | 31% | 2.11[a] (1.70–2.63) | – | 41% | 24% | 2.15[a] (1.50–3.07) | – |
| PTSD | 29% | 5% | 7.50[a] (5.31–10.60) | – | 22% | 4% | 6.26[a] (3.81–10.29) | – |
| Suicidal ideation | 41% | 24% | 2.25[a] (1.79–2.84) | 1.87[a] (1.48–2.38) | 49% | 31% | 2.16[a] (1.52–3.09) | 1.81[a] (1.24–2.64) |
| Persistent suicidal thought | 19% | 8% | 2.76[a] (2.02–3.77) | 2.11[a] (1.53–2.91) | 20% | 12% | 1.89[b] (1.19–3.01) | 1.44 (0.89–2.34) |
| Suicide plan | 15% | 5% | 3.01[a] (2.09–4.33) | 2.35[a] (1.62–3.41) | 22% | 9% | 2.86[a] (1.74–4.70) | 2.27[b] (1.36–3.81) |
| Suicide attempt | 10% | 3% | 3.35[a] (2.16–5.20) | 2.60[a] (1.63–4.13) | 11% | 4% | 2.82[b] (1.46–5.42) | 2.25[c] (1.16–4.38) |
| Multiple suicide attempts | 4% | 1% | 4.65[a] (2.23–9.68) | 3.30[b] (1.53–7.11) | 2% | 1% | 2.51 (0.75–8.38) | 1.77 (0.51–6.12) |

PTSD, posttraumatic stress disorder; CSA, childhood sexual abuse; AOR, adjusted odds ratio; MDD, major depressive disorder.
[a]$p < .0001$; [b]$p < .01$; [c]$p < .02$.

**TABLE 3**
*CSA-Associated Risk Controlling for MDD, Sex, and PTSD (n = 2,543–2,545)*

| | CSA (controlling for MDD & gender) | | CSA (controlling for PTSD, MDD, & gender) | |
|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI |
| Suicidal ideation | 1.86[a] | 1.52–2.26 | 1.63[a] | 1.32–2.01 |
| Persistent suicidal thought | 1.87[a] | 1.44–2.42 | 1.55[c] | 1.16–2.07 |
| Suicide plan | 2.32[a] | 1.73–3.15 | 1.91[b] | 1.37–2.68 |
| Suicide attempt | 2.47[a] | 1.69–3.60 | 1.90[c] | 1.23–2.93 |
| Multiple suicide attempts | 2.78[c] | 1.50–5.15 | 2.01 | 0.93–4.34 |

CSA, childhood sexual abuse; MDD, major depressive disorder; PTSD, posttraumatic stress disorder; AOR = adjusted OR.
[a]$p < .0001$; [b]$p < .001$; [c]$p < .01$.

**TABLE 4**
*Results of Cox Proportional Hazards Models Using Time-Dependent Covariates (Hazard Ratios and 95% CIs Shown)*

| | CSA | MDD | PTSD | Female |
|---|---|---|---|---|
| Suicidal ideation | 1.55[a] | 2.40[a] | 1.60[b] | 0.76[b] |
| ($N$ = 2,501) | 1.29–1.85 | 1.94–2.98 | 1.25–2.04 | 0.65–0.89 |
| Suicide attempt | 1.81[c] | 3.39[a] | 1.91[d] | 0.86 |
| ($N$ = 2,514) | 1.18–2.79 | 2.00–5.75 | 1.13–3.25 | 0.58–1.28 |

CSA, childhood sexual abuse; MDD, major depressive disorder; PTSD, posttraumatic stress disorder.
[a]$p < .0001$; [b]$p < .001$; [c]$p < .01$; [d]$p < .05$.

thoughts was no longer significant with control for MDD.

As largely similar OR were found for women and men in the prior analyses, we included data from both genders in additional analyses that control for MDD and gender (see Table 3). Persistent CSA-associated risk was found for all examined suicidal thoughts and behaviors. In analyses that also controlled for PTSD, all associations other than that for multiple suicide attempts remained significant.

To address whether a history of CSA is associated with significant risk for subsequently occurring suicidal thoughts and behavior, we performed survival analyses using Cox proportional hazards regression models with time-varying covariates. In separate analyses that included control for gender, CSA was associated with significant risk of MDD [HR 1.75 (95% CI 1.51–2.03), $p < .0001$] and PTSD [HR 1.67 (95% CI 1.24–2.26), $p < .0008$]. Of the suicide-related thoughts and behaviors, age at onset was collected only for suicidal ideation and suicide attempt. Significant CSA-associated risk was observed for suicidal ideation [HR 1.92 (95% CI 1.63–2.25), $p < .0001$] and suicide attempt [HR 2.57 (95% CI 1.79–3.67), $p < .0001$]. When MDD and PTSD were included in the Cox proportional hazards regression models as time-varying covariates (Table 4), CSA-associated risks decreased, but remained significant (e.g., the HR for suicide attempt decreased to 1.81 from the unadjusted value of 2.57). A CSA × Gender interaction term was added to each of these models to examine whether the effects of

CSA differed in women and men. No significant interaction was observed in either model.

## DISCUSSION

We found that a history of CSA is associated with increased risk of MDD and suicidal thoughts and behavior including suicidal ideation, persistent suicidal thoughts, suicide plan, and suicide attempt (both lifetime and recurrent). These risks were somewhat reduced in magnitude, but largely remained significant after controlling for MDD and PTSD. Survival analyses, which used information about temporal ordering of covariates, confirmed that individuals with a history of CSA have increased risk for subsequently occurring suicidal ideation and suicide attempt.

Significant CSA-associated risk for suicidal thoughts and behavior has been reported across a wide range of settings. This report's sample was ascertained on the basis of childhood maltreatment status from a nonclinical, Australian twin panel, and is thus enriched for both female and male CSA-positive individuals providing substantial power. The strong psychometric properties of the assessments used here also compare favorably with prior work. Other reports that have observed similar risk include longitudinal studies of population-representative adolescent cohorts (Fergusson, Horwood et al., 1996; Silverman et al., 1996) and cross-sectional examinations focusing on students (Martin et al., 2004), patients in primary care settings (McCauley et al., 1997), and other clinical populations (Briere & Runtz, 1986; Brodsky et al., 2001; Hardt et al., 2008).

The association between CSA and suicide attempts remained significant, although of somewhat smaller magnitude, with control for MDD and PTSD in our sample. Our results are consistent with these disorders only partially mediating this relationship. Sigfusdottir et al. (2008) similarly found that, although depressed mood associated with CSA is a partial mediator and strong predictor for suicidal behavior, an association remained between CSA and suicidal behavior when adolescents were not suffering from feelings of depression. In an Australian adolescent sample (Martin et al., 2004), controlling for depression caused the relationship between CSA and suicidality to fall below significance in females, whereas a ten fold risk remained for males. They concluded that depression mediated the relationship between CSA and suicidality in adolescent females, but not in males. In contrast, the current study found that the risk for suicide attempt remained significant in both women and men when controlling for MDD and PTSD. It is important to note that the adolescents in Martin et al.'s study had not yet survived a considerable portion of the period of risk for suicidal behavior. In addition, their sample had only 59 girls and 27 boys who endorsed a history of CSA. This report's inclusion of 584 women and 162 men reporting a history of CSA provides substantially greater power and thus more precise estimates of risk.

Earlier studies have reported varying degrees of gender differences in CSA-associated risk. Some studies have been inconclusive due to the limited number of sexually abused men in their samples (Hardt et al., 2008; Silverman et al., 1996). Other reports have found no gender differences in the association of CSA and adult mental health (Young, Harford, Kinder, & Savell, 2007), or suicide attempts (Dube et al., 2005; Peters & Range, 1995). Fergusson, Horwood et al. (1996) reported significant CSA-associated risk for a wide range of psychiatric disorders and for suicide attempt in their longitudinal study of a population-representative adolescent cohort. In analyses that controlled for family stressors and other covariates, they observed that contact CSA, especially when abuse involved intercourse, was associated with significant risk for conduct disorder, substance use disorders, and suicide attempts. All forms of CSA were associated with risk of MDD and anxiety disorders. Gender was a significant covariate in their examination of risk across psychiatric

disorders, but not risk for suicide attempts. One investigation (MacMillan et al., 2001) in a large Canadian community sample found that a history of CSA was significantly associated with a wide range of lifetime psychopathology in women; similar risks reached significance only for alcohol abuse/dependence and any psychiatric disorder in men. Survival analyses were also used in National Comorbidity Survey data (Molnar et al., 2001) to examine CSA-associated risks for psychiatric disorders while controlling for a variety of other family stressors including divorce, parental psychopathology, substance use, and other forms of abuse (physical and emotional). Significant risks in women included affective disorders, PTSD, and other anxiety disorders, and substance use disorders; risks in men were more limited in reaching significance for PTSD and substance use disorders. This report's findings provide evidence for CSA-associated risks for suicidal thoughts and behavior that are consistent across gender. Overall, the literature on gender differences remains somewhat difficult to interpret given the lower prevalence of CSA in men. Epidemiologic data from very large population-representative samples suggest that CSA-associated risks for psychiatric disorders may be less wide-ranging in men.

We found evidence that women with a history of CSA attempted suicide on an average of more than 5 years earlier than men with a similar history; similar gender differences were not observed in those without a history of CSA. Consistent with our findings, Briere and Runtz (1986) found that young adult women reporting a history of CSA on intake to a crisis counseling community health center had a twofold increase in history of suicide attempt. They observed that 93% of CSA-positive women who reported a suicide attempt did so before age 13. In a clinical sample of psychiatric hospital inpatients who met criteria for MDD, Brodsky et al. (2001) found that suicidal behavior was significantly related to a history of childhood physical or sexual abuse; more than 75% of those reporting a history of childhood abuse in their sample were women. They found that 46% of abused suicide attempters made their first suicide attempt before the age of 18; the similar value for nonabused suicide attempters was 19%. Therefore, results from both nonclinical and clinical samples suggest that a history of CSA is related to an earlier onset of suicidal behavior in women.

A number of limitations should be considered when interpreting results of this report. First, our assessment of CSA was based on retrospective self-report. A prior examination (Nelson et al., 2010) of the psychometric properties of the CSA assessment in this sample found reasonable temporal stability, good same-gender cotwin agreement, increased CSA risk in siblings of twins who endorsed CSA, and significant association with parental alcoholism, an established risk factor. In addition, if a major component of disagreement was derived from false negatives at reinterview (Fergusson et al., 2000; Nelson et al., 2010), it is likely that this report's estimates of CSA-associated risk are conservative. CSA was operationalized as a binary construct to simplify inclusion in this report's analyses. Doing so fails to consider important aspects of the abuse, including frequency, severity, and type (familial or extrafamilial) and number of perpetrators, that probably impact estimated risks. Our decision not to reassess participants who had completed identical prior assessments presumably failed to identify some individuals with a later onset of depression or suicidal thoughts and behavior, which could have impacted our findings and possibly led to additional attenuation of CSA-associated risks. The sample was composed primarily of Australian caucasians; therefore, the results may not be generalizable to samples composed of other ethnic groups. The change in study design from the initially planned matching of case and control families also may have impacted the generalizability of findings or introduced some unexpected bias into estimates of risk. Although the sample contained a relatively large number of men reporting a history of CSA, it is likely that our estimates of risk in men are

more imprecise due to our greater power to detect effects in women. CSA often occurs in the context of other childhood stressors [e.g., CSA and CPA are correlated (0.17) in our sample; $p < .0001$] and thus it is difficult to determine if estimated risk is solely attributable to CSA. It is also important to remember that although we are reporting associations with putative risk factors, our findings cannot be assumed to reflect causation.

In summary, we observed substantial CSA-associated risk for suicidal thoughts and behavior in both women and men. Survival analyses that incorporated the temporal ordering of risk factors found evidence of significant residual CSA-associated risk with control for MDD and PTSD. Our results are thus consistent with effects that are partially mediated via the presence of MDD and PTSD.

## REFERENCES


AGRAWAL, A., PERGADIA, M. L., SACCONE, S. F., LYNSKEY, M. T., WANG, J. C., MARTIN, N. G., ET AL. (2008). An autosomal linkage scan for cannabis use disorders in the nicotine addiction genetics project. *Archives of General Psychiatry*, *65*, 713–721.

BASILE, K. C., BLACK, M. C., SIMON, T. R., ARIAS, R., BRENER, N. D., & SALTZMAN, L. E. (2006). The association between self-reported lifetime history of forced sexual intercourse and recent health-risk behaviors: Findings from the 2003 National Youth Risk Behavior Survey. *Journal of Adolescent Health*, *39*, 752.e1–752.e7.

BRESLAU, N., DAVIS, G. C., PETERSON, E. L., & SCHULTZ, L. R. (2000). A second look at comorbidity in victims of trauma: The posttraumatic stress disorder-major depression connection. *Biological Psychiatry*, *48*, 902–909.

BRIERE, J., & RUNTZ, M. (1986). Suicidal thoughts and behaviours in former sexual abuse victims. *Canadian Journal of Behavioural Science*, *18*, 414–423.

BRODSKY, B. S., OQUENDO, M., ELLIS, S. P., HAAS, G. L., MALONE, K. M., & MANN, J. J. (2001). The relationship of childhood abuse to impulsivity and suicidal behavior in adults with major depression. *American Journal of Psychiatry*, *158*, 1871–1877.

BUCHOLZ, K. K., CADORET, R., CLONINGER, C. R., DINWIDDIE, S. H., HESSELBROCK, V. M., NURNBERGER, J. I. JR., ET AL. (1994). A new, semi-structured psychiatric interview for use in genetic linkage studies: A report on the reliability of the SSAGA. *Journal of Studies on Alcohol*, *55*, 149–158.

DUBE, S. R., ANDA, R. F., WHITFIELD, C. L., BROWN, D. W., FELITTI, V. J., DONG, M., ET AL. (2005). Long-term consequences of childhood sexual abuse by gender of victim. *American Journal of Preventive Medicine*, *28*, 430–438.

FERGUSSON, D. M., HORWOOD, L. J., & LYNSKEY, M. T. (1996). Childhood sexual abuse and psychiatric disorder in young adulthood: II. Psychiatric outcomes of child sexual abuse. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 1365–1374.

FERGUSSON, D. M., HORWOOD, L. J., & LYNSKEY, M. T. (1997). Childhood sexual abuse, adolescent sexual behaviors and sexual revictimization. *Child Abuse & Neglect*, *21*, 789–803.

FERGUSSON, D. M., HORWOOD, L. J., SHANNON, F. T., & LAWTON, J. M. (1989). The Christchurch Child Development Study: A review of epidemiological findings. *Paediatric and Perinatal Epidemiology*, *3*, 302–325.

FERGUSSON, D. M., HORWOOD, L. J., & WOODWARD, L. J. (2000). The stability of child abuse reports: A longitudinal study of the reporting behavior of young adults. *Psychological Medicine*, *30*, 529–544.

FERGUSSON, D. M., LYNSKEY, M. T., & HORWOOD, L. J. (1996). Childhood sexual abuse and psychiatric disorder in young adulthood: I. Prevalence of sexual abuse and factors associated with sexual abuse. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 1355–1364.

HARDT, J., SIDOR, A., NICKEL, R., KAPPIS, B., PETRAK, P., & EGLE, U. T. (2008). Childhood adversities and suicide attempts: A retrospective study. *Journal of Family Violence*, *23*, 713–718.

HEATH, A. C., HOWELLS, W., KIRK, K. M., MADDEN, P. A. F., BUCHOLZ, K. K., NELSON, E. C., ET AL. (2001). Predictors of non-response to a questionnaire survey of a volunteer twin panel: Findings from the Australian 1989 twin cohort. *Twin Research*, *4*, 73–80.

HESSELBROCK, M., EASTON, C., BUCHOLZ, K. K., SCHUCKIT, M., & HESSELBROCK, V. (1999). A validity study of the SSAGA–A comparison with the SCAN. *Addiction*, *94*, 1361–1370.

MACMILLAN, H. L., FLEMING, J. E., STREINER, D. L., LIN, E., BOYLE, M. H., JAMIESON, E., ET AL. (2001). Childhood abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry*, *158*, 1878–1883.

MARTIN, G., BERGEN, H. A., RICHARDSON, A. S., ROEGER, L., & ALLISON, S. (2004). Sexual

abuse and suicidality: Gender differences in a large community sample of adolescents. *Child Abuse and Neglect*, *28*, 491–503.

MCCAULEY, J., KERN, D. E., KOLODNER, K., DILL, L., SCHROEDER, A. F., DECHANT, H. K., ET AL. (1997). Clinical characteristics of women with a history of childhood abuse: Unhealed wounds. *Journal of the American Medical Association*, *277*, 1362–1368.

MOLNAR, B. E., BUKA, S. L., & KESSLER, R. C. (2001). Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Survey. *American Journal of Public Health*, *91*, 753–760.

NELSON, E. C., HEATH, A. C., LYNSKEY, M. T., BUCHOLZ, K. K., MADDEN, P. A. F., STATHAM, D. J., ET AL. (2006). Childhood sexual abuse and risk for licit and illicit drug-related outcomes: A twin study. *Psychological Medicine*, *36*, 1473–1483.

NELSON, E. C., HEATH, A. C., MADDEN, P. A. F., COOPER, M. L., DINWIDDIE, S. H., BUCHOLZ, K. K., ET AL. (2002). Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. *Archives of General Psychiatry*, *59*, 139–145.

NELSON, E. C., LYNSKEY, M. T., HEATH, A. C., MADDEN, P. A. F., & MARTIN, N. G. (2010). A family study of adult twins with and without a history of childhood abuse: Stability of retrospective reports of maltreatment and associated family measures. *Twin Research and Human Genetics*, *13*, 121–130.

O'LEARY, P., & GOULD, N. (2009). Men who were sexually abused in childhood and subsequent suicidal ideation: Community comparison, explanations and practice implications. *British Journal of Social Work*, *39*, 950–968.

PETERS, D. K., & RANGE, L. M. (1995). Childhood sexual abuse and current suicidality in college women and men. *Child Abuse and Neglect*, *19*, 335–341.

SACCONE, S. F., PERGADIA, M. L., LOUKOLA, A., BROMS, U., MONTGOMERY, G. W., WANG, J. C., ET AL. (2007). Genetic linkage to chromosome 22q12 for a heavy-smoking quantitative trait in two independent samples. *American Journal of Human Genetics*, *80*, 856–866.

SARTOR, C. E., LYNSKEY, M. T., BUCHOLZ, K. K., MCCUTCHEON, V. V., NELSON, E. C., WALDRON, M., ET AL. (2007). Childhood sexual abuse and the course of alcohol dependence development: Findings from a female twin sample. *Drug and Alcohol Dependence*, *89*, 139–144.

SIGFUSDOTTIR, I. D., ASGEIRSDOTTIR, B. B., GUDJONSSON, G. H., & SIGURDSSON, J. F. (2008). A model of sexual abuse's effects on suicidal behavior and delinquency: The role of emotions as mediating factors. *Journal of Youth and Adolescence*, *37*, 699–712.

SILVERMAN, A. B., REINHERZ, H. Z., & GIACONIA, R. M. (1996). The long-term sequelae of child and adolescent abuse: A longitudinal community study. *Child Abuse and Neglect*, *20*, 709–723.

ULLMAN, S. E., & NAJDOWSKI, C. J. (2009). Correlates of serious suicidal ideation and attempts in female adult sexual assault survivors. *Suicide and Life-Threatening Behavior*, *39*, 47–57.

WILCOX, H. C., STORR, C. L., & BRESLAU, N. (2009). Posttraumatic stress disorder and suicide attempts in a community sample of urban American young adults. *Archives of General Psychiatry*, *66*, 305–311.

YOUNG, M. S., HARFORD, K., KINDER, B., & SAVELL, J. K. (2007). The relationship between childhood sexual abuse and adult mental health among undergraduates: Victim gender doesn't matter. *Journal of Interpersonal Violence*, *22*, 1315–1331.

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