**Distribution Agreement**

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Daniel Bertolino Date

# Adverse Childhood Events and Associated Health Outcomes and Risk Behaviors Among a National Sample of Men Who Have Sex with Men

By

Daniel Bertolino

Master of Public Health
Global Epidemiology

_____

Travis Sanchez, DVM MPH
Committee Chair

# Adverse Childhood Events and Associated Health Outcomes and Risk Behaviors Among a National Sample of Men Who Have Sex with Men

By

Daniel Bertolino

Bachelor of Science, Biology
Arizona State University
2008
Bachelor of Science, Psychology
Arizona State University
2008

Thesis Committee Chair: Travis Sanchez, DVM MPH

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Global Epidemiology
2018

.


## Abstract

Adverse Childhood Events and Associated Health Outcomes and Risk Behaviors Among a National Sample of Men Who Have Sex with Men
By Daniel Bertolino

Adverse Childhood Events (ACEs), including measures of abuse and household dysfunction, have been associated with negative health outcomes and risk behaviors in adulthood. ACEs have not been extensively studied among men who have sex with men (MSM). We aimed to describe the prevalence of ACE exposure and its associated HIV and sexually transmitted infection (STI) related health outcomes and risk behaviors among a nationwide sample of MSM. Data were obtained from the 2015 cycle of the American Men's Internet Survey (AMIS), an annual cross-sectional survey of MSM living in the United States, obtained via online convenience sampling. The 2015 cycle of AMIS contained questions related to 8 ACE exposure categories in the first 18 years of life. Individuals with sufficient data for all categories were assigned an ACE score. Outcome and demographic measures were also reported by AMIS study participants. Multiple log-binomial models were fit to analyze the association between ACE exposure, including any exposure and exposure to individual ACE categories, and the following health outcomes and risk behaviors: STI testing, STI diagnosis, HIV-positive status, illicit substance use, and condomless anal intercourse (CAI). Among the 3,353 individuals randomized to receive the ACE questionnaire, 2,590 completed a sufficient portion to receive an ACE score. 79.7% of these participants reported exposure to one or more ACE category, with significant differences in reporting exposure by race/ethnicity, annual income, and educational attainment. In our multivariable models controlling for demographics, we found significant differences in STI testing, illicit substance use, and engagement in CAI by any ACE exposure (adj-PR: 1.07, 95% CI): 1.00, 1.15, p-value: 0.0432; adj-PR: 1.23, 95% CI: 1.05, 1.46; adjusted-PR: 1.12, 95% CI: 1.03, 1.21, respectively). We found that exposure to divorced or separated households, substance abuse, psychological abuse and mental illness were key drivers in differences in our analyzed outcomes. Our findings indicate a high overall ACE burden among MSM nationally, with potential consequences in later life. Trauma informed care, which involves screening for trauma and recognizing its potential impacts, and ACE prevention strategies should be implemented to mitigate current and future impacts of ACE exposure.

# Adverse Childhood Events and Associated Health Outcomes and Risk Behaviors Among a National Sample of Men Who Have Sex with Men

By

Daniel Bertolino

Bachelor of Science, Biology
Arizona State University
2008
Bachelor of Science, Psychology
Arizona State University
2008

Thesis Committee Chair: Travis Sanchez, DVM MPH

A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Global Epidemiology
2018

**Acknowledgments**

I would like to thank Dr. Travis Sanchez, Maria Zlotorzynska, and the rest of the PRISM team for their guidance and support throughout this challenging endeavor. Your wisdom, advice, and encouragement were very much appreciated throughout the entire process of completing this thesis. You have helped me become a more critical researcher and better writer. I would like to thank all members of the PRISM team, and my fellow students, for their work in achieving a greater understanding of the challenges faced by individuals who are often disenfranchised and marginalized members of American society.

## Table of Contents

## Background

Adverse Childhood Events (ACEs), such as physical, psychological, or sexual abuse, or household issues such as parental incarceration, have been associated with a wide range of higher risk behaviors (e.g., increased number of sexual partners, early age at first sexual intercourse) and health consequences (e.g., sexually transmitted infection, ischemic heart disease) in later life among the general population (1, 2). Previous studies have found a high prevalence of exposure to one or more ACE, and that increased level of ACE exposure is associated with an increased prevalence of negative health outcomes (2, 3). The pervasiveness of these ACEs and their association with health outcomes in adulthood have not been extensively studied in all subpopulations.

One subpopulation in which ACEs are relatively under-studied is men who have sex with men (MSM). MSM are disproportionately affected by sexual health issues, and achieving a greater understanding of the relationship between ACEs and higher risk sexual behavior among MSM may contribute to efforts to improve their sexual health (4). Although comprehensive ACE studies entailing the complete assessment of all ACE categories among MSM are limited, there has been an extensive amount of research surrounding the impact of some childhood events on later health outcomes among this population. Previous studies among adult MSM populations have examined prevalence and correlates of forced sex prior to the age of 18 or parental physical abuse (5-7). These studies, which have often been limited by geographic scope, have found that experiencing these events in childhood is associated with increased substance use, condomless anal intercourse, prevalence of sexually transmitted infections, depression, and HIV-positive status in adulthood.

ACEs encompass more than sexual or physical abuse, and this broader concept of ACEs and their impact on the health of adult MSM is supported by evidence from other studies which show positive experiences in childhood or adolescence are protective for negative health outcomes (8-10). Individuals who experience little to no rejection based on their sexual identity have been found to be less likely to take part in higher risk behaviors, such as unprotected sexual intercourse and illicit drug use (8, 9). Additionally, having close family bonds that carryover into adulthood has also been shown to contribute to a decrease in sexual risk behavior (10). Further, these supportive exposures are oppositional to many of the individual ACE measures explored in previous research, although ACE studies did not directly assess whether abuse and neglect were related to an individual's sexual orientation.

Individuals who identify as members of the LGB community suffer more ACE exposure than their heterosexual counterparts, and this difference may partly explain adulthood disparities in health outcomes and risky behavior for LGB persons (11-14). After controlling for ACE exposures, disparities between sexual minorities and heterosexuals in some health risk factors, such as binge or heavy drinking, either disappear or decrease (13). These findings support the idea that ACEs are more common among LGB-identified individuals and that they are involved in health disparities among MSM in adult life.

The specific objectives of the study were to describe the prevalence of ACEs among a nationwide sample of US MSM and determine whether HIV- or STI-related health outcomes and risk behaviors are associated with ACE exposure. Understanding the relationship between ACE exposure and sexual health outcomes and risk behaviors among MSM may enhance our prevention efforts.

## Methods

*Survey Overview, Recruitment, and Enrollment*

The American Men's Internet Survey (AMIS) is an annual cross-sectional online survey of MSM living in the United States (15). AMIS participants are recruited via convenience sampling through web-based advertisements and email blasts to members of certain websites (subsequently referred to as "ads"). Individuals who clicked the ads are brought to the survey website, which is hosted on a secure server by SurveyGizmo (Boulder, CO, USA). Eligibility for the survey is dependent on participants being 15 years of age or older, having a male gender identity, and having had oral or anal sex with a man at least once in the past (subsequently referred to as "MSM"). The AMIS questionnaire focuses on HIV- or STI-related behaviors, including engagement in higher risk sexual activities, illicit substance use, prevention services, and testing practices. The 2015 AMIS cycle included the ACE measures and ran from September 2015 through April 2016.

*Measures*

All questions related to ACEs in the 2015 AMIS cycle pertained to experiences in the first 18 years of life (Table 1). For ACE questions in which frequency was assessed, the response options were: "never", "once or twice", "sometimes", "often", or "very often". An individual's ACE score was dependent on the 8 subsequently defined ACE categories (Table 1). Individuals who had missing information for ACE categories defined by multiple questions were excluded from analysis if they: (1) had all missing data or (2) responded as unexposed for some questions and were missing responses for others. Missing values were assigned to the latter group because a definitive exposure to a given ACE category could not be properly defined with the given information. Individuals who had missing

information for ACE categories defined by multiple questions were included in analysis if they had an affirmative response for at least one question and were missing responses for others, as they would have been categorized as exposed regardless of their responses for the missing values. In order to be assigned an ACE score, individuals needed to have sufficient information to be assigned an exposure status for all ACE categories (Supplemental Table 1). Dichotomous ACE exposure was dependent on a participant's ACE score. If the ACE score was 1 or more, the participants were categorized as exposed to any ACE (Table 1 and Supplemental Table 2). Individuals who reported no ACE category exposures were considered the reference group in our analyses. This approach is similar to previous studies analyzing ACE exposure (2, 12, 13, 16, 17).

The internal consistency of the ACE categories and overall ACE score were assessed by Cronbach's coefficient alpha (Table 1). The standardized Cronbach's coefficient alpha for ACE categories were all ≥0.7, with the exception of exposure to mental illness ($\alpha$=0.37) and exposure to substance use ($\alpha$=0.32). To be consistent with previous studies, the use of these questions in determining ACE exposure was maintained. The Cronbach's coefficient alpha obtained when assessing the overall ACE score (combination of categories) was 0.68. Although less than ideal, these measures were all kept for the overall ACE score to be consistent with previous ACE studies. Previous research into the validation of the ACE questionnaire reported a Cronbach's coefficient alpha of 0.78 when assessing the overall ACE scale (18).

The following health outcome and risk behavior measures were used in this study and were all reported for the previous 12 months: STI testing, STI diagnoses, illicit substance use, and CAI with a male partner. HIV-status was also self-reported, but this was

not restricted to the previous 12 months. STI testing was measured by asking individuals who did not indicate a positive STI result if they had received testing for individual STIs (gonorrhea, chlamydia, and syphilis) in the previous 12 months. STI diagnosis was measured by allowing study participants to indicate which individual STIs a healthcare provider informed them that they had tested positive for in the previous 12 months. Illicit substance use was measured by asking study participants about the use of injection and non-injection substances, other than those prescribed to them, in the previous 12 months. CAI with male sex partners was assessed by asking study participants if they engaged in anal sex and, if they had, whether they engaged in anal sex without using a condom in the previous 12 months. Those who had not engaged in anal sex at all in the past 12 months were also considered to have not engaged in CAI. HIV-status was assessed two ways, first by asking about the results of a participant's most recent HIV test, if individuals indicated that they had previously tested positive they were asked to provide the month and year of their first positive test result. Participants who did not report their most recent HIV test was positive were also asked if they had ever had a positive HIV test result.

Demographic information was also collected, including: age, race/ethnicity, highest level of education attained, income per year, and population density of current county of residence. County of residence was determined by the participant's reported ZIP code of residence. Population density (urban, suburban, small/medium metro, or rural) of each county was categorized based on 2010 US Census data and definitions from the National Center for Health Statistics (NCHS) (19).

*Analyses*

AMIS participants younger than 18 were excluded from analyses as their ACE exposure could be ongoing, which is not consistent with our study's hypothesis that past ACE exposure may be associated with present behavior or health outcomes. Data were first analyzed in a univariate manner to assess the distribution and prevalence of the: ACE exposures, risk behaviors and health outcomes, and demographic covariates. The prevalence of any ACE exposure by demographics characteristics were then assessed. Chi-square tests were conducted to assess for significant differences in the distribution of any ACE exposure and individual ACE categories by demographic characteristics.

Multiple log-binomial regression models were fit to analyze the association between ACE exposure and the following health outcomes and risk behaviors: STI testing, STI diagnosis, HIV-positive status, illicit substance use, and condomless anal intercourse with a male partner. ACE exposures in these models were assessed by both any ACE exposure and by individual ACE categories. The exposure status of any ACE was assessed to better understand the association between combined ACE measures and health outcomes or risk behaviors. Individual ACE categories were assessed to understand which ACE exposure categories may play a more important role in risk behaviors or health outcomes among MSM. Model findings are presented as the prevalence ratios (PR) and 95% confidence intervals (95%-CI). The multivariable models controlled for age (continuous), race/ethnicity, educational attainment, annual income, and population density. Models of STI testing, STI diagnosis, and risk behaviors also controlled for HIV-positive status. A mediation analysis was also conducted to assess possible intervening variables in the association of ACE exposure with STI testing. It was thought that the association between

ACE exposure and STI testing may be mediated by CAI. Results were considered significant at alpha equal to 0.05. All analyses were conducted in SAS 9.4 (SAS Institute; Cary, NC).

## Results

Of the 3,353 individuals who were randomized to receive the ACE questionnaire and who were aged 18 years or older, 2,590 (77.2%) completed a sufficient portion of the ACE questionnaire to receive an ACE score (Supplemental Table 1). The most common reasons for insufficient data were missing responses for psychological abuse (n= 383) or physical abuse (n= 480). Participants included in the analysis were most commonly 40 years of age or older, non-Hispanic white, college graduates, living in urban areas, and made $75,000 or more per year of income (Table 2).

Overall, 79.7% of participants reported any ACE exposure (Table 1). There was wide variation in prevalence by ACE category, ranging from 41.78% reporting some form of psychological abuse to 8.69% reporting familial incarceration. There was also variation in the prevalence of affirmative responses to questions within ACE categories. For example, when assessing exposure to violence towards a participant's mother, 14.20% reported witnessing her being pushed, grabbed, slapped, or having an object thrown at her, and 7.08% reported witnessing her being threatened with a knife or gun, or having witnessed a knife used to harm her. In the assessment of how often participants experienced ACE exposures in categories with frequencies, it was more commonly reported that exposure occurred "once or twice", or "sometimes".

The prevalence of any ACE exposure significantly differed by participant demographics (Table 2). Those who were non-white, had lower income, or had lower educational attainment were more likely to have reported any ACE exposure**.** Prevalence of any ACE exposure did not significantly differ by participant age or population density of their county of residence. The prevalence of the individual ACE categories were also

found to differ by participant demographics, with the distribution by race/ethnicity significantly different in all categories (Supplemental Tables 3-10).

The prevalence of health outcomes significantly differed by ACE exposure (Table 3a). Participants with any ACE exposure were marginally more likely to have received STI testing in the previous 12 months (adjusted-PR: 1.07, 95% CI: 1.00, 1.15, p-value: 0.0432). When CAI was incorporated into the model as possible mediating variable, the association between any ACE exposure and STI testing was no longer significant (adjusted-PR: 1.06, 95% CI: 0.99, 1.13). There were no significant associations between any ACE exposure and STI diagnosis or HIV-positive status (Tables 3b and 3c). The prevalence of risk behaviors in the previous 12 months significantly differed by any ACE exposure (Tables 4a and 4b). Participants with any ACE exposure were significantly more likely to have used illicit substances (adjusted-PR: 1.23, 95% CI: 1.05, 1.46) or engaged in CAI (adjusted-PR: 1.12, 95% CI: 1.03, 1.21).

When examining individual ACE categories, it was found that exposure to a divorced or separated household resulted in a significant difference in all health outcomes and risk behaviors except for HIV-positive status (Tables 3a, 3b, 3c, 4a and 4b). Exposure to substance use during childhood was also significantly associated with STI diagnosis, substance use, and CAI in the previous 12 months (Table 3b, 4a and 4b). Exposure to psychological abuse during childhood was significantly associated with substance use and CAI (Tables 4a and 4b). Exposure to mental illness was significantly associated with STI testing and substance use (Tables 3a and 4a). Familial incarceration was the only individual ACE category that was not significantly associated with any health risk behavior or health outcome.

## Discussion

Among our national sample of MSM, the vast majority of study participants reported exposure to at least one ACE. The most commonly reported categories of ACEs were psychological abuse and exposure to substance use. We found that ACE exposure is significantly associated with STI testing, illicit substance use, and CAI in the previous 12 months. Some individual ACE categories may be particularly important in the formation of these associations, including exposure to: separated or divorced households, exposure to substance use, psychological abuse and mental illness.

Among the general population the prevalence of exposure to one or more ACE has been reported to be 59.4%, this can be contrasted to our study's ACE prevalence among MSM of 79.7% (20). The comparatively high prevalence of ACE burden among MSM relative to their heterosexual counterparts has been previously described on a smaller geographic scale (11-14, 21). Our findings expand upon this previous research by characterizing the prevalence of ACEs among a nationwide sample of MSM, including those who do not just reside in urban areas. There are several possible explanations for the increased ACE burden among MSM, including engagement in gender nonconforming behavior. Although gender non-conforming behavior in early life does not denote adult sexual orientation, they have been found to be associated (22-24). Individuals who exhibit gender nonconforming behaviors in childhood have been found to suffer significantly more maltreatment in childhood, including: psychological abuse, physical abuse, sexual abuse, and peer-bullying (25, 26).

Our results indicate that differences exist in ACE exposure between some demographic characteristics among MSM. Previous analyses of ACE burden among this

population by demographic attributes have not been conducted, although differences in ACE exposure among the general population have been previously reported (2). We found significant differences in exposure to any ACE by race, educational attainment, and annual income. Differences in many ACE exposures, such as familial incarceration, can be explained by inequitable differences in societal treatment based on an individual's race or socioeconomic status (27). Additionally, all significant associations between ACE exposure and study outcomes are independent of these demographic differences.

STI testing was significantly associated with ACE exposure but when we controlled for CAI, this association was no longer significant. Previous studies among MSM have found that engagement in increased risk behavior, such as CAI, is associated with increased STI testing (28, 29). It is reasonable to believe that the association we observed may be driven by increased sexual risk behavior among individuals exposed to any ACE, and not a direct effect of ACE exposure on STI testing. We found no similar associations between STI or HIV diagnoses and ACE exposure. This differs from previous studies, which found ACE exposure to be a significant predictor of sexual health outcomes, such as ever having an STI diagnosis in adulthood among the general population (2, 3, 30). This difference may be due to the increased STI burden among MSM, which results in an increased likelihood of STI exposure (4). Increased exposure to STIs due to population composition may mask impacts of ACE exposure on adult STI outcomes among MSM.

CAI and substance use were significantly associated with ACE exposure, which is consistent with previous research with MSM and the general population (5-7, 31-37). Our large diverse national sample of MSM, who were from both urban and non-urban settings, bolster these previous results. Previous researchers have hypothesized that the link

between ACE exposure and increased risk behavior may be a result of coping mechanisms used by these populations to deal with the stresses associated with ACE exposure (2). Previous studies have also outlined potential biologic bases for these differences, such as traumatic toxic stress (TTS) which has been shown to lead to long term physiological and behavioral changes (38, 39).

We found that many specific ACE categories have significant impact on most health outcomes and risk behaviors we measured. Although previous studies have analyzed the association between individual ACE categories and risk behaviors in adulthood among the general population, our research provides insight on the impact of the full spectrum of ACE categories among MSM (3, 17, 32, 40). Exposure to divorced or separated households, substance abuse, psychological abuse and mental illness are key drivers in differences in adult sexual health, including engagement in risk behaviors, such as substance use and CAI. Establishing which ACE exposures result in differences in adult health outcomes may allow for improvements in resource allocation and intervention implementation in both childhood and adulthood.

*Strengths and Weaknesses*

There are several substantial limitations of the study to note. This study did include MSM from across the United States, but results are not generalizable to all MSM. AMIS is an online study mainly recruiting from social networking websites or apps, therefore MSM who do not engage in these activities had no chance of being sampled. Similarly, individuals who failed to provide sufficient information to be assigned an ACE score differed significantly from those with complete information by race/ethnicity, which indicates a potential for systematic response bias. Our assessment of some ACE exposures

may not have adequately obtained information for all possible exposures. For example, in our assessment of sexual abuse we only asked about oral and anal sex but not vaginal sex. Social desirability bias is also of concern for ACE exposures, health outcomes and risk behaviors. This type of reporting bias is of specific concern for reporting engagement in condomless anal intercourse and substance use, however this bias likely does not systematically differ for prevalent exposures, such as any type of ACE. Due to the self-reported nature of the study and extended recall periods, recall bias is also of concern in the assessment of both ACE exposure and the analyzed outcomes. The limitations outlined are not unique to our study, they are ubiquitous in the study of exposure to ACEs and their association to adult health outcomes. Despite these limitations we are confident in our results, we used standard measures and complete assessments in the collection of study data. The web-based nature of our study also allowed for a geographically diverse sample. Compared to other modes of data collection, the use of web-based surveys might have resulted in more honest responses, reducing potential social desirability bias. Importantly, overall our results were consistent with previous ACE literature, indicating that these concerns are either pervasive or not as impactful as we may think.

## Future Directions

Our findings indicate that an expansion of measurement of ACEs may be necessary to adequately detect trauma among MSM, so it can be addressed to achieve better health outcomes and risk behavior reduction. Trauma informed care (TIC), which involves screening for trauma and recognizing its potential effects, can be used in healthcare and prevention services to potentially address the long-term consequences of ACE exposure and improve the delivery of patient centered care (39, 41, 42). Possible areas of expansion

in the assessment of past trauma among MSM includes peer-related bullying, in schools and online. These peer-related forms of early trauma are known to be pervasive and to be associated with negative health outcomes (43, 44). As our results indicate that childhood experiences have an impact on adult MSM behaviors and health outcomes, the promotion of healthy and supportive environments in early life may result in a decrease in disease burden and risk behaviors in adulthood. As a result of disparities in ACE prevalence among sexual minorities and their heterosexual counterparts, targeting interventions in this manner could also bring about more equitable health statuses in later life. For those who have already experienced childhood trauma, the implementation of TIC practices in healthcare and prevention service delivery may help mitigate the impact of ACEs on adverse health outcomes and risk behaviors. Further research should be conducted to better understand the pathways by which ACE exposure could result in higher risk behaviors, such as CAI and illicit substance use.

Previous efforts focused on decreasing the disproportionate sexual health burden experienced by MSM have primarily been concentrated in adult biologic and behavioral interventions. While these efforts are important in improving current population health, our data indicate that the prevention of childhood trauma could potentially decrease higher risk behaviors and STI diagnoses among MSM in adulthood. Organizations that aim to improve child welfare, such as the United States Children's Bureau, should develop action plans around improving childhood environments for LGBTQ youth, including MSM. Strategies could be learned from organizations such as the Hetrick-Martin Institute, which has a long history of fostering supportive environments for these communities (45). Medical and mental health professionals should also implement TIC strategies to assess and provide

tailored interventions for individuals who have experienced ACE exposures. Failure to act may result in continued disparities in the burden of ACEs, risk behaviors, and HIV or STI health outcomes for MSM.

## Ethical Approval

All aspects of the American Men's Internet Survey (AMIS) involving human participants were conducted in accordance with the ethical standards of the Emory University Institutional Review Board (IRB) and in compliance with laws dictating the standards of the Emory University Human Research Protection Program (HRPP) in order to safeguard and protect the aforementioned study participants. All participants provided informed consent prior to taking the survey.

## References


1. Anda RF, Butchart A, Felitti VJ, et al. Building a framework for global surveillance of the public health implications of adverse childhood experiences. *American journal of preventive medicine* 2010;39(1):93-8.
2. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American journal of preventive medicine* 1998;14(4):245-58.
3. Hillis SD, Anda RF, Felitti VJ, et al. Adverse childhood experiences and sexually transmitted diseases in men and women: a retrospective study. *Pediatrics* 2000;106(1):E11.
4. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atltanta: U.S. Department of Health and Human Services; 2017.
5. Friedman MS, Marshal MP, Stall R, et al. Gay-related development, early abuse and adult health outcomes among gay males. *AIDS Behav* 2008;12(6):891-902.
6. Paul JP, Catania J, Pollack L, et al. 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* 2001;25(4):557-84.
7. Lloyd S, Operario D. HIV risk among men who have sex with men who have experienced childhood sexual abuse: systematic review and meta-analysis. *AIDS education and prevention : official publication of the International Society for AIDS Education* 2012;24(3):228-41.

8. Ryan C, Huebner D, Diaz RM, et al. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics* 2009;123(1):346-52.

9. Rosario M, Schrimshaw EW, Hunter J. Disclosure of sexual orientation and subsequent substance use and abuse among lesbian, gay, and bisexual youths: critical role of disclosure reactions. *Psychol Addict Behav* 2009;23(1):175-84.

10. Schneider J, Michaels S, Bouris A. Family network proportion and HIV risk among black men who have sex with men. *Journal of acquired immune deficiency syndromes (1999)* 2012;61(5):627-35.

11. Corliss HL, Cochran SD, Mays VM. Reports of parental maltreatment during childhood in a United States population-based survey of homosexual, bisexual, and heterosexual adults. *Child abuse & neglect* 2002;26(11):1165-78.

12. Andersen JP, Blosnich J. Disparities in adverse childhood experiences among sexual minority and heterosexual adults: results from a multi-state probability-based sample. *PLoS One* 2013;8(1):e54691.

13. Austin A, Herrick H, Proescholdbell S. Adverse Childhood Experiences Related to Poor Adult Health Among Lesbian, Gay, and Bisexual Individuals. *Am J Public Health* 2016;106(2):314-20.

14. McLaughlin KA, Hatzenbuehler ML, Xuan Z, et al. Disproportionate exposure to early-life adversity and sexual orientation disparities in psychiatric morbidity. *Child abuse & neglect* 2012;36(9):645-55.

15. Zlotorzynska M, Sullivan P, Sanchez T. The Annual American Men's Internet Survey of Behaviors of Men Who Have Sex With Men in the United States: 2015 Key Indicators Report. *JMIR Public Health Surveill* 2017;3(1):e13.

16. Ports KA, Ford DC, Merrick MT. Adverse childhood experiences and sexual victimization in adulthood. *Child abuse & neglect* 2016;51:313-22.

17. Hillis SD, Anda RF, Felitti VJ, et al. Adverse childhood experiences and sexual risk behaviors in women: a retrospective cohort study. *Family planning perspectives* 2001;33(5):206-11.

18. Ford DC, Merrick MT, Parks SE, et al. Examination of the Factorial Structure of Adverse Childhood Experiences and Recommendations for Three Subscale Scores. *Psychol Violence* 2014;4(4):432-44.

19. Ingram DD, Franco SJ. 2013 NCHS urban-rural classification scheme for counties. Vital Health Stat 2 2014 Apr(166):1-73 (https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf).

20. Gilbert LK, Breiding MJ, Merrick MT, et al. Childhood adversity and adult chronic disease: an update from ten states and the District of Columbia, 2010. *American journal of preventive medicine* 2015;48(3):345-9.

21. Balsam KF, Rothblum ED, Beauchaine TP. Victimization over the life span: a comparison of lesbian, gay, bisexual, and heterosexual siblings. *J Consult Clin Psychol* 2005;73(3):477-87.

22. Friedman MS, Marshal MP, Guadamuz TE, et al. A meta-analysis of disparities in childhood sexual abuse, parental physical abuse, and peer victimization among

sexual minority and sexual nonminority individuals. *Am J Public Health* 2011;101(8):1481-94.

23. Zucker KJ, Mitchell JN, Bradley SJ, et al. The Recalled Childhood Gender Identity/Gender Role Questionnaire: Psychometric Properties. *Sex Roles* 2006;54(7-8):469-83.

24. Hidalgo MA, Kuhns LM, Kwon S, et al. The impact of childhood gender expression on childhood sexual abuse and psychopathology among young men who have sex with men. *Child abuse & neglect* 2015;46:103-12.

25. Roberts AL, Rosario M, Corliss HL, et al. Childhood gender nonconformity: a risk indicator for childhood abuse and posttraumatic stress in youth. *Pediatrics* 2012;129(3):410-7.

26. Roberts AL, Rosario M, Slopen N, et al. Childhood gender nonconformity, bullying victimization, and depressive symptoms across adolescence and early adulthood: an 11-year longitudinal study. *J Am Acad Child Adolesc Psychiatry* 2013;52(2):143-52.

27. Pettit B, Western B. Mass Imprisonment and the Life Course: Race and Class Inequality in U.S. Incarceration. *American Sociological Review* 2004;69(2):151-69.

28. Lehmiller JJ. A Comparison of Sexual Health History and Practices among Monogamous and Consensually Nonmonogamous Sexual Partners. *J Sex Med* 2015;12(10):2022-8.

29. Vriend HJ, Stolte IG, Heijne JC, et al. Repeated STI and HIV testing among HIV-negative men who have sex with men attending a large STI clinic in Amsterdam: a longitudinal study. *Sex Transm Infect* 2015;91(4):294-9.

30. Wade R, Jr., Cronholm PF, Fein JA, et al. Household and community-level Adverse Childhood Experiences and adult health outcomes in a diverse urban population. *Child abuse & neglect* 2016;52:135-45.

31. Mersky JP, Topitzes J, Reynolds AJ. Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: a cohort study of an urban, minority sample in the U.S. *Child abuse & neglect* 2013;37(11):917-25.

32. Brown MJ, Masho SW, Perera RA, et al. 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. *Child abuse & neglect* 2015;46:89-102.

33. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet Public Health* 2017;2(8):e356-e66.

34. Zhu Y, Liu J, Chen Y, et al. The relation between mental health, homosexual stigma, childhood abuse, community engagement, and unprotected anal intercourse among MSM in China. *Sci Rep* 2018;8(1):3984.

35. Schilder AJ, Anema A, Pai J, et al. Association between childhood physical abuse, unprotected receptive anal intercourse and HIV infection among young men who have sex with men in Vancouver, Canada. *PLoS One* 2014;9(6):e100501.

36. Dube SR, Felitti VJ, Dong M, et al. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the adverse childhood experiences study. *Pediatrics* 2003;111(3):564-72.

37. Fang L, Chuang DM, Lee Y. Adverse childhood experiences, gender, and HIV risk behaviors: Results from a population-based sample. *Prev Med Rep* 2016;4:113-20.

38. Shonkoff JP, Garner AS, Committee on Psychosocial Aspects of C, et al. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics* 2012;129(1):e232-46.

39. Oral R, Ramirez M, Coohey C, et al. Adverse childhood experiences and trauma informed care: the future of health care. *Pediatr Res* 2016;79(1-2):227-33.

40. Dube SR, Anda RF, Whitfield CL, et al. Long-term consequences of childhood sexual abuse by gender of victim. *American journal of preventive medicine* 2005;28(5):430-8.

41. Green BL, Saunders PA, Power E, et al. Trauma-informed medical care: CME communication training for primary care providers. *Family medicine* 2015;47(1):7-14.

42. Sales JM, Swartzendruber A, Phillips AL. Trauma-Informed HIV Prevention and Treatment. *Curr HIV/AIDS Rep* 2016;13(6):374-82.

43. Earnshaw VA, Reisner SL, Juvonen J, et al. LGBTQ Bullying: Translating Research to Action in Pediatrics. *Pediatrics* 2017;140(4).

44. Eisenberg ME, McMorris BJ, Gower AL, et al. Bullying victimization and emotional distress: is there strength in numbers for vulnerable youth? *J Psychosom Res* 2016;86:13-9.

45. Hetrick-Martin Institute's Annual Report 2016. New York: Hetrick-Martin Institute, 2017: (https://hmi.org/wp-content/uploads/2016/08/HMI_FY_AnnualReportFinal_web.pdf).

**Table 1:** Prevalence and frequency of exposure to Adverse Childhood Event (ACE) categories in the first 18 years of life for the 3,353 individuals randomized to receive the ACE questionnaire by individual questions present in the 2015 cycle of the American Men's Internet Survey (AMIS)

| ACE Questions by Category | Once or Twice % (n) | Sometimes % (n) | Often % (n) | Very Often % (n) | Prevalence % (n) | Correlation Coefficient |
|---|---|---|---|---|---|---|
| **Psychological Abuse** | | | | | | 0.80 |
| *How often did a parent, stepparent, or adult living in your home…* | | | | | | |
| Swear at you, insult you, or put you down? (n= 3329) | 18.08 (602) | 24.81 (826) | 12.29 (409) | 12.47 (415) | 24.75 (824)[1] | |
| Threaten to hit you or throw something at you, but didn't do it? (n= 2881) | 17.63 (508) | 20.65 (595) | 8.16 (235) | 5.87 (169) | 34.68 (999)[2] | |
| **Overall Psychological Abuse (n= 2970)** | --- | --- | --- | --- | 41.78 (1241) | |
| **Physical Abuse** | | | | | | 0.83 |
| *How often did a parent, stepparent or adult living in your home:* | | | | | | |
| Push, grab, slap, or throw something at you? (n= 2897) | 22.13 (641) | 21.44 (621) | 6.80 (197) | 4.66 (135) | 11.46 (329)[1] | |
| Hit you so hard that you had marks or were injured? (n= 2876) | 14.67 (422) | 10.33 (297) | 3.34 (96) | 2.85 (82) | 16.52 (475)[2] | |
| **Overall Physical Abuse (n= 2873)** | --- | --- | --- | --- | 18.76 (539) | |
| **Sexual Abuse** | | | | | | 0.89 |
| *Did an adult, relative, family friend, or stranger ever:* | | | | | | |
| Touch or fondle your body in a sexual way? (n= 3323) | --- | --- | --- | --- | 30.24 (1005) | |
| Have you touch their body in a sexual way? (n= 3094) | --- | --- | --- | --- | 26.12 (808) | |
| Attempt to have any type of sexual intercourse (oral or anal) with you? (n= 3084) | --- | --- | --- | --- | 24.77 (764) | |
| Actually have any type of sexual intercourse (oral or anal) with you? (n= 3088) | --- | --- | --- | --- | 21.76 (672) | |
| **Overall Sexual Abuse (n= 3137)** | --- | --- | --- | --- | 34.20 (1073) | |

[1]Responses of "often" or "very often" were considered as exposure

[2]Responses of "sometimes," "often," or "very often" were considered as exposure

**Table 1 (continued):** Prevalence and frequency of exposure to Adverse Childhood Event (ACE) categories in the first 18 years of life for the 3,353 individuals randomized to receive the ACE questionnaire by individual questions present in the 2015 cycle of the American Men's Internet Survey (AMIS)

| ACE Questions by Category | Once or Twice % (n) | Sometimes % (n) | Often % (n) | Very Often % (n) | Prevalence % (n) | Correlation Coefficient |
|---|---|---|---|---|---|---|
| **Violence Towards Mother** | | | | | | 0.89 |
| *How often did your father (or stepfather) or mother's boyfriend do any of these things to you mother (or stepmother):* | | | | | | |
| Push, grab, slap or throw something at her? (n= 3344) | 11.21 (375) | 8.58 (287) | 3.62 (121) | 2.00 (67) | 14.20 (475)[1] | |
| Kick, bite, hit her with a fist, or hit her something hard? (n= 3112) | 5.78 (180) | 5.14 (160) | 1.86 (58) | 1.45 (45) | 8.45 (263)[1] | |
| Repeatedly hit her over at least a few minutes? (n= 3095) | 3.72 (115) | 3.20 (99) | 1.20 (37) | 1.26 (39) | 9.37 (290)[2] | |
| Threaten her with a knife or gun, or use a knife to hurt her? (n= 3093) | 4.59 (142) | 1.36 (42) | 0.71 (22) | 0.42 (13) | 7.08 (219)[2] | |
| **Overall Violence Towards Mother (n= 3123)** | --- | --- | --- | --- | 17.58 (549) | |
| **Exposure to Mental Illness** | | | | | | 0.37 |
| *While you were growing up, in your first 18 years of life…* | | | | | | |
| Was a household member depressed or mentally ill? (n= 3145) | --- | --- | --- | --- | 33.42 (1051) | |
| Did a household member attempt suicide? (n= 3136) | --- | --- | --- | --- | 10.75 (337) | |
| **Overall Exposure to Mental Illness (n= 3135)** | --- | --- | --- | --- | 35.66 (1118) | |
| **Exposure to Substance Abuse** | | | | | | 0.32 |
| *While you were growing up, in your first 18 years of life…* | | | | | | |
| Did you live with anyone who was a problem drinker or alcoholic? (n= 3327) | --- | --- | --- | --- | 29.97 (997) | |
| Did you live with anyone who used street drugs? (n= 3150) | --- | --- | --- | --- | 13.78 (434) | |
| **Overall Exposure to Mental Illness (n= 3194)** | --- | --- | --- | --- | 35.75 (1142) | |

[1]Responses of "sometimes," "often," or "very often" were considered as exposure
[2]Any response except "never" considered as exposure

**Table 1 (continued):** Prevalence and frequency of exposure to Adverse Childhood Event (ACE) categories in the first 18 years of life for the 3,353 individuals randomized to receive the ACE questionnaire by individual questions present in the 2015 cycle of the American Men's Internet Survey (AMIS)

| ACE Questions by Category | Once or Twice % (n) | Sometimes % (n) | Often % (n) | Very Often % (n) | Prevalence % (n) | Correlation Coefficient |
|---|---|---|---|---|---|---|
| **Divorced or Separated Household** | | | | | | n/a |
| *While you were growing up, in your first 18 years of life…* | | | | | | |
| Were your parents ever separated or divorced? (n= 3327) | --- | --- | --- | --- | 36.94 (1229) | |
| **Overall Exposure to Divorce of Separation (n= 3327)** | --- | --- | --- | --- | 36.94 (1229) | |
| **Familial Incarceration** | | | | | | n/a |
| *While you were growing up, in your first 18 years of life…* | | | | | | |
| Did a household member go to prison? (n= 3143) | --- | --- | --- | --- | 8.69 (273) | |
| **Overall Exposure to Familial Incarceration (n= 3143)** | --- | --- | --- | --- | 8.69 (273) | |
| **Overall Exposure to Any ACE Category (n= 2590)** | --- | --- | --- | --- | 79.65 (2063) | 0.68 |

**Table 2:** Distribution of demographic characteristics by dichotomous Adverse Childhood Event (ACE) exposure in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | N | No ACE Exposure (N= 527) % (*n*) | ACE Exposure ≥ 1 (N= 2,063) % (*n*) | *p*[1] |
|---|---|---|---|---|
| **Age at Survey** | | | | 0.5388 |
| 18-24 | 889 | 20.44 (148) | 79.56 (576) | |
| 25-29 | 529 | 22.91 (93) | 77.09 (313) | |
| 30-39 | 467 | 19.48 (68) | 80.52 (281) | |
| ≥40 | 1468 | 19.62 (218) | 80.38 (893) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 13.04 (21) | 86.96 (140) | |
| Hispanic/Latino | 436 | 12.05 (37) | 87.95 (270) | |
| White | 2408 | 23.07 (440) | 76.93 (1467) | |
| Other/Multiple | 229 | 13.14 (23) | 86.86 (152) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 11.15 (33) | 88.85 (263) | |
| Some College of Technical Degree | 1159 | 17.18 (152) | 82.82 (733) | |
| College Degree or Postgraduate Education | 1778 | 24.53 (340) | 75.47 (1046) | |
| **Income** | | | | 0.0358 |
| $0-19,999 | 440 | 16.19 (57) | 83.81 (295) | |
| $20,000-39,999 | 569 | 17.70 (80) | 82.30 (372) | |
| $40,000-74,999 | 779 | 20.19 (128) | 79.81 (506) | |
| ≥$75,000 | 995 | 22.80 (179) | 77.20 (606) | |
| **NCHS Rural/Urban Classification** | | | | 0.1201 |
| Urban | 1376 | 20.47 (217) | 79.53 (843) | |
| Suburban | 658 | 22.49 (114) | 77.51 (393) | |
| Small/medium metropolitan | 990 | 17.74 (135) | 82.26 (626) | |
| Rural | 326 | 23.08 (60) | 76.92 (200) | |

[1]Chi-square test for difference in demographic characteristics between ACE exposure groups

**Table 3a:** Analysis of health outcomes by any Adverse Childhood Event (ACE) exposure and exposure to individual ACE categories in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| ACE Category | | (N) | STI Testing | | |
|---|---|---|---|---|---|
| | | | % (n) | Unadjusted PR (95% CI) | Adjusted PR[1] (95% CI) |
| **Any ACE Exposure** | No | 527 | 37.8 (199) | Referent | Referent |
| | Yes | 2063 | 44.0 (907) | 1.16 (1.03, 1.31) | 1.07 (1.00, 1.15)[2] |
| **Psychological Abuse** | No | 1729 | 41.5 (718) | Referent | Referent |
| | Yes | 1241 | 43.4 (538) | 1.04 (0.96, 1.14) | 1.01 (0.96, 1.06) |
| **Physical Abuse** | No | 2334 | 42.2 (985) | Referent | Referent |
| | Yes | 539 | 44.2 (238) | 1.05 (0.94, 1.16) | 1.00 (0.94, 1.07) |
| **Sexual Abuse** | No | 2064 | 43.2 (891) | Referent | Referent |
| | Yes | 1073 | 41.4 (444) | 0.96 (0.88, 1.05) | 0.99 (0.94, 1.04) |
| **Violence Towards Mother** | No | 2574 | 42.0 (1082) | Referent | Referent |
| | Yes | 549 | 45.5 (250) | 1.08 (0.98, 1.20) | 1.00 (0.94, 1.07) |
| **Exposure to Mental Illness** | No | 2017 | 39.8 (803) | Referent | Referent |
| | Yes | 1118 | 46.5 (520) | 1.17 (1.08, 1.27) | 1.05 (1.01, 1.10) |
| **Exposure to Substance Abuse** | No | 2052 | 41.1 (843) | Referent | Referent |
| | Yes | 1142 | 44.8 (511) | 1.09 (1.00, 1.18)[2] | 1.04 (0.99, 1.08) |
| **Divorced or Separated Household** | No | 2098 | 39.7 (832) | Referent | Referent |
| | Yes | 1229 | 47.5 (584) | 1.20 (1.11, 1.30) | 1.06 (1.01, 1.11) |
| **Familial Incarceration** | No | 2870 | 41.5 (1192) | Referent | Referent |
| | Yes | 273 | 50.2 (137) | 1.21 (1.07, 1.37) | 1.03 (0.95, 1.11) |

[1]Adjusted for age, race/ethnicity, education, income, HIV-positive status, and current rural/urban population density

[2]Marignally significant, p-value < 0.05

**Table 3b:** Analysis of health outcomes by any Adverse Childhood Event (ACE) exposure and exposure to individual ACE categories in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| ACE Category | | (N) | Any STI Diagnosis[1] | | |
|---|---|---|---|---|---|
| | | | % (n) | Unadjusted PR (95% CI) | Adjusted PR[2] (95% CI) |
| **Any ACE Exposure** | No | 527 | 8.4 (44) | Referent | Referent |
| | Yes | 2063 | 10.9 (225) | 1.31 (0.96, 1.78) | 1.42 (0.99, 2.04) |
| **Psychological Abuse** | No | 1729 | 10.0 (172) | Referent | Referent |
| | Yes | 1241 | 11.9 (147) | 1.19 (0.97, 1.47) | 1.10 (0.87, 1.39) |
| **Physical Abuse** | No | 2334 | 10.5 (245) | Referent | Referent |
| | Yes | 539 | 10.6 (57) | 1.01 (0.77, 1.32) | 0.96 (0.70, 1.31) |
| **Sexual Abuse** | No | 2064 | 10.6 (218) | Referent | Referent |
| | Yes | 1073 | 11.7 (125) | 1.10 (0.90, 1.36) | 1.04 (0.82, 1.33) |
| **Violence Towards Mother** | No | 2574 | 10.6 (273) | Referent | Referent |
| | Yes | 549 | 13.3 (73) | 1.25 (0.99, 1.60) | 1.06 (0.79, 1.42) |
| **Exposure to Mental Illness** | No | 2017 | 9.8 (198) | Referent | Referent |
| | Yes | 1118 | 12.0 (134) | 1.22 (0.99, 1.50) | 1.21 (0.96, 1.53) |
| **Exposure to Substance Abuse** | No | 2052 | 10.1 (207) | Referent | Referent |
| | Yes | 1142 | 12.3 (140) | 1.22 (0.99, 1.49) | 1.26 (1.01, 1.58) |
| **Divorced or Separated Household** | No | 2098 | 9.1 (191) | Referent | Referent |
| | Yes | 1229 | 14.2 (174) | 1.56 (1.28, 1.87) | 1.29 (1.03, 1.61) |
| **Familial Incarceration** | No | 2870 | 10.1 (290) | Referent | Referent |
| | Yes | 273 | 15.0 (41) | 1.49 (1.10, 2.01) | 0.99 (0.66, 1.47) |

[1]STI diagnosis limited to positive test for chlamydia, gonorrhea, or syphilis in the previous 12 months
[2]Adjusted for age, race/ethnicity, education, income, HIV-positive status, and current rural/urban population density

**Table 3c:** Analysis of health outcomes by any Adverse Childhood Event (ACE) exposure and exposure to individual ACE categories in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| ACE Category | | (N) | HIV-Positive Status | | |
|---|---|---|---|---|---|
| | | | % (n) | Unadjusted PR (95% CI) | Adjusted PR[1] (95% CI) |
| **Any ACE Exposure** | No | 527 | 7.8 (41) | Referent | Referent |
| | Yes | 2063 | 9.4 (193) | 1.20 (0.87, 1.66) | 1.16 (0.81, 1.66) |
| **Psychological Abuse** | No | 1729 | 8.8 (152) | Referent | Referent |
| | Yes | 1241 | 9.8 (121) | 1.11 (0.88, 1.39) | 0.99 (0.77, 1.26) |
| **Physical Abuse** | No | 2334 | 8.5 (199) | Referent | Referent |
| | Yes | 539 | 11.9 (64) | 1.39 (1.07, 1.82) | 1.14 (0.85, 1.52) |
| **Sexual Abuse** | No | 2064 | 8.1 (167) | Referent | Referent |
| | Yes | 1073 | 12.8 (137) | 1.58 (1.27, 1.95) | 1.24 (0.97, 1.58) |
| **Violence Towards Mother** | No | 2574 | 8.6 (220) | Referent | Referent |
| | Yes | 549 | 13.5 (74) | 1.58 (1.23, 2.02) | 1.32 (1.00, 1.75) |
| **Exposure to Mental Illness** | No | 2017 | 9.6 (194) | Referent | Referent |
| | Yes | 1118 | 8.9 (100) | 0.93 (0.74, 1.17) | 1.05 (0.82, 1.35) |
| **Exposure to Substance Abuse** | No | 2052 | 9.2 (188) | Referent | Referent |
| | Yes | 1142 | 10.1 (115) | 1.10 (0.88, 1.37) | 0.92 (0.71, 1.17) |
| **Divorced or Separated Household** | No | 2098 | 9.0 (189) | Referent | Referent |
| | Yes | 1229 | 10.4 (128) | 1.16 (0.93, 1.43) | 1.22 (0.95, 1.56) |
| **Familial Incarceration** | No | 2870 | 9.1 (260) | Referent | Referent |
| | Yes | 273 | 12.1 (33) | 1.33 (0.95, 1.88) | 1.23 (0.83, 1.83) |

[1]Adjusted for age, race/ethnicity, education, income and current rural/urban population density

**Table 4a:** Analysis of health risk behaviors in the previous 12 months by any Adverse Childhood Event (ACE) exposure and exposure to individual ACE categories in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| ACE Category | | (N) | Substance Use | | |
|---|---|---|---|---|---|
| | | | % (n) | Unadjusted PR (95% CI) | Adjusted PR[1] (95% CI) |
| **Any ACE Exposure** | No | 527 | 26.4 (139) | Referent | Referent |
| | Yes | 2063 | 33.6 (694) | 1.28 (1.09, 1.49) | 1.23 (1.05, 1.46) |
| **Psychological Abuse** | No | 1729 | 29.8 (516) | Referent | Referent |
| | Yes | 1241 | 34.7 (431) | 1.16 (1.05, 1.29) | 1.14 (1.02, 1.28) |
| **Physical Abuse** | No | 2334 | 31.7 (739) | Referent | Referent |
| | Yes | 539 | 34.1 (184) | 1.08 (0.95, 1.23) | 1.17 (1.02, 1.35) |
| **Sexual Abuse** | No | 2064 | 31.5 (650) | Referent | Referent |
| | Yes | 1073 | 32.2 (345) | 1.02 (0.92, 1.14) | 1.04 (0.92, 1.17) |
| **Violence Towards Mother** | No | 2574 | 31.2 (804) | Referent | Referent |
| | Yes | 549 | 33.3 (183) | 1.07 (0.94, 1.22) | 1.11 (0.96, 1.28) |
| **Exposure to Mental Illness** | No | 2017 | 27.8 (561) | Referent | Referent |
| | Yes | 1118 | 37.6 (420) | 1.35 (1.22, 1.50) | 1.24 (1.11, 1.39) |
| **Exposure to Substance Abuse** | No | 2052 | 28.4 (582) | Referent | Referent |
| | Yes | 1142 | 36.3 (415) | 1.28 (1.16, 1.42) | 1.27 (1.14, 1.42) |
| **Divorced or Separated Household** | No | 2098 | 28.2 (591) | Referent | Referent |
| | Yes | 1229 | 36.5 (448) | 1.29 (1.17, 1.43) | 1.17 (1.05, 1.31) |
| **Familial Incarceration** | No | 2870 | 30.9 (886) | Referent | Referent |
| | Yes | 273 | 35.2 (96) | 1.14 (0.96, 1.35) | 1.01 (0.84, 1.23) |

[1]Adjusted for age, race/ethnicity, education, income, HIV-positive status, and current rural/urban population density

[2]Marignally significant, p-value < 0.05

**Table 4b:** Analysis of health risk behaviors in the previous 12 months by any Adverse Childhood Event (ACE) exposure and exposure to individual ACE categories in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| ACE Category | | (N) | Condomless Anal Intercourse | | |
|---|---|---|---|---|---|
| | | | % (n) | Unadjusted PR (95% CI) | Adjusted PR[1] (95% CI) |
| **Any ACE Exposure** | No | 527 | 60.7 (320) | Referent | Referent |
| | Yes | 2063 | 66.3 (1368) | 1.09 (1.01, 1.18) | 1.12 (1.03, 1.21) |
| **Psychological Abuse** | No | 1729 | 63.1 (1091) | Referent | Referent |
| | Yes | 1241 | 67.5 (837) | 1.07 (1.01, 1.13) | 1.06 (1.00, 1.12)[2] |
| **Physical Abuse** | No | 2334 | 64.6 (1507) | Referent | Referent |
| | Yes | 539 | 64.8 (349) | 1.00 (0.94, 1.07) | 1.01 (0.94, 1.08) |
| **Sexual Abuse** | No | 2064 | 63.7 (1315) | Referent | Referent |
| | Yes | 1073 | 67.0 (719) | 1.05 (1.00, 1.11) | 1.09 (1.03, 1.16) |
| **Violence Towards Mother** | No | 2574 | 64.0 (1647) | Referent | Referent |
| | Yes | 549 | 69.4 (381) | 1.08 (1.02, 1.15) | 1.09 (1.02, 1.17) |
| **Exposure to Mental Illness** | No | 2017 | 63.7 (1285) | Referent | Referent |
| | Yes | 1118 | 67.2 (751) | 1.05 (1.00, 1.11) | 1.05 (0.99, 1.11) |
| **Exposure to Substance Abuse** | No | 2052 | 63.8 (1310) | Referent | Referent |
| | Yes | 1142 | 67.5 (771) | 1.06 (1.00, 1.11) | 1.07 (1.01, 1.13) |
| **Divorced or Separated Household** | No | 2098 | 63.2 (1326) | Referent | Referent |
| | Yes | 1229 | 68.5 (842) | 1.08 (1.03, 1.14) | 1.07 (1.01, 1.14) |
| **Familial Incarceration** | No | 2870 | 64.4 (1848) | Referent | Referent |
| | Yes | 273 | 70.3 (192) | 1.09 (1.01, 1.19) | 1.07 (0.98, 1.18) |

[1]Adjusted for age, race/ethnicity, education, income, HIV-positive status, and current rural/urban population density

[2]Marignally significant, p-value < 0.05

**Supplemental Table 1:** Distribution of demographic characteristics by dichotomous ability to be assigned an ACE score based on responses Adverse Childhood Event (ACE) questions for participants randomized to receive ACE questionnaire in the 2015 American Men's Internet Survey (AMIS)

| | | ACE Score Not Assigned (N= 763) | ACE Score Assigned (N= 2,590) | |
|---|---|---|---|---|
| | **N** | **% (*n*)** | **% (*n*)** | ***p*[1]** |
| **Age at Survey** | | | | 0.0053 |
| 18-24 | 889 | 18.56 (165) | 81.44 (724) | |
| 25-29 | 529 | 23.25 (123) | 76.75 (406) | |
| 30-39 | 467 | 25.27 (118) | 74.73 (349) | |
| ≥40 | 1468 | 24.32 (357) | 75.68 (1111) | |
| **Race/ethnicity** | | | | 0.0002 |
| Black | 221 | 27.15 (60) | 72.85 (161) | |
| Hispanic/Latino | 436 | 29.59 (129) | 70.41 (307) | |
| White | 2408 | 20.81 (501) | 79.19 (1907) | |
| Other/Multiple | 229 | 23.58 (54) | 76.42 (175) | |
| **Education** | | | | 0.5241 |
| ≤High School Diploma or Equivalent | 377 | 21.49 (81) | 78.51 (296) | |
| Some College of Technical Degree | 1159 | 23.64 (274) | 76.36 (885) | |
| College Degree or Postgraduate Education | 1778 | 22.05 (392) | 77.95 (1386) | |
| **Income** | | | | 0.6205 |
| $0-19,999 | 440 | 20.00 (88) | 80.00 (352) | |
| $20,000-39,999 | 569 | 20.56 (117) | 79.44 (452) | |
| $40,000-74,999 | 779 | 18.61 (145) | 634 (81.39) | |
| ≥$75,000 | 995 | 21.11 (210) | 78.89 (785) | |
| **NCHS Rural/Urban Classification** | | | | 0.7299 |
| Urban | 1376 | 22.97 (316) | 77.03 (1060) | |
| Suburban | 658 | 22.95 (151) | 77.05 (507) | |
| Small/medium metropolitan | 990 | 23.13 (229) | 76.87 (761) | |
| Rural | 326 | 20.25 (66) | 79.75 (260) | |

[1]Chi-square test for difference in demographic characteristics between individuals who were assigned an ACE score and those who were not

**Supplemental Table 2:** Distribution of demographic characteristics by Adverse Childhood Event (ACE) score obtained by exposure in the first 18 years of life for participants randomized to receive ACE questions in the 2015 cycle of the American Men's Internet Survey (AMIS) who completed a sufficient portion of the questionnaire to receive an ACE score

| | | ACE Score (%) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **n** | **0** | **1** | **2** | **3** | **4** | **5** | **≥6** | ***p*[1]** |
| **Age at Survey** | | | | | | | | | 0.9094 |
| 18-24 | 724 | 20.44 | 23.48 | 17.96 | 13.12 | 9.25 | 8.01 | 7.73 | |
| 25-29 | 406 | 22.91 | 21.43 | 16.50 | 15.02 | 9.36 | 7.39 | 7.39 | |
| 30-39 | 349 | 19.48 | 26.07 | 15.19 | 16.05 | 9.46 | 8.31 | 5.44 | |
| ≥40 | 1111 | 19.62 | 24.93 | 18.63 | 13.59 | 9.36 | 7.29 | 6.57 | |
| **Race/ethnicity** | | | | | | | | | <.0001 |
| Black | 161 | 13.04 | 18.01 | 19.25 | 19.88 | 8.70 | 9.94 | 11.18 | |
| Hispanic/Latino | 307 | 12.05 | 20.20 | 17.59 | 18.57 | 12.38 | 6.84 | 12.38 | |
| White | 1907 | 23.07 | 25.59 | 17.62 | 12.48 | 8.50 | 7.45 | 5.30 | |
| Other/Multiple | 175 | 13.14 | 21.71 | 18.86 | 18.29 | 10.29 | 9.14 | 8.57 | |
| **Education** | | | | | | | | | <.0001 |
| ≤HS Diploma | 296 | 11.15 | 19.93 | 17.23 | 14.19 | 12.50 | 12.50 | 12.50 | |
| Some College or Tech Degree | 885 | 17.18 | 24.29 | 16.27 | 14.92 | 9.94 | 8.93 | 8.47 | |
| College Degree or Postgraduate Education | 1386 | 24.53 | 24.96 | 18.61 | 13.35 | 8.44 | 5.63 | 4.47 | |
| **Income** | | | | | | | | | 0.0002 |
| $0-19,999 | 352 | 16.19 | 23.30 | 17.61 | 13.35 | 11.08 | 8.24 | 10.23 | |
| $20,000-39,999 | 452 | 17.70 | 19.47 | 18.14 | 15.71 | 10.40 | 10.40 | 8.19 | |
| $40,000-74,999 | 634 | 20.19 | 23.34 | 19.24 | 13.72 | 8.52 | 7.57 | 7.41 | |
| ≥$75,000 | 785 | 22.80 | 28.15 | 16.82 | 14.27 | 8.15 | 5.73 | 4.08 | |
| **Population Density[2]** | | | | | | | | | 0.0765 |
| Urban | 1060 | 20.47 | 24.43 | 17.55 | 14.34 | 8.11 | 8.11 | 6.98 | |
| Suburban | 507 | 22.49 | 23.47 | 17.95 | 12.23 | 10.85 | 6.31 | 6.71 | |
| Small/medium metro | 761 | 17.74 | 26.15 | 17.87 | 14.98 | 10.64 | 6.83 | 5.78 | |
| Rural | 260 | 23.08 | 18.46 | 16.54 | 13.46 | 7.69 | 10.77 | 10.00 | |
| **All Participants** | 2590 | 20.35 | 24.13 | 17.64 | 14.02 | 9.34 | 7.64 | 6.87 | |

[1]Chi-square test for difference in demographic characteristics by individuals assigned ACE score
[2]Based on NCHS rural/urban classification

**Supplemental Table 3:** Distribution of demographic characteristics by dichotomous psychological abuse exposure in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Psychological Abuse | | |
|---|---|---|---|---|
| | | Unexposed (N= 1729) | Exposed (N= 1241) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | 0.7450 |
| 18-24 | 889 | 56.25 (473) | 41.75 (339) | |
| 25-29 | 529 | 60.26 (276) | 39.74 (182) | |
| 30-39 | 467 | 58.64 (241) | 41.36 (170) | |
| ≥40 | 1468 | 57.33 (739) | 42.67 (550) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 48.37 (89) | 51.63 (95) | |
| Hispanic/Latino | 436 | 51.77 (190) | 48.23 (1177) | |
| White | 2408 | 61.13 (1346) | 38.87 (842) | |
| Other/Multiple | 229 | 49.75 (101) | 50.25 (102) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 50.15 (169) | 49.85 (168) | |
| Some College of Technical Degree | 1159 | 54.00 (554) | 46.00 (472) | |
| College Degree or Postgraduate Education | 1778 | 63.07 (994) | 36.93 (582) | |
| **Income** | | | | 0.0007 |
| $0-19,999 | 440 | 55.20 (223) | 44.80 (181) | |
| $20,000-39,999 | 569 | 52.99 (275) | 47.01 (244) | |
| $40,000-74,999 | 779 | 58.20 (408) | 41.80 (293) | |
| ≥$75,000 | 995 | 63.34 (565) | 36.66 (327) | |
| **Rural/Urban Classification** | | | | 0.1297 |
| Urban | 1376 | 59.77 (737) | 40.23 (490) | |
| Suburban | 658 | 59.93 (347) | 40.07 (232) | |
| Small/medium metropolitan | 990 | 55.00 (484) | 45.00 (396) | |
| Rural | 326 | 58.08 (169) | 41.92 (122) | |

[1]Chi-square test for difference in demographic characteristics between psychological abuse exposure groups

**Supplemental Table 4:** Distribution of demographic characteristics by dichotomous physical abuse exposure in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Physical Abuse | | |
|---|---|---|---|---|
| | | Unexposed (N= 2334) | Exposed (N= 539) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | 0.0002 |
| 18-24 | 889 | 85.29 (684) | 14.71 (118) | |
| 25-29 | 529 | 83.56 (371) | 16.44 (73) | |
| 30-39 | 467 | 80.81 (320) | 19.19 (76) | |
| ≥40 | 1468 | 77.90 (959) | 22.10 (272) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 72.07 (129) | 27.93 (50) | |
| Hispanic/Latino | 436 | 75.84 (270) | 24.16 (86) | |
| White | 2408 | 83.96 (1759) | 16.04 (336) | |
| Other/Multiple | 229 | 70.26 (137) | 29.74 (58) | |
| **Education** | | | | 0.0023 |
| ≤High School Diploma or Equivalent | 377 | 75.23 (246) | 24.77 (81) | |
| Some College of Technical Degree | 1159 | 80.35 (789) | 19.65 (193) | |
| College Degree or Postgraduate Education | 1778 | 83.19 (1277) | 16.81 (258) | |
| **Income** | | | | 0.3883 |
| $0-19,999 | 440 | 81.66 (325) | 18.34 (73) | |
| $20,000-39,999 | 569 | 79.48 (395) | 20.52 (102) | |
| $40,000-74,999 | 779 | 79.88 (548) | 20.12 (138) | |
| ≥$75,000 | 995 | 82.68 (721) | 17.32 (151) | |
| **NCHS Rural/Urban Classification** | | | | 0.9946 |
| Urban | 1376 | 81.25 (962) | 18.75 (222) | |
| Suburban | 658 | 81.32 (457) | 18.68 (105) | |
| Small/medium metropolitan | 990 | 81.43 (684) | 18.57 (156) | |
| Rural | 326 | 80.70 (230) | 19.30 (55) | |

[1]Chi-square test for difference in demographic characteristics between physical abuse exposure groups

**Supplemental Table 5:** Distribution of demographic characteristics by dichotomous sexual abuse exposure in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Sexual Abuse | | |
|---|---|---|---|---|
| | | Unexposed (N= 2064) | Exposed (N= 1073) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | <.0001 |
| 18-24 | 889 | 72.61 (615) | 27.39 (232) | |
| 25-29 | 529 | 73.75 (368) | 26.25 (131) | |
| 30-39 | 467 | 67.37 (289) | 32.63 (140) | |
| ≥40 | 1468 | 58.15 (792) | 41.85 (570) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 60.19 (124) | 39.81 (82) | |
| Hispanic/Latino | 436 | 56.37 (230) | 43.63 (178) | |
| White | 2408 | 68.84 (1555) | 31.16 (704) | |
| Other/Multiple | 229 | 60.66 (128) | 39.34 (83) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 56.20 (204) | 43.80 (159) | |
| Some College of Technical Degree | 1159 | 65.78 (719) | 34.22 (374) | |
| College Degree or Postgraduate Education | 1778 | 68.37 (1124) | 31.63 (520) | |
| **Income** | | | | 0.1057 |
| $0-19,999 | 440 | 65.73 (282) | 34.27 (147) | |
| $20,000-39,999 | 569 | 61.94 (332) | 38.06 (204) | |
| $40,000-74,999 | 779 | 64.04 (479) | 35.96 (269) | |
| ≥$75,000 | 995 | 67.97 (628) | 32.03 (296) | |
| **NCHS Rural/Urban Classification** | | | | 0.4975 |
| Urban | 1376 | 65.01 (823) | 34.99 (443) | |
| Suburban | 658 | 67.37 (417) | 32.63 (202) | |
| Small/medium metropolitan | 990 | 66.63 (625) | 33.37 (313) | |
| Rural | 326 | 63.02 (196) | 36.98 (115) | |

[1]Chi-square test for difference in demographic characteristics between sexual abuse exposure groups

**Supplemental Table 6:** Distribution of demographic characteristics by dichotomous exposure to violence towards an individual's mother in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Violence Towards Mother | | |
|---|---|---|---|---|
| | | Unexposed (N= 2574) | Exposed (N= 549) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | 0.0275 |
| 18-24 | 889 | 85.26 (717) | 14.74 (124) | |
| 25-29 | 529 | 83.87 (416) | 16.13 (80) | |
| 30-39 | 467 | 80.97 (349) | 19.03 (82) | |
| ≥40 | 1468 | 80.59 (1092) | 19.41 (263) | |
| **Race/ethnicity** | | | | 0.0001 |
| Black | 221 | 75.86 (154) | 24.14 (49) | |
| Hispanic/Latino | 436 | 77.44 (302) | 22.56 (88) | |
| White | 2408 | 84.37 (1906) | 15.63 (353) | |
| Other/Multiple | 229 | 78.80 (171) | 21.20 (46) | |
| **Education** | | | | 0.0002 |
| ≤High School Diploma or Equivalent | 377 | 77.59 (277) | 22.41 (80) | |
| Some College of Technical Degree | 1159 | 80.17 (857) | 19.83 (212) | |
| College Degree or Postgraduate Education | 1778 | 85.03 (1414) | 14.97 (249) | |
| **Income** | | | | 0.2805 |
| $0-19,999 | 440 | 81.82 (342) | 18.18 (78) | |
| $20,000-39,999 | 569 | 80.83 (430) | 19.17 (102) | |
| $40,000-74,999 | 779 | 82.97 (614) | 17.03 (126) | |
| ≥$75,000 | 995 | 84.58 (790) | 15.42 (144) | |
| **NCHS Rural/Urban Classification** | | | | 0.8596 |
| Urban | 1376 | 82.68 (1055) | 17.38 (222) | |
| Suburban | 658 | 83.20 (510) | 16.80 (103) | |
| Small/medium metropolitan | 990 | 82.02 (757) | 17.98 (166) | |
| Rural | 326 | 81.11 (249) | 18.89 (58) | |

[1]Chi-square test for difference in demographic characteristics between violence towards mother exposure groups

**Supplemental Table 7:** Distribution of demographic characteristics by dichotomous exposure to mental illness in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Exposure to Mental Illness | | |
|---|---|---|---|---|
| | | Unexposed (N= 2017) | Exposed (N= 1118) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | 0.0003 |
| 18-24 | 889 | 59.76 (505) | 40.24 (340) | |
| 25-29 | 529 | 60.56 (301) | 39.44 (196) | |
| 30-39 | 467 | 68.08 (290) | 31.92 (136) | |
| ≥40 | 1468 | 67.37 (921) | 32.63 (446) | |
| **Race/ethnicity** | | | | 0.0043 |
| Black | 221 | 74.27 (153) | 25.73 (53) | |
| Hispanic/Latino | 436 | 68.26 (271) | 31.74 (126) | |
| White | 2408 | 63.06 (1429) | 36.94 (837) | |
| Other/Multiple | 229 | 63.51 (134) | 36.49 (77) | |
| **Education** | | | | 0.5785 |
| ≤High School Diploma or Equivalent | 377 | 61.69 (219) | 38.31 (136) | |
| Some College of Technical Degree | 1159 | 64.38 (705) | 35.62 (390) | |
| College Degree or Postgraduate Education | 1778 | 64.58 (1065) | 35.42 (584) | |
| **Income** | | | | 0.0210 |
| $0-19,999 | 440 | 59.71 (246) | 40.29 (166) | |
| $20,000-39,999 | 569 | 62.29 (332) | 37.71 (201) | |
| $40,000-74,999 | 779 | 68.24 (505) | 31.76 (235) | |
| ≥$75,000 | 995 | 64.35 (601) | 35.65 (333) | |
| **NCHS Rural/Urban Classification** | | | | 0.3568 |
| Urban | 1376 | 63.10 (807) | 36.90 (472) | |
| Suburban | 658 | 64.81 (396) | 35.19 (215) | |
| Small/medium metropolitan | 990 | 66.35 (621) | 33.65 (315) | |
| Rural | 326 | 62.09 (190) | 37.91 (116) | |

[1]Chi-square test for difference in demographic characteristics between exposure to mental illness groups

**Supplemental Table 8:** Distribution of demographic characteristics by dichotomous exposure to substance abuse in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Exposure to Substance Abuse | | |
|---|---|---|---|---|
| | | Unexposed (N= 2052) | Exposed (N= 1142) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | 0.4906 |
| 18-24 | 889 | 63.84 (542) | 36.16 (307) | |
| 25-29 | 529 | 67.27 (337) | 32.73 (164) | |
| 30-39 | 467 | 64.03 (283) | 35.97 (159) | |
| ≥40 | 1468 | 63.48 (890) | 36.52 (512) | |
| **Race/ethnicity** | | | | 0.0019 |
| Black | 221 | 61.97 (132) | 38.03 (81) | |
| Hispanic/Latino | 436 | 56.23 (230) | 43.77 (179) | |
| White | 2408 | 65.99 (1547) | 34.01 (782) | |
| Other/Multiple | 229 | 63.89 (138) | 36.11 (78) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 53.97 (197) | 46.03 (168) | |
| Some College of Technical Degree | 1159 | 59.87 (664) | 40.13 (445) | |
| College Degree or Postgraduate Education | 1778 | 69.42 (1169) | 30.58 (515) | |
| **Income** | | | | 0.1278 |
| $0-19,999 | 440 | 62.29 (261) | 37.71 (158) | |
| $20,000-39,999 | 569 | 60.44 (327) | 39.56 (214) | |
| $40,000-74,999 | 779 | 65.20 (489) | 34.80 (261) | |
| ≥$75,000 | 995 | 66.04 (630) | 33.96 (324) | |
| **NCHS Rural/Urban Classification** | | | | 0.0469 |
| Urban | 1376 | 63.66 (834) | 36.34 (476) | |
| Suburban | 658 | 67.20 (418) | 32.80 (204) | |
| Small/medium metropolitan | 990 | 65.02 (617) | 34.98 (332) | |
| Rural | 326 | 58.06 (180) | 41.94 (130) | |

[1]Chi-square test for difference in demographic characteristics between exposure to substance abuse groups

**Supplemental Table 9:** Distribution of demographic characteristics by dichotomous exposure to a divorced or separated household in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Divorced or Separated Household | | |
|---|---|---|---|---|
| | | Unexposed (N= 2098) | Exposed (N= 1229) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | <.0001 |
| 18-24 | 889 | 56.02 (493) | 43.98 (387) | |
| 25-29 | 529 | 54.55 (288) | 45.45 (240) | |
| 30-39 | 467 | 59.65 (275) | 40.35 (186) | |
| ≥40 | 1468 | 71.47 (1042) | 28.53 (416) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 46.05 (99) | 53.95 (116) | |
| Hispanic/Latino | 436 | 50.69 (219) | 49.31 (213) | |
| White | 2408 | 67.45 (1616) | 32.55 (780) | |
| Other/Multiple | 229 | 59.47 (135) | 40.53 (92) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 48.65 (180) | 51.35 (190) | |
| Some College of Technical Degree | 1159 | 56.46 (651) | 43.54 (502) | |
| College Degree or Postgraduate Education | 1778 | 70.59 (1248) | 29.41 (520) | |
| **Income** | | | | <.0001 |
| $0-19,999 | 440 | 51.95 (226) | 48.05 (209) | |
| $20,000-39,999 | 569 | 55.75 (315) | 44.25 (250) | |
| $40,000-74,999 | 779 | 62.63 (486) | 37.37 (290) | |
| ≥$75,000 | 995 | 74.19 (733) | 25.81 (255) | |
| **NCHS Rural/Urban Classification** | | | | 0.0545 |
| Urban | 1376 | 65.74 (900) | 34.26 (469) | |
| Suburban | 658 | 62.17 (406) | 37.83 (247) | |
| Small/medium metropolitan | 990 | 60.70 (593) | 39.30 (384) | |
| Rural | 326 | 60.62 (197) | 39.38 (128) | |

[1]Chi-square test for difference in demographic characteristics between divorced or separated household exposure groups

**Supplemental Table 10:** Distribution of demographic characteristics by dichotomous exposure to familial incarceration in the first 18 years of life for participants randomized to receive ACE questions in the 2015 American Men's Internet Survey (AMIS)

| | | Familial Incarceration | | |
|---|---|---|---|---|
| | | Unexposed (N= 2870) | Exposed (N= 273) | |
| | N | % (*n*) | % (*n*) | *p*[1] |
| **Age at Survey** | | | | <.0001 |
| 18-24 | 889 | 88.08 (746) | 11.92 (101) | |
| 25-29 | 529 | 87.10 (432) | 12.90 (64) | |
| 30-39 | 467 | 91.10 (389) | 8.90 (38) | |
| ≥40 | 1468 | 94.90 (1303) | 5.10 (70) | |
| **Race/ethnicity** | | | | <.0001 |
| Black | 221 | 80.58 (166) | 19.42 (40) | |
| Hispanic/Latino | 436 | 83.63 (332) | 16.37 (65) | |
| White | 2408 | 94.02 (2140) | 5.98 (136) | |
| Other/Multiple | 229 | 88.10 (185) | 11.90 (25) | |
| **Education** | | | | <.0001 |
| ≤High School Diploma or Equivalent | 377 | 83.05 (294) | 16.95 (60) | |
| Some College of Technical Degree | 1159 | 89.44 (983) | 10.56 (116) | |
| College Degree or Postgraduate Education | 1778 | 94.38 (1561) | 5.62 (93) | |
| **Income** | | | | <.0001 |
| $0-19,999 | 440 | 86.23 (357) | 13.77 (57) | |
| $20,000-39,999 | 569 | 87.76 (466) | 12.24 (65) | |
| $40,000-74,999 | 779 | 91.26 (679) | 8.74 (65) | |
| ≥$75,000 | 995 | 96.59 (907) | 3.41 (32) | |
| **NCHS Rural/Urban Classification** | | | | 0.5619 |
| Urban | 1376 | 91.47 (1179) | 8.53 (110) | |
| Suburban | 658 | 90.34 (552) | 9.66 (59) | |
| Small/medium metropolitan | 990 | 91.12 (852) | 8.88 (83) | |
| Rural | 326 | 93.11 (284) | 6.89 (21) | |

[1]Chi-square test for difference in demographic characteristics between familial incarceration exposure groups