



Published in final edited form as:

AIDS Behav. 2008 November ; 12(6): 891–902. doi:10.1007/s10461-007-9319-3.

Gay-related Development, Early Abuse and Adult Health Outcomes Among Gay Males

Mark S. Friedman¹, Michael P. Marshal², Ron Stall¹, JeeWon Cheong³, and Eric R. Wright⁴

¹ Graduate School of Public Health, University of Pittsburgh, 130 DeSoto Street, Second Floor, Pittsburgh, PA 15261, USA, e-mail: Msf11@pitt.edu

² School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

³ Department of Psychology, University of Pittsburgh, Pittsburgh, PA, USA

⁴ School of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA

Abstract

This study examined relationships between timing of gay-related developmental milestones, early abuse, and emergence of poor health outcomes in adulthood among 1,383 gay/bisexual men in the Urban Men's Health Study. Latent Profile Analysis grouped participants as developing early, middle or late based on the achievement of four phenomena including age of first awareness of same-sex sexual attractions and disclosure of sexual orientation. Participants who developed early were more likely, compared to others, to experience forced sex and gay-related harassment before adulthood. They were more likely to be HIV seropositive and experience gay-related victimization, partner abuse and depression during adulthood. Early forced-sex, gay-related harassment and physical abuse were associated with several negative health outcomes in adulthood including HIV infection, partner abuse, and depression. This analysis suggests that the experience of homophobic attacks against young gay/bisexual male youth helps to explain heightened rates of serious health problems among adult gay men.

Keywords

HIV; Homosexuality; Abuse; Psychosexual development

Introduction

Numerous epidemiological surveys have described elevated rates of depression (Cochran and Mays 2000a, b; Cochran et al. 2003; Jorm et al. 2002; Sandfort et al. 2001), suicidality (Cochran and Mays 2000a; Herrell et al. 1999; Jorm et al. 2002), substance abuse (Cochran et al. 2004; Tang et al. 2004; Woody et al. 2001), and HIV infection (Brewer et al. 2006; Catania et al. 2001; Centers for Disease Control and Prevention 2005; Xia et al. 2006) among gay and bisexual men and men who have sex with other men, compared to heterosexual controls. One notable aspect of this literature is the early timing of many of these health disparities, in that adolescent and young adult gay and bisexual males and adolescent and young adult males who have sex with other males report elevated levels for these same health problems compared to their heterosexual peers (Centers for Disease Control and Prevention 2005; Faulkner and

Cranston 1998; Fergusson et al. 1999; Garofalo et al. 1998, 1999; Lampinen et al. 2006; Mackellar et al. 2006; Remafedi et al. 1998; Safren and Heimberg 1999; Valleroy et al. 2000). The early onset of this cluster of psychosocial health problems suggests that something in the experiences of gay males during childhood and adolescence shapes experiences of health problems in adulthood.

One possible explanation to account for the early emergence of these health problems among gay males is the experience of violence among these individuals prior to adulthood. A substantial literature exists to show that gay and bisexual adolescents experience greater physical victimization, compared to heterosexual controls (Bontempo and D'Augelli 2002; Faulkner and Cranston 1998; Garofalo et al. 1998; Russell et al. 2001). For example, data from the Youth Risk Behavior Survey in two states suggest that gay and bisexual male adolescents, compared to their heterosexual counterparts, were approximately nine times more likely to be victimized at school 10 or more times during the prior year (Bontempo and D'Augelli 2002). Other studies have described high rates of gay-related harassment (D'Augelli et al. 2002a; Harris Interactive 2005; Pilkington and D'Augelli 1995) and of sexual abuse (Doll et al. 1992). Further, a literature is emerging to show that adolescents from the general population who are bullied suffer poorer health outcomes in adolescence (Bernstein and Watson 1997; Glew et al. 2000; Kaltiala-Heino et al. 1999; Nansel et al. 2001; Rigby and Slee 1999; Salmon et al. 2000; Slee 1995) and in adulthood (Olweus 1993).

One approach to understanding the differential levels of violence experienced by gay youth as well as the emergence of health problems among gay adults would be to consider timing of gay developmental milestones. Boys who start gay male developmental processes earlier in life, and in particular, disclose being gay at a relatively early age, could be assumed to have greater exposure to violence and stigmatization during adolescence. Studies have found that gay youth who "come out" to themselves and others early are more likely, compared to those who come out at later ages, to be physically abused (D'Augelli and Hershberger 1993; Remafedi 1991; Schneider et al. 1989). Further, these experiences of violence would theoretically occur at an age in which boys have fewer resources to cope with these threats, placing them at even greater risk of manifesting a poorer health profile in adolescence. In fact, gay and bisexual youth who experience physical victimization during adolescence are more likely to experience mental health problems (California Safe Schools Coalition and 4-H Center for Youth Development 2004; Elze 2002; Hershberger and D'Augelli 1995), abuse substances and engage in HIV sexual risk behavior (Bontempo and D'Augelli 2002). The effects of these experiences may carry over into adulthood given that youth who manifest psychosocial health problems during adolescence are at greater vulnerability to bring these same problems into adulthood (e.g., substance use and abuse) (Chassin et al. 2002).

This paper therefore examines the relationships between timing of gay-related developmental milestones, experiences of abuse, and emergence of poor health outcomes in adulthood by examining the following hypotheses: (a) Earlier gay-related development (GRD) is associated with increased forced sex, gay-related harassment and parental physical abuse prior to adulthood. (b) Earlier GRD is associated with negative health outcomes during adulthood including greater prevalence of HIV infection. (c) Increased victimization of gay males during childhood and adolescence is associated with negative health outcomes during adulthood. The data set used for this analysis is the Urban Men's Health Study (UMHS), a household sample of adult men who have sex with men (MSM) in Los Angeles, Chicago, San Francisco and New York (Catania et al. 2001).

Methods

Participants and Procedures

This secondary data-analysis uses retrospective and cross-sectional data in analyzing the UMHS database. The UMHS conducted telephone interviews with 2,881 men in four major urban areas between 1996 and 1998 who reported having sex with another man since age 14 or self-identifying as gay or bisexual. The study used health, commercial and census data to identify zip codes with relatively large numbers of MSM (Catania et al. 2001). Disproportionate and adaptive sampling techniques were used to construct a random-digit-dial sample in these zip codes. The proportions of MSM across zip codes ranged from 1.6% to 33.6%. It was estimated that the majority of all MSM households in each city were included in the sampled areas (Catania et al. 2001). The recruitment and sampling strategies are described in greater detail elsewhere (Blair 1999; Mills et al. 2001).

We included 1,383 of the 2,881 individuals from the UMHS in this analysis. Our major inclusion criterion was age 18 through 40. This was done to decrease the possibility of retrospective bias and increase confidence in the accuracy of the participants' recollection of gay-related developmental milestones and other phenomena that occurred during childhood and adolescence. On average, 50 year olds, compared to 30 or 40 year olds, may have more difficulty remembering, for example, the age when they were first attracted to another male or decided they were gay. Selecting this age group also reduced the possibility of a cohort effect in that older men in this sample, compared to younger men, may have experienced an environment that was less supportive of their sexual orientation. We did not select a younger group, for example MSM who were between 18 and 30, because this would have excluded a large proportion of individuals who subsequently became infected with HIV (a critical outcome variable) and produced insufficient power to adequately conduct the analyses. Of the UMHS sample, individuals who reported not using sexual orientation-related labels; not knowing if they were gay, bi or something else; declined to answer the question; or were not asked the question were not included. Individuals who self-identified as bisexual were also not included as the health profile of bisexual adolescents is notably different than the health profile of individuals who self-identify as gay (Russell and Joyner 2001).

The sample used in this analysis was primarily Caucasian (77.1%) with relatively small proportions of Hispanics (10.8%), Asian-Pacific Islanders (5.5%), African-Americans (3.9%), and Native Americans (2.5%). The gross household income of the sample was relatively high as 21.6% reporting earning between \$60,001 and \$100,000 with 14.4% over \$100,000. Participants were generally well educated as 71.9% reported having a college or postgraduate degree. About 18% were HIV seropositive and 47.8% reported never having been sexually attracted to females. The average age was 32.5. Demographic comparisons between the 18–40 year olds and the remaining sample revealed statistically significant demographic differences. The younger group, compared to the older group, was more likely to be non-white, lower income, and less educated.

Measures

With the exception of gay-related developmental classes, the variables used here are from the original UMHS study. Certain variables were recoded as described below.

Gay-related Development—GRD is often conceived of as the development of an identity (Alderson 2003; Cass 1979; Troiden 1988), the initiation of specific events (e.g., same-sex sexual activity, disclosure of sexual orientation) (D'Augelli 2002b; Hershberger et al. 1997), and a fluid and variable process among adolescents (Diamond 1998, 2003). To capture several of these attributes, GRD was conceptualized in this study as a latent process that could be

categorized by several gay-related developmental milestones with the possibility that these might occur in varying order with the overall timing of the process differing between subgroups of youth. Four gay-related milestones were used as indicators to estimate a latent class variable: (a) age of initial awareness of same-sex sexual attraction, (b) age of first same-sex sexual activity, (c) age of deciding that one is gay, and (d) age of first disclosure that one is gay. This analysis (described in more detail below) allowed us to categorize the participants into three gay-related developmental classes: Early, middle and late developing individuals, which were used in subsequent analyses to examine risk.

Parental Physical Abuse During Childhood and Adolescence—Parental physical abuse was assessed using a dichotomous variable (zero versus one or more occurrences) with “When you were 16 or younger, how often did a parent, or some other adult in charge of you beat you up?” This variable does not distinguish between parental abuse that occurred in childhood versus adolescence as the specific ages associated with occurrences of this abuse were not ascertained. Nor does the variable describe if the abuse was related to participants’ sexual orientation. Response items for this and the gay-related harassment question below were “never” “once” “2–3 times” and “4+ times.” To maximize statistical power, we performed analyses treating this and the gay-related harassment variable as continuous. The results in those analyses were consistent with the results using the dichotomous variables. The dichotomous variables were selected for use in the analyses below because findings of logistic regression are more easily interpreted than those of regular regression. Finally, a dichotomous variable assessing more frequent (i.e., less than four versus four or more) occurrences of parental abuse and gay-related harassment was used. Findings using this variable were also consistent with those of the dichotomous variable used in the analyses.

Gay-related Harassment During Childhood and Adolescence—Harassment was assessed using a dichotomous variable (none versus one or more occurrences before age 17) with “Were you harassed because others assumed you were gay—including being called names like ‘sissy,’ ‘queer,’ or ‘faggot’?” As with parental physical abuse, the specific ages at which incidents of harassment occurred could not be determined. A dichotomous variable measuring more frequent (less than four versus four or more) occurrences of gay-related harassment was also used. The findings of this analysis were consistent with those using the above variable.

Forced Sex—Sexual coercion was assessed with “Thinking back from your childhood to the present, have you ever been forced or frightened by someone into doing something sexually that you did not want to do?” Assessments, including the participant’s age when experiences of forced sex occurred, were made for the first experience of abuse and, if more than one individual was involved, for the most recent. Data was recoded for the UMHS analyses into a variable that included these categories: “never” “childhood” (before age 13) “adolescence” (between ages 13 and 17 inclusive) and “adulthood” (after age 17). We recoded this variable into two variables, one that included all forced sex occurring before the age of 18 for the purpose of measuring childhood and adolescent forced sex (i.e., a dichotomous variable indicating having experienced forced sex at those ages versus no forced sex) and a second dichotomous variable that included forced sex only at the age of 18 and above. As with parental physical abuse, it was not possible to determine if the experiences of forced sex were related to the participants’ sexual orientation.

Current Depression—Depression was assessed for the week prior to instrument administration using the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff 1977). We used a score of 22 or above to indicate a clinically depressive state. At least 16 of the 20 items had to have non-missing responses for a scale score to be calculated. UMHS investigators received a dichotomous version of the scale score indicating clinical depression

(scores of 16 and higher). However, research suggests that the 16+ group inappropriately combines “distressed” respondents with clinically depressed ones. Greatest specificity and sensitivity has been noted at cut-points in the range of 21–23 (Fava et al. 1982; Herman et al. 1994; Lyness et al. 1997).

HIV Serostatus—HIV serostatus was assessed using “What was the result of your most recent HIV antibody test in which you got your results?” Individuals who were never tested were assumed to be negative. This method was found to be reasonably accurate by UMHS researchers based on follow-up with a subgroup of the sample using an oral HIV test kit. Nevertheless, assuming individuals who were never tested to be negative produces a conservative estimate of the proportion of individuals who are HIV negative.

Sexual Risk Behavior During Adulthood—Two variables were constructed by the UMHS to assess unprotected anal intercourse with another man during the prior 12 months. An affirmative response to either of the following categorized an individual as having had unprotected receptive anal intercourse: “Had receptive anal intercourse without a condom, with withdrawal before ejaculation?” “Had receptive anal intercourse without a condom, with ejaculation inside you?” An affirmative response to either “Had insertive anal intercourse without a condom, with withdrawal before ejaculation?” or “Had insertive anal intercourse without a condom, with ejaculation inside him?” was categorized as unprotected insertive anal intercourse.

Partner Abuse During Adulthood—A dichotomous variable (no occurrences of any of the following types of partner abuse versus at least one occurrence of one or more types) was used in these analyses and was assessed with “Intimate relationships are characterized by many different feelings and behaviors. Sometimes relationships involve unwanted physical or emotional violence. In the past 5 years has a boyfriend or partner (‘hit you with fists or an open hand’ ‘thrown something at you’ ‘verbally threatened you in any way’ ‘verbally demeaned you in front of strangers’ ‘pushed or shoved you’ ‘forced you to get high or drunk’ ‘made fun of your appearance’ ‘forced you to have sex’ ‘kicked you’ ‘hit you with an object’ ‘damaged or destroyed your property’ ‘stalked you’)?”

Victimization Related to Being Gay During Adulthood—A dichotomous variable (zero versus one or more occurrences of victimization that was reported to be related to participants’ sexual orientation) was assessed with “People who live in cities are sometimes victims of crime such as a robbery, physical assault, or verbal assault. We would like to get a picture of what it is like for you to live in (city name) in terms of crime. In the past 12 months... (has your personal property been purposely damaged or destroyed? have you been hit, beaten or physically attacked? have you been assaulted or wounded with a weapon? have you been raped or sexually assaulted? has someone thrown an object or objects at you? has someone chased or followed you? has someone verbally insulted or threatened you? have you been harassed by the police without assault? have you been beaten or assaulted by the police?)” For each affirmative response participants were asked “Was that because someone thought you were gay?”

Suicide Attempt During Adulthood—Prior suicide attempt(s) were assessed with the following questions: “Have you ever tried to take your own life?” “Did you try to do it more than once?” “How old were you when you tried?” “How many times?” “How old were you the (first/second/third/fourth) time you tried?” A categorical variable was created and used in the analyses (never versus having attempted at or above the age of 18).

Data Analyses

Our first task was to identify subgroups of the sample with respect to GRD. The subgroups used in this study were estimated using Latent Profile Analysis. Four variables (i.e., age of first awareness of being sexually attracted to other males, age of first same-sex sexual activity, age of deciding that one is gay, and age of first disclosure to another person that one is gay) were entered into the LPA.

LPA is a multivariate data reduction procedure that identifies subtypes of related cases— analogous to cluster analysis, but is advantageous because it is a model-based procedure and employs a probabilistic grouping procedure which assumes that the data are “generated by a mixture of underlying probability distributions” (Vermunt and Magidson 2002). Underlying probability distributions were identified using an iterative, maximum-likelihood, estimation-maximization procedure with random starts in MPlus (Muthen and Muthen 2002). Class membership was assigned based on an individual’s probability of being in each class. By assigning individuals to their most likely class, a categorical variable was created that was used as a proxy for class membership. Several criteria were used to decide on the final model retained for the proposed analyses. Because no study has estimated similar classes of gay-related milestones to date, there is relatively little theory that would dictate the expected number or form of GRD latent classes. Therefore, we used one of the more common procedures in LPA to determine the best solution, by estimating a series of models with successively higher number of classes in each, and comparing them based on model fit, parsimony, and interpretability. We retained a three-class solution for several reasons: (1) it was characterized by the largest reduction in Bayesian information criterion and Akaike information criterion fit values; (2) it included three clearly interpretable classes; (3) the average probability of being in each class exceeded acceptable industry standards (.80); and (4) the four-, five- and six-class solutions yielded two or more prohibitively small and uninterpretable groups.

We then turned to describing how the three groups identified through LPA were different with respect to demographics. This was done by using regular multiple regression analysis for continuous variables (e.g., age and income) and logistic regression for categorical variables (i.e., educational achievement, HIV serostatus). Dummy variables were created to run separate analyses to compare early and late, early and middle, and middle and late “bloomers”.

Our third task was to describe the relationship between GRD and abusive experiences in adolescence. Logistic regression with dummy variables was used given that the three abuse variables (parental physical abuse, forced sex, and gay-related harassment) had been recoded into dichotomous variables.

We then turned to describing possible relationships between GRD and adult health outcomes. Again, logistic regression was used because all outcomes were dichotomous (i.e., HIV serostatus, partner abuse, gay-related victimization, depression, suicide attempts).

Our final task was to describe the relationship between abusive experiences in childhood and adolescence with adult health outcomes. To do this we used the same strategy as with prior analyses.

Results

Gay-related Development

Figure 1 describes patterns identified through LPA; specifically, average ages at which each of the three identified groups achieved each of the developmental milestones. The GRD of the groups differed greatly. The early developing group (n = 629) first became aware of being sexually attracted to other males, on average, in third grade, first experienced sexual activity

with another male in ninth grade, decided they were gay in tenth grade, and first disclosed being gay to another person in 12th grade. The middle developing group's ($n = 645$) first awareness of same-sex attractions was, on average, in sixth grade, first same-sex sexual activity in twelfth grade, decided they were gay at the age of 19.3, and first disclosure at the age of 20.9. The late developing group's ($n = 109$) first awareness was in eighth grade, first same-sex sexual activity at the age of 22.1, decided they were gay at 25.8, and first disclosure at 28.2.

Demographic and Other Relevant Characteristics

We then turned to describing the sample's characteristics and the question of whether these differed between the early, middle, and late GRD groups. Table 1 presents the results of comparisons between the GRD groups. Individuals who experienced early GRD, compared to late GRD, were younger and more likely to report being HIV seropositive, earning less income, and never having been sexually attracted to females. They were, compared to the middle GRD group, more likely to report being HIV seropositive, less likely to have earned a college degree, and more likely to report never having been attracted to females. The middle GRD group, compared to the late GRD group, were younger and more likely to report never having been attracted to females. These variables were therefore entered as covariates in the remaining analyses.

Timing of Gay-related Development and Abuse During Adolescence

The next area that was examined was whether participants who developed early had different experiences of abuse during adolescence. Logistic and ordinary least squares regression analyses using dummy-coded variables were used to examine group differences. Demographic variables were included as covariates. Table 2 describes the relationships between GRD and parental physical abuse, forced sex, and gay-related harassment. Early bloomers appear to be at higher risk for two of the three indices of abuse. The odds of experiencing gay-related harassment during adolescence are 176% greater for the early GRD group than the late GRD group ($B = 2.76, P < .001$), 75% greater for the middle GRD group than for the late GRD group ($B = 1.75, P < .05$) and 58% greater for the early GRD group than the middle GRD group ($B = 1.58, P < .01$). The odds of experiencing forced sex during adolescence are 95% greater for the early GRD group than the late GRD group ($B = 1.95, P < .05$) and 52% greater for the early GRD group than the middle GRD group ($B = 1.52, P < .01$).

GRD and Adult Health Outcomes

We then turned to the question of whether participants who developed early were more likely to have greater negative health outcomes as adults. Table 3 and Fig. 2 describe the relationships between GRD and partner abuse, gay-related victimization, depression, unprotected anal intercourse, HIV serostatus, and suicide attempts during adulthood. All analyses entered demographic variables as covariates. Analyses using depression, unprotected sex, and suicide attempts as outcome variables also entered adult gay-related victimization, partner abuse and forced sex as covariates. The odds of experiencing gay-related victimization, depression, being HIV seropositive, and attempting suicide as an adult were 86% ($B = 1.86, P = .054$), 119% ($B = 2.19, P < .05$), 213% ($B = 3.13, P < .01$), and 113% ($B = 2.13, P = .225$) greater for the early GRD group than the late GRD group respectively. The lack of statistical significance for the suicide attempt finding may be a result of lack of power given the small cell size in the late blooming category. The odds of experiencing partner abuse, gay-related victimization, depression and being HIV seropositive were 28% ($B = 1.28, P < .05$), 39% ($B = 1.39, P < .05$), 41% ($B = 1.41, P < .05$), and 69% ($B = 1.69, P < .01$) greater for the early GRD group than for the middle GRD group respectively.

Adolescent Victimization and Adult Health Outcomes

Finally, we examined the global relationships between abuse experienced during childhood and adolescence and negative outcomes in adulthood. Table 4 describes these associations. The odds of experiencing gay-related victimization were 189% ($B = 2.89, P < .001$) greater for individuals who experience gay-related harassment before the age of 17 than for those who did not. The odds of experiencing depression, partner abuse, gay-related victimization, and having reported attempted suicide as adults were 95% ($B = 1.95, P < .001$), 57% ($B = 1.57, P < .01$), 47% ($B = 1.47, P < .05$), and 90% ($B = 1.90, P < .05$) greater respectively for individuals who reported parental physical abuse than for those who did not. The odds of experiencing depression, partner abuse, engaging in unprotected receptive anal intercourse, and being HIV seropositive as adults were 103% ($B = 2.03, P < .001$), 107% ($B = 2.07, P < .001$), 45% ($B = 1.45, P < .05$), 45% ($B = 1.45, P < .05$) greater respectively for individuals who reported forced sex before the age of 18 than for those who did not.

Discussion

Several papers describing the health of gay and bisexual male samples, including the UMHS, suggest that large health disparities exist among homosexual men including HIV, depression, suicidality, intimate partner abuse, and substance abuse. Data from studies reporting the health of younger gay men suggest that these disparities are already evident in adolescence and early adulthood. Together, this literature suggests that important phenomena in childhood and adolescence give rise to substantial health disparities including HIV infection among gay men compared to heterosexuals. Once established among communities of young gay men, these individual health problems may interact to further lower health profiles of gay men and even increase vulnerability to infectious disease epidemics such as HIV (Stall et al. 2003, in press). This study resulted in three sets of findings that may further our understanding of these issues.

The first set of findings provides insight with respect to the development of gay males. Latent Profile Analysis described the existence of major gay-related developmental classes of study participants based on several milestones (i.e., age of first awareness of being sexually attracted to other males; engaging in sexual activity with another male; deciding that one is gay or bisexual; disclosure of one's sexual orientation another person). Our findings suggest that three major classes exist: Individuals experiencing early, middle and late GRD. For individuals experiencing early GRD, these milestones occurred, on average, between third and 12th grades; for the middle GRD group between sixth grade and the age of 21; and for the late GRD group between eighth grade and the age of 28. To our knowledge, no study to date has attempted to characterize or estimate a model of GRD in this way. Some previous studies have used individual milestones such as coming out as proxies for developmental processes. Our findings make an important contribution to this literature because they show that a meaningful developmental process can be captured using multiple indicators, and that individuals in different groups are meaningfully and in some cases substantially different in their experiences growing up and in their long-term health outcomes including HIV infection.

The second set of findings suggests that the timing of GRD among gay males appears to be related to their risk of developing health problems. Gay males who, with respect to their sexual orientation, develop early are significantly more likely to experience memorable harassment and sexual abuse during adolescence. They are also more likely to become depressed, experience gay-related victimization and report being HIV seropositive as adults. The analyses describing the relationship between GRD and adult depression and HIV infection controlled for adult partner abuse, sexual abuse and gay-related victimization in addition to demographic variables. The relationship between GRD and adult health outcomes therefore appears to be relatively robust and consistently predicts above and beyond the adult victimization variables.

The third set of findings suggests that harassment and violence are very common experiences of young gay and bisexual boys and these experiences of abuse are predictive of negative health outcomes in adulthood. About 74% and 22% of the sample reported experiencing gay-related harassment and parental physical abuse respectively before the age of 17 while 21% reported experiencing forced sex before the age of 18. Early gay-related harassment was found to be positively associated with forced sex and gay-related victimization in adulthood; early parental abuse with partner abuse, gay-related victimization, depression, attempted suicide and HIV seropositivity; and early forced sex with adult partner abuse, gay-related victimization, depression, engagement in high-risk sex, and HIV seropositivity. In nearly all cases, early abuse predicts adult health outcomes above and beyond adult victimization as the analyses with depression, engagement in high-risk sex, and HIV seropositivity also controlled for sexual abuse, gay-related victimization and partner abuse occurring during adulthood. These socially produced insults occurred at what was probably an especially vulnerable age given the lack of gay-related internal and external supports available to most young gay males.

While the study suggests that timing of GRD and violence experienced by gay and bisexual youth impacts their development, the findings should nevertheless be considered exploratory given several limitations associated with this study. First, participants' reports concerning the age they achieved gay-related developmental milestones and of adverse adolescent experiences are retrospective. The reliability and validity of these reports as a result might be compromised. For example, the possibility exists that gay men who experience abuse during childhood and adolescence are more likely to ruminate about their GRD and are therefore more likely to remember gay-related developmental markers. Another limitation is that the UMHS used a cross-sectional design. As such inferences concerning temporal precedence are weakened and our confidence in the causal relationships between these phenomena are limited. The men included in these analyses entered adulthood, on average, in the mid 1980s. The ability to generalize these findings to recent cohorts of young gay men is not known. The findings should not be generalized to the entire UMHS sample because the demographic characteristics of the men used in this analysis differed from those over the age of 40. The categorization used in the LPA (i.e., awareness of same-sex attraction, sexual activity, deciding one is gay, coming out) is of unknown validity and reliability and needs to be examined with other samples. Finally, we considered implementing tests of mediation to test whether violence experienced by participants during adolescence mediates the relationship between GRD and adult health outcomes. However, as described by MacKinnon (2007), mediation analysis should only be implemented when an appropriate temporal relationship can be described. In this case the ability to test for mediation is dependent upon GRD occurring first, adolescent abuse second, and adult health outcomes third. It cannot however be determined from the data that GRD occurred prior to adolescent parental abuse, forced sex and gay-related harassment.

While taking these limitations into account, a compelling case can still be made that the three sets of findings above, as a whole, support the hypothesis that the experience of homophobic attacks against gay youth contribute to health disparities among gay men. It was noted above that the assessment of child and adolescent forced sex did not ascertain whether these experiences were related to the individuals' sexual orientation. The finding that GRD was related to their experiences of forced sex during childhood and adolescence does suggest that gay males' experience of forced sex prior to adulthood is, at least in part, related to their sexual orientation. In turn, this suggests that their experience of abuse is related to homophobia and that these experiences in part determine the adult health problems that gay men often experience. However, only future longitudinal studies will be able to test these hypotheses more rigorously. Future studies will also be able to include potentially relevant variables that were not included in the original UMHS. For example, gender-role nonconformity may be an important factor that was not initially assessed. It may be that men in the early GRD grouping

were more likely to be gender-role nonconforming and, as a result, more likely to be labeled by others as gay, confront their homosexuality at younger ages, and experience victimization.

Future research in this area should be guided by the need to prevent the development of health problems among gay and bisexual adolescents and adults. The first need is to increase understanding of how psychosocial health problems develop among gay males. Among other areas, studies will need to focus on how (1) characteristics of the environments in which gay and bisexual youth develop (e.g., peers, family, schools, community) and of the youth themselves (e.g., gender-role nonconformity, internalized stigma, timing of pubertal development) impact timing of GRD and subsequent health outcomes; (2) the types (e.g., sexual, physical, verbal; gay versus non-gay related) and intensity of abuse are implicated in the development of health problems; (3) the relationships between violence, timing of GRD and subsequent health outcomes contrast between African–American, Latino, Asian–American, Native American and Caucasian gay and bisexual males; and (4) these relationships contrast between American and non-American populations.

Future studies should be based not only on general developmental theories but also on those more specifically pertaining to gay and bisexual individuals. These include theories that focus on masculine socialization processes, minority stressors, and minority/gay development. Finally, as Savin-Williams (2001) has suggested, studies of gay and bisexual youth have overemphasized pathology. Data relevant to the development of prevention interventions can be gained by assessing mechanisms that result in resilience.

To summarize, some of the health disparities of gay and bisexual men may have their genesis in these individuals' childhood and adolescent years given that these disparities are already in place by early adulthood. The findings described above support the hypotheses that the disparities appear to be due, in part, to the timing of GRD and the violence these individuals experience related to being gay during their formative years. Understanding of the development of health problems among gay males is however limited. The ability to develop effective prevention interventions and thus reduce health disparities among gay and bisexual individuals will depend on the implementation of longitudinal studies to improve understanding in this area.

References

- Alderson KG. The ecological model of gay male identity. *The Canadian Journal of Human Sexuality* 2003;12:72–85.
- Bernstein JY, Watson MW. Children who are targets of bullying: A victim pattern. *Journal of Interpersonal Violence* 1997;12(4):483–498.
- Blair J. A probability sample of gay urban males: The use of two-phase adaptive sampling. *Journal of Sex Research* 1999;36:39–44.
- Bontempo DE, D'Augelli AR. Effects of at-school victimization and sexual orientation on lesbian, gay, or bisexual youths' health risk behaviors. *Journal of Adolescent Health* 2002;30:364–374. [PubMed: 11996785]
- Brewer DD, Golden MR, Handsfield HH. Unsafe sexual behavior and correlates of risk in a probability sample of men who have sex with men in the era of highly active antiretroviral therapy. *Sexually Transmitted Diseases* 2006;33(4):250–255. [PubMed: 16505748]
- California Safe Schools Coalition, 4-H Center for Youth Development. *Consequences of harrasment based on actual or perceived sexual orientation and gender non-conformity and steps for making schools safer*. Davis: University of California; 2004.
- Cass VC. Homosexual identity formation: A theoretical model. *Journal of Homosexuality* 1979;4:219–235. [PubMed: 264126]
- Catania J, Osmond D, Stall R, Pollack L, Paul JP, Blower S, Binson D, Canchola JA, Mills TC, Fisher L, Choi KH, Porco T, Turner C, Blair J, Henne J, Bye LL, Coates TJ. The continuing HIV epidemic

- among men who have sex with men. *American Journal of Public Health* 2001;91(6):907–914. [PubMed: 11392933]
- Centers for Disease Control Prevention. HIV prevalence, unrecognized infection, and HIV testing among men who have sex with men – Five U.S. cities, June 2004–April 2005. *Morbidity and Mortality Weekly Report* 2005;54:597–601. [PubMed: 15973239]
- Chassin L, Pitts SC, Prost J. Binge drinking trajectories from adolescence to emerging adulthood in a high-risk sample: Predictors and substance abuse outcomes. *Journal of Consulting and Clinical Psychology* 2002;70(1):67–78. [PubMed: 11860058]
- Cochran SD, Ackerman D, Mays VM, Ross MW. Prevalence of non-medical drug use and dependence among homosexually active men and women in the US population. *Addiction* 2004;99:989–998. [PubMed: 15265096]
- Cochran SD, Mays VM. Lifetime prevalence of suicidal symptoms and affective disorders among men reporting same-sex sexual partners: Results from the NHANES III. *American Journal of Public Health* 2000a;90(4):573–578. [PubMed: 10754972]
- Cochran SD, Mays VM. Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the U.S. population. *American Journal of Epidemiology* 2000b;151(5):516–523. [PubMed: 10707921]
- Cochran SD, Sullivan JG, Mays VM. Prevalence of mental disorders, psychological distress, and mental health services use among LGB adults in the United States. *Journal of Consulting & Clinical Psychology* 2003;71(1):53–61. [PubMed: 12602425]
- D’Augelli AR, Pilkington NW, Hershberger SL. Incidence and mental health impact of sexual orientation victimization of lesbian, gay, and bisexual youths in high school. *School Psychology Quarterly* 2002a;17(2):148–167.
- D’Augelli AR. Mental health problems among lesbian, gay, and bisexual youths ages 14 to 21. *Clinical Child Psychology and Psychiatry* 2002b;7(3):1359–1045.
- D’Augelli AR, Hershberger S. Lesbian, gay, and bisexual youth in community settings: Personal challenges and mental health problems. *American Journal of Community Psychology* 1993;21(4):421–448. [PubMed: 8192119]
- Diamond LM. Development of sexual orientation among adolescent and young adult women. *Developmental Psychology* 1998;34(5):1085–1095. [PubMed: 9779753]
- Diamond LM. New paradigms for research on heterosexual and sexual-minority development. *Journal of Clinical Child and Adolescent Psychology* 2003;32(4):490–498. [PubMed: 14710457]
- Doll LS, Joy D, Bartholow BN, Harrison JS, Bolan G, Douglas JM, Saltzman LE, Moss PM, Delgado W. Self-reported childhood and adolescent sexual abuse among adult homosexual and bisexual men. *Child Abuse & Neglect* 1992;16:855–864. [PubMed: 1486514]
- Elze DE. Risk factors for internalizing and externalizing problems among gay, lesbian, and bisexual adolescents. *Social Work Research* 2002;26(2):89–99.
- Faulkner AH, Cranston K. Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students. *American Journal of Public Health* 1998;88(2):262–266. [PubMed: 9491018]
- Fava GA, Pilowsky I, Pierfederici A, Bernardi M, Pathak D. Depression and illness behavior in a general hospital: A prevalence study. *Psychotherapy and Psychosomatics* 1982;38:141–153. [PubMed: 7150407]
- Fergusson DM, Horwood LJ, Beautrais AL. Is sexual orientation related to mental health problems and suicidality in young people? *Archives of General Psychiatry* 1999;5(10):876–880. [PubMed: 10530626]
- Garofalo R, Wolf RC, Kessel S, Palfrey J, DuRant RH. The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics* 1998;101(5):895–902. [PubMed: 9565422]
- Garofalo R, Wolf RC, Wissow L, Woods ER, Goodman E. Sexual orientation and risk of suicide attempts among a representative sample of youth. *Archives of Pediatrics and Adolescent Medicine* 1999;153(5):487–493. [PubMed: 10323629]
- Glew G, Rivara F, Feudtner C. Bullying: Children hurting children. *Pediatrics in Review* 2000;21(6):183–190. [PubMed: 10854313]

- Harris Interactive. From teasing to torment: School climate in America. New York: Gay, lesbian, and straight education network; 2005.
- Herman DB, Susser ES, Struening EL. Childhood out-of-home care and current depressive symptoms among homeless adults. *American Journal of Public Health* 1994;84:1849–1851. [PubMed: 7977934]
- Herrell R, Goldberg J, True WR, Ramakrishnan V, Lyons M, Eisen S, Tsuang MT. Sexual orientation and suicidality: A co-twin control study in adult men. *Archives of General Psychiatry* 1999;56:867–874. [PubMed: 10530625]
- Hershberger S, D’Augelli AR. The impact of victimization on the mental health and suicidality of lesbian, gay, and bisexual youths. *Developmental Psychology* 1995;31(1):65–74.
- Hershberger S, Pilkington NW, D’Augelli AR. Predictors of suicide attempts among gay, lesbian, and bisexual youth. *Journal of Adolescent Research* 1997;12(4):477–497.
- Jorm AF, Korten AE, Rodgers B, Jacomb PA, Christensen H. Sexual orientation and mental health: Results from a community survey of young and middle-aged adults. *The British Journal of Psychiatry* 2002;180:423–427. [PubMed: 11983639]
- Kaltiala-Heino R, Rimpela M, Marttunen M, Rimpela A, Rantanen P. Bullying, depression, and suicidal ideation in Finnish adolescents: School survey. *British Medical Journal* 1999;319(7206):348–351. [PubMed: 10435954]
- Lampinen TM, McGhee D, Martin I. Use of crystal methamphetamine and other club drugs among high school students in Vancouver and Victoria. *British Columbia Medical Journal* 2006;48(1):22–27.
- Lyness JM, Noel TK, Cox C, King DA, Conwell Y, Caine ED. Screening for depression in elderly primary care patients: A comparison of the Center for Epidemiologic Studies–Depression Scale and the Geriatric Depression Scale. *Archives of Internal Medicine* 1997;157:449–454. [PubMed: 9046897]
- Mackellar DA, Valleroy LA, Anderson JE, Behel S, Secura GM, Bingham T, Celentano DD, Koblin BA, LaLota M, Shehan D, Thiede H, Torian LV, Janssen RS. Recent HIV testing among young men who have sex with men: Correlates, contexts, and HIV seroconversion. *Sexually Transmitted Diseases* 2006;33(3):183–192. [PubMed: 16508526]
- MacKinnon DP, Fairchild AJ, Fritz MS. Mediation analysis. *Annual Review of Psychology* 2007;58:593–614.
- Mills TC, Stall R, Pollack L, Paul JP, Binson D, Canchola J, Catania JA. Health-related characteristics of men who have sex with men: A comparison of those living in “gay ghettos” with those who live elsewhere. *American Journal of Public Health* 2001;91:980–983. [PubMed: 11392945]
- Muthen, LK.; Muthen, BO. Mplus user’s guide. Los Angeles: Authors; 2002.
- Nansel T, Overpeck M, Pilla SR, Ruan WJ, Simons-Morton B, Scheidt P. Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association* 2001;285(16):2094–2100. [PubMed: 11311098]
- Olweus, D. *Bullying at school: What we know and what we can do*. Cambridge: Blackwell; 1993.
- Pilkington NW, D’Augelli AR. Victimization of lesbian, gay, and bisexual youth in community settings. *Journal of Community Psychology* 1995;23(1):34–56.
- Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;1(3):385–501.
- Remafedi G. Risk factors for attempted suicide in gay and bisexual youth. *Pediatrics* 1991;87(6):869–875. [PubMed: 2034492]
- Remafedi G, French S, Story M, Resnick MD, Blum R. The relationship between suicide risk and sexual orientation: Results of a population-based study. *American Journal of Public Health* 1998;88(1):57–60. [PubMed: 9584034]
- Rigby K, Slee P. Suicidal ideation among adolescent school children, involvement in bully-victim problems, and perceived social support. *Suicide and Life-Threatening Behavior* 1999;29(2):119–130. [PubMed: 10407965]
- Russell ST, Franz BT, Driscoll AK. Same-sex romantic attraction and experiences of violence in adolescence. *American Journal of Public Health* 2001;91(6):903–906. [PubMed: 11392932]
- Russell ST, Joyner K. Adolescent sexual orientation and suicide risk: Evidence from a national study. *American Journal of Public Health* 2001;91(8):1276–1281. [PubMed: 11499118]

- Safren SA, Heimberg RG. Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *Journal of Consulting & Clinical Psychology* 1999;67(6):859–866. [PubMed: 10596508]
- Salmon G, James A, Cassidy EL, Javaloyes MA. Bullying a review: Presentations to an adolescent psychiatric service and within a school for emotionally and behaviourally disturbed children. *Clinical Child Psychology and Psychiatry* 2000;5(4):563–579.
- Sandfort TG, de Graaf R, Bijl RV, Schnabel P. Same-sex sexual behavior and psychiatric disorders: Findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Archives of General Psychiatry* 2001;58(1):85–91. [PubMed: 11146762]
- Savin-Williams RC. A critique of research on sexual-minority youths. *Journal of Adolescence* 2001;24(1):5–13. [PubMed: 11259066]
- Schneider SG, Farberow NL, Kruks GN. Suicidal behavior in adolescent and young adult gay men. *Suicide and Life-Threatening Behavior* 1989;19(4):381–394. [PubMed: 2609366]
- Slee PT. Peer victimization and its relationship to depression among Australian primary school students. *Personality and Individual Differences* 1995;18(1):57–62.
- Stall, R.; Friedman, MS.; Catania, J. Interacting epidemics and gay men's health: A theory of syndemic production among urban gay men. In: Wolitski, R.; Valdiserri, RO.; Stall, R., editors. *Unequal opportunity: Health disparities among gay and bisexual men in the United States*. in press
- Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul JP, Pollack L, Binson D, Osmond D, Catania JA. Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health* 2003;93(6):939–942. [PubMed: 12773359]
- Tang H, Greenwood GL, Cowling DW, Lloyd JC, Roeseler AG, Bal DG. Cigarette smoking among lesbians, gays, and bisexuals: How serious a problem? *Cancer Causes and Control* 2004;15:797–803. [PubMed: 15456993]
- Troiden RR. Homosexual identity development. *Journal of Adolescent Health Care* 1988;9(2):105–113. [PubMed: 3283087]
- Valleroy LA, MacKellar DA, Karon JM. HIV prevalence and associated risks in young men who have sex with men: Young Men's Survey Study Group. *Journal of the American Medical Association* 2000;284:198–204. [PubMed: 10889593]
- Vermunt, JK.; Magidson, J. Latent class cluster analysis. In: Hagenaaars, JA.; McCutcheon, AL., editors. *Advances in latent class analysis*. Cambridge: University Press; 2002.
- Woody GE, VanEtten-Lee M, McKirnan D, Donnell D, Metzger D, Seage G, Gross M. HIVNET VPS 001 Protocol Team. Substance use among men who have sex with men: Comparison with a national household survey. *Journal of Acquired Immune Deficiency Syndrome* 2001;27(1):86–90.
- Xia Q, Osmond DH, Tholandi M, Pollack L, Zhou W, Ruiz JD, Catania JA. HIV prevalence and sexual risk behaviors among men who have sex with men. *Journal of Acquired Immune Deficiency Syndrome* 2006;41(2):238–245.

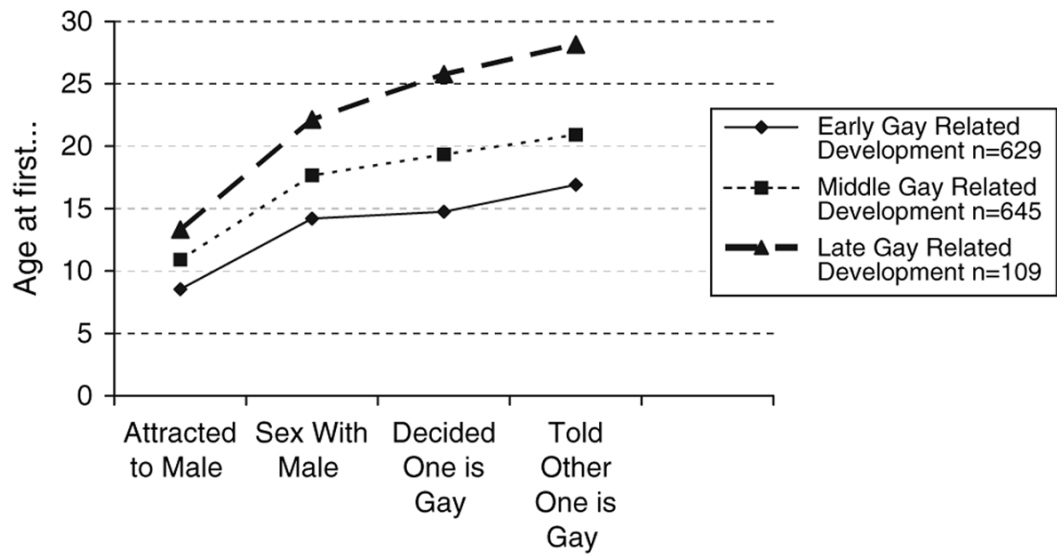


Fig. 1. Latent Profile Analysis using four gay-related development (age of first occurrence) factors describing three groups

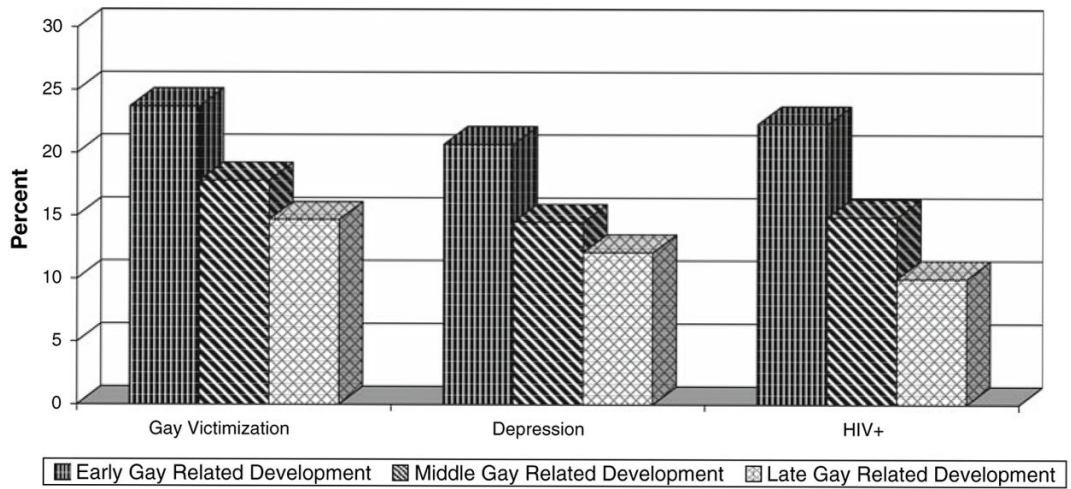


Fig. 2. Associations between gay-related development and adult health outcomes. *Note:* Rates of gay victimization, depression and HIV infection were significantly different for the late versus early gay-related developmental groups and for the middle versus early gay-related developmental groups ($P < .05$)

Table 1
Demographic comparison of early, middle and late gay-related developmental groups

Descriptive variable	Early (n = 629)		Middle (n = 645)		Late (n = 109)		Total (1,383) ^d	
	%	n	%	n	%	n	%	n
<i>Race</i>								
White	76.3	476	78.4	504	74.3	81	77.1	1061
Black	4.5	28	3.3	21	4.6	5	3.9	54
Hispanic	11.4	71	9.5	61	14.7	16	10.8	148
API	5.4	34	5.6	36	4.6	5	5.5	75
Native American	2.2	14	2.8	18	1.8	2	2.5	34
Other	.2	1	.5	3	0	0	.2	4
<i>Education</i> ^{a,*}								
<High School	1.7	11	.8	5	.9	1	1.2	17
High School	29.9	188	24.7	159	22.9	25	26.9	372
College Degree	68.4	430	76.3	83	74.6	481	71.9	994
<i>Income</i> ^{b,*}								
<20,000	12.5	77	11.8	74	5.6	6	11.6	157
20,001–60,000	53.7	331	50.6	318	55.1	59	52.4	708
60,001–100,000	20.1	124	23.5	148	18.7	20	21.6	292
>100,000	13.6	84	14.1	89	20.6	22	14.4	195
Never sexually attracted to females ^{a,**,b,**,c,*}	55.2	341	43.4	276	31.8	34	47.8	651
HIV positive ^{a,**,b,**}	22.3	130	14.9	87	10.0	9	18.0	226
Age (Mean and SD) ^{b,**,c,*}	32.1	5.04	32.5	4.76	34.8	3.71	32.5	4.87

^aMiddle-early comparison

^bLate-early comparison

^cLate-middle comparison

^dRow totals vary due to missing data

* $P < .05$;

** $P < .01$

Associations between gay-related development and parental physical abuse, harassment related to being gay, and forced sex during childhood and adolescence^d

Table 2

Gay-related development	Parental physical abuse (1+ times, < 17 year old)		Harassed for being gay (1+ times, < 17 year old) ^d		Forced sex (1+ times, < 18 year old) ^{a,*,b,**}	
	%	n	%	n	%	n
Early (n = 629)	27.8	174	83.7	523	25.6	159
Middle (n = 645)	23.4	151	75.7	487	17.4	111
Late (n = 109)	26.9	29	64.8	70	16.7	18
Total (n = 1,383)	25.7	354	78.5	1080	21.0	288

^a Middle-early comparison

^b Late-early comparison

^c Late-middle comparison

^d All regression analyses controlled for age, education level, sexual attractions to females, and HIV sero-status

* $P < .05$;

** $P < .01$

Table 3
Associations between gay-related development and adult health outcomes^c

	Partner abuse (prior 5 years) ^{a,*}		Gay-related victimization (prior year) ^{a,*}		Depression (current) ^{a,*}		Unprotected receptive anal sex ^d (prior year)		HIV ⁺ ^{a,**}		Suicide attempts (age 18+)	
	%	n	%	n	%	n	%	n	%	n	%	n
Early (n = 629)	49.9	312	23.7	149	20.7	129	27.2	167	22.3	130	6.1	38
Middle (n = 645)	42.7	274	17.8	115	14.5	92	26.8	168	14.9	87	4.6	29
Late (n = 109)	45.4	49	14.7	16	12.1	13	28.6	30	10.0	9	4.7	5
Total	46.2	635	20.2	280	17.2	234	27.1	365	18.0	226	5.3	72

^aMiddle-early comparison

^bLate-early comparison

^cAll regression analyses controlled for race, age, education level, attractions to females, and HIV sero-status. Regression analyses with depression, suicide attempt (age 18+), unprotected anal sex and HIV+ as outcome variables included adult gay-related victimization, forced sex age 18+, and adult partner abuse as covariates in addition to the above demographic variables

^dAnalyses examination the relationship between gay-related development and unprotected *insertive* anal sex were also conducted. Findings were not statistically significant

* $P < .05$;

** $P < .01$

Table 4
Associations between early abuse and adult health outcomes^a

	Partner abuse (prior 5 years)		Gay victimization (prior year)		Depression (current)		Suicide attempt (age 18+)		Unprotected receptive anal sex (prior year) ^b		HIV+	
	%	n	%	n	%	n	%	n	%	n	%	n
Yes—Harassed ^c	46.9	505	23.1 ^{**}	250	17.7	189	5.2	56	26.1	103	17.8	176
No—Harassed	44.1	130	9.8	29	15.4	45	5.5	16	30.4	262	18.8	50
Yes—Parent abuse ^d	55.5 ^{**}	196	25.1 ^{**}	89	26.0 ^{**}	91	8.0 [*]	28	29.7	102	22.4 [*]	72
No—Parent abuse	42.9	438	18.7	191	14.0	142	4.2	43	26.2	262	16.5	154
Yes—Forced sex ^e	59.4 ^{**}	171	24.3	70	26.2 ^{**}	75	7.0	20	33.0 [*]	94	22.9 [*]	60
No—Forced sex	42.8	462	19.2	208	14.8	158	4.9	52	25.7	270	16.7	165

^a All regression analyses controlled for race, age, education level, sexual attractions to females, and HIV sero-status. Regression analyses with depression, suicide attempt (age 18+), unprotected anal sex and HIV+ as outcome variables included adult gay-related victimization, forced sex age 18+, and adult partner abuse as covariates in addition to the above demographic variables

^b Analyses examining the relationship between early harassment, parent abuse, forced sex and unprotected *insertive* anal intercourse were also conducted. Abused versus non-abused groups were not significantly different

^c Related to being gay, 1+ times, <17 years old

^d 1+ times, <17 years old

^e 1+ time, <18 years old

* $P < .05$;

** $P < .01$