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Birth cohort differences in sexual identity development milestones among HIV-negative gay and bisexual men in the United States

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Abstract

The “coming out” process for gay and bisexual men (GBM) involves crossing sexual identity development (SID) milestones: (1) self-awareness of sexual attraction to the same sex, (2) self-acceptance of an identity as gay or bisexual, (3) disclosure of this sexual identity to others, and (4) having sex with someone of the same sex. We examined trends in SID milestones by birth cohort in a 2015 U.S. national sample of GBM (n = 1023). Birth cohort was independent of when men first felt sexually attracted to someone of the same sex (median age 11 to 12). However—with the exception of age of first same-sex attraction—older cohorts tended to pass other milestones at later ages than younger cohorts. Latent Class Analysis of SID milestone patterns identified three subgroups. The majority (84%) began sexual identity development with same-sex attraction around the onset of puberty (i.e., around age 10) and progressed to self-identification, same-sex sexual activity, and coming out—in that order. The other two classes felt same-sex attraction during teen years (12.5 and 18.0 years of age, respectively), but achieved the remaining SID milestones later in life—for some 13% of men, this was during early adulthood, and for a smaller 3% of men, this was in middle adulthood. Birth cohort was significantly associated with class membership—those achieving sexual identity development in early and middle adulthood were more common among men from earlier generations. Findings highlight the need to monitor ongoing generational differences in passing sexual identity development milestones.

Keywords

gay and bisexual men; coming out milestones; sexual identity development milestones; sexual debut

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Introduction

Lesbian, gay, and bisexual individuals undergo a complex sexual identity development process commonly called “coming out” (Calzo, Antonucci, Mays, & Cochran, 2011; D'Augelli, 1991; Eliason & Schope, 2007; Floyd & Bakeman, 2006; Grov, Bimbi, Nanín, & Parsons, 2006; Rosario, Schrimshaw, & Hunter, 2004; Rosario, Schrimshaw, Hunter, & Braun, 2006; Savin-Williams & Cohen, 2007). Though this process, they reject societies’ imposed labels of assumed heterosexuality while simultaneously adopting a new sexual identity (Cass, 1979; Dank, 1971; Troiden, 1979). Early research by Cass (1979) and Troiden (1979) proposed that the coming out process proceeded in stages which consisted of acknowledgement of same-sex attractions (i.e., self-awareness) and public disclosure of a same-sex sexual identity (i.e., disclosure to others). Crossing these two “milestones” served as critical points in sexual identity development.

Although complex and unique for every individual, recent research suggests that the coming out process involves crossing two additional sexual identity development milestones, including: (1) self-acceptance of an identity as lesbian, gay, or bisexual and (2) having sex with someone of the same sex (often called same-sex sexual debut) (Bilodeau & Renn, 2005; Calzo et al., 2011; Floyd & Bakeman, 2006; Floyd & Stein, 2002; Friedman, Marshal, Stall, Cheong, & Wright, 2008; Grov et al., 2006; Maguen, Floyd, Bakeman, & Armistead, 2002; McDonald, 1982; Rosario et al., 2006; Savin-Williams, 2011). Though the order in which individuals pass these four milestones may vary, data in general suggest that self-awareness and self-acceptance tend to precede disclosure to others as well as same-sex sexual debut (Calzo et al., 2011; Fassinger & Miller, 1997; Floyd & Bakeman, 2006; Floyd & Stein, 2002; Grov et al., 2006; Martos, Nezhad, & Meyer, 2015; McDonald, 1982; Nelson, Gamarel, Pantalone, Carey, & Simoni, 2016; Rosario et al., 2006; Savin-Williams & Cohen, 2007).

For both heterosexuals and sexual minorities, age of sexual debut has been frequently examined, particularly because age at first sex—if too early—is associated with a host of negative sexual health outcomes such as unplanned pregnancy, STI/HIV transmission, and sexual risk behavior (Balthasar, Jeannin, & Dubois-Arber, 2009; Baumgartner, Geary, Tucker, & Wedderburn, 2009; Friedman et al., 2008; Lyons et al., 2012; Nelson et al., 2016; Sandfort, Orr, Hirsch, & Santelli, 2008), as well as mental health problems (Brown, Masho, Perera, Mezuk, & Cohen, 2015). For heterosexual men and gay and bisexual men (GBM), it appears that age of sexual debut has decreased over time (Balthasar et al., 2009; Floyd & Bakeman, 2006; Grov et al., 2006; Liu et al., 2015; Lyons et al., 2012). In a study of 845 Australian gay men Lyons et al. (2012) noted that age at first anal intercourse fell from 35 years for men born between 1944 and 1953 to 18 years for men born between 1984 and 1993. In another study of 812 GBM in the U.S., Nelson et al. (2016) reported that mean age of sexual debut was 14.6 among men born in the 1990s versus 15.9 among men born before 1970. Using data collected between 2003 and 2004, Grov et al. (2006) showed further evidence for this trend among GBM—men born after 1980 had their same-sex sexual debut at a mean age of 16.1, those born in the 1970s and those born in the 1960s both had their debut at a mean age of 17.9, those born in the 1950s had their debut at a mean age of 18.6, and those born prior to 1950 had their debut at a mean age of 19.0.

Researchers have also investigated the ages in which GBM cross other sexual identity development milestones such as self-awareness, self-acceptance, or age at first disclosure of sex minority identity to others. Dank's (1971) study of 237 gay men found the average age of first sexual desire toward the same gender occurred around age 13, while acceptance of sexual identity emerged much later, around age 19. In a sample of 72 LGB youth aged 16–27, Floyd and Stein (2002) reported that awareness of same-sex attraction occurred around age 10, self-identification at around age 16 years and disclosure at around age 17. Using samples that include a greater diversity of age groups, other studies have reported awareness of same-sex attraction among men at an average age of 13 (Bell, Weinberg, & Hammersmith, 1981; McDonald, 1982), but little has been published recently.

One study, using data collected between 2003 and 2004, reported that men born in the 1980s self-identified as gay or bisexual at a mean age of 15.0 and the age at which this occurred increased with older cohorts, with the highest being age 20.3 among men born prior to 1950 (Grov et al., 2006). In this study, a similar linear trend was observed for the mean age at which men disclosed to others that they were gay or bisexual, which increased from at age 16.94 among men born in the 1980s to age 24.11 among men born prior to 1950. Of note, this study was based on a sample of GBM in New York City and Los Angeles.

Most studies have examined cohort differences in the age at which men reached a single milestone or have looked comparatively within a single group at the ages at which men achieved multiple milestones to determine sequencing. With few exceptions (c.f., Calzo et al., 2011) studies have not examined whether there are unique patterns in sexual identity development milestones. Such an inquiry is critical, as it would help to understand the extent of heterogeneity in both the sequencing and the magnitude of the ages at which GBM achieve each of the aforementioned milestones. Further, with sufficiently large samples, one could also examine whether there are cohort differences in these patterns of achieving sexual identity development milestones. Latent class analysis (LCA) is a so-called person-centered approach that allows one to examine whether distinct but unobserved groups of people share a common pattern—in this case, whether there are distinct groups of GBM who share a common pattern in the ages (again, both in sequence and in magnitude) at which they achieve sexual identity development milestones. Moreover, the LCA approach looks for patterns without assuming any functional form (e.g., linear, quadratic), unlike other approaches such as growth curve analysis, which has the added benefit of helping to discover subgroups of men whose sequence of milestones may be far from the average.

Given that the findings reported in some of the most recent data on sexual identity development milestones were collected upwards of a decade ago (e.g., Calzo et al., 2011; Friedman et al., 2008; Grov et al., 2006), we aimed to investigate sexual identity development milestones in a recent sample of GBM. Moreover, we aimed to improve upon prior research by utilizing a nationwide sample from across the U.S. that was sufficiently large to be able to represent several decades of birth cohorts. Data for the present study (collected in 2015) includes a new birth cohort of GBM (those born in the 1990s) and thus provides a substantive addition to the literature. Our goals were to compare birth cohorts on demographic and behavioral differences, as well as identify cohort differences in passing sexual identity development identity milestones. Additionally, we aimed to add to the

existing literature by conducting a LCA of the sexual identity milestone ages to determine what evidence exists for distinct patterns in these milestones. In doing so, we aimed to identify distinct trajectories of sexual identity development and compare these trajectories across birth cohorts.

Method

Participants and Procedures

One Thousand Strong is a longitudinal cohort study prospectively following a nationwide sample of GBM in the U.S. for a period of three years (Grov et al., 2016). Data for the present analyses were taken from the 12-month follow-up assessment that was conducted in 2015, which was when we collected data on sexual identity development milestones. Participants were initially recruited via Community Marketing and Initiative's (CMI) panel of over 45,000 LGBT individuals, over 22,000 of whom are GBM throughout the U.S. CMI draws panelists from over 200 sources ranging from LGBT events to social media and non-gay identified venues/mediums (e.g., social media). Participants in *One Thousand Strong* were targeted to represent the diversity and distribution of GBM in the U.S. population based on age, geography, and race/ethnicity. In so doing, recruitment targets were established using data from the U.S. Census with regard to same sex households.

CMI emailed potential participants with a description of the study along with a link to a brief survey that would determine preliminary eligibility criteria (e.g., reside in the U.S., be at least 18 years of age, be cisgender male, identify as gay or bisexual, report having sex with a man in the past year, self-identify as HIV-negative, willing to complete at-home self-administered rapid HIV antibody testing, willing to complete self-administered testing for urine and rectal STIs, able to complete assessments in English, have access to a device that was capable of taking a digital photo (e.g., camera phone, digital camera), and were residentially stable (i.e., have not moved more than twice in the past 6 months)). Those meeting these preliminary criteria were invited to join the study and presented with informed consent. CMI shared contact with the research team to follow up for enrollment in the study. In total, 1071 GBM were enrolled in the study in 2014. Full enrollment procedures have been described elsewhere (Grov et al., 2016).

At the month 12 follow up, participants were emailed a link to a self-administered at-home online survey that took approximately one hour to complete. Of the 1,071 enrolled at baseline, 1,023 (95.5%) completed the follow-up survey. Those completing the survey were compensated a $25 gift card to amazon.com. The City University of New York Institutional Review Board approved study procedures.

Measures

Sexual identity development milestones—Measures of sexual identity development among sexual minority populations have focused on three main milestones: self-realization of attraction to the same sex, disclosure of same-sex sexual identity to others, and engaging in consensual sexual behavior (either oral or anal) with someone of the same sex (Calzo et al., 2011; Floyd & Stein, 2002; Grov et al., 2006). Note, our questions specified "consensual

sex" in an effort to avoid misclassifying instances of childhood sexual abuse—which are more common among GBM (as compared to heterosexual men)—or assault as the age of sexual debut (Boroughs et al., 2015; Catania et al., 2008; Mimiaga et al., 2009). Furthermore, in the present study, we split the domain of self-realization to include the age at which participants first felt sexually attracted to people of the same sex (i.e., self-awareness), as well as the age in which they first admitted to themselves they were gay or bisexual (i.e., self-acceptance/self-identification). Thus, in total, participants indicated the age in which they first (a) felt sexually attracted to someone of the same sex, (b) admitted to themselves they were gay/bisexual, (c) had consensual sex with another male, (d) told someone else they were gay/bisexual.

Demographic and behavioral characteristics—Participants reported demographic characteristics including race or ethnicity, education, income, age, sexual identity, relationship status, whether they had a primary care provider, and, if so, whether they were "out" to their provider. Participants indicated if they had engaged in condomless anal sex (CAS) with a casual male partner who was HIV-positive or did not know their status in the prior 90 days. Furthermore, men were asked if they were currently taking HIV Pre-Exposure Prophylaxis (PrEP).

Analytic Plan

At the 12 month assessment (all conducted in 2015), participants ranged in age from 19 to 80. Participants were grouped into cohorts based on the decade they were born: before 1960 (i.e., over age 55), 1960 to 1969 (age 46 to 55), 1970 to 1979 (age 36 to 45), 1980 to 1989 (age 26 to 35), and 1990 to 1996 (age 19 to 25). Organizing participants based on decade of birth mirrors that of another study that assessed cohort differences in sexual debut (Nelson et al., 2016). Specifically, participants born in the same decade share exposure to key sociopolitical movements related to the sexual revolution, gay rights, and the HIV epidemic during formative portions of their sexual development (Nelson et al., 2016). Although a second study of sexual identity development milestones (Grov et al., 2006) grouped individuals based on *current* age—not birth decade—the age groupings used in that study correspond well with the cohort groupings used in the present study.

First, we used chi-square to compare birth cohorts on several key demographic and behavioral characteristics. Next, and to accommodate the non-normal distribution (positive skew) of age of passing a sexual identity development milestone, we used Kruskal-Wallis chi-square to compare milestones by birth cohort. Finally, we utilized latent class analysis (LCA) (i.e., latent mixture modeling) in *Mplus* version 7.3 to investigate unique groups of men based on the patterns of ages at which they reached their sexual identity development milestones. Specifically, we entered each of the four ages as continuous indicators of the latent class and iteratively tested models ranging from 1 to 6 classes. We compared the models utilizing several available fit indices—specifically, lower Akaike's information criteria (AIC) and adjusted Bayesian information criteria (ABIC), higher entropy, and significant *p*-values for the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-ALRT) were used as indicators of better fit and considered in conjunction with class size and model interpretability to pick the ideal number of classes. To improve estimation, we increased

several of the random starts above the *Mplus* defaults (STARTS=600 400; STITERATIONS = 40; K-1STARTS = 600 40; LRTSTARTS = 0 0 600 40). We utilized the 3-step estimation procedure for auxiliary variables (R3STEP) in *Mplus* to estimate the class structure while simultaneously considering the influence of key sociodemographic variables of interest, with a focus on estimating the probabilities of class membership by birth cohort. Finally, we utilized the most likely class membership to produce a plot of the proportion within each birth cohort who were in each class.

Results

As noted, 1,023 individuals completed the online survey for the month 12 assessment. Those completing the assessment were not significantly different from those who did not on demographic characteristics, and completion was not significantly associated with birth cohort (data not shown). The sample for present analyses included 197 (19.3%) men born before 1960, 191 (18.7%) men born in the 1960s, 206 (20.1%) men born in the 1970s, 282 (27.6%) born in the 1980s, and 147 (14.4%) men born in the 1990s.

Table 1 reports demographic and behavioral characteristics across birth cohort. Birth cohort was associated with race (a higher proportion of older cohorts were White), employment status (older and younger cohorts had the lowest proportions who were employed full-time), income (the oldest cohort had the highest proportion with low income), relationship status (fewer of the youngest cohort were in a relationship), and having a primary care provider (the proportion with a primary care provider declined from older to younger cohorts). Among those with a provider, there was a marginally significant ($p = .051$) association between whether one's provider knew they had sex with men (only 70.7% of men born in the 1990s said their provider knew, whereas this number was closer to 80% among other cohorts). Cohort was associated with whether men were currently taking PrEP, which increased going from older to younger birth cohorts with the exception of those born in the 1990s, who had the second lowest proportion. Of note, and when excluding those taking currently PrEP, birth cohort was not associated with recent CAS. Birth cohort was not associated with education, geographic region of residence, or sexual identity.

Table 2 and Figure 1 report responses to questions regarding sexual identity development milestones. Across all cohorts, the first sexual identity development milestone reached, on average, was feeling attracted to someone of the same sex. Median age was between 11 and 12 and this did not significantly differ across cohorts. There were numerous significant cohort differences in passing other sexual identity milestones; however, two trends were observed. First, older cohorts tended to report passing milestones at later ages than younger cohorts. Second, and across all cohorts, the average order in which milestones were passed trended as follows: after first feeling sexually attracted to someone of the same sex, men (regardless of cohort) tended to next admit to themselves that they were gay or bisexual, followed by having consensual sex with someone of the same sex, and finally telling someone else that they were gay or bisexual. For reporting purposes, Table 2 also indicates cohort differences separately for gay versus bisexual men; however, we urge caution in the interpretation of findings for bisexual men given the small sample size.

Having established differences across birth cohorts in the age of achieving each milestone, we next aimed to examine whether there were distinct patterns in the ages men reached each milestone. We utilized latent class analysis and found that a 3-class solution was the best fit to the data based on both statistical (e.g., information criteria, entropy, and likelihood-ratio tests) and conceptual (e.g., size of classes, interpretability of patterns) grounds. Fit statistics are reported in Table 3. The three classes extracted and their patterns on the sexual identity development milestones are displayed in Figure 2. We found that the most prevalent class (83.6%; $n = 851$) consisted of those who had a pattern of reaching sexual identity development milestones during adolescence (the "*Adolescence*" class), beginning with same-sex attraction at an average age of 10.4 and steadily moving toward coming out by 17.9 years, on average. The second most prevalent class (12.8%; $n = 124$) consisted of individuals who became aware of same-sex attraction at 12.5 years of age followed by proceeding through the remainder of sexual identity development in early adulthood (the "*Early Adulthood*" class), beginning with same-sex sexual experience at 23.7 years of age and ending with coming out at 30.4 years of age. Finally, the smallest class (3.6%; $n = 36$) consisted of those who became aware of same-sex attraction at age 18.0 but the remainder of same-sex sexual identity development was delayed until midlife (the "*Midlife*" class), beginning with same-sex sexual experience at age 37.9 and ending with coming out at age 44.2.

Importantly, the largest class—*Adolescence*—drove the overall average trend that showed same-sex attraction comes first followed by self-identification and, subsequently, sexual activity—the smaller two classes, in fact, both engaged in same-sex sexual activity prior to self-identification as gay or bisexual. It is also worth noting that the 4-class solution produced the same three classes above while also splitting out a very small fourth class ($n = 11$), thus making the model unreliable. This additional class contained those for whom both same-sex attraction and sexual experience occur during adolescence ($M = 12.1$ and $M = 14.0$ years, respectively) but age of self-identification ($M = 42.0$) and sexual orientation disclosure ($M = 41.4$) occurred in midlife.

The proportion of each birth cohort who fell into each of the three classes is displayed in Figure 3. As can be seen visually, more recent birth cohorts had the highest proportions of participants in the Adolescence class while the older birth cohorts had the highest proportions in the Midlife class. In order to statistically compare the birth cohorts on these trajectories, we utilized multinomial logistic regression within the context of the LCA model (i.e., the R3STEP procedure) adjusted for other demographic factors. Compared to those born prior to the 1960's, those born in the 1970's (B = 0.71, $p = 0.02$), the 1980's (B = 4.18, $p = 0.002$), and 1990's (B = 21.67, $p < 0.001$) were much more likely to be in the Adolescence class rather than the Early Adulthood class; those born in the 1960's did not differ significantly (B = 0.15, $p = 0.59$). Similarly, compared to those born prior to the 1960's, those born in the 1960's (B = 1.34, $p = 0.008$), the 1970's (B = 2.40, $p < 0.001$), the 1980's (B = 22.86, $p < 0.001$), and the 1990's (B = 23.30, $p < 0.001$) were significantly more likely to be in the Adolescence class rather than the Midlife class.

Discussion

Using a U.S. national sample of HIV-negative GBM, this study reported on demographic and behavioral differences across five birth cohorts, well as cohort differences in passing sexual identity development identity milestones. By and large, the demographic differences observed across birth cohorts were on par with what one would expect based on a person's age (e.g., compared to someone older, a younger person would be expected to earn less income and be single). The youngest and oldest cohorts were the least likely to be employed full-time, an artifact of higher rates of retirement among men over the age of 55 and high rates of being a current student among those under the age of 26.

With regard to cohort differences in the average age of passing sexual identity development milestones, three consistent patterns were noted. First, on average, birth cohort was independent of when men first felt sexually attracted to someone of the same sex (median age 11 to 12), and this age appears to be on par with when heterosexuals begin to first recognize sexual feelings for people of a different sex (Eliason, 1995; Worthington, Savoy, Dillon, & Vernaglia, 2002). Second, and with the exception of first attraction, older cohorts tended to report passing other milestones at later ages than younger cohorts (Calzo et al., 2011; Floyd & Bakeman, 2006). Taken together, these suggest that although anti-gay sentiments were greater in decades past (essentially making it more hazardous to be gay or bisexual) (Rosario et al., 2004; Rosario et al., 2006), the ages in which GBM first recognized their attraction to other men has not changed meaningfully over time. Thus, the delay in passing subsequent sexual identity milestones among older cohorts may be a direct result of more pervasive anti-gay attitudes at that time (Grov et al., 2006).

Meanwhile, shifting attitudes in the increased social acceptance and visibility of LGBT communities have made it easier for someone to come out at a younger age today than in decades past, including during times in which individual may not yet have financial independence from their parent(s)/caregiver(s) (Grov et al., 2006; Rosario et al., 2004; Rosario et al., 2006). Further, the ages in which GBM today are passing sexual identity milestones (such as having sex) appear to be on par with heterosexual counterparts (Eliason, 1995; Grov et al., 2006; Worthington et al., 2002). Third, and across all cohorts, the *order* in which milestones were passed, on average, was generally the same—after first feeling sexually attracted to someone of the same sex, men (regardless of cohort) tended to next admit to themselves that they were gay or bisexual, followed by having consensual sex with someone of the same sex, and finally telling someone else that they were gay or bisexual. This is consistent with prior work suggesting an ordered trend in passing milestones, beginning first with recognizing sexual attraction to members of the same sex (Calzo et al., 2011; Fassinger & Miller, 1997; Floyd & Stein, 2002; Grov et al., 2006; Martos et al., 2015; McDonald, 1982; Nelson et al., 2016; Rosario et al., 2006; Savin-Williams & Cohen, 2007).

Grov et al. (2006) reported on sexual identity development milestones among GBM aged 18 and older in 2003 and 2004 (i.e., roughly 11 years prior to the current study). Men aged 18–24 and 25–34 at that time would be roughly equivalent to those aged 26–35 and 36–45 respectively in our 2015 study. Interestingly, men aged 18–24 back in 2003–2004 reported passing sexual identity development milestones at almost exactly the same ages as those

who were aged 26–35 in our 2015 study. The same is true for those aged 25–34 in 2003–2004 and those aged 36–45 in our 2015 study. This suggests that within temporally-matched age cohorts, patterns of sexual identity development have been stable over time. Meanwhile, the youngest group of men in the current study (ages 19–25 in 2015) reported passing milestones roughly one year earlier than men who were roughly that age back in 2003–2004 (i.e., 18–24 year olds) in the Grov et al. (2006) study. This suggests that in the last decade, the ages in which GBM passed these three milestones may have shifted to be one year younger. Admittedly, we recognize that the cohort groupings between the 2006 study and the present study do not match up identically and there are some key sampling differences between the present study and the 2006 study (i.e., that study included HIV-positive participants and was geographically limited to men in urban areas). Nevertheless, the current study highlights the need to monitor ongoing generational differences in passing sexual identity development milestones on a continuing basis.

Patterns in Latent Classes

Although we identified that, on average, the sequencing of sexual identity development milestones was consistent across cohorts and simply occurred at later points and with longer gaps of time in between, another goal of this study was to examine whether there was any evidence for unique subgroups of men for whom these patterns were not the case, and examine whether these patterns were associated with birth cohort. Our latent class analysis confirmed that the overwhelming majority of men (84%) began sexual identity development with same-sex attraction around the onset of puberty (i.e., around age 10) and progressed from there to self-identification, same-sex sexual activity, and coming out, in that order. Moreover, these milestones were achieved, on average, within adolescence.

More interesting, however, are the other groups of men who were identified. Both other groups felt same-sex attraction during teen years (12.5 and 18.0 years of age, respectively), but went on to achieve the remaining sexual identity development milestones later in life—for some 13% of men, this was during early adulthood, and for a smaller 3% of men, this was in middle adulthood. Further, in both of these groups, same-sex sexual activity occurred *before* self-identification, suggesting the possibility that it was not until men had acted on their same-sex attraction that they developed a same-sex sexual identity. Not surprisingly, birth cohort was significantly associated with membership in these classes—the patterns characterized by achieving sexual identity development in early and middle adulthood were more common among men from older generations.

Limitations

Our findings should be understood in light of their limitations. We did not assess ages in which participants may have felt sexually attracted to women (if at all) or ages in which participants may have first had sex with a woman (if at all). This would be particularly salient for bisexual men, an area for which there is limited data (including in the present study, $n = 48$ bisexual men) (Brewster & Moradi, 2010). Meanwhile, given greater anti-gay sentiments in decades past, it could also have been that men from older cohorts were more likely to have ever had sex with a woman, have had a long term relationship with a woman (e.g., marriage), and—among those reporting sex with women—that they may have been

more likely than younger men to report having sex with a woman *prior* to having sex with a man.

For the present study, age of sexual debut could have included oral or anal sex. It may be worth investigating these behavioral debuts separately. Further, we include the term "consensual" when assessing for sexual debut in an effort to avoid misclassifying experiences of childhood sexual abuse or sexual assault however, we do not have information on how participants may have interpreted or understood the term "consensual," when, by local law, they may not yet have reached the age of legal consent.

We also recognize that some of our findings—particularly that younger cohorts reported passing sexual identity development milestones at earlier ages than older cohorts—could be, in part, an artifact of the cross-sectional nature of our data. That is, in order to be part of this study, all participants had to *already* self-identify as gay or bisexual and report being sexually active with another male in the past year. Thus, and especially for the youngest participants in our study, the full representativeness of ages at which individuals passed sexual identity milestones could have been censored. We highlight, however, that participants were not required to have passed all milestones in order to be enrolled (e.g., being out to others), and note that limitations with regard to right censorship is innate for this type of research (Grov et al., 2006; Nelson et al., 2016; Rosario et al., 2004; Rosario et al., 2006).

It is also important to recognize whom our sample represents and whom it does not. We did not include women in this study—coming out milestones among women remain an important area for research. Study participants were geographically dispersed across the U.S. and enrollment was targeted to match our sample against Census data; however, our sample does not represent those who refused to participate upon invitation, it may underrepresent men of color (i.e., due to ongoing racial disparities in HIV and our criteria that men be HIV-negative at enrollment), it does not contain any HIV-positive men, was underpowered to conduct separate analyses for bisexual men, and does not include bisexual men who may have only reported sex with a woman in the past year. Enrollment criteria also required men to have access to the internet; however, the digital divide, particularly among GBM, appears to be closing (Grov, Breslow, Newcomb, Rosenberger, & Bauermeister, 2014; Kalichman, Benotsch, Weinhardt, Austin, & Luke, 2002; Kalichman, Weinhardt, et al., 2002; Pequegnat et al., 2007). Although the sample was sufficiently large for LCA, it is worth noting that there was evidence for a fourth class that we were not able to fully investigate because of how small the class itself was. Further research with even larger sample sizes may indeed find additional, very small classes with distinct patterns of sexual identity development milestones.

Our measures were self-reported and we asked participants to reflect on events that, for most, happened years, if not decades, in the past. Events like having consensual sex with another man for the first time or disclosing to someone else that you are gay/bisexual are likely highly salient and thus easily remembered, but things like self-awareness of sexual attraction to members of the same sex might be more subjective. In our analysis, age of sexual debut could have included or sex or anal sex, yet there is much value to assess oral

sexual debut separately from anal sexual debut (Nelson et al., 2016), and a recognition that not all GBM may choose to engage in anal sex. Finally, we recognize that there may be additional unexplored nuances to passing sexual identity development milestones (e.g., plasticity in self-labels) and that other identity labels such as “queer” or “in the life” exist in parallel to the labels of gay and bisexual (Battle, Cohen, Warren, Fergerson, & Audam, 2002; Diamond, 2007, 2008).

Conclusions

We investigated four sexual identity development milestones across five generational cohorts and found (1) birth cohort was independent of when men first felt sexually attracted to someone of the same sex (median age 11 to 12), (2) with the exception of age of first same-sex attraction, older cohorts tended to report passing other milestones at later ages than younger cohorts, and (3) across all cohorts, the *order* in which milestones were passed were generally the same—feeling sexual attraction to someone of the same sex, admitting to oneself they are gay/bisexual, having consensual sex with someone of the same sex, and telling someone else that they were gay or bisexual. Within temporally-matched age cohorts (i.e., the present study versus those from a decade or more ago), patterns of sexual identity development have been stable over time. Meanwhile, the youngest group of men in the current study (ages 19–25 in 2015) reported passing milestones roughly one year earlier than men who were approximately that age back in 2003–2004 (i.e., 18–24 year olds) (Grov et al., 2006). This suggests that in the last decade, the ages in which GBM passed these three milestones may have shifted to be one year younger.

We conducted LCA to examine whether any unique groups exist who may differ from the average pattern of sexual identity development, and found evidence for two groups. Both of these groups differed primarily in the magnitude of their milestone achievement (i.e., they achieved them at later ages), though both groups did also have a difference in sequencing whereby same-sex sexual activity preceded same-sex identification (though both occurred quite close to one another). Moreover, earlier generations were more likely to have had these patterns to their sexual identity development milestones, whereby they proceeded through the majority of them in early (for 13%) or even middle (for 3%) adulthood. Our findings highlight the need to monitor ongoing generational differences in passing sexual identity development milestones on a continual basis.

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References

Balthasar H, Jeannin A, Dubois-Arber F. First anal intercourse and condom use among men who have sex with men in Switzerland. Archives of Sexual Behavior. 2009; 38:1000–1008. [PubMed: 18561013]

Battle J, Cohen C, Warren D, Fergerson G, Audam S. Say it loud: I'm Black I'm Proud; Black Pride Survey 2000. New York: The Policy Institute of the National Gay and Lesbian Task Force; 2002.

Baumgartner JN, Geary CW, Tucker H, Wedderburn M. The influence of early sexual debut and sexual violence on adolescent pregnancy: a matched case-control study in Jamaica. International Perspectives on Sexual and Reproductive Health. 2009; 35:21–28. [PubMed: 19465345]

Bell AP, Weinberg MS, Hammersmith SK. Sexual preference: Its development in men and women. Bloomington: Indiana University Press; 1981.

Bilodeau BL, Renn KA. Analysis of LGBT identity development models and implications for practice. New Directions for Student Services. 2005; 2005:25–39.

Boroughs MS, Valentine SE, Ironson GH, Shipherd JC, Safren SA, Taylor SW, O'Cleirigh C. Complexity of childhood sexual abuse: predictors of current post-traumatic stress disorder, mood disorders, substance use, and sexual risk behavior among adult men who have sex with men. Archives of Sexual Behavior. 2015; 44:1891–1902. [PubMed: 26159863]

Brewster ME, Moradi B. Personal, relational and community aspects of bisexual identity in emerging, early and middle adult cohorts. Journal of Bisexuality. 2010; 10:404–428.

Brown MJ, Masho SW, Perera RA, Mezuk B, Cohen SA. 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 and Neglect. 2015; 46:89–102. [PubMed: 25804435]

Calzo JP, Antonucci TC, Mays VM, Cochran SD. Retrospective recall of sexual orientation identity development among gay, lesbian, and bisexual adults. Developmental Psychology. 2011; 47:1658. [PubMed: 21942662]

Cass VC. Homosexuality identity formation: A theoretical model. Journal of Homosexuality. 1979; 4(3):219–235. [PubMed: 264126]

Catania JA, Paul J, Osmond D, Folkman S, Pollack L, Canchola J, Neilands T. Mediators of childhood sexual abuse and high-risk sex among men-who-have-sex-with-men. Child Abuse and Neglect. 2008; 32:925–940. [PubMed: 18995903]

D'Augelli AR. Gay men in college: Identity processes and adaptations. Journal of College Student Development. 1991; 32:140–146.

Dank BM. Coming out in the gay world. Psychiatry. 1971; 34:180–197. [PubMed: 5553891]

Diamond LM. The evolution of plasticity in female-female desire. Journal of Psychology & Human Sexuality. 2007; 18:245–274.

Diamond LM. Sexual fluidity: understanding women's love na desire. Cambridge: Harvard University press; 2008.

Eliason MJ. Accounts of sexual identity formation in heterosexual students. Sex Roles. 1995; 32:821–834.

Eliason MJ, Schope R. Shifting sands or solid foundation? Lesbian, gay, bisexual, and transgender identity formation. In: Meyer IH, Northridge ME, editorsThe Health of Sexual Minorities. New York: Springer; 2007. 3–26.

Fassinger RE, Miller BA. Validation of an inclusive model of sexual minority identity formation on a sample of gay men. Journal of Homosexuality. 1997; 32:53–78.

Floyd FJ, Bakeman R. Coming-out across the life course: Implications of age and historical context. Archives of Sexual Behavior. 2006; 35:287–296. [PubMed: 16804747]

Floyd FJ, Stein TS. Sexual orientation identity formation among gay, lesbian, and bisexual youths: Multiple patterns of milestone experiences. Journal of Research on Adolescence. 2002; 12:167191.

Friedman MS, Marshal MP, Stall R, Cheong J, Wright ER. Gay-related development, early abuse and adult health outcomes among gay males. AIDS and Behavior. 2008; 12:891–902. [PubMed: 17990094]

Grov C, Bimbi DS, Nanín JE, Parsons JT. Race, ethnicity, gender, and generational factors associated with the coming-out process among gay, lesbian, and bisexual individuals. Journal of Sex Research. 2006; 43:115–121. [PubMed: 16817058]

Grov C, Breslow AS, Newcomb ME, Rosenberger JG, Bauermeister JA. Gay and bisexual men's use of the Internet: Research from the 1990s through 2013. Annual Review of Sex Research. 2014; 51:390–409.

Grov C, Cain D, Whitfield THF, Rendina HJ, Pawson M, Ventuneac A, Parsons JT. Recruiting a U.S. national sample of HIV-negative gay and bisexual men to complete at-home self-administered HIV/STI testing and surveys: Challenges and opportunities. Sexuality Research & Social Policy. 2016; 13:1–21. [PubMed: 26858776]

Kalichman SC, Benotsch EG, Weinhardt LS, Austin J, Luke W. Internet use among people living with HIV/AIDS: Association of health information, health behaviors, and health status. AIDS Education and Prevention. 2002; 14:51–61. [PubMed: 11900110]

Kalichman SC, Weinhardt L, Benotsch E, DiFonzo K, Luke W, Austin J. Internet access and Internet use for health information among people living with HIV-AIDS. Patient Education and Counceling. 2002; 46:109–116.

Liu G, Hariri S, Bradley H, Gottlieb SL, Leichliter JS, Markowitz LE. Trends and patterns of sexual behaviors among adolescents and adults aged 14 to 59 years, United States. Sexually Transmitted Diseases. 2015; 42:20–26. [PubMed: 25504296]

Lyons A, Pitts M, Grierson J, Smith A, McNally S, Couch M. Age at first anal sex and HIV/STI vulnerability among gay men in Australia. Sexually Transmitted Infections. 2012; 88:252–257. [PubMed: 22246810]

Maguen S, Floyd FJ, Bakeman R, Armistead L. Developmental milestones and disclosure of sexual orientation among gay, lesbian, and bisexual youths. Journal of Applied Developmental Psychology. 2002; 23:219–233.

Martos AJ, Nezhad S, Meyer IH. Variations in Sexual Identity Milestones Among Lesbians, Gay Men, and Bisexuals. Sexuality Research and Social Policy. 2015; 12:24–33. [PubMed: 27695579]

McDonald GJ. Individual differences in the coming out process for gay men: Implications for theoretical minds. Journal of Homosexuality. 1982; 8:47–60. [PubMed: 7183725]

Mimiaga MJ, Noonan E, Donnell D, Safren SA, Koenen KC, Gortmaker S, Mayer KH. Childhood sexual abuse is highly associated with HIV risk-taking behavior and infection among MSM in the EXPLORE Study. Journal of Acquired Immune Deficiency Syndromes. 2009; 51:340–348. [PubMed: 19367173]

Nelson KM, Gamarel KE, Pantalone DW, Carey MP, Simoni JM. Sexual debut and HIV-related sexual risk-taking by birth cohort among men who have sex with men in the United States. AIDS and Behavior. 2016; 20:2286–2295. [PubMed: 26860630]

Pequegnat W, Rosser BR, Bowen AM, Bull SS, DiClemente RJ, Bockting WO, Zimmerman R. Conducting Internet-based HIV/STD prevention survey research: considerations in design and evaluation. AIDS and Behavior. 2007; 11:505–521. [PubMed: 17053853]

Rosario M, Schrimshaw EW, Hunter J. Ethnic/racial differences in the coming-out process of lesbian, gay, and bisexual youths: A comparison of sexual identity development over time. Cultural Diversity and Ethnic Minority Psychology. 2004; 10:215–228. [PubMed: 15311975]

Rosario M, Schrimshaw EW, Hunter J, Braun L. Sexual identity development among lesbian, gay, and bisexual youths: Consistency and change over time. Journal of Sex Research. 2006; 43:46–58. [PubMed: 16817067]

Sandfort TGM, Orr M, Hirsch JS, Santelli J. Long-term health correlates of timing of sexual debut: Results from a national US study. American Journal of Public Health. 2008; 98:155–161. [PubMed: 18048793]

Savin-Williams RC. Identity development among sexual-minority youth. In: Schwartz SJ, Luyckx K, Vignoles VL, editorsHandbook of identity theory and research. New York: Springer; 2011. 671–689.

Savin-Williams RC, Cohen KM. Development of same-sex attracted youth. In: Meyer IH, Northridge ME, editorsThe Health of Sexual Minorities. New York: Springer; 2007. 27–47.

Troiden RR. Becoming homosexual: A model of gay identity acquisition. Psychiatry. 1979; 42:362–373. [PubMed: 504515]

Worthington RL, Savoy HB, Dillon FR, Vernaglia ER. Heterosexual identity development: A multidimensional model of individual and social identity. The Counseling Psychologist. 2002; 30:496–531.

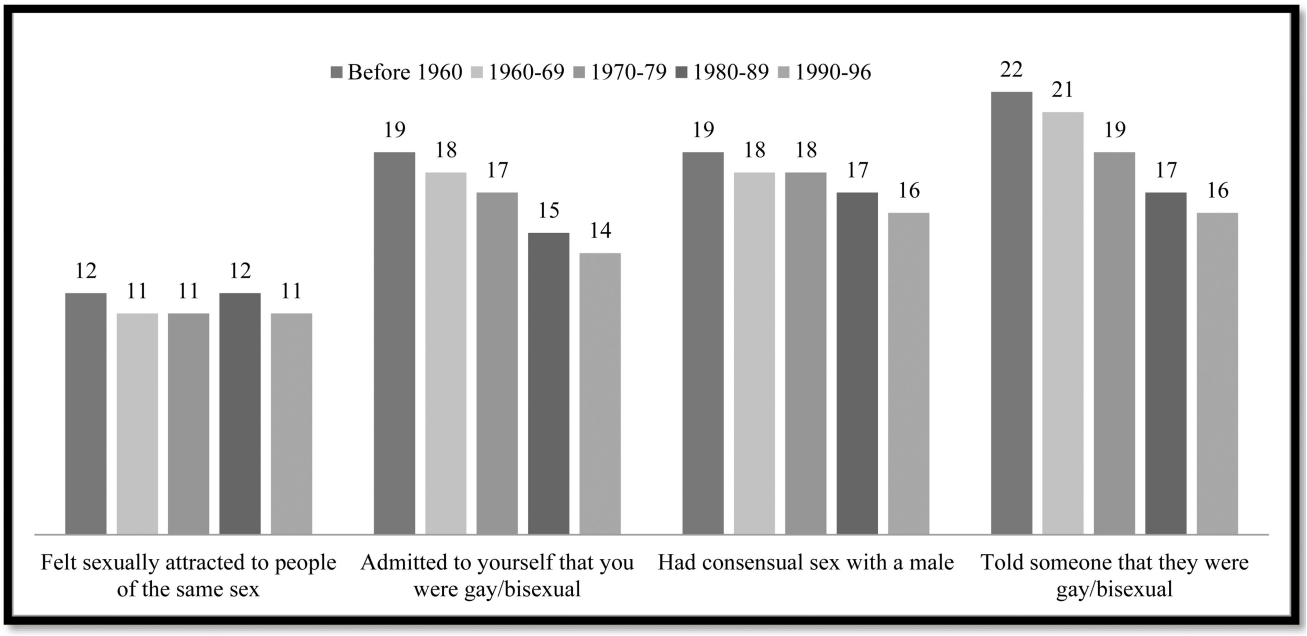

Figure 1.
Median age of sexual identity development milestones by birth cohort

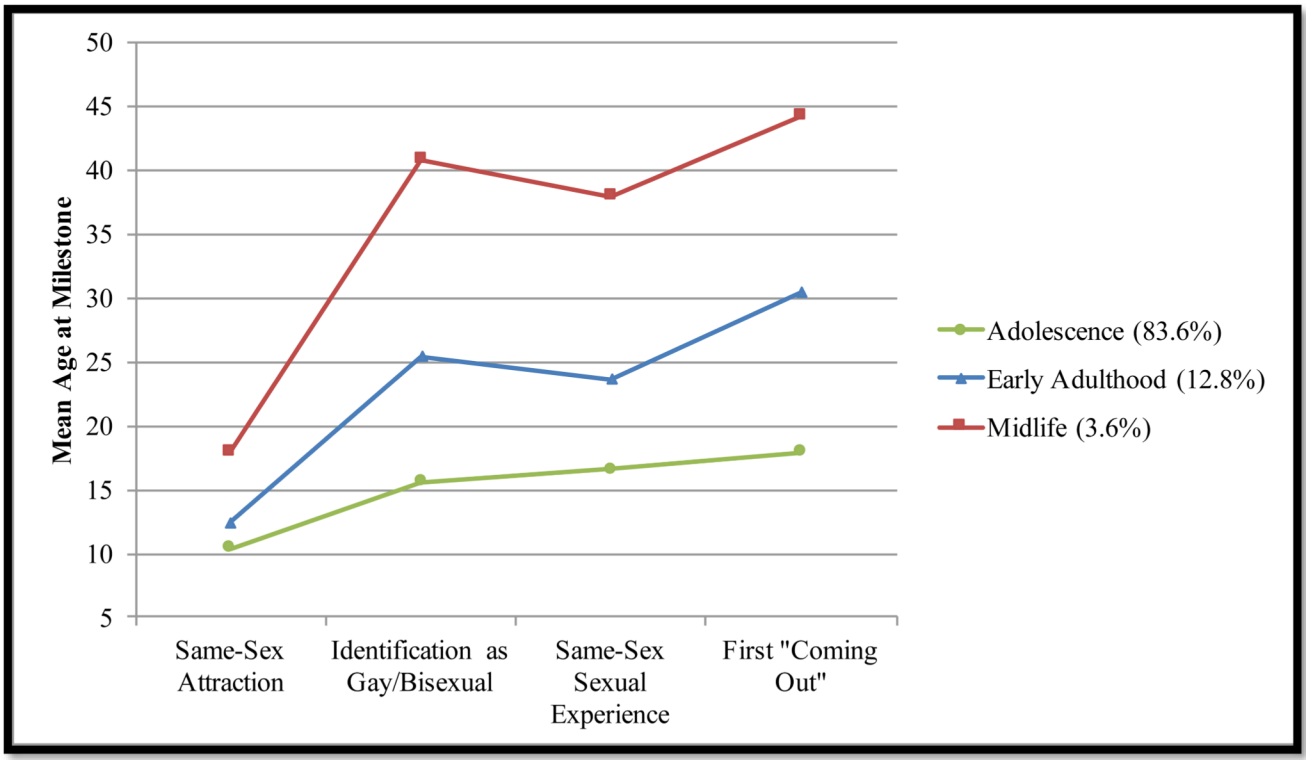

Figure 2.
The trajectory of each sexual identity development milestone across the three latent class analysis-derived groups.

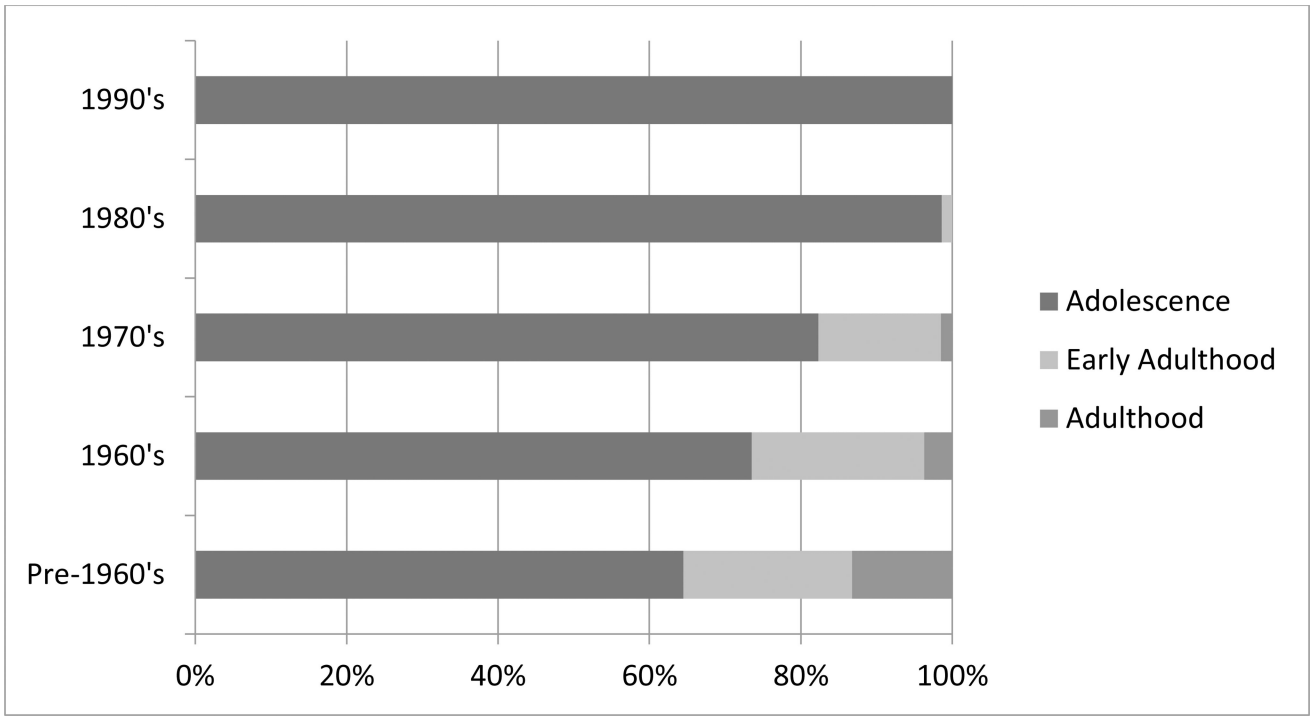

Figure 3.

The proportion of individuals from each birth cohort who were in the Adolescence, Young Adulthood, and Adulthood classes. The numbers who reached their primary sexual identity development milestones in adolescence was highest (100.0%) among the group born in the 1990's who were, at the time of the study, all under the age of 26 and lowest among the group born prior to the 1960's (64.5%). Conversely, the numbers who reached these milestones in adulthood were lowest among those born in the 1990's (0.0%) and highest among those born prior to the 1960's (13.2%).

Table 1

Demographic and behavioral differences across birth cohorts

Birth cohort **Age at time of survey (2015)**	**Before 1960** **>55** ***n* = 197**		**1960–69** **46 – 55** ***n* = 191**		**1970–79** **36 – 45** ***n* = 206**		**1980–89** **26 – 35** ***n* = 282**		**1990–96** **19 – 25** ***n* = 147**			
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	**Chi-Sq**	***p***
Race or Ethnicity												
Black	9	4.3	14	6.9	27	12.7	23	8	10	6.3	78.97	< .001
Latino	11	5.3	14	6.9	23	10.8	52	18	35	22.2		
White	182	87.9	164	80.4	137	64.3	188	65.1	92	58.2		
Multiracial/Other	5	2.4	12	5.9	26	12.2	26	9	21	13.3		
Employment												
Unemployed, student, disability, retired	67	34	15	7.3	15	7.3	20	7.1	20	13.6	154.38	< .001
Employed part-time (and/or full-time student)	31	15.7	24	12.6	13	6.3	24	8.5	47	32		
Employed full-time	99	50.3	144	75.4	178	84.6	238	84.4	80	54.4		
Income												
< $20,000	21	10.7	22	11.5	16	7.8	32	11.3	58	39.5	152.11	< .001
$20,000 – $49,999	64	32.5	60	31.4	62	30.1	134	47.5	78	49		
$50,000 +	112	56.9	109	57.1	128	62.1	116	41.1	17	11.6		
Education												
High school or less	10	5.1	11	5.8	12	5.8	21	7.4	10	6.8	7.58	0.48
Some college	66	33.5	72	37.7	70	34	90	31.9	63	42.9		
4-year college degree	121	61.4	108	56.5	124	60.2	171	60.6	74	50.3		
U.S Geographic region												
Northeast	52	25.1	34	16.7	41	19.2	48	16.6	29	18.4	11.87	0.46
Midwest	31	15.0	44	21.6	35	16.4	56	19.4	26	16.5		
South	64	30.9	75	36.8	73	34.3	104	36.0	61	38.6		
West	60	29.0	51	25.0	64	30.0	81	28.0	42	26.6		
Sexual identity												
Gay	185	93.9	185	96.9	194	94.2	273	96.8	137	93.2	4.54	0.34
Bisexual	12	6.1	6	3.1	12	5.8	9	3.2	9	6.8		
Relationship status												

Birth cohort **Age at time of survey (2015)**	**Before 1960** **>55** ***n* = 197**		**1960–69** **46 – 55** ***n* = 191**		**1970–79** **36 – 45** ***n* = 206**		**1980–89** **26 – 35** ***n* = 282**		**1990–96** **19 – 25** ***n* = 147**			
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	**Chi-Sq**	***p***
Single	98	49.7	89	46.6	95	46.1	122	43.3	86	58.5	9.75	0.046
In a relationship	99	50.3	102	53.4	111	53.9	160	56.7	61	41.5		
Has a primary care provider (a doctor)	179	91.3	160	84.7	161	78.9	191	68.5	82	57.7	69.51	< .001
Does s/he know you have sex with men? valid *n* = 773	140	78.2	134	83.8	133	82.6	162	84.8	58	70.7	9.423	0.051
Currently taking PrEP												
No	199	96.1	189	92.6	197	92.5	255	88.2	150	94.9	12.77	0.01
Yes	8	3.9	15	7.4	16	7.5	34	11.8	8	5.1		
CAS [1] with a casual male partner or HIV+/uknown status main partner, < 90 days (excluding participants on PrEP)												
No	138	69.3	129	68.3	128	65	173	67.8	107	71.3	1.76	0.78
Yes	61	30.7	60	31.7	69	35	82	32.2	43	28.7		

Note

[1] CAS = Condomless anal sex

Table 2

Birth cohort differences in sexual identity development milestones

Birth cohort **Age at time of survey (2015)**	**Group A** **Before 1960** **>55**		**Group B** **1960–69** **46 – 55**		**Group C** **1970–79** **36 – 45**		**Group D** **1980–89** **26 – 35**		**Group E** **1990–96** **19 – 25**				
	Mdn	**IQR**	**Mdn**	**IQR**	**Mdn**	**IQR**	**Mdn**	**IQR**	**Mdn**	**IQR**	**K-W**	***p***	**Post hoc**
(all participants) How old were you when you first…	*n* = 197		*n* = 191		*n* = 206		*n* = 282		*n* = 147				
felt sexually attracted to people of the same sex?	12	7–14	11	8–13	11	7.25–13	12	8–13	11	10–13	2.76	0.60	
admitted to yourself that you were gay/bisexual?	19	15–25	18	15–22	17	14–21	15	13–18	14	13–16	136.23	< .001	A ≠ C, D, E; B ≠ D, E; C ≠ D ≠ E
had consensual sex with a male	19	14–25	18	14–21	18	15–21	17	15–19	16	14–18	33.64	< .001	E ≠ A, B, C, D; D ≠ C, A; A ≠ B
told someone else that they were gay/bisexual	22	19–33	21	18–28	19	17–23	17	15–20	16	17–17.25	245.97	< .001	A ≠ B ≠ C ≠ D ≠ E
Gay identified men, *n* = 974	*n* = 185		*n* = 185		*n* = 194		*n* = 273		*n* = 137				
felt sexually attracted to people of the same sex?	12	7–13	11	8–13	11	7–13	12	8–13	11	10–13	2.63	0.62	
admitted to yourself that you were gay/bisexual?	19	15–25	18	15–22	17	14–21	15	13–18	14	13–16	129.79	< .001	E ≠ A, B, C, D, D ≠ A, B, C; A ≠ C
had consensual sex with a male	19	14–24	18	14–21	18	15–31	17	15–19	17	14.25–18	28.63	< .001	E ≠ A, B, C; A ≠ D
told someone else that they were gay/bisexual	22	19–30	21	18–28	19	17–23	17	15–20	16	14–17	237.34	< .001	E ≠ A, B, C, D; 'D ≠ A, B, C; A ≠ C
Bisexual identified men, *n* = 48	*n* = 12		*n* = 6		*n* = 12		*n* = 9		*n* = 9				
felt sexually attracted to people of the same sex?	13	1.25–15.75	11.5	8.75–16.5	12	8–13	15	9–19.5	11	9.25–13.5	3.2	0.52	
admitted to yourself that you were gay/bisexual?	32.5	7.25–44.25	17	1.5–21.25	15	14–22	17	9–20.5	14.5	13–18.25	10.6	0.03	A ≠ E
had consensual sex with a male	20	25.75–45	16	10–20.25	18	14–23	18	11–21	15	12–18.25	6	0.2	
told someone else that they were gay/bisexual	31	6.25–46.75	21.5	5.75–34.5	21	15–25	18	12–22	14.5	2.75–18.25	9.4	0.051	

Table 3

Fit statistics of the Latent Class Models

	Number of class solutions				
	2	**3**	**4**	**5**	**6**
AIC	24870.5	24448.3	24265.5	24117.3	24003.0
BIC	24934.4	24536.8	24378.6	24255.1	24165.3
ABIC	24893.1	24479.7	24305.6	24166.1	24060.5
Entropy	0.98	0.94	0.95	0.86	0.85
VLMR LRT	0	0.05	0.001	0.26	0.16
LMR ALRT	0.0001	0.05	0.001	0.27	0.17