



Age of alcohol use initiation and psychiatric symptoms among young adult trauma survivors[☆]



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HIGHLIGHTS

- Earlier age of initiation of alcohol use associated with greater psychiatric symptoms
- Age of initiation of alcohol use associated with symptoms for women but not men
- Association between age of initiation and symptoms not accounted for by trauma load

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ABSTRACT

Alcohol use disorder (AUD) evidences high rates of comorbidity with a range of psychiatric disorders, particularly within high-risk populations, such as individuals exposed to physical or sexual violence. Increasing efforts are focused on understanding the role of early alcohol use (e.g., during adolescence) on emotional and psychiatric functioning over time, as well as sex differences in these associations. The aim of the current study was to evaluate patterns of association between age of initiation of regular alcohol use and posttraumatic stress disorder (PTSD), anxiety, and depressive symptoms as a function of sex. Participants were 269 college students with a history of interpersonal trauma and alcohol use who completed a battery of questionnaires regarding alcohol use and emotional health. Neither bivariate correlations nor results from structural equation models covarying for key factors showed a relationship between age of alcohol use initiation and current psychiatric symptoms among men ($n = 63$). Results of a structural equation model supported an association between earlier age of alcohol use initiation and greater levels of current PTSD ($\beta = -0.14$), anxiety ($\beta = -0.15$), and depression symptoms ($\beta = -0.16$) in the female sub-sample ($n = 202$), after controlling for covariates, as well as intercorrelations among criterion variables. Statistical support for sex as a moderator of these associations was not detected. The current study provides preliminary evidence for potential sex differences in the role of early alcohol use in the development of psychiatric symptoms and highlights the need for systematic longitudinal research.

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1. Introduction

Individuals with alcohol use disorder (AUD) are likely to meet criteria for a range of comorbid emotional disorders, including posttraumatic stress disorder (PTSD), major depression, and anxiety disorders (Blanco et al., 2013; Grant et al., 2015), with psychiatric comorbidity being associated with poorer AUD treatment response (Kranzler, Del Boca, & Rounsaville, 1996; Kushner et al., 2005; Read, Brown, & Kahler, 2004). Three primary explanations for the comorbidity of AUD with emotional disorders have been offered. The most widely studied and supported explanation is the self-medication model, whereby individuals are presumed to be at heightened risk for AUD due to the use of alcohol to cope with psychiatric symptoms (Khantzian, 1997). A second well-studied explanation is that of shared liability, or the notion that AUD and emotional disorders are related due to common familial risk (i.e., genetic factors and shared environment). Shared liability accounts for a portion of the co-occurrence of AUD with PTSD (Xian et al., 2000) and other emotional disorders (Kendler, Prescott, Myers, & Neale, 2003). Finally, a third model posits that alcohol use and AUD play a causal role in the onset of psychiatric symptoms, in part due to an increased risk for stressful and traumatic life events (e.g., susceptibility hypothesis; Brady, Back, & Coffey, 2004). This model is less well-studied, with the exception of established associations between problem drinking and increased risk for traumatic events, which in turn may predispose individuals to emotional disorders (Kaysen, Neighbors, Martell, Fossos, & Larimer, 2006).

Further study of the role of AUD and related phenotypes in the onset of psychiatric symptoms (defined in the current study as PTSD symptoms, depressive symptoms, and anxiety symptoms) in trauma-exposed populations is warranted, given emerging literature implicating AUD as a potential risk factor for the development of negative emotional outcomes. For example, in the largest, nationally representative investigation of PTSD-AUD comorbidity to date, AUD was found to precede PTSD more often than the reverse association for trauma-exposed women, an effect not accounted for by increased exposure to lifetime trauma (Berenz et al., 2017). A clear role of risky alcohol use and AUD also has been identified with respect to risk for major depression onset (Boschloo, Van den Brink, Penninx, Wall, & Hasin, 2012; Brière, Rohde, Seeley, Klein, & Lewinsohn, 2014). Further understanding alcohol risk pathways for the development of psychiatric symptoms in young adulthood is needed, however, particularly given the bias in the literature for self-medication models of comorbidity.

Studies evaluating preclinical alcohol phenotypes (e.g., alcohol consumption) in relation to psychiatric risk are particularly useful for evaluating etiological risk, given that AUD status is comprised of heterogeneous combinations of symptoms. Available research supports a link between various alcohol phenotypes and psychiatric risk. Cross-sectional studies have identified links between heavy alcohol use in adolescence and depressive symptoms (e.g., Fidalgo, Silveira, & Silveira, 2008). Longitudinal studies also suggest that heavy alcohol use during adolescence predicts the development of major depression later in adolescence and in young adulthood (see Pedrelli, Shapero, Archibald, & Dale, 2016 for a review). With regard to anxiety, human laboratory studies have found that adolescents who use alcohol regularly exhibit greater panic reactivity in the laboratory, compared to experimental users and non-users (Blumenthal, Leen-Feldner, Knapp, Bunaciu, & Zamboanga, 2012). Furthermore, basic research (e.g., neuroimaging studies, animal studies) has extensively evaluated the negative impact of adolescent alcohol use on a range of neurodevelopmental outcomes relevant to the experience and management of negative affective states, such as reward learning (see Guerri & Pascual, 2010 for a review), impulsivity, and risk preference (McMurray, Amodeo, & Roitman, 2016; Sanchez-Roige, Peña-Oliver, Ripley, & Stephens, 2014; White et al., 2011).

However, it is not clear whether the timing of alcohol exposure (e.g., age of initiation of alcohol use), as opposed to any heavy use or

AUD symptoms during adolescence, is important for understanding risk for emotional disorders. Early age of alcohol use initiation is well-established as a risk marker for AUD (e.g., King & Chassin, 2007) and other substance use disorders (e.g., Behrendt et al., 2012), but the impact of age of alcohol use initiation on the development of psychiatric symptoms is not well understood. Clarification of these distinctions is important not only for informing etiological models of AUD comorbidity, but also for guiding adolescent public health initiatives. If age of alcohol use initiation emerges as an important factor in risk for the development of psychiatric disorders, screening and brief intervention efforts might be best spent assessing and delaying the onset of any alcohol use, as opposed to focusing solely on problem drinking metrics.

Another outstanding question is whether there are sex differences in the association between adolescent alcohol use and the development of emotional disorders in trauma-exposed individuals. General associations between alcohol use phenotypes and anxiety and depression symptoms (e.g., Pedrelli et al., 2016; Poulin, Hand, Boudreau, & Santor, 2005), as well as PTSD (Berenz et al., 2017; Kachadourian, Pilver, & Potenza, 2014), are stronger for women compared to men. In a prospective, population-based study of adolescents, Edwards et al. (2014) found that frequency of alcohol use during early adolescence was associated with greater odds of depression in late adolescence for boys and girls, but greater odds of anxiety in late adolescence for girls only.

In light of the evidence supporting a link between adolescent alcohol use and psychiatric risk, it is surprising that basic associations between adolescent alcohol use initiation and psychiatric symptoms have not been widely evaluated. One study by Carbia, Corral, García-Moreno, Cadaveira, and Caamaño-Isorna (2016) found that earlier age of alcohol use initiation was associated with greater anxiety and depression symptoms in a sample of college freshmen in Spain, an effect that was stronger for women compared to men. The Carbia et al. (2016) study was informative; however, the study was limited in a number of ways. First, the authors did not evaluate associations between age of alcohol use initiation and PTSD symptoms, which are highly comorbid with AUD (Berenz et al., 2017; Brown, Stout, & Mueller, 1999). The examination of an association between age of alcohol use initiation and PTSD symptoms would necessitate a trauma-exposed sample of young adults in order to ensure a significant finding was specific to PTSD symptoms, as opposed to trauma exposure more generally. Second, the study was conducted in a relatively healthy sample of college students. College students are at greater risk for AUD compared to their non-college peers (Carter, Brandon, & Goldman, 2010), but future studies would benefit from examining these associations in a higher-risk subset of the college population to capture clinically meaningful variability in psychiatric symptoms. Trauma exposure is associated with greater risk for a broad range of psychiatric disorders (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Interpersonal trauma in particular, compared to accidental trauma (e.g., illness, injury), is associated with the greatest psychiatric risk (Kessler et al., 1995) and affects a significant proportion of college students (Edwards et al., 2015). Finally, given that familial factors account for significant variation in age of alcohol use initiation (Sartor et al., 2009; Ystrom, Kendler, & Reichborn-Kjennerud, 2014), AUD (Agrawal & Lynskey, 2008), and emotional disorders (Hettema, Neale, & Kendler, 2001; Sullivan, Neale, & Kendler, 2000; True et al., 1993), controlling for familial risk (i.e., family history) of AUD and anxiety/depression may strengthen confidence in significant findings.

Taken together, the aim of the current study was to evaluate sex-specific associations between age of alcohol use initiation and symptoms of PTSD, anxiety, and depression in a sample of young adults endorsing a lifetime history of interpersonal trauma (e.g., sexual assault, interpersonal violence). It was hypothesized that earlier age of alcohol use initiation would be significantly associated with greater PTSD, anxiety, and depression symptoms for women but not men, above and beyond the covariates of lifetime trauma history, family

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