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Depressive Symptoms and Age of Alcohol Use Onset Interact to Predict Suicidal Ideation

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Abstract

Distal risk factors of alcohol use may increase suicidal ideation in the presence of proximal risk factors, such as depressive symptoms. We tested whether depressive symptoms and age at onset of alcohol use interact to predict suicidal ideation in 500 individuals (67% men; 68% Black/African American) under criminal justice supervision. Regression analysis revealed that age of onset negatively associated with suicidal ideation only at average and high levels of depressive symptoms, while controlling for suicide attempt history. Clinicians may consider individuals with an early age of onset of alcohol use and current depressive symptoms at risk for suicidal ideation.

Keywords

suicide; substance use; initiation; age; criminal justice

Deaths by suicide are on the rise in the United States despite prevention efforts (Centers for Disease Control and Prevention [CDC], 2018). The latest available statistics revealed that nearly 45,000 people died by suicide in the United States in 2016. A recent meta-analysis of the last 50 years of research indicated that currently established risk factors only predict suicidal behaviors slightly above chance (Franklin et al., 2016). Suicide risk is difficult to accurately detect and prevent partly because of its complex etiology. Distal risk factors, defined as factors increasing risk over the weeks, months, or years prior to suicidal behavior, are important to determining one's chronic risk for suicidal ideation and behavior (Hufford, 2001). However, proximal risk factors, defined as factors that precipitate suicidal ideation and behavior, are important when considering acute risk for suicidal ideation or behavior (Turecki et al., 2012). The need to understand proximal and distal risk factors for suicide is particularly important among the criminal justice population. Individuals with histories of criminal justice involvement are at high risk for suicidal behavior (Binswanger et al., 2007; Cardarelli et al., 2015), as well as early alcohol use (Horan & Widom, 2015). The present study examines the interaction between a distal risk factor suicidal ideation—age at onset of alcohol use—and a proximal risk factor for suicidal ideation—depressive symptoms, within a criminal justice population.

Alcohol use at varying levels (e.g., binge drinking, heavy drinking, alcohol use disorder) has been consistently found to be distally related to suicidal ideation and behavior (Borges & Loera, 2010; Borges et al., 2000; Gart & Kelly, 2015; Glasheen et al., 2015; Grant & Hasin, 1999; Nock et al., 2008; Reifman & Windle, 1995; Sung et al., 2015; Wilsnack et al., 2004). Regarding suicidal ideation specifically, a meta-analysis revealed that individuals with a history of alcohol use disorder were at nearly twice the odds of suicidal ideation compared to people without such history (Darvishi et al., 2015). The literature has primarily focused on the distal role of alcohol use disorder, with fewer studies examining other distal alcohol use variables. Examining additional, distal alcohol use variables, such as age of alcohol use onset, will shed light on the complex relation between alcohol use and suicidal ideation.

Early drinking effects include impairment in adult synapses, cognitive functioning, sleep, neurogenesis, and cholinergic and serotonergic neurons, which could increase individuals' vulnerability to depression, alcohol use disorders, and related psychological problems such as suicidal ideation (Crews et al., 2016; Grant & Dawson, 1997; Reifman & Windle, 1995). Indeed, one prospective study demonstrated that alcohol use in adolescence predicted suicidal ideation in young adulthood (Duncan et al., 1997). Furthermore, adolescents who engage in drinking prior to age 13 are more likely to engage in suicidal ideation (Baiden et al., 2018) and attempts than those who began drinking after the age of 13 (Buydens-Branchey et al., 1989; D. Kim & H. Kim, 2010; Swahn et al., 2008; Swahn et al., 2010).

Theory based in diathesis-stress models suggests that a distal risk factor such as early alcohol use may not impact suicidal ideation unless a proximal risk factor is present (Hufford, 2001). Diathesis-stress models propose that psychopathology results from the interaction of a diathesis (or vulnerability) with a stressor (or trigger). Such models typically propose that diatheses are not sufficient to produce psychopathology, but rather, are activated by a stressor (van Heeringen, 2012; Zuckerman & Riskind, 2000). For example, diatheses towards suicide risk such as genetic predisposition may not contribute or lead to suicidal ideation or an attempt unless a stressor, such as depression, is present (van Heeringen, 2012).

Early drinking may serve as a diathesis towards suicide risk, given its damaging effects on neurodevelopment and psychological functioning (Crews et al., 2016; Grant & Dawson, 1997; Reifman & Windle, 1995). Although depression is often considered a distal risk factor for suicidal ideation and behavior (Hufford, 2001), depressive symptoms are often proximally related to suicidal ideation and therefore may activate diatheses towards such ideation (Ben-Zeev et al., 2012; Foley et al., 2006; Turecki et al., 2012). That is, individuals with early onset of alcohol use may have less biological and psychological resources to respond adaptively to depressive symptoms and therefore are at greater risk for engaging in suicidal ideation. Many studies have shown that the comorbidity of alcohol use disorder and major depressive disorder—both distal risk factors—increase risk for suicidal ideation and behavior (Brière et al., 2014; Cohen et al., 2017; Cornelius et al., 1995; Waller et al., 1999). However, no studies have examined the potential interaction of the distal risk factor of alcohol use onset, with the proximal risk factor of depressive symptoms.

Empirical and theoretical literature on the complex relations among alcohol use, depressive symptoms, and suicidal ideation suggest a possible diathesis-stress relation. That is, age of alcohol use onset may impact suicidal ideation only in the presence of a proximal risk factor such as recent depressive symptoms. Specifically, given the damaging effects of early drinking on neurodevelopment and psychological functioning, we hypothesized that age of alcohol use onset would negatively predict suicidal ideation in the presence of high, but not low or average, levels of depressive symptoms.

Methods

Procedure

To test our hypothesis, we conducted a secondary analysis on baseline data from a 500 participants in a clinical trial testing the effects of bupropion on smoking cessation. Flyers were disseminated at the Birmingham, AL community corrections office. Out of the 689 individuals screened for the study, 500 met inclusion criteria and participated. Following informed consent, participants completed a baseline assessment conducted by trained research staff and received physical health examinations before receiving the study medication. A physical exam was also conducted one week following the baseline assessment, which determined final study eligibility. Because this was a secondary analysis of a clinical trial, there were inclusion and exclusion criteria. Inclusion criteria were 1) having smoked at least five cigarettes per day, 2) having a urinary cotinine level ≥ 200 mg/MI, 3) being ≥ 19 years old, 4) being currently under criminal justice supervision (e.g., drug court, probation), 5) having no expectation of being incarcerated over the next year, 6) living in an environment that allowed smoking, 7) being ready to quit smoking, and 8) being willing to take bupropion and receive four sessions of behavioral counseling for smoking cessation. Exclusion criteria included 1) having a history of bipolar disorder, 2) having *current* suicidal ideation or a suicide attempt within the past six months, 3) being pregnant or nursing a child, 4) being unable to speak English, or 5) being cognitively impaired or medically unstable. Details regarding the RCT are described elsewhere (blinded for review).

Participants

See Table 1 for a summary of the sample characteristics. On average, participants were 37.40 years old ($SD = 11.30$). A majority of the participants identified as male and of a non-White race and an African American/Black ethnic background. A majority of the participants had never been married or were divorced/separated (85.7%). Most participants had at least some high school or trade school education (84.8%). On average, participants' reported monthly income placed them below the poverty line.

Measures

In addition to a demographics questionnaire, participants completed the following assessments of alcohol use, suicidal ideation, depressive symptoms, and lifetime history of suicide attempts.

Age at Onset of Alcohol Use.—The Addiction Severity Index (ASI) was used to assess age at onset of alcohol use (McLellan et al., 1980). The ASI is a semi-structured interview

that assesses the nature of addictive behaviors, including alcohol abuse, across participants' lifetime and in the past thirty days. Although the complete ASI was administered, for the purposes of this study, we used the items assessing age at first alcohol use, age at first regular use of alcohol, age at first use until intoxication, age at regular intoxication, number of days of alcohol use over the past 30 days, number of days of using alcohol to intoxication over the past 30 days, number of years of alcohol use, and number of years of using alcohol to intoxication. Research has found that self-report of age at onset of alcohol use is generally reliable (Johnson & Mott, 2001).

Suicidal Ideation.—Suicidal ideation over the past 30 days was measured using the suicidality section of the Mini-International Neuropsychiatric Interview, a structured interview that assesses DSM-IV psychiatric disorders (Sheehan et al., 1998). The suicidality section consists of four suicidal ideation items that assess whether participants felt they were better off dead, wanted to harm themselves, thought about suicide, or had a suicide plan. Response choices were no (0) and yes (1). These items were summed to create a continuous suicidal ideation variable, which demonstrated good internal consistency ($\alpha = .84$).

Depressive Symptoms.—Depressive symptoms over the past week were measured using the Center for Epidemiological Studies Depression Scale-Revised (CESD-R; Eaton et al., 2004). The CESD-R consists of 20 items that rank the experience of depressive symptoms over the past week on a 0 (rarely or none of the time, less than a day) to 3 (most or all of the time, 5–7 days) scale. Total possible scores range from 0 to 60, with higher scores indicating higher levels of depressive symptoms. The CESD-R exhibited good internal consistency in the present sample ($\alpha = .88$).

Lifetime Suicide Attempt History.—Lifetime suicide attempt history was assessed using the lifetime suicide attempt item from the suicidality section of the MINI (Sheehan et al., 1998). Response choices were no (0) and yes (1).

Data Analytic Strategy

All analyses were conducted using SPSS Version 24.0. Descriptive analyses and correlations were computed. Skewed and kurtotic variables were transformed to reduce non-normality of the data. Potential covariates to include in the multivariate analysis were examined by examining the associations between demographic variables of interest and suicidal ideation. Correlations were computed for continuous variables (i.e., age, years of education, number of children), and independent t-tests and analysis of variance (ANOVA) were ran for dichotomous (e.g., race, sex, treatment group) and nominal variables (i.e., marital status), respectively.

We then conducted a regression analysis using Hayes' (2018) Process Macro for SPSS. We used Model 1 to test whether a two-way interaction between depressive symptoms (moderator, continuous variable) and age at first use of alcohol (focal predictor, continuous variable) associated with suicidal ideation. Control variables found to be associated with suicidal ideation in the aforementioned analyses were entered as covariates. Bootstrapping was used, with 5,000 bootstrap samples with 95% bias-corrected confidence interval to

estimate the effects. A significant interaction was explicated by testing the association between age at first use of alcohol and suicidal ideation at 1 Standard Deviation (*SD*) below the mean, the mean, and 1 *SD* above the mean of depressive symptoms. An identical analysis was conducted using the original variables that were not log-transformed.

Results

Descriptive Statistics

Means, standard deviations, and bivariate correlations are reported in Table 2. Some participants reported ages 0 and 1 for the age at first use of alcohol ($n = 3$), age at regular use of alcohol ($n = 46$), age at first intoxication ($n = 17$), and age at regular intoxication ($n = 61$) variables. We assumed that these participants were referring to in utero exposure to alcohol and exposure to alcohol as an infant via their parents. Nevertheless, we counted these responses as missing data for validity purposes. Demographic variables of number of children and monthly income, as well as suicidal ideation, exhibited positive skewness and kurtosis. We log-transformed these variables for the correlational and multivariate analysis. A dichotomized version of the suicidal ideation variable revealed that 4.4% of the sample reported ideation in the past 30 days. Ten percent of the sample reported having made a suicide attempt in their lifetime.

Correlations revealed that education, number of children, age, and monthly income were not associated with suicidal ideation ($ps > .10$). Number of days of alcohol use over the past 30 days, number of days of using alcohol to intoxication over the past 30 days, number of years of alcohol use, and number of years of using alcohol to intoxication were not associated with suicidal ideation ($ps > .10$). Age at first intoxication by alcohol ($r = -.11$, $p = .06$) and age at using alcohol on a regular basis ($r = -.08$, $p = .09$) were marginally, negatively associated with suicidal ideation. Depressive symptoms and suicide attempt history were positively associated with suicidal ideation, whereas age at alcohol use onset was negatively associated with suicidal ideation ($ps < .05$; see Table 1 for significant correlations). *T*-tests revealed no gender or race differences in suicidal ideation ($ps > .10$). Finally, an ANOVA showed no differences in suicidal ideation by marital status ($p > .10$). Given that suicide attempt history was the sole potential covariate to associate with suicidal ideation, this was included in the multivariate analysis as a covariate.

Multivariate Analysis

The overall model fit for the regression analysis was significant; $R^2 = 0.15$, $F(4, 445) = 19.63$, $p < .0001$), and the addition of the interaction between depressive symptoms and age at alcohol use onset significantly increased the variance explained by the model; although only by 4%; $R^2 = 0.04$, $F(1, 445) = 19.63$, $p < .0001$). Depressive symptoms and age at onset of alcohol use interacted to predict suicidal ideation, while controlling for suicide attempt history (See Table 3 for regression parameters).

Explication of the interaction indicated that age at onset of alcohol use negatively associated with suicidal ideation at average ($B = -.003$, $t = -2.48$, $p = .01$) and high ($B = -.007$, $t = -5.16$, $p < .0001$) levels of depressive symptoms. Age at onset of alcohol use was not

associated with suicidal ideation at low levels of depressive symptoms ($p = .25$). Fisher's Z transformations indicated that the strength of the association between age at alcohol use onset and suicidal ideation did not differ between average and high levels of depressive symptoms ($z = 0.06$, $p = .48$). An identical analysis using the original suicidal ideation variable that was not log-transformed revealed the same results. Additionally, given that age at regular use of alcohol and age at regular intoxication by alcohol variables marginally correlated with suicidal ideation, set of analyses identical to those described previously was run using these variables (age at regular use and age at regular intoxication) as the focal predictor. The results were the same as those using the age at first use of alcohol.

Discussion

The present study is the first to examine whether the distal factor of age at alcohol use onset negatively predicts suicidal ideation in the presence of the proximal factor of depressive symptoms. Partially consistent with our hypothesis, age at alcohol use onset was negatively associated with suicidal ideation at average and high, but not low, levels of depressive symptoms. This relation remained while controlling for suicide attempt history, one of the strongest risk factors for suicidal ideation and behavior (Franklin et al., 2016).

This finding adds to past work that has demonstrated an interactive effect of distal risk factors of comorbid major depression and alcohol use disorders increase risk suicidal ideation and behavior (Brière et al., 2014; Cohen et al., 2017; Cornelius et al., 1995; Waller et al., 1999). Depressive symptoms are often considered a distal risk factor; however, recent depressive symptoms are proximal factors and may activate the effects of predisposing risk factors on suicidal ideation (Ben-Zeev et al., 2011; Hufford, 2001). The current work adds preliminary support to a diathesis-stress model of suicide risk, suggesting that distal factors may increase suicidal ideation in the presence of proximal risk factors (Hufford, 2001; Turecki et al., 2012). Finally, given the lack of racial and gender differences, it appears that these findings are consistent across Whites and non-Whites, and males and females.

Despite these findings, the past month prevalence of suicidal ideation was low; however, these statistics appear consistent with similar samples and higher than general population rates. For example, one study of probationers demonstrated a 12 month prevalence of suicidal ideation as 9.7% (Yu & Sung, 2015), whereas the present study reports a one month suicidal ideation prevalence rate of 4.4%. Further, this past month rate is similar to a 12 month prevalence rate in United States adults (Piscopo et al., 2016). Therefore, suicidal ideation remains an important issue to be studied among individuals in community corrections.

Limitations to the current study warrant caution in interpreting these results. First, we used cross-sectional data, which precludes drawing temporal or causal conclusions. Longitudinal data would serve as a more robust test of the interaction between age at alcohol use onset and depressive symptoms in predicting suicidal ideation. Second, because we conducted a secondary analysis on data from a clinical trial, there were numerous inclusion and exclusion criteria that limited the generalizability of the study (e.g., cigarette smokers, limited medical or severe psychiatric comorbidity such as current suicidal ideation or recent suicide

attempts). Samples with greater variability in suicidal ideation and attempts are needed to further explore this research question. The sample was also primarily non-White and Black/African American in ethnic and racial identity, male, and of limited financial resources. This particular sample is likely unique in that participants were likely experiencing a greater number and unique types of stressors while also not being acutely suicidal. Future work should seek to replicate these findings in more representative samples. Finally, some confounding variables are worth examining in future research. Notably, childhood depressive symptoms and negative family environment might impact age at onset of alcohol use and current (proximal) depressive symptoms and suicidal ideation (Wu et al., 2006). This is particularly important given that individuals involved in the criminal justice system are likely to have histories of adverse childhood experiences (Smith et al., 2013). In addition to environmental third variables, neurobiological variables are likely involved in the complex relation between alcohol use at an early age, depressive symptoms, and suicidal ideation (Turecki et al., 2012).

Despite these limitations and need for additional research, professionals working with people involved in the criminal justice system may benefit from some preliminary recommendations from this work. Individuals with an early history of alcohol use should be carefully assessed for present depressive symptoms and suicidal ideation. Individuals with an early onset of alcohol use and moderate to severe depressive symptoms may be at particular risk for suicidal ideation and should be carefully assessed and monitored for such risk. As suggested by Conner and colleagues (2014), treating chronic, distal risk factors such as alcohol use disorder may not reduce risk for suicidal ideation when other distal factors such as age at alcohol use affect risk. Treating proximal factors may be more productive in reducing risk for suicidal ideation among individuals with a history of alcohol use.

References

- Baiden P, Mengo C, Boateng GO, & Small E.(2018). Investigating the association between age at first alcohol use and suicidal ideation among high school students: Evidence from the Youth Risk Behavior Survey. *Journal of Affective Disorders*. Publication online.
- Ben-Zeev D, Young MA, & Depp CA (2012). Real-time predictors of suicidal ideation: Mobile assessment of hospitalized depressed patients. *Psychiatry Research*, 197, 55–59. [PubMed: 22397912]
- Binswanger IA, Stern MF, Deyo RA, Heagerty PJ, Cheadle A, Elmore JG, & Koepsell TD (2007). Release from prison—a high risk of death for former inmates. *New England Journal of Medicine*, 356, 157–165. [PubMed: 17215533]
- Borges G, & Loera CR (2010). Alcohol and drug use in suicidal behaviour. *Current Opinion in Psychiatry*, 23, 195–204. [PubMed: 20308904]
- Borges G, Walters EE, & Kessler RC (2000). Associations of substance use, abuse, and dependence with subsequent suicidal behavior. *American Journal of Epidemiology*, 151(8), 781–789. [PubMed: 10965975]
- Brière FN, Rohde P, Seeley JR, Klein D, & Lewinsohn PM (2014). Comorbidity between major depression and alcohol use disorder from adolescence to adulthood. *Comprehensive Psychiatry*, 55, 526–533. [PubMed: 24246605]
- Buydens-Branchey L, Branchey MH, & Noumair D.(1989). Age of alcoholism onset: I. Relationship to psychopathology. *Archives of General Psychiatry*, 46, 225–230. [PubMed: 2919951]

- Cardarelli R, Balyakina E, Malone K, Fulda KG, Ellison M, Sivernell R, & Shabu T.(2015). Suicide risk and mental health co-morbidities in a probationer population. *Community Mental Health Journal*, 51, 145–152. [PubMed: 25069419]
- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2018). Web-based Injury Statistics Query and Reporting System (WISQARS). Retrieved from www.cdc.gov/injury/wisqars/index.html.
- Cohen GH, Fink DS, Sampson L, Tamburrino M, Liberzon I, Calabrese JR, & Galea S.(2017). Coincident alcohol dependence and depression increases risk of suicidal ideation among Army National Guard soldiers. *Annals of Epidemiology*, 27(3), 157–163. [PubMed: 28139369]
- Conner KR, Bagge CL, Goldston DB, & Ilgen MA (2014). Alcohol and suicidal behavior: What is known and what can be done. *American Journal of Preventive Medicine*, 47(3), S204–S208. [PubMed: 25145740]
- Cornelius JR, Salloum IM, Mezzich J, & Cornelius MD (1995). Disproportionate suicidality in patients with comorbid major depression and alcoholism. *The American Journal of Psychiatry*, 152(3), 358. [PubMed: 7864260]
- Crews FT, Vetreno RP, Broadwater MA, & Robinson DL (2016). Adolescent alcohol exposure persistently impacts adult neurobiology and behavior. *Pharmacological Reviews*, 68, 1074–1109. [PubMed: 27677720]
- Darvishi N, Farhadi M, Haghtalab T, & Poorolajal J.(2015). Alcohol-related risk of suicidal ideation, suicide attempt, and completed suicide: A meta-analysis. *PloS One*, 10(5), e0126870.
- Duncan SC, Alpert A, Duncan TE, & Hops H.(1997). Adolescent alcohol use development and young adult outcomes. *Drug and Alcohol Dependence*, 49(1), 39–48. [PubMed: 9476698]
- Eaton WW, Smith C, Ybarra M, Muntaner C, & Tien A.(2004). Center for Epidemiologic Studies Depression Scale: Review and revision (CESD and CESD-R). 363.
- Foley DL, Goldston DB, Costello EJ, & Angold A.(2006). Proximal psychiatric risk factors for suicidality in youth: The Great Smoky Mountains Study. *Archives of General Psychiatry*, 63, 1017–1024. [PubMed: 16953004]
- Franklin JC, Ribeiro JD, Fox KR, Bentley KH, Kleiman EM, Huang X, ... & Nock MK (2017). Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, 143(2), 187. [PubMed: 27841450]
- Gart R, & Kelly S.(2015). How illegal drug use, alcohol use, tobacco use, and depressive symptoms affect adolescent suicidal ideation: a secondary analysis of the 2011 Youth Risk Behavior Survey. *Issues in Mental Health Nursing*, 36, 614–620. [PubMed: 26379135]
- Glasheen C, Pemberton MR, Lipari R, Copello EA, & Mattson ME (2015). Binge drinking and the risk of suicidal thoughts, plans, and attempts. *Addictive Behaviors*, 43, 42–49. [PubMed: 25553510]
- Grant BF, & Dawson DA (1997). Age at onset of alcohol use and its association with DSM- IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Substance Abuse*, 9, 103–110. [PubMed: 9494942]
- Grant BF, & Hasin DS (1999). Suicidal ideation among the United States drinking population: Results from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Studies on Alcohol*, 60(3), 422–429. [PubMed: 10371272]
- Hayes AF (2018). *Introduction to mediation, moderation, and conditional process analysis*. (2nd Ed.). New York: The Guilford Press.
- Horan JM, & Widom CS (2015). Does age of onset of risk behaviors mediate the relationship between child abuse and neglect and outcomes in middle adulthood?. *Journal of Youth and Adolescence*, 44, 670–682. [PubMed: 25104419]
- Johnson TP, & Mott JA (2001). The reliability of self-reported age of onset of tobacco, alcohol and illicit drug use. *Addiction*, 96 1187–1198. [PubMed: 11487424]
- Kim DS, & Kim HS (2010). Early initiation of alcohol drinking, cigarette smoking, and sexual intercourse linked to suicidal ideation and attempts: findings from the 2006 Korean Youth Risk Behavior Survey. *Yonsei Medical Journal*, 51, 18–26. [PubMed: 20046509]
- McLellan AT, Luborsky L, Woody GE, & O'Brien CP (1980). An improved diagnostic evaluation instrument for substance abuse patients: The Addiction Severity Index. *Journal of Nervous and Mental Disease*. 168, 26–33. [PubMed: 7351540]

- Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, ... & Williams D (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry*, 192(2), 98–105. [PubMed: 18245022]
- Piscopo K, Lipari RN, Cooney J, & Glasheen C.(2016, 9). Suicidal thoughts and behavior among adults: Results from the 2015 National Survey on Drug Use and Health. NSDUH Data Review. Retrieved from <http://www.samhsa.gov/data/>
- Reifman A, & Windle M.(1995). Adolescent suicidal behaviors as a function of depression, hopelessness, alcohol use, and social support: A longitudinal investigation. *American Journal of Community Psychology*, 23(3), 329–354. [PubMed: 7572835]
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E,... & Dunbar GC (1998). The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *The Journal of Clinical Psychiatry*, 59, 22.
- Smith CA, Park A, Ireland TO, Elwyn L, & Thornberry TP (2013). Long-term outcomes of young adults exposed to maltreatment: the role of educational experiences in promoting resilience to crime and violence in early adulthood. *Journal of Interpersonal Violence*, 28, 121–156. [PubMed: 22871791]
- Sung YK, La Flair LN, Mojtabei R, Lee LC, Spivak S, & Crum RM (2015). The association of alcohol use disorders with suicidal ideation and suicide attempts in a population-based sample with mood symptoms. *Archives of Suicide Research*, Online publication.
- Swahn MH, Bossarte RM, & Sullivent EE (2008). Age of alcohol use initiation, suicidal behavior, and peer and dating violence victimization and perpetration among high-risk, seventh-grade adolescents. *Pediatrics*, 121, 297–305. [PubMed: 18245421]
- Swahn MH, Bossarte RM, Ashby JS, & Meyers J.(2010). Pre-teen alcohol use initiation and suicide attempts among middle and high school students: findings from the 2006 Georgia Student Health Survey. *Addictive Behaviors*, 35, 452–458. [PubMed: 20089362]
- Turecki G, Ernst C, Jollant F, Labonté B, & Mechawar N.(2012). The neurodevelopmental origins of suicidal behavior. *Trends in Neurosciences*, 35, 14–23. [PubMed: 22177979]
- van Heeringen K.(2012). Stress–diathesis model of suicidal behavior In Dwivedi Y.(Ed.), *The Neurobiological Basis of Suicide* (pp.113). Boca Raton, FL CRC Press/Taylor and Francis.
- Waller SJ, Lyons JS, & Costantini-Ferrando MF (1999). Impact of comorbid affective and alcohol use disorders on suicidal ideation and attempts. *Journal of Clinical Psychology*, 55, 585–595. [PubMed: 10392789]
- Wilsnack SC, Wilsnack RW, Kristjanson AF, Vogeltanz-Holm ND, & Windle M.(2004). Alcohol use and suicidal behavior in women: Longitudinal patterns in a US national sample. *Alcoholism: Clinical and Experimental Research*, 28, 38S–47S.
- Wu P, Bird HR, Liu X, Fan B, Fuller C, Shen S, ... & Canino GJ (2006). Childhood depressive symptoms and early onset of alcohol use. *Pediatrics*, 118, 1907–1915. [PubMed: 17079561]
- Yu SSV, & Sung HE (2015). Suicidal ideation of probationers. *Crisis*.
- Zuckerman M, & Riskind JH (2000). Vulnerability to psychopathology: A biosocial model.

Table 1.

Sample Characteristics

Variable	<i>n</i>	%
Gender		
Male	335	67%
Race		
African-American/Black	330	66%
Marital Status		
Never been married	270	54.2%
Divorced/separated	157	31.5%
Education		
High school diploma or GED	186	37.3%
Some high school or trade school	126	25.3%
Some college or associate's degree	111	22.2%
Variable	<i>M</i>	<i>SD</i>
Age	37.40	11.30
Monthly income	578.73	726.92
Number of children	1.73	1.79

Table 2.

Means, standard deviations, and bivariate correlations among study variables

Variable	1	2	3	4
1 Age at Alcohol Use Onset	--			
2 Suicidal Ideation	-.16**	--		
3 Depressive Symptoms	.04	.27**	--	
4 Suicide Attempt History	-.11*	.20**	.15**	--
<i>M</i>	14.36	0.08	15.06	--
<i>SD</i>	3.96	0.43	10.26	--
<i>Range</i>	29	4	48	1

Note. Suicidal ideation was log-transformed prior to correlational analyses; however, the raw means and *SD* are reported; suicide attempt history is a dichotomous variable (0 = absence of attempt and 1 = presence of attempt).

*
 $p < .05$

**
 $p < .01$.

Table 3.

Results of Regression Predicting Suicidal Ideation

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Age at Alcohol Use Onset	.004	.002	2.06	.04
Depressive Symptoms	.008	.001	5.94	<.0001
Depressive Symptoms X Age at Alcohol Use Onset	−0.0004	.0001	−4.50	<.0001
Suicide Attempt History	0.04	.01	2.78	.006