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Posttraumatic Stress Symptoms and Emerging Adult Sexual Minority Men: Implications for Assessment and Treatment of Childhood Sexual Abuse

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Abstract

Emerging adulthood (EA) is a developmental period marked by unique challenges that affect health including burgeoning occupational, relational, and financial stability; and increased risk taking in terms of sexual behavior(s) and substance use. Data were collected from 296 HIV-uninfected sexual minority men with childhood sexual abuse (CSA) histories. We analyzed baseline assessment data from a multisite randomized controlled trial that tested the efficaciousness of an experimental psychosocial treatment and examined vulnerabilities known to be linked with CSA. Our analyses compared EA sexual minority men, aged 18–29, with older sexual minority men (OSMM) on posttraumatic stress disorder (PTSD) and other mental health and substance use outcomes. We found higher odds of PTSD, odds ratio (*OR*) = 0.57, 95% CI [0.33, 0.96]; panic disorder or panic disorder with agoraphobia, *OR* = 0.36, 95% CI [0.16, 0.85]; and cocaine use, *OR* = 0.50, 95% CI [0.25, 0.97], among OSMM and higher odds of alcohol intoxication, *OR* = 5.60, 95% CI [3.20, 9.82]; cannabis use, *OR* = 3.09, 95% CI [1.83, 5.21]; and non-HIV sexually transmitted infections, *OR* = 3.03, 95% CI [1.29, 7.13], among the EA men. These results present a complex picture of health risks among sexual minority men in general and EA sexual minority men in particular. HIV seroconversion linked health risk behaviors, among sexual minority men, may be better addressed via increased attention to treating trauma and comorbid mental health and substance use problems using evidence-based psychosocial assessments and integrated treatment platforms that are tailored to this population.

Emerging adulthood is a significant stage of development that involves important growth and role changes in multiple areas of life, including adult identity formation, educational attainment, occupational choices, and interpersonal relationships. Accordingly, this period is characterized by an intense transition that is theoretically and empirically distinct from adolescence (Arnett, 2000). Emerging adults (i.e., individuals aged 18–29 years) are more likely to engage in risk behaviors that, relative to those perpetuated by adolescents, may have lifelong consequences, such as those resulting from choices surrounding cohabitation, sexual behavior, and impactful financial decision making.

Thus, emerging adulthood is a critical developmental period with unique risk factors that affect health and future well-being (Schulenberg & Zarrett, 2006). Developmental processes put emerging adults at risk for future psychopathology linked, in part, to increased stress as they transition to adult responsibilities, including residential stability, establishing full-time employment, and achieving financial independence, which are often in flux during this period (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008). Emerging adults are at an elevated risk for binge drinking and substance use and abuse (Arnett, 2000; Bachman, Johnson, & O'Malley, 1998; Sheidow, McCart, Zajac, & Davis, 2012), with problematic substance use most likely to begin, and often continue, past emerging adulthood (Substance Abuse and Mental Health Services Administration, 2005). Other psychological problems, such as a first major depressive episode, prodromal symptoms of schizophrenia (Larsen et al., 2006), and bipolar disorder (Lewinsohn, Seeley, Buckley, & Klein, 2002), typically have their genesis during this developmental period as well.

In addition to these risks and stressors, common problems associated with past trauma in childhood or adolescence, such as sexual abuse, physical abuse or neglect, and bullying or peer victimization, often affect adjustment among emerging adults (Schmid, Petermann, & Fegert, 2013; Schuster, et al., 2015; Sedlak et al., 2010). Some populations are affected more than others. For example, developmental trauma from sexual abuse and bullying are shown to be linked with health risk behaviors that affect sexual minorities with a greater disease burden such as HIV, especially young gay and bisexual men (Bontempo & D'Augelli, 2002). Sexual minorities compose a group whose sexual identity, orientation, attractions, or behaviors differ from the majority of the surrounding culture or society (Savin-Williams, 2001; Ullerstam, 1966). In addition, the epidemiological literature, using population-based samples, demonstrates increased risk of posttraumatic stress disorder (PTSD) onset in gay men compared to heterosexual peers for those who have experienced early traumatic exposure (Roberts, Austin, Corliss, Vander Morris, & Koenen, 2010). For example, in one large study with over 9,000 participants, researchers found an elevated risk, between 1.6 and 3.9 times as great, of probable PTSD among sexual minorities compared to heterosexuals with childhood abuse, accounting for one-third to one-half of PTSD disparities by sexual orientation (Roberts, Rosario, Corliss, Koenen, & Austin, 2012). Authors of this study broadly measured childhood abuse inclusive of physical abuse, emotional abuse, and sexual abuse.

Childhood sexual abuse (CSA) and the trauma resulting from experiences of CSA have emerged in the literature as a risk factor for a range of negative health and mental health sequelae in adults. Among the adult population in the United States, CSA is alarmingly

common, with reports of up to 14.9% of women and 5.2% of men affected (Sweet & Welles, 2012). The experience of CSA is associated with impactful comorbid health concerns, such as PTSD and substance use disorders (Suvak, Brogan, & Shipherd, 2012), as well as the subsequent onset of a mood or anxiety disorder (Maniglio, 2013; Molnar, Buka, & Kessler, 2001). In addition to mental health and substance use problems, a history of CSA is associated with sexual risk behavior, including unprotected sexual intercourse (Arriola, Loudon, Doldren, & Fortenberry, 2005; Bruggen, Runtz, & Kadlec, 2006; Neumann, Houskamp, Pollock, & Briere, 1996). Gay, bisexual, and other men who have sex with men (together, herein referred to as “sexual minority men”) experience disproportionate rates of CSA, with some estimations as high as 47% (Safren et al., 2012), relative to heterosexual men. Only heterosexual women experience higher rates of CSA (Mimiaga et al., 2009; Paul, Catania, Pollack, & Stall, 2001; Sweet & Welles, 2012). Among sexual minority men, CSA is consistently associated with higher rates of PTSD, substance use problems, depression, and anxiety (Kalichman & Weinhardt, 2001; Mimiaga et al., 2009; O’Leary, Purcell, Remien, & Gomez, 2003). In addition, a predictive association between CSA and high-risk sexual behavior has been noted among sexual minority men (Lenderking et al., 1997; O’Leary et al., 2003; Paul et al., 2001), further linking it to a risk for HIV. These syndemic outcomes (i.e., multiple psychosocial problems that interact to exacerbate disease burden; Stall, Friedman, & Catania, 2008) paint a clinical picture that is alarmingly similar to the profile of negative health outcomes found among sexual minority men with a history other types of trauma (e.g., verbal abuse, bullying and teasing, and physical assault; see Collier, Beusekom, Bos, & Sandfort, 2013; D’Augelli, Grossman, & Starks, 2006; Sinclair, Bauman, Poteat, Koenig, & Russell, 2012).

High-risk sexual behavior among sexual minority men is associated with a greater likelihood of HIV infection that is further amplified among those with a history of CSA (Mimiaga et al., 2009). Among men in this population, high-risk sexual behavior linked with increased risk for HIV and other sexually transmitted infections (STIs) includes multiple sexual partners, sex under the influence of a substance, condomless intercourse, and transactional sex (Epstein, Bailey, Manhart, Hill, & Hawkins, 2014). However, notable mitigating factors that only apply to HIV risk include adherence to antiretroviral therapy (ART), among HIV-infected individuals, or pre-exposure prophylaxis (PrEP) among those who are uninfected (Baeten et al., 2015). Although the links between CSA rates and HIV infection in sexual minority men have been noted in several peer-reviewed studies (e.g., Mimiaga et al., 2009; Stall et al., 2003), few studies have demonstrated what, if any, additional risks occur in the midst of the transition to emerging adulthood. More specifically, as a demographic group, emerging adult sexual minority men are at the greatest risk for HIV seroconversion (Prejean, Hernandez, & Song, 2012), and therefore a history of CSA may only serve to amplify this risk. Traditional sexual risk reduction interventions have not been found to be optimal in reducing seroconversion rates for sexual minority men with a history of CSA (Mimiaga et al., 2009). The lack of effective prevention interventions adds to the risk profile for this population despite the established links between violence, trauma, and health being noted as a public health crisis by the World Health Organization (WHO; WHO, 2002).

A history of past CSA with concomitant substance use further complicates prevention and intervention for emerging adult sexual minority men. In general, sexual minorities, relative

to their heterosexual peers, experience significant developmental changes in substance use behaviors. For example, in one longitudinal study, authors found that sexual minorities reported a greater frequency of substance use across several substances (Talley, Sher, & Littlefield, 2010). In another, researchers found that emerging adult sexual minority men had increased prevalence of past-year drug use compared to heterosexual men (Corliss et al., 2010). The researchers noted elevated levels of use across multiple drug categories, including marijuana, prescription drug misuse, and illicit drugs other than marijuana. Among emerging adult men, sexual minority men have also been shown to experience more suicidal thoughts and receive less parental support compared with heterosexual men (Needham & Austin, 2010).

Thus, past childhood sexual trauma, emerging adulthood, substance use trajectories, and disproportionate disease burden are each independently associated with sexual risk taking and HIV infection, and these factors converge to provide for a disproportionate health burden that is a recognized syndemic. This syndemic among sexual minority men underscores the need for carefully tailored prevention efforts, evidence-based assessments, and integrated treatment platforms to identify past trauma that impacts current functioning and to discontinue or moderate health risk behaviors. However, the development of these interventions, especially for emerging adult populations, is lacking. Additionally, there is a paucity of literature assessing these relationships among sexual minority men in emerging adulthood.

The current study was conducted as a part of a larger randomized controlled trial (RCT; additional details about the development of the intervention can be found elsewhere; O’Cleirigh et al., under review; NCT00797654) and was meant to psychologically assess all study participants, formulate treatment targets, and clarify inclusion/exclusion criteria and fit for the trial. As these data were collected as one part of a full RCT, this paper is an analysis of the baseline data set. Comprehensive clinician-administered diagnostic interviews, together with psychometrically validated self-report scales, were used to measure key psychological constructs. Based on theory and published findings, we hypothesized that emerging adult sexual minority men would have elevated rates of PTSD, sexual risk behavior, STIs, and substance abuse (i.e., alcohol and marijuana) relative to older adult sexual minority men given the traumatic history of all participants in the study. We also hypothesized that the incidence of anxiety disorders (e.g., generalized anxiety disorder, panic disorder, obsessive-compulsive disorder, etc.) would be higher among emerging adults relative to older adult men based on (a) the incidence of first onset or episode, complicated by the documented delay in initial treatment contact for younger adults, and (b) several recent media and governmental reports noting a rise in anxiety among college-aged adults (Denizet-Lewis, 2017; Tate, 2017; Wang et al., 2005).

Method

Participants

Data were collected from 296 HIV-uninfected sexual minority men with a history of CSA that occurred before age 17 years and recent sexual risk-taking behaviors (i.e., unprotected intercourse with a partner of unknown serostatus or known positive serostatus) that increased

the vulnerability for HIV. All study participants completed a diagnostic assessment as a part of their participation in the RCT. The study sites were located in Boston, MA and Miami, FL. Of the 296 sexual minority men, 290 reported their age ($n = 87$ emerging adults and $n = 203$ older adults), and most were Euro American (69.3%) or African American (21.7%) and non-Hispanic (70.7%). The average age of participants was 37.95 years ($SD = 11.68$), and most participants were single (73.5%) and reported their educational attainment as having some college education or a bachelor's degree (54.5%; see Table 1). To be included in the study, participants had to (a) identify as a man who has sex with men; (b) report unwanted sexual contact before the age of 13 years with an adult or a person 5 years older, or unwanted sexual contact between the ages of 13 and 16 years inclusive with a person 10 years older (or any age with the threat of force or harm); (c) report more than one episode of unprotected vaginal or anal intercourse within the past 3 months; and (d) be HIV-uninfected. Participants were excluded if all episodes of unprotected vaginal or anal intercourse occurred with one or more primary partner(s) with a known HIV-negative status. Additionally, participants were excluded if they reported a significant mental health diagnosis requiring immediate treatment (e.g., bipolar disorder, high suicide risk, or any psychotic disorder) or an inability to complete the informed consent process (e.g., substantial cognitive impairment or inadequate English language skills). Each of the reported categorical demographic variables were analyzed with a nonparametric test for differences between groups (i.e., emerging adult vs. older adult) with no observed significant differences except bisexual men composed a higher proportion of the older adult sample compared with the emerging adults, $\chi^2(4, N = 290) = 12.24, p = .016$. Using a one-way analysis of variance (ANOVA), the groups did not differ significantly on the number of male or female sexual partners in the past 3 months.

Procedure

Recruitment.—Recruitment at the study sites involved use of targeted advertising in print and social media and was accomplished in partnership with local bars and clubs. In addition, recruitment involved community outreach to businesses and organizations that were either allies of the lesbian, gay, bisexual, and transgender (LGBT) community or that cater to gay and bisexual men's communities. Outreach was organized by a study research assistant and consisted of weekly visits to these organizations to foster relationships and distribute recruitment materials together with follow-up communication via telephone or email. In an effort to decrease stigma and protect individuals who spoke with study staff from being identified as someone who experienced CSA, recruitment for this study was accomplished jointly with other ongoing behavioral health and epidemiological studies. Recruitment materials specified the minimum entry criteria, that the study involved “no-cost individual therapy,” the maximum remuneration possible, and contact details to facilitate telephone screening and provide further information.

Study procedure.—All study procedures were approved by the Partners Human Research Committee and the Fenway Institutional Review Board. Following the recruitment procedures, prospective participants were screened by trained clinical staff via a structured Institutional Review Board–approved questionnaire. Individuals who self-identified as HIV-uninfected were considered for participation in the study and invited for a baseline

assessment and HIV and other STI testing. Both verbal and written informed consent were obtained and reviewed with all study participants before any study procedures commenced; this included limits to confidentiality, the precedence of participant health and welfare over adherence to study procedures, and how HIV and other STI results would be communicated and kept private in accordance with rules set forth by the U.S. Federal Government, the Department of Health of the Commonwealth of Massachusetts, and the ethical standards of each of the health professions involved in the study. The study was registered as a clinical trial with the U.S. National Library of Medicine (see clinicaltrials.gov; NCT number NCT01395979). At the time of the informed consent, the nature of the study (i.e., a randomized controlled trial testing an experimental treatment vs. time-matched control, such as supportive psychotherapy) was revealed. Serostatus was confirmed via rapid HIV testing at the first study visit, and individuals who tested positive for HIV infection were referred for immediate care and excluded from the study according to the inclusion and exclusion criteria. The baseline assessment included an extensive psychiatric evaluation with clinician-rated measures of posttraumatic stress, mood and anxiety disorders, substance use, suicidality, psychotic disorders, quality of life, and several computer-based psychosocial assessments. Participants responded to survey questions electronically because of extant evidence suggesting the use of this type of data collection technology renders participants more likely to disclose sensitive information (Des Jarlais et al., 1999; Metzger et al., 2000; Millstein, 1987; Navaline et al., 1994). Participants who met study inclusion and exclusion criteria continued their participation and were randomized to either the experimental or the control condition. Baseline assessments and treatment sessions were provided by study interventionists including clinical psychologists (including the study PI), and pre- and postdoctoral fellows in clinical psychology. Training included 2 full days with the developer (Dr. Patricia A. Resick) of one component part of the experimental condition (i.e., cognitive processing therapy [CPT]) plus additional study-specific training, conducted by the principal investigator (PI) and project director, on the assessments and all other treatment components. All study staff attended regular clinical supervision. All participants were assessed at post-intervention follow-ups conducted at 3, 6, 9, and 12 months posttreatment, and these evaluations were conducted by an independent assessor. Participants excluded due to the presence of major mental illness, such as untreated severe mood disorders or psychotic disorders, which was an exclusion criterion, were referred to their treating psychiatrist following debriefing. Individuals who were not connected with care were referred to local providers who were, in most cases, in the same community health center in which the study activities took place. The measures described herein, analyses, and results pertain only to data collected from the comprehensive baseline assessment.

Measures

Demographics.—Participants completed demographic questionnaires using electronic data capture and paper and pencil measures. These included self-reported age, race, ethnicity (independent of racial category), educational attainment, income, sexual orientation, and relationship/marital status.

Assessment of childhood sexual abuse.—History of CSA was evaluated through a clinician-administered interview adapted from earlier work in HIV treatment and prevention

and used previously to assess sexual abuse in a variety of medical populations (Leserman et al., 1997; Leserman, Li, Drossman, & Hu, 1998) including those that are HIV infected (Lesserman, Ironson, & O’Cleirigh, 2006). The interview comprised 20 standardized, closed-ended questions that predominantly required *yes* or *no* answers and assessed sexual abuse history. Participants’ CSA history was assessed across two age ranges, 0–12 and 13–16 years. In the younger age range, CSA was indicated by any unwanted sexual contact reported with someone 5 years or more years older. In the older age range, CSA was indicated if any sexual contact was reported with someone 10 years older or with someone of any age if there was the threat of force or harm. If any of the following occurred, CSA was indicated: genital touching, being touched, or penetrative intercourse (i.e., vaginal or anal penetration). This measure of unwanted sexual contact was adapted from earlier research (Kilpatrick, 1992; Leserman, 2005), and all items on the measure asked about unwanted sexual contact. To meet criteria for sexual abuse, there must be clear force or threat of harm for adolescents with a perpetrator less than 10 years older; however, in children (under 13 years of age), the threat of force or harm is implied by a 5-year age differential between the victim and perpetrator.

PTSD diagnosis.—The Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-IV; Spitzer, Gibbon, & Williams, 1997) was used to evaluate posttraumatic stress. Only the section on PTSD was used to provide an independent assessment of current or lifetime PTSD diagnosis and symptoms.

Trauma symptoms.—The Davidson Trauma Scale (Davidson et al., 1997; Zlotnick et al., 1996) was administered by a clinician to identify posttraumatic symptoms related specifically to CSA, or, for those who experienced multiple episodes, the worst episode of CSA the participant experienced. In our sample, the reliability of the scale was high (Cronbach’s $\alpha = .88$).

Psychiatric disorders other than PTSD.—The Mini-International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998) assessed psychiatric disorders. The M.I.N.I. is a structured diagnostic interview, comparable to the SCID-IV, that has good reliability and validity. A trained clinician administered this assessment to each participant to assist with providing diagnosis of mood, anxiety, or substance use disorders. Major depressive disorder was scored as being present for anyone who met diagnostic criteria for a major depressive episode at any time up to 2 weeks prior to the baseline assessment. “Any substance use disorder” was scored as being present for individuals who met diagnostic criteria for either substance abuse or dependence across any substance category in the past 12 months. Similarly, “any alcohol use disorder” was scored as present for each participant who met diagnostic criteria for either alcohol abuse or dependence in the past 12 months.

Drug and alcohol use.—In addition to the M.I.N.I., substance use was further assessed via a clinician interview. The National Institute on Drug Abuse-Clinical Trial Network (NIDA-CTN) Addictions Severity Index-Lite (ASI-Lite; McLellan et al., 1992) measured drug and alcohol use, including polysubstance use, in the past 30 days and over the past year using the Timeline Followback (TLFB) method.

Sexually transmitted infections.—As part of the self-report assessment, participants were asked if they had been diagnosed with an STI in the past 12 months. This generated a dichotomous variable.

Data Analysis

All analyses were completed using IBM SPSS (Version 24). Main effects of each mental health outcome, including PTSD, substance use, and STIs, were loaded separately into general linear models along with covariates of race, ethnicity, and education. Unstandardized regression coefficients and their 95% confidence intervals were reported for significant effects. Missing demographic data were removed from the demographic variable calculations. Overall, our level of missingness was less than 10% across the data set, making the missing data unlikely to bias our results (Bennett, 2001); therefore, we used listwise deletion. Two of the analyses involved data with greater than 10% missingness: meeting criteria for lifetime PTSD and testing positive for an STI. With regard to the lifetime PTSD assessment, missingness was less than 20%, and we have noted that this may have affected the results in the limitations section. The STI results were routinely more difficult to acquire at one of the study sites because testing involved participant travel to a health sciences campus for these services to be rendered; this accounted for the majority of missing values that we believe are consistent with data missing at random (MAR), making it unlikely to bias our results.

Results

Table 2 presents the proportions of sexual minority men who met criteria for mental health diagnoses, substance use diagnoses, and STIs. Table 3 displays the comparisons between emerging adults (age 18–29 years) and older adults (age 30 years or more) on the prevalence of mental health diagnoses, substance use diagnoses, and STIs, using bivariate logistic regression. All models were run accounting for covariates of race, ethnicity, and education level.

Differences observed between emerging adults and older adults were significant for the diagnoses of current PTSD and panic disorder or panic disorder with agoraphobia. Emerging adults were 43.3% less likely to have current PTSD, odds ratio (OR) = 0.57, 95% CI [0.33, 0.96], with 33.3% of emerging versus 46.3% of older adults meeting criteria for PTSD. Emerging adults were also significantly less likely to meet diagnostic criteria for panic disorder or panic disorder with agoraphobia than their older counterparts, OR = 0.36, 95% CI [0.16, 0.85], p = .020, with 6.9% of emerging adults versus 11.8% of older adults meeting criteria. Differences for lifetime PTSD incidence, social phobia diagnosis, and generalized anxiety disorder diagnosis were not significant (see Table 3).

Analyses conducted on substance misuse revealed significant differences between emerging adults and older adults on the problematic use of alcohol, marijuana, and cocaine. Regarding alcohol use, emerging adults had 5 times higher odds, OR = 5.60, 95% CI [3.20, 9.82], p < .001, of alcohol intoxication in the past month, with 92.5% of emerging adults endorsing being intoxicated in the past 30 days versus 68.6% of older adults. Emerging adults were also over 3 times more likely to have used marijuana in the past month than their older

counterparts, $OR = 3.09$, 95% CI [1.83, 5.21], $p < .001$. A Mann-Whitney nonparametric test revealed that this difference was significant at $p < .001$. However, emerging adults were significantly less likely than their older counterparts to engage in cocaine use, $OR = 0.50$, 95% CI [0.25, 0.97], $p = .040$. Using logistic regression, we assessed substance use generally by looking at any substance use dependence or abuse including alcohol. Although we could not calculate common effect size statistics, such as Cohen's d , with this analysis, odds ratios are considered an unstandardized effect size statistic. The odds ratio was not significant, $OR = 1.56$, 95% CI [0.94, 2.61], $p = .087$. For analyses regarding any substance use or abuse generally, there were no significant differences between age groups for amphetamine use, marijuana use, or inhalant use (see Table 3).

For the diagnosis of STIs, we found a significant difference between emerging adults and older adults; emerging adults had 3 times higher odds of reporting an STI in the past year, $OR = 3.03$, 95% CI [1.29, 7.13], $p = .011$. However, no differences were found in unprotected sex incidence over the past 3 months accounting for PrEP usage (see Table 3).

Discussion

We undertook the current study to investigate differences between sexual minority emerging adult and older adult men with a history of CSA and recent sexual risk behavior using data collected from a comprehensive diagnostic assessment that was a part of a multisite RCT. The trial tested an integrated treatment platform designed to reduce trauma symptoms and sexual risk behaviors linked with HIV. Based on multiple risk factors demonstrated to affect the health of sexual minority men in general and emerging adult sexual minority men more specifically, we set out to compare mental health and substance use outcomes that affect this population. Previous research has documented elevated risk for emerging adults in mental health and substance use problems, a concern that extends to sexual minority populations as well (Arnett, 2000). Other studies have linked a history of CSA with sexual risk behavior (Arriola et al., 2005; Suvak et al., 2012).

The findings from this study contribute to the literature by providing some distinct additions to our understanding of sexual minority men with a history of CSA and mental health and substance use problems that occur during a complex developmental transition from emerging adulthood to older adulthood. Contrary to our prediction, results suggested that older adults had higher odds of a diagnosis of current, but not lifetime, PTSD. This finding was inverse to our prediction but aligns with literature suggesting an age of onset in the mid-20s (Kessler et al., 2005). With maturation, the emerging adults may be vulnerable to a PTSD diagnosis in the future. Other studies suggest this finding might be related to either the age at which the trauma was experienced (Kaplow & Widom, 2007) or the age of onset for different types of mental illness, with some disorders having a later onset than others (Kessler et al., 2007). Still other factors may influence an increased likelihood for future PTSD diagnosis such as the age, frequency, duration, and complexity of CSA (Boroughs et al., 2015).

Our findings support hypotheses on increased alcohol use disorders, cannabis use disorders, and STIs (exclusive of HIV) among the emerging adults. Other hypotheses were either

partially supported, significant in a direction not predicted, or unsupported. For example, we hypothesized higher anxiety among the emerging adults relative to the older adults using a composite of all anxiety disorders. Results, however, revealed a significant difference only in panic disorder and panic disorder with agoraphobia and not in the direction expected, with no significant differences observed in social or generalized anxiety disorders. This finding is curious in light of some recent literature that has suggested that there has been no increase in the epidemiology of anxiety disorders in past years (Bandelow & Michaelis, 2015).

Although we recognize the possibility that differences in anxiety may be an artifact of a delay in research being published in the academic literature relative to news outlets or governmental reports, this would not explain increased odds of an anxiety disorder among older adults, which we found when analyzing these data. One possibility to explain this finding may be cultural changes that uniquely affect sexual minorities, such as marriage equality. Further, the authors noted "... actual differences between the investigated populations may also exist, which may be due to: traumatic stressors that influence, for example [the] suppression of minorities" (Bandelow & Michaelis, 2015, p. 331).

The results support significant differences in substance use problems, with alcohol and marijuana findings in the expected direction; however, older adult men were 50.0% more likely to have cocaine problems than emerging adult men, with no differences among other substances between the groups. That emerging adults were much more likely to have a substance use disorder with alcohol (5 times higher) and marijuana (3 times higher) is unsurprising given previous investigations (e.g., Bachman et al., 1998; Sheidow et al., 2012). Further, opportunities for health professionals to assess and intervene in this regard will likely increase as the legalization of marijuana expands in the United States and Canada (see Cochrane, 2017; Kerr, Bae, Phibbs, & Kern, 2017; Khazan, 2017).

It is notable that the emerging adults were 3 times more likely than older adults to report an STI despite no remarkable difference in unprotected intercourse. This is a curious finding, although consistent with literature on the sexual behavior of emerging adults and certainly among traumatized sexual minority men (Arriola et al., 2005; Suvak et al., 2012). Although the frequency of unprotected sex was high in both groups, it is not clear why STI rates would be distinctly higher among the emerging adults. Given that STIs are readily transmitted during sex without intercourse, one hypothesis is that emerging adults are more likely to engage in sexual behaviors that do not involve intercourse. Alternatively, the older adult men may be less likely to report an STI though we have found no evidence to suggest this possibility. Finally, the frequency of all sexual acts may be higher for emerging adults, or the prevalence of STIs may be higher in the emerging adult population (see Weinstock, Berman, & Cates, 2004).

These findings present a complex clinical picture that suggests a need for additional research into evidence-based assessment and treatment of trauma among emerging adult sexual minority men to address health risk behaviors. As a general discussion point, the inclusion of routine assessment of CSA among emerging adult sexual minority men may not only improve treatment outcomes but also prevent HIV or the onset of symptoms that could result in a PTSD diagnosis in older adulthood when targeted trauma-focused interventions are utilized. Current sexual risk reduction and HIV prevention interventions for sexual minority

men have been modestly successful (Crepaz et al., 2006; Herbst et al., 2005; Lyles et al., 2007) and cost effective (Herbst, et al. 2007); however, sexual minority men with CSA may be less likely to benefit from traditional HIV-prevention programs (Mimiaga, et al., 2009). Thus, tailored interventions that (a) account for a history of CSA and address and treat past trauma, regardless of a PTSD diagnosis; (b) treat comorbid mental health disorders; and (c) intervene to moderate or discontinue substance use may be fruitful pathways in addressing this syndemic. Further, we found that treatment that is sensitive to sexual minorities conducted by culturally competent health professionals to be of critical importance (Boroughs et al., 2015).

Despite these results, our study is not without limitations. One potential limitation is the level of education in Boston, with nearly 40% of 18–34 year olds holding a bachelor's degree (Thomas, 2012); it is possible that educational attainment may be a protective factor that buffers some young adults from the development of PTSD or anxiety disorders. It is unclear what influences the higher rates of STIs among emerging adults despite equivalent sexual risk-taking behaviors or higher disordered use of alcohol and marijuana. Many measures that were used were self-report and therefore subject to bias. To mitigate this concern, we utilized clinician-administered self-report measures, which may have limited some bias (e.g., Fresco et al., 2001). Future research may also benefit by assessing CSA complexities in order to explore additional variables beyond age, including the nature of an individual's relationship with the abuser, the type of abuse, and the age of first and last sexual trauma as well as structural factors such as access to services and poverty (Boroughs et al., 2015). As described by Kaplow and Widom (2007), the effects of child maltreatment differ on the basis of the age of onset of the maltreatment. Finally, the study had missing data, less than 20%, in the analysis of lifetime PTSD, which may have biased those results.

In summary, the current study was the first of its kind to assess the simultaneous influence of CSA and its association with psychosocial risk factors in sexual minority emerging adults compared to older adult sexual minority men. Results demonstrated that sexual minority emerging adults may be at greater risk for STIs, alcohol use problems, and cannabis use problems, whereas older adults were shown to have greater odds of PTSD, panic disorder, and cocaine use. The robust effect sizes of these disparities reiterate the pressing need for the development of prevention and intervention efforts that are tailored to sexual minority emerging adults.

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References

- Arnett JJ (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469–480. 10.1037/0003-066X.55.5.469 [PubMed: 10842426]

- Arriola KRJ, Loudon T, Doldren MA, & Fortenberry RM (2005). A meta-analysis of the relationship of child sexual abuse to HIV risk behavior among women. *Child Abuse & Neglect*, 29, 725–746. 10.1016/j.chiabu.2004.10.014 [PubMed: 15979712]
- Bachman JG, Johnson LD, & O'Malley PM (1998). Explaining recent increases in students' marijuana use: Impacts of perceived risks and disapproval, 1976 through 1996. *American Journal of Public Health*, 88, 887–892. 10.2105/AJPH.88.6.887 [PubMed: 9618614]
- Baeten J, Heffron R, Kidoguchi L, Mugo N, Katabira E, & Bukusi E (2015). Near elimination of HIV transmission in a demonstration project of PrEP and ART [CROI Abstract 24]. In Special Issue: Abstracts from the 2015 Conference on Retroviruses and Opportunistic Infections. *Topics in Antiviral Medicine*, 23, 10.
- Bandelow B, & Michaelis S (2015). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, 17, 327–335. [PubMed: 26487813]
- Bennett DA (2001). How can I deal with missing data in my study? *Australian and New Zealand Journal of Public Health*, 25, 464–469. 10.1111/j.1467-842X.2001.tb00294.x [PubMed: 11688629]
- Bontempo DE, & D'Augelli AR (2002). Effects of at-school victimization and sexual orientation on lesbian, gay, or bisexual youths' health risk behavior. *Journal of Adolescent Health*, 30, 364–374. 10.1016/S1054-139X(01)00415-3 [PubMed: 11996785]
- Boroughs MS, Valentine SE, Ironson GH, Shipherd JC, Safren SA, Taylor SW, ... O'Cleirigh C (2015). Complexity of childhood sexual abuse: Predictors of current post-traumatic stress disorder, mood disorders, substance use, and sexual risk behavior among adult men who have sex with men. *Archives of Sexual Behavior*, 44, 1891–1902. 10.1007/s10508-015-0546-9 [PubMed: 26159863]
- Bruggen LKV, Runtz MG, & Kadlec H (2006). Sexual revictimization: The role of sexual self-esteem and dysfunctional sexual behaviors. *Child Maltreatment*, 11, 131–145. 10.1177/1077559505285780 [PubMed: 16595847]
- Cochrane D (2017, 3 26). Liberals to announce marijuana will be legal by July 1, 2018. *CBC News*. Retrieved August 15, 2018, from: <http://www.cbc.ca/news/politics/liberal-legal-marijuana-pot-1.4041902>
- Collier KL, Beusekom G. van, Bos HMW, & Sandfort TGM (2013). Sexual orientation and gender identity/expression related peer victimization in adolescence: a systematic review of associated psychosocial and health outcomes. *The Journal of Sex Research*, 50, 299–317. 10.1080/00224499.2012.750639 [PubMed: 23480074]
- Corliss HL, Rosario M, Wypij D, Wylie SA, Frazier AL, & Austin SB (2010). Sexual orientation and drug use in a longitudinal cohort study of U.S. adolescents. *Addictive behaviors*, 35, 517–521. <https://doi.org/10.1016/j.addbeh.2009.12.019> [PubMed: 20061091]
- Crepaz N, Lyles CM, Wolitski RJ, Passin WF, Rama SM, Herbst JH, ... HIV/AIDS Prevention Research Synthesis (PRS) Team. (2006). Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials. *AIDS*, 20, 143–157. 10.1097/01.aids.0000196166.48518.a0. [PubMed: 16511407]
- D'Augelli AR, Grossman AH, & Starks MT (2006). Childhood gender atypicality, victimization, and PTSD among lesbian, gay, and bisexual youth. *Journal of Interpersonal Violence*, 21, 1462–1482. 10.1177/0886260506293482 [PubMed: 17057162]
- Davidson JRT, Book SW, Colket JT, Tupler LA, Roth S, David D, ... Feldman ME (1997). Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine*, 27, 153–160. [PubMed: 9122295]
- Denizet-Lewis B (2017, 10 11). Why are more American teenagers than ever suffering from severe anxiety. *The New York Times Magazine*. Retrieved August 8, 2018, from: <https://www.nytimes.com/2017/10/11/magazine/why-are-more-american-teenagers-than-ever-suffering-from-severe-anxiety.html>
- Des Jarlais DC, Paone D, Milliken J, Turner CF, Miller H, Gribble J, ... Friedman SR (1999). Audio-computer interviewing to measure risk behaviour for HIV among injecting drug users: A quasi-randomised trial. *Lancet*, 353, 1657–1661. 10.1016/S0140-6736(98)07026-3 [PubMed: 10335785]
- Epstein M, Bailey JA, Manhart LE, Hill KG, & Hawkins JD (2014). Sexual risk behavior in young adulthood: Broadening the scope beyond early sexual initiation. *The Journal of Sex Research*, 51, 721–730. 10.1080/00224499.2013.849652 [PubMed: 24423058]

- Fresco DM, Coles ME, Heimberg RG, Liebowitz MR, Hami S, Stein MB, & Goetz D (2001). The Liebowitz Social Anxiety Scale: A comparison of the psychometric properties of self-report and clinician-administered formats. *Psychological Medicine*, 31, 1025–1035. 10.1017/S0033291701004056 [PubMed: 11513370]
- Herbst JH, Beeker C, Mathew A, McNally T, Passin WF, Kay LS, . . . Johnson RL (2007). The effectiveness of individual-, group-, and community-level HIV behavioral risk-reduction interventions for adult men who have sex with men: A systematic review. *American Journal of Preventive Medicine*, 32, 38–67. <https://doi.org/10.1016/j.amepre.2006.12.006> [PubMed: 17218189]
- Herbst JH, Sherba RT, Crepaz N, DeLuca JB, Zohrabyan L, Stall RD, . . . HIV/AIDS Prevention Research Synthesis Team. (2005). A meta-analytic review of HIV behavioral interventions for reducing sexual risk behavior of men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, 39, 228–241. 10.1097/01.qai.0000151077.88193.15. [PubMed: 15905741]
- Kalichman SC, & Weinhardt L (2001). Negative affect and sexual risk behavior: Comment on Crepaz and Marks (2001). *Health Psychology*, 20, 300–301. 10.1037/0278-6133.20.4.300 [PubMed: 11515742]
- Kaplow JB, & Widom CS (2007). Age of onset of child maltreatment predicts long-term mental health outcomes. *Journal of Abnormal Psychology*, 116, 176–187. 10.1037/0021-843X.116.1.176 [PubMed: 17324028]
- Kerr DC, Bae H, Phibbs S, & Kerr AC (2017). Changes in undergraduates' marijuana, heavy alcohol, and cigarette use following legalization of recreational marijuana use in Oregon. *Addiction*, 112, 1992–2001. 10.1111/add.13906 [PubMed: 28613454]
- Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, & Ustun TB (2007). Age of onset of mental disorders: a review of recent literature. *Current Opinion on Psychiatry*, 20, 359–364. 10.1097/YCO.0b013e32816ebc8c
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, & Walters DE (2005). Lifetime prevalence and age-of-onset distributions of *DSM-IV* disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 593–602. 10.1001/archpsyc.62.6.593 [PubMed: 15939837]
- Khazan O (2017, 6 16). The surprising effect of marijuana legalization on college students. *The Atlantic*. Retrieved from: http://www.theatlantic.com/health/archive/2017/06/marijuana-legalization-college-students/530607/?utm_source=eb
- Kilpatrick AC (1992). Long-range effects of child and adolescent sexual experiences. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Larsen TK, Melle I, Auestad B, Friis S, Haahr U, Johannessen JO, . . . McGlashan TH (2006). Substance abuse in first-episode non-affective psychosis. *Schizophrenia Research*, 88, 55–62. 10.1016/j.schres.2006.07.018 [PubMed: 16971092]
- Lenderking WR, Wold C, Mayer KH, Goldstein R, Losina E, & Seage GR (1997). Childhood sexual abuse among homosexual men: Prevalence and association with unsafe sex. *Journal of General Internal Medicine*, 12, 250–253. 10.1046/j.1525-1497.1997.012004250.x [PubMed: 9127231]
- Leserman J (2005). Sexual abuse history: Prevalence, health effects, mediators, and psychological treatment. *Psychosomatic medicine*, 67, 906–915. 10.1097/01.psy.0000188405.54425.20 [PubMed: 16314595]
- Leserman J, Li Z, Drossman DA, & Hu YJ (1998). Selected symptoms associated with sexual and physical abuse history among female patients with gastrointestinal disorders: The impact on subsequent health care visits. *Psychological Medicine*, 28, 417–425. [PubMed: 9572098]
- Leserman J, Li Z, Drossman DA, Toomey TC, Nachman G, & Glogau L (1997). Impact of sexual and physical abuse dimensions on health status: Development of an abuse severity measure. *Psychosomatic Medicine*, 59, 152–160. [PubMed: 9088052]
- Lesserman J, Ironson G, & O'Cleirigh C (2006, 3). Preliminary results of a randomized controlled trial of an emotional disclosure intervention in patients with HIV. Presented at the Annual Meeting of the International Society of Behavioral Medicine, Bangkok, Thailand.

- Lewinsohn PM, Seeley JR, Buckley ME, & Klein DN (2002). Bipolar disorder in adolescence and young adulthood. *Child and Adolescent Psychiatric Clinics of North America*, 11, 461–475. [PubMed: 12222078]
- Lyles CM, Kay LS, Crepaz N, Herbst JH, Passin WF, Kim AS, ... Mullins MM (2007). Best-evidence interventions: Findings from a systematic review of HIV behavioral interventions for U.S. populations at high risk, 2000–2004. *American Journal of Public Health*, 97, 133–143. 10.2105/AJPH.2005.076182 [PubMed: 17138920]
- Maniglio R (2013). The impact of child sexual abuse on the course of bipolar disorder: A systematic review. *Bipolar Disorders*, 15, 341–358. 10.1111/bdi.12050 [PubMed: 23346867]
- McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, ... Argeriou M (1992). The fifth edition of the addiction severity index. *Journal of Substance Abuse Treatment*, 9, 199–213. 10.1016/0740-5472(92)90062-S [PubMed: 1334156]
- Metzger DS, Koblin B, Turner C, Navaline H, Valenti F, Holte S, ... Seage GR (2000). Randomized controlled trial of audio computer-assisted self-interviewing: Utility and acceptability in longitudinal studies. HIVNET Vaccine Preparedness Study Protocol Team. *American Journal of Epidemiology*, 152, 99–106. 10.1093/aje/152.2.99 [PubMed: 10909945]
- Millstein SG (1987). Acceptability and reliability of sensitive information collected via computer interview. *Educational and Psychological Measurement*, 47, 523–533. 10.1177/0013164487472028
- Mimiaga MJ, Noonan E, Donnell D, Safren SA, Koenen KC, Gortmaker S, ... Mayer KH (2009). Childhood sexual abuse is highly associated with HIV risk-taking behavior and infection among MSM in the EXPLORE study. *Journal of Acquired Immune Deficiency Syndromes*, 51, 340–348. 10.1097/QAI.0b013e3181a24b38 [PubMed: 19367173]
- Molnar BE, Buka SL, & Kessler RC (2001). Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Survey. *American Journal of Public Health*, 91, 753–760. [PubMed: 11344883]
- Navaline HA, Snider EC, Petro CJ, Tobin D, Metzger D, Alterman AI, & Woody GE (1994). Preparations for AIDS vaccine trials. An automated version of the Risk Assessment Battery (RAB): Enhancing the assessment of risk behaviors. *AIDS Research and Human Retroviruses*, 10, S281–283. [PubMed: 7865319]
- Needham BL, & Austin EL (2010). Sexual orientation, parental support, and health during the transition to young adulthood. *Journal of Youth and Adolescence*, 39, 1189–1198. 10.1007/s10964-010-9533-6 [PubMed: 20383570]
- Nelson MC, Story M, Larson NI, Neumark-Sztainer D, & Lytle LA (2008). Emerging adulthood and college-aged youth: An overlooked age for weight-related behavior change. *Obesity*, 16, 2205–2211. 10.1038/oby.2008.365. [PubMed: 18719665]
- Neumann DA, Houskamp BM, Pollock VE, & Briere J (1996). The long-term sequelae of childhood sexual abuse in women: a meta-analytic review. *Child Maltreatment*, 1, 6–16. 10.1177/1077559596001001002
- O'Leirigh C, Safren SA, Taylor SW, Goshe B, Bedoya CA, Marquez S ... Shipherd J (under review). Cognitive behavioral therapy for trauma and self-care in men who have sex with men with a history of childhood sexual abuse: A randomized controlled trial. *AIDS and Behavior*.
- O'Leary A, Purcell D, Remien RH, & Gomez C (2003). Childhood sexual abuse and sexual transmission risk behaviour among HIV-positive men who have sex with men. *AIDS Care*, 15, 17–26. 10.1080/0954012021000039725 [PubMed: 12655830]
- Paul JP, Catania J, Pollack L, & Stall R (2001). Understanding childhood sexual abuse as a predictor of sexual risk-taking among men who have sex with men: The Urban Men's Health Study. *Child Abuse & Neglect*, 25, 557–584. 10.1016/S0145-2134(01)00226-5 [PubMed: 11370726]
- Prejean J, Hernandez A, & Song R (2012). Estimated HIV incidence among adults and adolescents in the United States, 2007–2010 HIV Surveillance Supplemental Report, 17, 1–26. Atlanta, GA: Center for Disease Control and Prevention.
- Roberts AL, Austin SB, Corliss HL, Vander Morris AK, & Koenen KC (2010). Pervasive trauma exposure among US sexual orientation minority adults and risk of posttraumatic stress disorder.

- American Journal of Public Health, 100, 2433–2441. 10.2105/AJPH.2009.168971 [PubMed: 20395586]
- Roberts AL, Rosario M, Corliss HL, Koenen KC, & Austin SB (2012). Elevated risk of posttraumatic stress in sexual minority youths: Mediation by childhood abuse and gender nonconformity. *American Journal of Public Health*, 102, 1587–1593. 10.2105/AJPH.2011.300530 [PubMed: 22698034]
- Safren SA, O’Cleirigh CM, Bullis JR, Otto MW, Stein MD, & Pollack MH (2012). Cognitive behavioral therapy for adherence and depression (CBT-AD) in HIV-infected injection drug users: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 80, 404–415. 10.1037/a0028208 [PubMed: 22545737]
- Savin-Williams RC (2001). A critique of research on sexual minority youths. *Journal of Adolescence*, 24, 5–13. 10.1006/jado.2000.0369 [PubMed: 11259066]
- Schmid M, Petermann F, & Fegert JM (2013). Developmental trauma disorder: Pros and cons of including formal criteria in the psychiatric diagnostic systems. *BMC Psychiatry*, 13, 1–12. 10.1186/1471-244X-13-3 [PubMed: 23281653]
- Schulenberg JE, & Zarrett NR (2006). Mental health during emerging adulthood: Continuity and discontinuity in courses, causes, and functions In Arnett JJ & Tanner JL (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 135–172). Washington, DC: American Psychological Association 10.1037/11381-006
- Schuster MA, Bogart LM, Klein DJ, Feng JY, Tortolero SR, Mrug S, ... Elliott MN (2015). A longitudinal study of bullying of sexual-minority youth. *New England Journal of Medicine*, 372, 1872–1874. 10.1056/NEJMc1413064 [PubMed: 25946302]
- Sedlak AJ, Mettenburg J, Basena M, Peta I, McPherson K, & Greene A (2010). Fourth national incidence study of child abuse and neglect (NIS-4). Washington, DC: U.S. Department of Health and Human Services.
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, ... Dunbar GC (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for *DSM-IV* and *ICD-10*. *The Journal of Clinical Psychiatry*, 59, 22–33.
- Sheidow AJ, McCart M, Zajac K, & Davis M (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal*, 35, 235–243. 10.2975/35.3.2012.235.243 [PubMed: 22246122]
- Sinclair KO, Bauman S, Poteat VP, Koenig B, & Russell ST (2012). Cyber and bias-based harassment: Associations with academic, substance use, and mental health problems. *Journal of Adolescent Health*, 50, 521–523. 10.1016/j.jadohealth.2011.09.009 [PubMed: 22525118]
- Spitzer RL, Gibbon M, & Williams JBW (1997). *User’s guide for the Structured Clinical Interview for DSM-IV Axis I Disorders, SCID-I: Clinician version*. Washington DC: American Psychiatric Publications.
- Stall R, Friedman M, & Catania JA (2008). Interacting epidemics and gay men’s health: A theory of syndemic production among urban gay men. *Unequal opportunity: Health disparities affecting gay and bisexual men in the United States*, 1, 251–274.
- Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul J, ... Catania JA (2003). Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health*, 93, 939–942. 10.2105/AJPH.93.6.939 [PubMed: 12773359]
- Substance Abuse and Mental Health Services Administration. (2005). Results from the 2005 National Survey on Drug Use and Health: National findings. Retrieved from: <http://www.oas.samhsa.gov/2k5/2k5nsduh/2k5nsduh/2k5Results.pdf>
- Suvak MK, Brogan LA, & Shipherd JC (2012). Predictors of sexual functioning in a sample of U.S. Marines: An 11-year follow-up study. *International Journal of Sexual Health*, 24, 26–44. 10.1080/19317611.2011.640387
- Sweet T, & Welles SL (2012). Associations of sexual identity or same-sex behaviors with history of childhood sexual abuse and HIV/STI risk in the United States. *Journal of Acquired Immune Deficiency Syndromes*, 59, 400–408. 10.1097/QAI.0b013e3182400e75 [PubMed: 22083072]

- Talley AE, Sher KJ, & Littlefield AK (2010). Sexual orientation and substance use trajectories in emerging adulthood. *Addiction*, 105, 1235–1245. 10.1111/j.1360-0443.2010.02953.x [PubMed: 20491728]
- Tate E (2017, 3 29). Anxiety on the rise. Inside Higher Ed, Retrieved from <https://www.insidehighered.com/news/2017/03/29/anxiety-and-depression-are-primary-concerns-students-seeking-counseling-services>
- Thomas GS (2012, 5 06). Boston leads the U.S. in education levels for young adults. *The Business Journals*, Retrieved August 08, 2018, from: <http://www.bizjournals.com/bizjournals/on-numbers/scott-thomas/2012/05/education-levels-for-young-adults-are.html>
- Ullerstam L (1966). *The erotic minorities*. New York, NY: Grove Press.
- Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, & Kessler RC (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 629–640. <https://doi.org/10.1007/archpsyc.62.6.629> [PubMed: 15939840]
- Weinstock H, Berman S, & Cates W (2004). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, 36, 6–10. 10.1363/3600604 [PubMed: 14982671]
- World Health Organization. (2002). *World report on violence and health: Summary*. Geneva, Switzerland: Author.
- Zlotnick C, Shea MT, Pearlstein T, Simpson E, Costello E, & Begin A (1996). The relationship between dissociative symptoms, alexithymia, impulsivity, sexual abuse, and self-mutilation. *Comprehensive Psychiatry*, 37, 12–16. 10.1016/S0010-440X(96)90044-9 [PubMed: 8770520]

Table 1

Demographic Characteristics for Comparison Age Groups and Full Sample

Variable	<u>Emerging Adult^d</u>		<u>Older Adult^b</u>		<u>Total</u>	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Race ^c						
White/Euro American	54	62.1	147	72.4	201	69.3
Black/African American	19	21.8	44	21.7	63	21.7
Asian American	5	5.7	4	2.0	9	3.1
Native American/Alaska Native	2	2.3	5	2.5	7	2.4
Other/unknown	5	5.7	3	1.5	8	2.8
Ethnicity						
Non-Hispanic	57	65.5	148	72.9	205	70.7
Hispanic	30	34.5	54	26.6	84	29.0
Education level						
Some high school or diploma	19	21.8	54	26.6	73	25.1
Some college or college degree	51	58.6	107	52.7	158	54.5
Graduate education or above	16	18.3	41	20.2	57	19.7
Relationship status						
Partnered	15	17.2	61	30.0	76	26.5
Single	72	82.8	142	70.0	214	73.5
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age (years)	24.61	2.69	43.67	9.08	37.95	11.68

Note.

^a Age 18–29 years.^b Age 30 years.^c Participants could select more than one race variable; therefore, values add up to > 100%.

Table 2

Psychopathology at Baseline Assessment

Variable	Emerging Adult ^a		Older adult ^b		Total		<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%	
Current PTSD	29	33.3	94	46.3	123	41.5	.036
Major depressive disorder	23	26.4	65	33.5	8	29.7	.314
Suicide risk	14	18.0	32	18.8	46	15.5	.869
PD and PD with agoraphobia	6	6.9	24	11.8	30	10.1	.020
Social phobia	12	13.8	38	18.7	5	16.8	.383
Obsessive compulsive disorder	10	11.5	2	13.3	3	12.5	.685
Alcohol abuse	21	24.1	34	16.7	56	18.9	.167
Alcohol dependence	23	26.4	34	16.7	57	19.2	.071
Alcohol intoxication ^c	86	92.5	201	68.6	287	98.0	< .001
Non-alcohol substance use or dependence	30	34.5	59	29.1	89	30.7	.391
Substance use or dependence, including alcohol	45	51.7	82	40.4	127	43.8	.087
Sexual risk	71	81.6	160	78.8	231	78.0	.589
Sexually transmitted infection	13	14.9	12	5.9	25	8.4	.011

Note. PTSD = posttraumatic stress disorder; PD = panic disorder.

^a Age 18–29 years.

^b Age 30 years.

^c Alcohol use to intoxication in the last 30 days.

Table 3

Bivariate Logistic Regression for Study Variables Between Emerging and Older Adults

Variable	OR	95% CI
Current PTSD diagnosis	0.57 [*]	[0.33, 0.96]
Lifetime PTSD diagnosis	0.96	[0.43, 1.34]
Panic disorder and PD with agoraphobia	0.36 [*]	[0.16, 0.85]
Social phobia	0.80	[0.45, 1.42]
Generalized anxiety disorder	0.67	[0.33, 1.36]
Any substance use dependence or abuse including alcohol	1.56	[0.94, 2.61]
Any substance use dependence or abuse without alcohol	1.27	[0.74, 2.17]
Lifetime problematic cocaine use	0.50 [*]	[0.25, 0.97]
Lifetime problematic marijuana use	0.90	[0.49, 1.67]
Lifetime problematic inhalant use	0.57	[0.17, 1.63]
Lifetime problematic amphetamine use	0.71	[0.34, 1.47]
Cocaine use during the past 30 days	0.91	[0.48, 1.74]
Marijuana use during the past 30 days	3.09 [*]	[1.83, 5.21]
Inhalant use during the past 30 days	1.05	[0.58, 1.92]
Amphetamine use during the past 30 days	1.05	[0.52, 2.13]
Alcohol intoxication in the past 30 days	5.60 [*]	[3.20, 9.82]
Sexual risk	0.46	[0.17, 1.27]
Sexually transmitted infection	3.03 [*]	[1.29, 7.13]

Note. PTSD = posttraumatic stress disorder; PD = panic disorder.

^{*} p < .05.