



Longitudinal investigation of interpersonal trauma exposure and alcohol use trajectories



Erin C. Berenz^{a,b,*}, Seung Bin Cho^{b,1}, Cassie Overstreet^{b,c}, Kenneth Kendler^b, Ananda B. Amstadter^{b,c,2}, Danielle M. Dick^{b,c,2}

^a Department of Pediatrics, University of Virginia, Charlottesville, VA, USA

^b Department of Psychiatry, Virginia Commonwealth University, Richmond, VA, USA

^c Department of Psychology, Virginia Commonwealth University, Richmond, VA, USA

HIGHLIGHTS

- Pre-college interpersonal trauma predicts greater first semester alcohol use for female students.
- College-onset interpersonal trauma predicts greater concurrent and future alcohol consumption for female students.
- Associations between interpersonal trauma and alcohol use may be more salient for women than men.
- Almost a quarter of college women endorsed interpersonal trauma during the first two years of college.

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ABSTRACT

Background: The current longitudinal study examined associations between interpersonal potentially traumatic events (PTEs; i.e., sexual or physical assault) and changes in alcohol consumption among incoming college students.

Methods: 1197 students (68% female) participating in a university-wide research study were included in analyses. Assessments were administered at three time-points and included measures of alcohol use, PTEs (Life Events Checklist), and a screener for possible PTSD symptoms (abbreviated Primary Care PTSD Screen). Linear growth curve models were fit to the three repeated measures of alcohol quantity and frequency to determine the role of pre-college and college-onset interpersonal PTEs and possible PTSD symptoms on patterns of alcohol use.

Results: Pre-college interpersonal PTE was associated with greater baseline alcohol use for female but not male students. College-onset interpersonal PTE predicted greater alcohol use at concurrent and future assessments for women but not men, beyond the effects of pre-college PTE. Pre-college possible PTSD symptoms did not predict baseline or change in alcohol use.

Conclusions: There may be a stronger and longer-lasting impact of interpersonal PTE for college women compared to men on alcohol phenotypes, although replication in studies oversampling men endorsing interpersonal PTE is needed.

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1. Introduction

College students are at high risk for problematic alcohol use. Two-thirds of college students report current (i.e., past month) alcohol use, and nearly half report recent (i.e., past two weeks) binge drinking, a known risk factor for AUDs (AUD) (O'Malley & Johnston, 2002). The 12-month prevalence rate for a DSM-IV AUD (alcohol abuse or

dependence) is 20.4% among college students (Blanco et al., 2008), with the median age of onset of lifetime AUDs among adults being 20 years (Kessler et al., 2005). It is important to identify predictors of problem alcohol use in college samples to inform prevention and early intervention efforts.

A history of potentially traumatic events (PTEs) and/or posttraumatic stress disorder (PTSD) symptoms predicts high risk drinking, such as drinking to cope with negative affect (Waldrop et al., 2007), and subsequent AUDs (Kessler et al., 1995). Interpersonal PTEs (e.g., physical and sexual assault/abuse), as opposed to accidental PTEs (e.g., natural disasters, motor vehicle accidents), have a greater relative risk for PTSD (Kessler et al., 1995). Available data suggest that interpersonal PTEs and alcohol use problems could have a cyclical relationship.

* Corresponding author at: Department of Pediatrics, University of Virginia, Stacey Hall, 1105 West Main St., Box 800828, Charlottesville, VA 22908, USA.

E-mail address: ecb2z@virginia.edu (E.C. Berenz).

¹ Co-first authors.

² Co-last authors.

For example, women exposed to violence who develop alcohol abuse are more vulnerable to revictimization compared to those not abusing alcohol (Messman-Moore & Long, 2003). PTE exposure, particularly interpersonal PTE history, also is related to problem alcohol use among college women (Green et al., 2005). It may be the case that trauma-exposed individuals are more likely to develop AUDs due to motivation to use alcohol to cope with trauma memories and psychiatric symptoms (O'Hare & Sherrer, 2011; Coffey et al., 2002). However, twin and family studies also indicate that interpersonal PTEs and PTSD symptoms share familial liability (i.e., genetic risk and common environment) with alcohol phenotypes, such as alcohol consumption (McLeod et al., 2001), and that PTSD and alcohol dependence share familial liability (Xian et al., 2000).

Longitudinal studies are useful for examining the natural course of associations between trauma and alcohol phenotypes. The majority of longitudinal studies examining associations between interpersonal PTEs and alcohol use have been conducted in all-female samples. For example, Kilpatrick and colleagues found that physical or sexual assault was associated prospectively with increased alcohol use in women (Kilpatrick et al., 1997). Similarly, incapacitated rape has demonstrated prospective associations with increased alcohol use in college women (Kaysen et al., 2006). Other longitudinal studies have not found evidence for an association between interpersonal PTE and alcohol use. For example, intimate partner violence did not significantly predict changes in alcohol use in an all-female sample (Testa, Livingston, & Leonard, 2003). However, the women in this sample ranged in age from 18 to 30 years old (mean = 24 years). It is possible that acute changes in alcohol use are more likely to be evidenced during emerging adulthood (e.g., college), prior to drinking patterns becoming better established.

In one of only a few prospective evaluations of PTEs and alcohol use in mixed-gender college student samples, Read and colleagues demonstrated that a PTE history and PTSD symptoms upon enrollment are related to significantly greater endorsement of negative alcohol-related consequences throughout the first year of college, even after accounting for trait-level neuroticism and demographic characteristics (Read et al., 2012). Furthermore, PTSD symptoms and alcohol use/problems appear to be reciprocally related over time in college student samples (Read, Wardell, & Colder, 2013). In spite of the inclusion of male and female participants, a distinction was not made between interpersonal and accidental PTE types. As such, there was likely significant variability in participants' PTE experiences.

Taken together, there is a solid empirical basis for the relationship between PTE/PTSD and alcohol use outcomes. However, no studies to our knowledge have examined prospectively the unique influence of new-onset interpersonal PTE, above and beyond a prior history of interpersonal PTE, on changes in alcohol use in a mixed-gender college sample. As such, it is unclear whether a relationship between interpersonal PTE and alcohol use differs by sex. The aim of the current study was to investigate pre-college and college-onset interpersonal PTEs and possible PTSD symptoms in relation to alcohol use trajectories. It was hypothesized that: (1) a pre-college history of interpersonal PTEs and possible PTSD symptoms would be incrementally related (i.e., no interpersonal PTE < interpersonal PTE < possible PTSD symptoms) to increased baseline and rate of change of alcohol use quantity and frequency; and (2) college-onset interpersonal PTEs and possible PTSD symptoms would be incrementally related (i.e., no new interpersonal PTE < new interpersonal PTE < new possible PTSD symptoms) to increased rate of change of alcohol use quantity and frequency, over and above the effects of pre-college PTEs and possible PTSD symptoms. To examine potential sex effects, sex was included as a grouping variable in the models.

2. Materials and methods

2.1. Participants and procedure

Participants included the first cohort of Spit for Science, a university-wide, longitudinal research study at Virginia Commonwealth University

(VCU) investigating substance use and emotional health in college students (Dick et al., 2014). The VCU Institutional Review Board approved all study procedures, and informed consent was obtained from all participants. Study data were collected and managed using REDCap (Research Electronic Data Capture), hosted at Virginia Commonwealth University (Harris et al., 2009). REDCap is a secure, web-based application that provides: (1) an interface for data entry; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures to common statistical packages; and (4) procedures for importing data from external sources.

Incoming freshmen age 18 and older in fall 2011 (N = 3623) were invited via e-mail to participate in the web-based study. 2056 students (57%) completed the initial survey (wave 1) and were invited for a follow-up survey in spring 2012 (wave 2; n = 1558, 76%). All wave 1 participants also were invited to complete a follow-up survey in spring 2013 (wave 3; n = 1346, 59%). Participants were compensated \$10 and a t-shirt at each assessment. Participants were included in analyses if they had non-missing data for key study variables at one or more time points (final n = 1197, 44.1%).

2.2. Measures

2.2.1. Alcohol consumption

Past 30-day alcohol use frequency was assessed on a 5-point scale ranging from 1 ("Never") to 5 ("Four or more times a week"). Participants were provided information regarding what constitutes a "standard drink." Past 30-day alcohol use quantity was then assessed as the average number of standard drinks consumed on a typical drinking day and was assessed on a 6-point scale, ranging from 1 ("None") to 6 ("10 or more drinks"). Individuals endorsing no lifetime alcohol use were assigned the past 30-day values of "Never" for frequency and "None" for quantity.

2.2.2. PTEs

An abbreviated Life Events Checklist (Gray et al., 2004) assessed: natural disasters, physical assaults, sexual assaults, other unwanted or uncomfortable sexual experiences, and transportation accidents. At wave 1, if a participant endorsed having ever experiencing a physical assault, sexual assault, or other unwanted sexual experience, they were determined to have a pre-college history of interpersonal PTE. At wave 2, participants were asked to indicate whether they had experienced each PTE "after [they] started college." At wave 3, participants indicated if they had experienced each PTE in the past 12 months (i.e., since wave 2). Participants endorsing an interpersonal PTE at wave 2 or 3 were determined to have a college-onset PTE. Participants who endorsed an accidental PTE but no interpersonal PTE were included in analyses with participants who endorsed no history of PTE.

2.2.3. Possible PTSD symptoms

Due to limited available space within a large, university-wide assessment battery, a PTSD screener item was adapted from the Primary Care PTSD Screen (PC-PTSD) (Prins et al., 2003) and assessed whether the participants with a PTE history had experienced potential symptoms of PTSD. Specifically, the item asked, "Have any of these experiences resulted in any of the following symptoms: Nightmares about it, tried hard not to think about it or went out of your way to avoid situations that reminded you of it, constantly on guard, watchful, or easily startled, or felt numb or detached from others, activities, or your surroundings?" Endorsement at wave 1 indicated a pre-college history of possible PTSD symptoms. At waves 2 and 3, participants with new PTE were queried with regard to possible PTSD symptoms since the last assessment, with endorsement indicating college-onset possible PTSD symptoms.

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