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Sex and sexual orientation disparities in adverse childhood experiences and early age at sexual debut in the United States: Results from a nationally representative sample[☆]

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Abstract

Adverse childhood experiences (ACEs) have been linked to early sexual debut, which has been found to be associated with multiple adverse health outcomes. Sexual minorities and men tend to have earlier sexual debut compared to heterosexual populations and women, respectively. However, studies examining the association between ACEs and early sexual debut among men and sexual minorities are lacking. The aim of this study was to examine the sex and sexual orientation disparities in the association between ACEs and age at sexual debut. Data were obtained from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. Logistic and linear regression model were used to obtain crude and adjusted estimates and 95% confidence intervals adjusting for age, race/ethnicity, income, education, insurance and marital status for the association between ACEs (neglect, physical/psychological abuse, sexual abuse, parental violence, and parental incarceration and psychopathology) and early sexual debut. Analyses were stratified by sex and sexual orientation. Larger effect estimates depicting the association between ACEs and sexual debut were seen for women compared to men, and among sexual minorities, particularly among men who have sex with men (MSM) and women who have sex with women (WSW), compared to heterosexuals. Sexual health education programs with a focus on delaying sexual debut among children and adolescents should also consider addressing ACEs, such as neglect, physical, psychological and sexual abuse, witnessing parental violence,

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and parental incarceration and psychopathology. Public health practitioners, researchers and sexual health education curriculum coordinators should consider these differences by sex and sexual orientation when designing these programs.

Keywords

Adverse childhood experiences; Sexual debut; Sexual minority; MSM; Bisexual; Heterosexual

Introduction

Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are a particular set of negative childhood exposures, for example, emotional, physical, or sexual abuse, witnessing violence among household members, losing a parent due to death or divorce, or household mental illness, substance abuse or criminal behavior (Anda, Butchart, Felitti, & Brown, 2010; Centers for Disease Control and Prevention (CDC), 2010). ACEs pose a major public health challenge in the United States (Anda et al., 2010; Brown, Thacker, & Cohen, 2013). Recent estimates show that six in ten people in the general population have been exposed to at least one adverse childhood event (Brown et al., 2013), and 8.7% have reported five or more ACEs (Centers for Disease Control and Prevention (CDC), 2010). ACEs have been linked to suicide attempts (Dube, Felitti, Dong, Giles, & Anda, 2003; Felitti et al., 1998; Friestad, Ase-Bente, & Kjelsberg, 2014; Hung, Caine, Fan, Huang, & Chen, 2013; Van Niel, Pachter, Wade, Felitti, & Stein, 2014), using illicit drugs (Felitti et al., 1998; Friestad et al., 2014; Van Niel, Pachter, Wade, Felitti, & Stein, 2014), smoking (Bellis, Hughes, Leckenby, Perkins, & Lowey, 2014; Felitti et al., 1998; Van Niel et al., 2014), having multiple sex partners (Dube et al., 2003; Felitti et al., 1998), and have also been linked to depression in late-life (Ritchie et al., 2009).

Adverse Childhood Experiences and Sexual Health

ACEs have been shown to be associated with sexual debut in early adolescence compared to later adolescence or as an adult (Hillis, Anda, Felitti, & Marchbanks, 2001). The number of adverse events was also associated with first sex by age 15 among women (Hillis et al., 2001). Sexual abuse (Lin, Li, Fang, & Lin, 2011) and physical abuse (Richter et al., 2014) during childhood have also been linked to early sexual debut. The sexual risk behaviors of individuals who have been exposed to ACEs, such as early sexual debut, may represent attempts to obtain close interpersonal connections (Hillis et al., 2001). One study found that adolescents who reported age at sexual debut at 15 years or younger were also more likely to report worse relationships with their mothers compared to other adolescents (Price & Hyde, 2011).

Early age at sexual debut has also been found to be associated with multiple adverse health outcomes including reproductive health well beyond adolescence. The median age at sexual debut in the United States overall is 17.4 years, 17.2 among women and 17.6 years among men (Finer, 2007). However, of all adolescents, 6.2% report having had sexual intercourse before age 13 years, 9.0% of boys and 3.4% of girls (Eaton et al., 2012). Sexual debut before

age 15 is associated with multiple unintended pregnancies (Magnusson, Masho, & Lapane, 2011) and inconsistent contraceptive use (Magnusson, Masho, & Lapane, 2012). Among adolescents who reported early sexual debut, higher proportions of respondents reported two or more sex partners in the past three months, using alcohol/drugs at last sexual intercourse, not using condom at last sexual intercourse, to ever be pregnant or cause pregnancy, to ever be forced to have sex and to be involved in physical intimate partner violence in the past year (Kaplan, Jones, Olson, & Yunzal-Butler, 2013). Among men who have sex with men, sexual debut before age 16 was associated with exchanging sex for drugs or money, marijuana use, emotional and psychological problems associated with substance use, and suicide attempts (Outlaw et al., 2011). Early sexual debut has also been found to be associated with condom non-use among both male and female adolescents (Kim & Lee, 2012).

Sexual Minorities and Age at Sexual Debut

Some populations have been identified to be “high-risk” for early sexual initiation. For example, sexual minorities tend to have earlier sexual debut compared to heterosexual populations (Tornello, Riskind, & Patterson, 2013; van Griensven et al., 2004). Males who identify as homosexual or bisexual have an earlier mean age of sexual debut compared to males who identify as heterosexual (van Griensven et al., 2004). Bisexual and lesbian women also report being younger at heterosexual debut, having multiple sexual partners, and were more likely to report sexual abuse by a male partner compared to heterosexual women (Tornello et al., 2013). However, bisexual women reported the earliest sexual debut compared to homosexual and heterosexual women (Tornello et al., 2013).

Sexual Orientation and Adverse Childhood Experiences

Data from both community and national probability samples suggest an association between sexual orientation and *exposure* to ACEs (Andersen & Blosnich, 2013; McLaughlin, Hatzenbuehler, Xuan, & Conron, 2012; Zietsch et al., 2012). For example, research using a United States population-based sample showed that sexual minorities (gay/lesbian and bisexual respondents) had higher rates of ACEs and higher odds of experiencing multiple ACEs compared to heterosexuals (Andersen & Blosnich, 2013). Childhood sexual abuse and risky family environment, which included witnessing parental violence, relationship strain between respondent and one or both parents, or living with a problem drinker in the household, were significantly associated with identifying as a sexual minority in a community sample (Zietsch et al., 2012). In this sample, women who identified as a sexual minority tended to have fewer close friends, younger fathers, higher rates of physical abuse compared to heterosexual women. However, this association was not observed in men (Zietsch et al., 2012). Nevertheless, population-based samples have shown that sexual minority men may have greater odds of experiencing ACEs, such as sexual abuse than heterosexual men; and sexual minority women had greater odds of experiencing sexual abuse compared to heterosexual women (Sweet & Welles, 2012). Another population-based study showed that gay and lesbian respondents had higher odds of exposure to child abuse (physical or sexual) and housing adversity (homelessness or being forced out of their homes by parents/caregivers) compared to heterosexuals (McLaughlin et al., 2012). Bisexual

respondents were more likely to be exposed to child abuse, housing adversity and IPV compared to heterosexuals (McLaughlin et al., 2012).

Potential Effect Measure Modifiers

Sex differences have been reported in the impact of ACEs on adverse outcomes (Haatainen et al., 2003; Isohookana, Riala, Hakko, & Rasanen, 2013; O'Donnell, O'Donnell, & Stueve, 2001). For example, sex differences have been reported in the association between ACEs and adult hopelessness (Haatainen et al., 2003). The association remained statistically significant in women but not in men after adjusting for age, marital status, education, employment status, and subjective financial situation. Differences have also been seen in the prevalence of ACEs between males and females (Isohookana et al., 2013). Girls more often experience sexual abuse, and more girls compared to boys report being affected by parental psychiatric problems (24% vs. 13%). However, boys are more likely to report parental divorce, parental unemployment and parental death (Isohookana et al., 2013). Significant differences by sex have been observed for the association between early sexual initiation and risk behaviors including lifetime number of partners, pregnancy involvement, ever forcing a partner to have sex and condom use (O'Donnell et al., 2001). However, some studies have not found sex differences. No statistically significant differences between males and females were observed in a study examining the impact of ACEs on overall health, depressive symptoms, and tobacco, alcohol and marijuana use (Mersky, Topitzes, & Reynolds, 2013).

Sexual orientation may also be a potential effect measure modifier in the association between ACEs and age at sexual debut. Although studies have shown that sexual minority populations tend to report more adverse events during childhood (McLaughlin et al., 2012; Zietsch et al., 2012) and also tend to report earlier age at sexual debut (Tornello et al., 2013; van Griensven et al., 2004), to date, no study has examined this potential effect measure modification in the association between ACEs and age at sexual debut.

Potential Confounders

Statistically significant differences in the exposure and nonexposure to ACEs have been reported by age, race/ethnicity, annual household income, marital status and insurance status (Brown et al., 2013). Racial/ethnic and sex differences have also been shown in age at sexual debut (Cavazos-Rehg et al., 2009). For example, Black males tend to report earlier sexual debut compared to Asian, Hispanic and White males and females. Asian males and females tend to report later sexual debut compared to other racial/ethnic groups. Findings may have resulted due to defined social expectations based on specific gender and racial groups as defined in different cultures and communities (Cavazos-Rehg et al., 2009; Kinsman, Romer, Furstenberg, & Schwarz, 1998). Age (Jordahl & Lohman, 2009), income (Dinkelman, Lam, & Leibbrandt, 2007; Valle, Roysamb, Sundby, & Klepp, 2009), education (De Graaf, Vanwesenbeeck, & Meijer, 2014; Dinkelman et al., 2007), and marital status (Anglewicz, VanLandingham, & Phuengsamran, 2014) have also been shown to be associated with sexual debut.

The Current Study

Prior research has examined the association between ACEs (Hillis et al., 2001), and childhood sexual abuse (Lin et al., 2011), and age at sexual debut among women, and physical and sexual abuse among men and women (Richter et al., 2014). Nevertheless, to date, and to our knowledge, no study has examined the association between ACEs such as neglect, witnessing parental violence, and parental incarceration and psychopathology, and age at sexual debut among men. In addition, little research, if any, has examined the association between the wide range of ACEs and age at sexual debut by sex and sexual orientation among a nationally representative sample of the United States population. The aim of the study was to examine the sex and sexual orientation disparities in the association between ACEs (neglect, physical and psychological abuse, sexual abuse, witnessing parental violence, and parental incarceration and psychopathology), and age at sexual debut. The current study uses a nationally representative sample of the United States to determine if there are differences in the relationships between different types of ACEs and age at sexual debut by sex and sexual orientation to help to determine what adverse events occurring in childhood may be important risk factors for early sexual debut among specific populations.

Methods

Ethics Statement

The Virginia Commonwealth University Institutional Review Board deemed the current study exempt as de-identified, secondary data were used.

Data Source and Sample Population

Data were obtained from Wave 2 of the National Epidemiologic Survey on Alcohol-Related Conditions (NESARC) fielded in 2004–2005 (Grant & Dawson, 2006), which was a follow-up interview of respondents from Wave 1, fielded in 2001–2002. A multistage sampling design was used, which resulted in a representative sample of the non-institutionalized population 18 years and older who were living in the United States. The NESARC obtained data using structured computer-assisted personal interviewing. The survey instrument computer software consisted of built-in skip patterns, logic and consistency checks (Grant, Dawson, et al., 2004). Experienced lay interviewers from the United States Census Bureau administered the interviews (Grant, Dawson, et al., 2004). Interviewers provided participants with written information about the survey and obtained consent before conducting interviews. The NESARC was funded by the National Institute on Alcohol Abuse and Alcoholism with support from the National Institute on Drug Abuse (SAMSHA's Co-Occurring Center for Excellence, 2007).

The NESARC used the “Group Quarters Inventory” from the United States Bureau of Census 2000 to obtain information from respondents who were military personnel living off base, and other respondents residing in boarding houses, rooming houses, nontransient hotels and motels, shelters, facilities for housing workers, college quarters, and group homes (Grant, Stinson, et al., 2004). However, people residing in homeless shelters were excluded. The NESARC also included Spanish speakers (SAMSHA's Co-Occurring Center for Excellence, 2007) and oversampled Black and Hispanic households (Grant, Stinson, et al.,

2004). These households were oversampled (Grant, Stinson, et al., 2004) to ensure that there was a sufficient sample size of these households in the data in order to make precise estimates about these populations. Sample weights were available for each observation.

Operational Definition of Adverse Childhood Experiences

ACEs were operationalized by questions asking about experiences during childhood as previously determined by exploratory and confirmatory factor analyses (Brown, Perera, Masho, Mezuk, & Cohen, 2015): (1) *Neglect*: if a respondent was left alone or unsupervised when they were too young to be left alone, that is, before age 10, went without things needed (clothes, school supplies), went hungry or failed to get medical treatment; (2) *Physical/psychological abuse*: if a parent or caregiver insulted or said hurtful things to, or threatened to hit or throw something at, or push, grabbed, shoved, slapped or hit the respondent causing marks, bruises or injury, or made the respondent fear that he/she would be physically hurt; (3) *Sexual abuse*: if an adult or other person had touched the respondent sexually, had the respondent touched him/her sexually, attempted to have sex or had sex with the respondent; (4) *Parental violence*: if the respondent witnessed his/her father or other adult male push, grab, slap, or throw something at his/her mother, hit mother with a fist or something hard, repeatedly hit mother for at least a few minutes, threaten mother with a knife/gun or use it to hurt her. *Neglect, physical/psychological abuse, sexual abuse, and parental violence* were analyzed in binary format (Yes vs. No) and Likert Scale format: “Very often”, “Fairly often”, “Sometimes”, “Almost never” and “Never”. (5) *Parental incarceration/psychopathology* was determined from questions asking if, before 18 years old, the respondent had lived with a parent or other adult who was a problem drinker, abused drugs, had been incarcerated, or had a mental illness, or had attempted and/or committed suicide. Questions asking for information on parental incarceration/psychopathology elicited a binary response (Yes vs. No).

Operationalization of Age at Sexual Debut

Age at sexual debut was operationalized by the question “How old were you when you first had sex/sexual intercourse, or have you never had sexual intercourse?” Self-reported age at sexual debut has been used in several prior studies (Hillis et al., 2001; Magnusson et al., 2011, 2012; O’Donnell et al., 2001), and computer-assisted interviewing, as used in the NESARC, has been found to result in increased rates of reporting sensitive behaviors (Langhaug, Sherr, & Cowan, 2010) and outcomes, such as early age at sexual debut.

Operational Definition of Sexual Orientation

Sexual orientation was mainly defined by the question “Which of the categories best described you?” with response options: “Heterosexual”, “Gay or lesbian”, “Bisexual” or “Not sure”. Respondents who chose the response “Heterosexual” were categorized as heterosexuals. Male respondents who reported their sexual orientation to be “gay” or “bisexual” were defined as men who have sex with men (MSM). Female respondents who identified themselves as “lesbian” or “bisexual” were categorized as women who have sex with women (WSW). MSM and WSW groups were examined as we wanted to examine the association among men and women who self-identified as having sex with and/or being

attracted to the same gender regardless of experiences with the opposite sex. Respondents (both men and women) who reported to be “Bisexual” were classified as bisexual.

Effect Measure Modifiers and Potential Confounders

Differences by sex have been reported in the association of ACEs and adverse outcomes (Haatainen et al., 2003; Isohookana et al., 2013; O’Donnell et al., 2001). Sexual minority populations tend to report more adverse events during childhood (McLaughlin et al., 2012; Zietsch et al., 2012) and earlier age at sexual debut (Tornello et al., 2013; van Griensven et al., 2004). Therefore effect measure modifiers considered in the current study were sex and sexual orientation.

Potential confounders that were considered are associated with ACEs and age at sexual debut as reported in the literature. Confounders that were considered included: age at interview (continuous) (Hillis et al., 2001; O’Donnell et al., 2001), race/ethnicity (Black, American Indian/Alaskan Native, Asian/Native Hawaiian/Other Pacific Islander, Hispanic vs. White) (Hillis et al., 2001; O’Donnell et al., 2001), income (<\$15,000, \$15,000–<\$50,000, vs. \$50,000), education (<High school, High School vs. >High School), insurance status (None, public vs. private) and marital status (Not married vs. married) (Magnusson et al., 2012).

Analytic Approach

Respondents were not eligible if they answered “don’t know” or were missing on all ACE questions or reported never having sex (2,929, 8.5%). The resultant sample was 31,724. Weighting variables were used to account for weighting procedures used in the survey. Two separate sets of analyses using SAS 9.4 (SAS Institute, Cary, NC) were conducted:

1. *Logistic regression* was used to determine the association between ACE categories and age at sexual debut (before 18 years of age). Age at sexual debut was defined as <13, 13–14, and 15–17 years among men and women to examine age at first sex as a preteen (<13), younger teenager (13–14) and older teenager (15–17). Age at sexual debut was defined as 14 and 15–17 for analyses examining the relationship between ACEs and sexual debut among heterosexual, bisexual, men who have sex with men (MSM) and women who have sex with women (WSW) populations. For analyses stratifying by sexual orientation, the age categories <13 and 13–14 years were combined to form one category (<14 years) due to the small number of sexual minority respondents (bisexual, MSM and WSW) reporting age at sexual debut <13 years. Model fit was assessed using Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC) and -2 Log Likelihood values.
2. *Linear regression* was used to determine the association between ACE categories and age at sexual debut using the latter as a continuous variable. Linearity between age at sexual debut and ACEs were assessed. Model fit was assessed using adjusted R^2 .

Sensitivity analyses were performed excluding respondents reporting sexual abuse due to the potential overlap of sexual abuse with sexual debut to determine associations between other

ACEs and age at sexual debut. All analyses were stratified by sex and sexual orientation and considered sociodemographic confounders.

Results

Overall, 62.2% of the eligible population was exposed to at least one ACE. Table 1 shows the distribution of sociodemographic characteristics and age at sexual debut in the overall sample and across ACE exposure groups. A slight majority of the sample were women (52.0%), and one in four were between the ages of 18 and 34 (25.2%). The mean age of the sample was 48.6 years (SD = 0.10). Most (59.1%) had more than a high school education and were married/cohabiting (65.4%). Approximately 3.0% had their sexual debut at <13 years, 6.9% between 13 and 14 years, 34.8% between 15 and 17 years, and 55.3% at 18 years or older. Among respondents who were exposed to ACEs, approximately half were women (50.4%), one in four were between the ages of 18 and 34 (24.5%), and 60.4% had more than a high school education. Among respondents exposed to ACEs, 98.0% identified as heterosexuals, 0.7% as MSM, 0.5% as WSW and 0.8% as bisexuals. Among respondents unexposed to ACEs, 99.1% identified as heterosexuals, 0.4% as MSM, 0.2% as WSW, 0.3% as bisexuals. There were statistically significant differences in exposure to ACEs by sex, age, race/ethnicity, income, education, age at sexual debut and sexual orientation, but not by insurance and marital status.

Table 2 shows the distribution of sociodemographic characteristics and ACE exposure across age categories of sexual debut (<13, 13–14, 15–17, 18). Two-thirds of respondents reporting sexual debut at <13 years and 13–14 years were men (64.4% and 62.9%, respectively). Approximately one in four respondents reporting sexual debut at <13 years (26.6%) and 8.0% of respondents reporting sexual debut at 18 years or older were Black, non-Hispanic. Among respondents reporting age of sexual debut at <13 years, one in five (20.2%) had less than a high school education, while among respondents reporting sexual debut at 18 or older, one in ten (10.7%) reported having less than a high school education. About eight in ten respondents reporting sexual debut at <13 years reported being exposed to ACEs (85.0%) while 57.1% of respondents reporting sexual debut at 18 or older reported ACE exposure. Approximately 2.4% and 1.8% of respondents reporting sex at <13 were MSM and bisexual respondents respectively. However, 0.5% of respondents reporting age at sexual debut at 18 years or older were MSM and 0.5% were bisexual respondents.

The associations between ACEs (neglect, physical/psychological abuse, sexual abuse, parental violence, and parental incarceration and psychopathology) and early age at sexual debut (<13, 13–14, 15–17) compared to respondents with age at sexual debut at 18 years old or older by sex are shown in Table 3. After adjusting for age (continuous), race/ethnicity, income, education, insurance and marital status, men who were neglected as children were 2.7 times as likely than men who were not exposed to ACEs to have sexual debut before age 13 (OR: 2.67; 95% CI: 2.28–3.12). However, women who were neglected as children were 31.5 times as likely to have sexual debut before age 13 (OR: 31.5; 95% CI: 24.5–40.7) compared to women unexposed to ACEs. Men who were sexually abused had 9.9 times the likelihood as men who were not exposed to ACEs to have sexual debut before age 13 (OR: 9.90; 95% CI: 8.09–12.1). However, women who were sexually abused were 90.5 times as

likely to have sexual debut before age 13 (OR: 90.5; 95% CI: 70.6–116.0). Women who were exposed to parental incarceration and psychopathology as children were almost 30 times as likely as women not exposed to ACEs to have their sexual debut before age 13 (OR: 29.8; 95% CI: 23.5–37.7). However, men exposed to parental incarceration and psychopathology were 3.46 times as likely as men not exposed to ACEs to have their sexual debut before age 13 (OR: 3.46; 95% CI: 2.93–4.09). Analyses excluding respondents reporting sexual abuse (Supplemental Table 1) showed positive associations between other ACEs and early age at sexual debut. Estimates were reduced to a greater extent for women compared to men.

The associations between ACEs and early age at sexual debut (14, 15–17) by sexual orientation are shown in Table 4. After adjusting for age (continuous), race/ethnicity, income, education, insurance and marital status, among heterosexual respondents, those who were exposed to sexual abuse were 6.6 times as likely to have their sexual debut at age 14 or younger (OR: 6.63; 95% CI: 6.09–7.21). However, MSM respondents exposed to sexual abuse were 122 times as likely as MSM respondents not exposed to ACEs to have their sexual debut at age 14 or younger (OR: 122.2; 95% CI: 64.4–231.5). Heterosexual respondents who were exposed to parental incarceration and psychopathology were approximately 3.5 times as likely to have their sexual debut at age 14 or younger compared to heterosexual respondents who were not exposed to ACEs (OR: 3.49; 95% CI: 3.23–3.76). However, WSW and MSM respondents who were exposed to parental incarceration and psychopathology were 13.7 times and 20.1 times as likely, respectively, to have their sexual debut at age 14 or younger compared to WSW and MSM respondents who were not exposed to ACEs (OR: 13.7; 95% CI: 10.1–18.6 for WSW; OR: 20.1; 95% CI: 12.1–33.4 for MSM). Analyses excluding respondents reporting sexual abuse (Supplemental Table 2) showed positive associations between other ACEs and early age at sexual debut. Estimates were reduced to a greater extent for sexual minority groups compared to heterosexual respondents.

Table 5 shows the linear regression results depicting the associations between ACEs and age at sexual debut by sex and sexual orientation. After controlling for age (continuous), race/ethnicity, income, education, insurance and marital status, men, women, heterosexual and bisexual respondents who were exposed to sexual abuse had, on average, a sexual debut two years earlier compared to those who were not (β : -2.05; 95% CI: -2.57, -1.53 for men; β : -2.11; 95% CI: -2.32, -1.89 for women; β : -1.95; 95% CI: -2.16, -1.75 for heterosexual respondents; and β : -2.22; 95% CI: -3.03, -1.41 for bisexual respondents). MSM and WSW respondents who were exposed to sexual abuse had, on average, a sexual debut three years earlier compared to those who were not (β : -2.87; 95% CI: -4.06, -1.69 for MSM respondents; β : -2.57; 95% CI: -3.16, -1.97 for bisexual respondents). Analyses excluding respondents reporting sexual abuse (Supplemental Table 3) showed similar estimates of association between other ACEs and early age at sexual debut.

Discussion

Overall, ACEs (neglect, physical/psychological abuse, sexual abuse, parental violence, and parental incarceration and psychology) were associated with age at sexual debut. Larger

effect estimates depicting the association between ACEs and sexual debut were generally seen for women compared to men and for sexual minorities compared to heterosexual respondents.

Disparities in Relationships Between ACEs and Sexual Debut for Men and Women

Sex disparities have been reported in the impact of ACEs on adverse outcomes (O'Donnell et al., 2001; Haatainen et al., 2003; Isohookana et al., 2013). The associations between ACEs and earlier age at sexual debut in the current study were stronger among women compared to men. The larger effect estimates for women compared to men may suggest that women may be more susceptible to the effect of ACEs on risky sexual behavior such as very early age at sexual debut. ACEs may be reflective of not only "fragile families" (families with unmarried parents) (Fragile Families and Child Wellbeing Study, 2014) but further instability and unstable environments for children. As ACEs tend to be interrelated rather than occurring independently (Felitti et al., 1998), this instability may result in a higher risk of separation of the family. Separation of families may lead to the absence of father in the home. Father absence has been linked to earlier sexual debut in girls, but not in boys, and is also associated with increased risky sexual behavior in girls, but not in boys (James, Ellis, Schlomer, & Garber, 2012). The current findings showing an association between ACEs and early sexual debut among women support findings from Hillis et al. (2001). Hillis et al. showed an association between physical abuse, verbal (psychological) abuse, sexual abuse, witnessing parental violence, living with incarcerated family member, household substance abuse and mental illness and sexual debut at 15 or younger among women (Hillis et al., 2001). The current study examined these relationships for men and women and adjusted for age, race/ethnicity, income, education, insurance and marital status, while Hillis et al. (2001) only examined these associations among women and adjusted for age and race.

Disparities in Relationships for ACEs and Sexual Debut by Sexual Orientation

Sexual minorities tend to be disproportionately exposed to ACEs (McLaughlin et al., 2012; Zietsch et al., 2012). Associations between ACE domains and age at sexual debut differed by sexual orientation. The strongest association between physical/psychological abuse, sexual abuse, and parental incarceration and psychopathology and age at sexual debut 14 years was observed among MSM. However, bisexual respondents had the strongest association between witnessing parental violence and age at sexual debut 14 years. Sexual abuse was strongly associated with early age of sexual debut for all groups, and this relationship was especially pronounced for sexual minority populations. The results suggest that sexual minority populations such as MSM exposed to abuse and living with a parent or adult who has been incarcerated or has psychiatric or substance use disorders as children have the strongest odds for early sexual debut. However, exposure to parental violence (e.g., male-perpetrated violence toward the maternal figure in the home) may impact bisexual populations to a greater extent than other populations. The association between ACEs and age at sexual debut may be higher for sexual minority populations as they are also more likely to report ACEs compared to heterosexual populations (McLaughlin et al., 2012; Zietsch et al., 2012), and tend to initiate sex earlier compared to heterosexual populations (Tornello et al., 2013; van Griensven et al., 2004). Due to being exposed to ACEs, sexual

minorities may also initiate sex earlier in an attempt to obtain more personal connections as adolescents.

Adverse Childhood Experiences and Sexual Debut

The overall linear model showed, on average, a sexual debut two years earlier among respondents exposed to sexual abuse. However, Brown, Cohen, Chen, Smailes, and Johnson (2004) showed an approximate one-year decrease in age at sexual debut among respondents who were victims of at least two episodes of sexual abuse but there was no statistically significant association seen between having one episode of sexual abuse and age at sexual debut (Brown et al., 2004). Sexual abuse in the linear regression analyses was analyzed in a Likert scale format (“Very often”, “Fairly often”, “Sometimes”, “Almost never” and “Never”) and did not differentiate between one episode of sexual abuse and having at least two episodes of sexual abuse. Sexual abuse and neglect, physical/psychological abuse and witnessing parental violence, were operationalized in Likert scale format for the linear regression analyses so as not to lose any information. Also, it was not feasible to determine if the response option of “Almost never” meant that the adverse event occurred once or more than once. The disparate definitions of operationalizing sexual abuse may explain the difference in findings.

Strong associations were seen between parental incarceration and psychopathology and early age at sexual debut among sexual minorities. Few studies have examined this association (Hillis et al., 2001; Ramiro, Madrid, & Brown, 2010) and to our knowledge, no study has examined this relationship by sexual orientation. Ramiro et al. (2010) did not find an association between incarceration of a household member and sexual debut at age 16 or younger (Ramiro et al., 2010). Our overall results showed an association between parental incarceration and psychopathology and sexual debut before 18 years of age. Different study populations may have explained this difference in findings as Ramiro et al. (2010) examined this association in a developing country and the current study assesses this relationship among a nationally representative sample in the United States.

Incarceration and psychopathology of parents or adults in the household may be an indicator of lack of parental monitoring or supervision, which may also be proxies for parenting processes such as parental warmth and parental knowledge. As parents may struggle with psychiatric and substance use disorders, and/or are incarcerated and spend less time in the home, there may be less parenting processes and reduced parental monitoring. One study examining parental processes and risky sexual behavior found that parental warmth, a measure of a child’s perception of his/her relationship with each parent, and parental knowledge, a measure of a child’s perception of how well his/her parents knew about their whereabouts, were found to have a negative association with sexual onset among adolescents (Rodgers & McGuire, 2012). Parental monitoring has also been shown to be a protective factor of early age at sexual debut (Chewning et al., 2001; Valle, Torgersen, Roysamb, Klepp, & Thelle, 2005).

Interconnectivity of Adverse Childhood Experiences

In interpreting these findings, it is important to consider the interconnectivity of ACEs. In other words, a respondent may have been exposed to one ACE such as neglect *and* also be exposed to another ACEs, such as sexual abuse. Previous research has shown that multiple ACEs are associated with more severe outcomes regardless of sexual orientation among women (Andersen et al., 2014). found similar physical health problems being reported by heterosexual and lesbian women with increasing number of ACEs such as sexual and physical abuse. Indeed, the sensitivity analyses, excluding respondents reporting sexual abuse from the sample, significantly reduced estimates especially for women, sexual minorities and for very early age at sexual debut (<13 years) findings. The findings also suggested that respondents who reported sexual abuse were also likely to report early age at sexual debut. Holmes (2009) found that among men, risky behavior associated with childhood sexual abuse may be associated with childhood sexual abuse occurring at sexual debut (Holmes, 2009).

Strengths and Limitations

The current study has several strengths. First, this will be the first study to date to examine the association between ACEs and age at sexual debut among a nationally representative sample of the United States. Second, sex and sexual orientation disparities in the association between ACEs and age at sexual debut have been determined. Third, the study considered two different methodologic approaches: linear regression and logistic regression. Therefore, age at sexual debut was examined both as a continuous and a categorical variable.

However, there are some limitations. Self-report of sensitive topics such as ACEs and sexual behavior such as age at first sexual debut are commonplace in the literature. The predominance of using self-report measures of ACEs and sexual behavior is due mostly to difficulty in obtaining physiological data related to these variables (Andersen & Broffitt, 1988). Computer-assisted personal interviewing (CAPI) was used as the mode of survey administration in NESARC (Grant, Dawson, et al., 2004) and has been shown to increase rates of reporting sensitive behaviors (Langhaug et al., 2010). It is possible that there are biases in the reporting of ACEs. Hardt and Rutter (2004) suggest that there is substantial measurement error and false negatives in the reporting of ACEs (Hardt & Rutter, 2004). Nevertheless, false positive reports are rare. Retrospective reporting of ACEs is usually as a result of the respondent's recall of specific events and/or other people informing the respondents of adverse events occurring while they were infants. However, the bias observed in reporting ACEs do not justify the rejection of using self-reported ACEs but warrant cautious interpretation when used (Hardt & Rutter, 2004). ACEs are also interconnected. However, the main analyses in the current study did not take into account the interconnectivity of these events. Nevertheless, additional sensitivity analyses indicated that sexual abuse may have been interconnected with other ACEs.

Some ACEs such as parental separation or divorce were not included in the survey, and hence were not included in the current study. The question, which was used to operationalize age at sexual debut, also did not differentiate between vaginal, oral and anal sex as was examined previously (Dillon et al., 2010). In addition, the question, which asked

about age at sexual debut, unfortunately, did not explicitly define “sex” or “sexual intercourse” and did not differentiate between consensual and forced sexual intercourse, which may have important implications for the association between ACEs and first sexual intercourse. Differentiating whether this first sexual intercourse is consensual or forced is key in determining the “true” association between sexual abuse and age at sexual debut (consensual or forced). It is possible that the associations between ACEs and age at sexual debut may vary depending on whether first sexual intercourse was forced or consensual.

Sexual orientation was also operationalized by self-report of sexual orientation status. Respondents, especially among sexual minority groups, may not have been truthful about their sexual identity. Other potential confounders, such as poverty level, and condom use (Magnusson et al., 2012), were not able to be considered as these were not included in the survey. However, we adjusted for income, which may be considered a proxy for poverty. Results examining results by sexual orientation should also be interpreted with caution due to the relatively small sample size of homosexual and bisexual respondents.

Conclusions

The current study is the first to examine the association between a wide range of ACEs and age at sexual debut by sex and by sexual orientation using a nationally representative sample of the United States population. Intervention programs with a focus on delaying sexual debut among adolescents, which have targeted both girls and boys, have had mixed findings in their effectiveness (Mathews et al., 2012; O’Leary et al., 2012; Tibbits, Smith, Caldwell, & Flisher, 2011). However, studies examining sex differences in delayed sexual debut after interventions found no statistically significant differences for men and women (O’Leary et al., 2012; Scott-Sheldon, Walstrom, Harrison, Kalichman, & Carey, 2013). The findings from the current study suggest that sexual health education programs geared toward delaying sexual debut among children and adolescents should consider addressing ACEs such as neglect, physical/psychological abuse, sexual abuse, witnessing parental violence and incarceration and/or mental illness of parents/guardians. Programs should also be implemented for men and women, and for heterosexual and sexual minority populations but should consider the differences in the relationship between ACEs and age at sexual debut by sex and by sexual orientation. We also recommend that survey designs garnering information on sexual debut, explicitly define sexual intercourse, and differentiate between forced and consensual intercourse so age of sexual debut may be accurately operationalized. Future studies should examine relationships between the wide range of ACEs and adverse health outcomes and behaviors across the lifespan. Further research addressing the risk factors of sexual health behaviors of sexual minority populations, especially among WSW, are also needed. Research and practical efforts should also focus on reducing the rates and prevention of ACEs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.chiabu.2015.02.019>.

Table 1

Distribution of Characteristics in Overall Sample and across ACE Exposure Groups.

	Overall <i>N</i> = 31,724 <i>N</i> (Weighted %)	ACEs <i>N</i> = 20,011 <i>N</i> (Weighted %)	No ACEs <i>N</i> = 11,713 <i>N</i> (Weighted %)	<i>P</i> -value ^a
Sex				
Men	13,357 (48.0)	8,710 (49.6)	4,647 (45.3)	<0.0001
Women	18,367 (52.0)	11,301 (50.4)	7,066 (54.7)	
Age				
18–34	7,375 (25.2)	4,575 (24.5)	2,800 (26.3)	
35–49	10,346 (31.9)	6,928 (34.0)	3,418 (28.4)	
50+	14,003 (42.9)	8,508 (41.5)	5,495 (45.3)	<0.0001
Mean (SD)	48.6 (0.10)	47.7 (0.11)	50.3 (0.17)	<0.0001
Race/ethnicity				
White, non-Hispanic	18,497 (71.2)	11,686 (71.4)	6,811 (70.9)	<0.0001
Black, non-Hispanic	6,075 (11.1)	3,941 (11.5)	2,134 (10.5)	
AI/AN, non-Hispanic	533 (2.23)	382 (2.5)	151 (1.7)	
Asian/NH/PI, non-Hispanic	806 (3.91)	432 (3.3)	374 (5.0)	
Hispanic, any race	5,813 (11.5)	3,570 (11.3)	2,243 (11.9)	
Income				
<\$25,000	9,688 (25.4)	5,842 (24.6)	3,846 (26.8)	
\$25,000–<\$50,000	9,031 (27.8)	5,687 (27.4)	3,344 (28.4)	
\$50,000–<\$80,000	6,694 (23.2)	4,346 (23.7)	2,348 (22.4)	
\$80,000–<\$100,000	2,268 (8.2)	1,460 (8.2)	808 (8.1)	
\$100,000	4,043 (15.4)	2,676 (16.0)	1,367 (14.3)	<0.0001
Education				
<High school	4,852 (13.5)	2,855 (12.8)	1,997 (13.0)	
High school	8,622 (27.4)	5,292 (26.8)	3,330 (27.8)	
>High school	18,250 (59.1)	11,864 (60.4)	6,386 (59.2)	<0.0001
Insurance				
Yes	27,780 (88.0)	17,566 (88.1)	10,214 (87.9)	0.2869
No	3,922 (12.0)	2,431 (11.9)	1,491 (12.1)	
Marital status				
Married/cohabiting	17,681 (65.4)	11,165 (65.7)	6,516 (65.0)	0.0956
Widowed/divorced/separated	8,415 (18.9)	5,248 (18.8)	3,167 (19.3)	
Never married	5,628 (15.6)	3,598 (15.6)	2,030 (15.7)	
Age at sexual debut				
<13	1,039 (3.0)	880 (4.1)	159 (1.2)	
13–14	2,274 (6.9)	1,708 (8.3)	566 (4.6)	
15–17	11,203 (34.8)	7,458 (36.9)	3,745 (31.3)	
18+	17,208 (55.3)	9,965 (50.7)	7,243 (62.9)	<0.0001
Sexual orientation				
Heterosexual	31,017 (98.5)	19,458 (98.0)	11,559 (99.1)	<0.0001

	Overall <i>N</i> = 31,724 <i>N</i> (Weighted %)	ACEs <i>N</i> = 20,011 <i>N</i> (Weighted %)	No ACEs <i>N</i> = 11,713 <i>N</i> (Weighted %)	<i>P</i> -value ^a
MSM	186 (0.5)	142 (0.7)	44 (0.4)	
WSW	143 (0.4)	114 (0.5)	29 (0.2)	
Bisexual	227 (0.6)	185 (0.8)	42 (0.3)	

^a*P*-value comparing respondents exposed and unexposed to ACEs.

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Table 2

Distribution of characteristics across age at sexual debut categories.

	<13 <i>N</i> = 1,039 <i>N</i> (Weighted %)	13–14 <i>N</i> = 2,274 <i>N</i> (Weighted %)	15–17 <i>N</i> = 11,203 <i>N</i> (Weighted %)	18+ <i>N</i> = 17,208 <i>N</i> (Weighted %)
Sex				
Men	631 (64.4)	1,309 (62.9)	5,152 (51.7)	6,265 (42.9)
Women	408 (35.6)	965 (37.1)	6,051 (48.3)	10,943 (57.1)
Age				
18–34	267 (29.4)	826 (40.0)	3,278 (31.0)	3,004 (19.4)
35–49	360 (35.0)	721 (32.9)	4,104 (36.4)	5,161 (28.8)
50+	412 (35.6)	727 (27.1)	3,821 (32.6)	9,043 (51.8)
Mean (SD)	46.7 (0.48)	43.1 (0.33)	44.8 (0.15)	52.0 (0.13)
Race/ethnicity				
White, non-Hispanic	42 (54.4)	1,082 (61.7)	6,287 (70.1)	10,696 (74.0)
Black, non-Hispanic	377 (26.6)	628 (18.3)	2,504 (13.3)	2,566 (8.0)
AI/AN, non-Hispanic	34 (4.7)	47 (2.8)	219 (2.6)	233 (1.77)
Asian/NH/PI, non-Hispanic	9 (0.9)	26 (1.7)	156 (2.0)	615 (5.53)
Hispanic, any race	187 (13.5)	491 (15.5)	2,037 (11.9)	3,098 (10.7)
Income				
<\$25,000	453 (39.0)	843 (32.0)	3,374 (25.2)	5,018 (24.0)
\$25,000–<\$50,000	278 (28.4)	664 (29.2)	3,248 (27.9)	4,841 (27.5)
\$50,000–<\$80,000	181 (19.0)	429 (21.1)	2,409 (24.0)	3,675 (23.2)
\$80,000–<\$100,000	48 (4.7)	138 (7.4)	807 (8.2)	1,275 (8.5)
\$100,000	79 (8.9)	200 (10.3)	1,365 (14.7)	2,399 (16.8)
Education				
<High school	216 (20.2)	541 (23.0)	1,920 (15.4)	2,175 (10.7)
High school	329 (34.6)	663 (29.6)	3,242 (29.4)	4,388 (25.5)
>High school	494 (45.2)	1,070 (47.4)	6,041 (55.2)	10,645 (63.8)
Insurance				
Yes	859 (81.0)	1,858 (80.9)	9,604 (86.1)	15,459 (90.5)
No	180 (19.0)	416 (19.1)	1,590 (13.9)	1,736 (9.5)
Marital status				
Married/cohabiting	493 (56.1)	1,180 (60.2)	6,138 (63.7)	9,870 (67.7)
Widowed/divorced/separated	316 (23.5)	576 (19.0)	2,843 (18.5)	4,680 (19.0)
Never married	230 (20.3)	518 (20.8)	2,222 (17.8)	2,658 (13.4)
ACE exposure				
Yes	880 (85.0)	1,708 (74.7)	7,458 (66.1)	9,965 (57.1)
No	159 (15.0)	566 (25.3)	3,745 (33.9)	7,243 (42.9)
Sexual orientation				
Heterosexual	975 (94.9)	2,210 (98.2)	10,983 (98.5)	16,849 (98.7)
MSM	19 (2.4)	18 (0.6)	51 (0.4)	98 (0.5)
WSW	10 (0.9)	7 (0.3)	52 (0.3)	74 (0.4)

	<13 <i>N</i> = 1,039 <i>N</i> (Weighted %)	13–14 <i>N</i> = 2,274 <i>N</i> (Weighted %)	15–17 <i>N</i> = 11,203 <i>N</i> (Weighted %)	18+ <i>N</i> = 17,208 <i>N</i> (Weighted %)
Bisexual	22 (1.8)	27 (0.9)	78 (0.7)	100 (0.5)

P-value comparing respondents for categorical variables across age at sexual debut categories were all <0.0001.

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Table 3

Association between ACEs and age at sexual debut by sex using logistic regression.

	<13		13-14		15-17	
	OR 95% CI	Adjusted OR* 95% CI	OR 95% CI	Adjusted OR* 95% CI	OR 95% CI	Adjusted OR* 95% CI
<i>Overall</i>						
Neglect	5.64 (5.04-6.31)	5.55 (4.95-6.22)	2.68 (2.50-2.87)	2.59 (2.40-2.80)	1.53 (1.46-1.59)	1.52 (1.46-1.59)
Physical/psychological	4.61 (4.14-5.12)	4.80 (4.31-5.35)	2.36 (2.20-2.53)	2.43 (2.24-2.63)	1.50 (1.45-1.55)	1.50 (1.44-1.59)
Sexual	16.6 (14.8-18.7)	16.1 (14.2-18.3)	4.68 (4.31-5.08)	4.52 (4.12-4.95)	2.02 (1.89-2.15)	1.97 (1.84-2.10)
Parental violence	8.58 (7.60-9.68)	7.69 (6.79-8.73)	3.81 (3.55-4.08)	3.44 (3.16-3.75)	1.89 (1.79-1.99)	1.77 (1.67-1.86)
Parental incarceration and psychopathology	6.42 (5.70-7.23)	6.09 (5.39-6.88)	3.13 (2.90-3.38)	2.95 (2.71-3.22)	1.81 (1.75-1.87)	1.70 (1.65-1.76)
<i>Men</i>						
Neglect	2.74 (2.36-3.18)	2.67 (2.28-3.12)	1.86 (1.69-2.05)	1.82 (1.64-2.02)	1.26 (1.19-1.33)	1.27 (1.21-1.35)
Physical/psychological	2.45 (2.16-2.79)	2.70 (2.35-3.10)	1.68 (1.53-1.84)	1.80 (1.62-2.01)	1.23 (1.18-1.28)	1.26 (1.20-1.31)
Sexual	10.1 (8.51-12.0)	9.90 (8.09-12.1)	3.34 (2.91-3.82)	3.09 (2.68-3.55)	1.63 (1.49-1.78)	1.66 (1.51-1.83)
Parental violence	4.60 (3.96-5.33)	3.97 (3.37-4.67)	2.73 (2.47-3.02)	2.46 (2.19-2.76)	1.55 (1.44-1.66)	1.47 (1.37-1.58)
Parental incarceration and psychopathology	3.78 (3.23-4.41)	3.46 (2.93-4.09)	2.35 (2.13-2.60)	2.23 (2.01-2.49)	1.56 (1.48-1.63)	1.48 (1.41-1.56)
<i>Women</i>						
Neglect	31.8 (24.8-40.6)	31.5 (24.5-40.7)	4.26 (3.84-4.72)	4.15 (3.72-4.64)	1.76 (1.67-1.86)	1.74 (1.64-1.85)
Physical/psychological	23.1 (18.1-29.5)	23.2 (18.0-30.0)	3.64 (3.27-4.04)	3.70 (3.32-4.12)	1.74 (1.67-1.81)	1.70 (1.63-1.77)
Sexual	94.0 (73.6-119.9)	90.5 (70.6-116.0)	9.14 (8.15-10.3)	8.94 (7.85-10.2)	2.52 (2.34-2.72)	2.44 (2.26-2.65)
Parental violence	45.7 (36.0-57.9)	41.4 (32.4-53.0)	6.39 (5.72-7.14)	5.85 (5.22-6.54)	2.25 (2.13-2.39)	2.07 (1.95-2.19)
Parental incarceration and psychopathology	30.9 (24.5-39.0)	29.8 (23.5-37.7)	4.98 (4.47-5.55)	4.84 (4.29-5.45)	2.07 (1.98-2.16)	1.95 (1.87-2.04)

* Adjusted for age (continuous), race/ethnicity, income, education, insurance, and marital status.

Comparison group consists of respondents with age of sexual debut = 18.

Bolded numbers represent statistical significance at $P < 0.05$.

Note: AIC and BIC values showed that the adjusted models were a better fit for the data compared to crude models (data not shown).

Table 4

Association between ACEs and age at sexual debut by sexual orientation using logistic regression.

	14		15-17		14		15-17	
	OR 95% CI	Adjusted OR* 95% CI	OR 95% CI	Adjusted OR* 95% CI	OR 95% CI	Adjusted OR* 95% CI	OR 95% CI	Adjusted OR* 95% CI
	<i>Heterosexual</i>							
Neglect	3.18 (2.98-3.39)	3.08 (2.87-3.31)	1.52 (1.45-1.58)	1.52 (1.45-1.59)	21.0 (14.6-30.2)	28.6 (15.3-53.2)	2.47 (1.57-3.91)	1.84 (1.02-3.32)
Physical/psychological	2.75 (2.58-2.93)	2.84 (2.64-3.05)	1.50 (1.46-1.55)	1.50 (1.45-1.55)	13.3 (8.82-20.2)	7.23 (3.27-16.0)	2.00 (1.29-3.08)	1.07 (0.70-1.62)
Sexual	6.80 (6.32-7.32)	6.63 (6.09-7.21)	1.98 (1.86-2.12)	1.94 (1.81-2.08)	52.8 (36.7-76.1)	70.4 (32.9-150.6)	4.74 (2.92-7.69)	2.23 (1.24-8.90)
Parental violence	4.62 (4.32-4.95)	4.19 (3.88-4.53)	1.88 (1.79-1.98)	1.77 (1.68-1.87)	28.1 (17.5-45.1)	224.3 (89.2-564.2)	3.09 (2.13-4.47)	1.24 (0.68-2.26)
Parental incarceration and psychopathology	3.70 (3.45-3.96)	3.49 (3.23-3.76)	1.81 (1.75-1.87)	1.71 (1.65-1.77)	26.0 (17.5-38.7)	9.17 (3.72-22.6)	2.79 (1.78-4.37)	1.30 (0.65-2.62)
	<i>MSM</i>							
Neglect	24.2 (18.1-32.2)	20.9 (13.1-33.3)	1.61 (1.17-2.22)	1.40 (1.01-1.96)	11.7 (8.89-15.4)	9.16 (7.21-11.6)	3.16 (2.20-4.54)	3.06 (2.17-4.33)
Physical/psychological	12.5 (9.76-16.0)	15.9 (11.0-22.8)	0.76 (0.56-1.03)	0.60 (0.44-0.81)	8.91 (7.04-11.3)	6.89 (5.18-9.17)	2.36 (1.67-3.33)	1.72 (1.17-2.51)
Sexual	48.8 (30.3-78.6)	122.2 (64.4-231.5)	1.40 (0.85-2.32)	1.26 (0.82-1.95)	23.7 (18.2-30.8)	39.3 (28.2-54.9)	5.00 (3.65-6.86)	6.14 (4.07-9.26)
Parental violence	19.2 (14.0-26.4)	13.4 (5.51-32.6)	1.16 (0.83-1.62)	0.78 (0.63-0.96)	24.9 (18.4-33.5)	60.0 (31.2-83.2)	4.32 (3.28-5.69)	3.04 (1.92-4.81)
Parental incarceration and psychopathology	15.3 (11.3-20.9)	20.1 (12.1-33.4)	0.83 (0.59-1.17)	0.65 (0.50-0.84)	13.9 (10.7-18.0)	13.7 (10.1-18.6)	3.32 (2.37-4.63)	2.49 (1.55-4.00)
	<i>WSW</i>							

* Adjusted for age (continuous), race/ethnicity, income, education, insurance, and marital status.

Comparison outcome group consisted of respondents with age of sexual debut 18.

Bolded numbers represent statistical significance at $P < 0.05$.

Note: AIC and BIC values showed that the adjusted models were a better fit for the data compared to crude models (data not shown).

Table 5

ACEs and age at sexual debut by sex and sexual orientation using linear regression.

	β	95% CI	* Adjusted β	* Adjusted 95% CI	β	95% CI	* Adjusted β	* Adjusted 95% CI
<i>Overall</i>								
Neglect	-1.03	-1.25, -0.81	-0.86	-1.07, -0.64				
Physical/psychological	-0.88	-0.98, -0.78	-0.75	-0.86, -0.65				
Sexual	-2.21	-2.41, -2.01	-2.02	-2.22, -1.82				
Parental violence	-0.92	-1.04, -0.80	-0.65	-0.76, -0.54				
Parental incarceration and psychopathology	-1.54	-1.65, -1.42	-1.24	-1.35, -1.12				
<i>Men</i>								
Neglect	-0.76	-1.19, -0.34	-0.63	-1.07, -0.19	-1.25	-1.46, -1.03	-1.00	-1.20, -0.81
Physical/psychological	-0.87	-1.05, -0.69	-0.77	-0.96, -0.58	-0.91	-1.04, -0.79	-0.75	-0.87, -0.63
Sexual	-2.17	-2.61, -1.72	-2.05	-2.57, -1.53	-2.36	-2.58, -2.13	-2.11	-2.32, -1.89
Parental violence	-1.04	-1.28, -0.80	-0.70	-0.94, -0.46	-0.96	-1.11, -0.82	-0.68	-0.81, -0.56
Parental incarceration and psychopathology	-1.81	-1.97, -1.66	-1.41	-1.56, -1.26	-1.21	-1.41, -1.00	-0.99	-1.18, -0.80
<i>Heterosexuals</i>								
Neglect	-0.99	-1.21, -0.77	-0.81	-1.03, -0.60	-1.31	-2.02, -0.61	-0.83	-1.66, -0.001
Physical/psychological	-0.87	-0.98, -0.76	-0.74	-0.85, -0.64	-1.19	-1.79, -0.58	-1.07	-1.73, -0.41
Sexual	-2.16	-2.37, -1.95	-1.95	-2.16, -1.75	-2.38	-3.14, -1.63	-2.22	-3.03, -1.41
Parental violence	-0.91	-1.03, -0.79	-0.65	-0.76, -0.54	-1.20	-1.76, -0.65	-0.52	-1.24, 0.20
Parental incarceration and psychopathology	-1.52	-1.64, -1.40	-1.22	-1.34, -1.10	-4.04	-6.54, -2.26	-3.09	-5.15, -1.02
<i>MSM</i>								
Neglect	-4.67	-7.53, -1.81	-4.16	-6.44, -1.88	-1.18	-1.82, -0.53	-0.79	-1.49, -0.09
Physical/psychological	-1.86	-2.73, -1.00	-2.00	-2.86, -1.14	-0.88	-1.40, -0.37	-0.92	-1.47, -0.37
Sexual	-2.92	-4.28, -1.56	-2.87	-4.06, -1.69	-2.63	-3.15, -2.11	-2.57	-3.16, -1.97
Parental violence	-1.91	-4.47, 0.66	-0.81	-2.70, 1.09	-1.56	-2.27, -0.85	-0.85	-1.63, -0.07
Parental incarceration and psychopathology	-2.40	-4.13, -0.66	-2.41	-4.08, -0.75	-2.90	-4.46, -1.35	-2.07	-3.64, -0.50

* Adjusted for age (continuous), race/ethnicity, income, education, insurance, and marital status.

Bolded numbers represent statistical significance at $P < 0.05$.

Note: Adjusted R^2 values showed that fully adjusted models were a better fit for the data compared to crude models (data not shown).