Sexual Orientation and Psychological Distress across Cohorts

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Abstract

Sexual minorities experience higher levels of psychological distress than their straight counterparts. Yet, with the advancement of sexual minority rights over recent decades, whether this health disadvantage has been reduced among recent cohorts is unknown. Our analysis of data from the 2013-2017 National Health and Interview Surveys found no evidence of a reduced gap in psychological distress between sexual minorities and straight people across cohorts. Indeed, the disadvantage of gays and lesbians and, more strikingly, bisexuals, in psychological distress in comparison to the straights has increased across cohorts. SES explains only a small part of the increasing trends in psychological distress disadvantage of LGBs. Findings highlight the importance of designing and implementing public policies and programs to reduce societal homophobia and biphobia that shape psychological distress disparities among LGB Millennials and Generation Xers.

Sexual Orientation and Psychological Distress across Cohorts

Previous studies demonstrate that LGB sexual minorities (i.e., lesbians, gays, and bisexuals) experience higher levels of psychological distress than their straight counterparts,[1,2] with bisexuals reporting the worst well-being among all groups.[3,4] Minority stress theory was developed to articulate the specific mental health disadvantages that accrue for sexual minorities, wherein sexual minority status is a fundamental cause of stress and disadvantage due to its socially stigmatized and historically discriminated status.[2,5,6] Structural stigma at the macro level, such as laws banning same-sex marriage, have been found to compromise the well-being of sexual minorities.[7-9]

Yet, notably, the U.S. has witnessed significant progress in promoting and securing legal rights for the LGB population over the past few decades, most conspicuously legalizing same-sex marriage at first the state- and then the federal-level.[10] In the context of rapid LGB civil rights movement, there is no scientific consensus on whether younger LGB cohorts are better off than their earlier cohorts in terms of psychological well-being. This research gap is the primary aim of the present study.

We expect that newer cohorts of LGB populations will experience diminishing levels of psychological distress for several reasons. Younger cohorts grew up in, and currently

experience, an environment that is more legally and socially progressive than preceding cohorts. Public opinion has changed drastically, decidedly moving toward pro-LGB rights over past decades: marriage equality was granted nationally, and other national, state-level, and local protections have been granted to reduce homophobia and provide safe spaces for LGB in order to promote the well-being of sexual minority adults and children.[11-13] These changes are accompanied by the increasing number of American adults who report a LGB identity——from 8 million (3.5% of the adult population) in 2012 to 11 million (4.5% of the adult population) in 2017.[14] This trend is primarily driven by the rapid increase of younger LGB-identified individuals——particularly bisexual individuals——in emerging cohorts, indicating reduced societal stigma towards identifying as LGB across cohorts.[15]

Shifts in legal rights and social acceptance may have a strong impact on younger generations such as the Millennials (i.e., born after 1980) and Generation Xers (i.e., born 1965-1980). LGB Millennials and Generation Xers experienced coming of age during this progressive period, while LGB Baby Boomers (born 1946-1964) and pre-Boomers (i.e., born before 1946) came of age during a period of heightened legal and social stigmatization. In fact, scholars have hypothesized that increasing legal rights and social acceptance of sexual minority identities will reduce

stigma and discrimination and in turn alleviate minority stress.[16,17] For example, while LGB youth today still report higher levels of victimization than their straight peers, they are less likely to conceal or repress their sexual minority identity, and are more likely than older cohorts to disclose their sexual identity to others.[18,19] Changes in cultural climate and awareness of LGB issues likely result in less stigma and minority stress experienced among LGB of younger cohorts. Given more open social environments for LGB in more recent cohorts relative to earlier cohorts, we hypothesize that the disadvantage of LGB in psychological distress relative to the straight population will decrease across cohorts.

In addition, we hypothesize that socioeconomic status (SES) will account for at least some of this cohort trend in psychological distress, as generational changes and subsequent effects on well-being will be shaped by educational and other socioeconomic protections.[20] Pro-LGB policies in primary and secondary school are positively associated with LGB's later socioeconomic achievement, such as education achievement and labor force participation.[21] LGB Millennials experienced educational ages during the 1990s-2000s when LGB policies and programs were introduced into secondary schools. Therefore, they would be more likely to be positively influenced by these policies. In contrast, Generation Xers concluded primary

education before this transitional period, and most Baby Boomers and pre-Boomers experienced educational ages before the post-Stonewall gay identity movement[22] ——thus, neither group have experienced these more supportive environments in early life. Moreover, research suggests that LGB individuals as a whole have higher rates of poverty and housing insecurity,[23] yet, few studies have examined how these rates may have changed across cohorts. Notably, however, socioeconomic shifts may not affect LGB populations equally, as bisexuals in particular appear to experience higher rates of unemployment, homelessness, and poverty than gays and lesbians.[3,24,25]

Using the pooled data from the National Health Interview Surveys 2013-2017, we provide the first population-based evidence on cohort trends in psychological well-being of LGB. We address the following research questions: 1) does the LGB disadvantage in psychological distress in comparison to their straight counterparts decrease in more recent cohorts? and 2) does socioeconomic status explain these trends? Findings provide new insight into assumptions underlying efforts to reduce health disparities within this minority population. This study further provides historical context for the effects of ongoing LGB movements for the well-being of sexual minorities and to our general understanding of historical changes in LGB well-being.

DATA AND SAMPLE

We used data from the pooled 2013-2017 Integrated National Health Interview Surveys (NHIS).[26] The NHIS is a cross-sectional household survey conducted annually in the United States by the National Center for Health Statistics (NCHS); it is representative of the United States civilian non-institutionalized population.[27] One adult aged 18 and above in each household is randomly selected to answer supplementary questions on sexual orientation, psychological distress and other additional health information contained in the Sample Adult questionnaire. We excluded about 5% of respondents because of missing values on sexual orientation or psychological distress. Our final analytic sample (N = 156,363) contained 152,229 self-identified straight individuals, 2,693 self-identified gays and lesbians, and 1,441 self-identified bisexuals. Table 1 shows detailed sample frequency by sexual orientation and age cohort. All analyses were weighted to account for the inverse probability of selection into the sample and poststratification based on age, race-ethnicity, and gender. The "svy" commands in Stata were used to account for the complex nature of the NHIS sampling design.[28]

Table 1 about here

MEASURES

Sexual Orientation. All adults in the NHIS were asked, "Which of the following best represents how you think of

yourself?" Five response options were provided: (1) Lesbian or Gay, (2) Straight, that is, not lesbian or gay, (3) Bisexual, (4) Something else, and (5) I don't know the answer. Our analysis was restricted to respondents who identify as either "gay/lesbian", "straight, that is, not gay/lesbian" or "bisexual" due to small numbers in other categories.

Psychological Distress. Psychological distress was measured using the Kessler-6 (K6) scale, which is an unweighted sum of six items: "During the past 30 days, how often did you feel: (1) so sad that nothing could cheer you up, (2) nervous, (3) restless or fidgety, (4) hopeless, (5) that everything was an effort, and (6) worthless".[29] The response options ranged from none of the time (coded 0) to all of the time (coded 4). Respondents with higher scores on the K6 had higher levels of nonspecific psychological distress (Range = 0–24, alpha=0.86).

Age Cohorts. We used respondents' birth year to construct age cohorts representing Millennials (born after 1980), Generation Xers (born 1965-1980), and Baby Boomers and pre-Boomers (born before 1965, reference). We combined Baby Boomers and pre-Boomers (sometimes referred to as the Silent or Great Generation) into one group (Baby Boomers+) given the small number of pre-Baby Boomers in our sample who are self-identified as bisexual (n=68) and gays/lesbians (n=238). In our sample, Millennials (n=39,082) were between the ages of 18-36,

Generation Xers (n=39,373) were 32-52, and Baby Boomers+ (n=77,908) were 48-85 at the time of the survey.

Socioeconomic Status (SES*).* We examined four SES related factors that may explain the trends: 1) *education* includes less than high school (reference), high school or equivalent, some college, college graduate and above, and missing reports; 2) *poverty status* includes at or above federal poverty threshold (reference), below federal poverty threshold, and missing reports; 3) *employment status* includes employed (reference), unemployed, not in labor force and missing reports; and 4) *marital status* includes different-sex married (reference), same-sex married, different-sex cohabiting, same-sex cohabiting, divorced, widowed, never married, and missing reports.

Other demographic covariates include age in years, sex (0=male, 1=female), race-ethnicity (non-Hispanic white [reference], non-Hispanic black, Hispanic, and others), *nativity* (born in US or US territory [reference], born outside US or US territory and missing reports), and region of residence (Northeast [reference], north central/Midwest, south, west), and survey year (2013 [reference], 2014, 2015, 2016 and 2017).

STATISTICAL ANALYISS

We estimate three Negative Binomial (NB) regression models to analyze the K6 scores. Model 1 includes the main effects of sexual orientation and age cohorts, controlling for basic

demographic covariates including age in years, sex, race-ethnicity, region, nativity and survey year. Model 2 adds the interaction terms of sexual orientation and age cohorts in order to explore whether sexual orientation disparities in psychological distress vary across cohorts. Model 3 adds additional controls for SES variables to assess whether these SES factors contribute to the trends of sexual orientation disparities in psychological distress. We also tested the cohort trends by gender but did not find significant gender differences in the key findings (results available upon request).

RESULTS

Table 2 shows weighted mean K6 scores by sexual orientation and age cohorts. Within each age cohort, gays/lesbians and bisexuals have significantly higher K6 scores (i.e., higher levels of psychological distress) than the straights; and bisexuals are the group with the highest K6 scores among all sexual orientation groups. Moreover, within each sexual orientation group, both Millennials and Generation Xers have higher K6 scores than the Baby Boomers+.

Table 2 about here

Table 3 shows the estimated incidence rate ratios for K6 from the negative binomial regression models. Results from Model 1 of Table 3 suggest that after controlling for age in years, sex, survey year, race/ethnicity, geographic region and

nativity, both gays/lesbians (IRR=1.375, p<.001) and bisexuals (IRR=1.972, p<.001) have significantly higher rate of psychological distress than the straight group. Figure 1 graphically illustrates the predicted K6 scores by sexual orientation groups based on results from Model 1 of Table 3. From Figure 1 we can see that straight individuals have the lowest calculated K6 scores while bisexuals have the highest calculated K6 scores followed by gays and lesbians. Moreover, after controlling for these basic demographic covariates, both Generation Xers(IRR=0.869, p<.001) and Millennials(IRR=0.711, p<.001)report lower K6 scores than the Baby Boomers+.

Table 3 about here

Figure 1 about here

Model 2 adds the interaction terms of sexual orientation by age cohort, suggesting that the differences in psychological distress by sexual orientation vary across age cohorts. Among Baby Boomers+, both gays/lesbians and bisexuals have higher rate of psychological distress than the straight group, indicated by the significant main effects of sexual orientation in Model 2 of Table 3. The significant interaction effects of sexual orientation and age cohort in Model 2 suggest that the differences in psychological distress across sexual orientation groups are significantly larger among Generation Xers and Millennials than among Baby Boomers+. Specifically, for baby

boomers+, the incidence rate of K6 score is 16.1% (IRR=1.161, P<.05) higher for lesbians/gays and 50.7% (IRR=1.507, P<.001) higher for bisexuals than for the straight group; for Generation Xers, the incidence rate of K6 score is 45.4% (IRR=1.161X1.252=1.454) higher for lesbians/gays and twice (IRR=1.507X1.373=2.069) for bisexuals than for the straight group; and for millennials, the incidence rate of K6 score is 51.8% (IRR=1.161X1.308=1.518) higher for lesbians/gays and twice(IRR=1.507X1.376=2.074) for bisexuals than for the straight group.

Model 3 adds SES related factors including education, poverty status, employment status, and marital status. The increasing gap in K6 between bisexuals and straights from Baby Boomers+ to Generation Xers (IRR=1.200, P>.05) becomes insignificant after the SES variables are added in Model 3, but SES does not explain all other identified trends in psychological distress differences by sexual orientation. Figure 2 illustrates the increasing gaps in calculated K6 scores of LGB in comparison to the straight across age cohorts after netting the effects of all covariates. These trends are mostly driven by a more rapid decline in psychological distress across cohorts among straight people in comparison to LGB (Figure 2).

Figure 2 about here

DISCUSSION

Previous studies have demonstrated that sexual minorities generally experience higher levels of psychological distress than their straight counterparts.[1,2] Scholars and policy makers have premised that increasing legal rights and social acceptance of sexual minority identity will decrease stigma and, in turn, decrease psychological distress associated with minority stigma.[16,17] Surprisingly, our analyses of pooled data from the National Health and Interview surveys reveal no evidence of closing gap in psychological distress between LGB and their straight counterparts across cohorts. Indeed, the psychological distress disadvantage of LGB in comparison to the straights has increased in more recent cohorts.

While public opinion on sexual minority status is more favorable than ever before, there remains significant stigma faced by sexual minorities.[30] Recent debates about protection for sexual minorities in the workplace, for example, suggests that U.S. social institutions remain resistant to fully accepting the legitimacy of sexual minorities and sexual minority families.[31,32] Thus, even as there has been some substantial progress in the reduction of stigma and the increase in legal rights for sexual minorities, it may be that significant discrimination and stigma continue on the individual or societal level, even during a more progressive legal era. This may be important for LGB psychological distress because more LGB individuals have

disclosed their sexual identity than ever before,[18,19] making them more susceptible to public stigma and discrimination relative to their more closeted counterparts of previous generations.

Furthermore, our findings show that SES explains little of the increasing sexual minority disadvantages in psychological distress with only one exception: SES explains the increased psychological distress disadvantage of bisexuals among Generation Xers in comparison to Baby Boomers+. Because our Millennials sample are at the ages of 18-35, and a significant portion of them have not completed their education and experience decreased economic security. While we would expect that increased tolerance and acceptance in primary and secondary school would increase the life chances of LGB youth, it is likely that these pro-LGB public policies have not fully reflected in later life socioeconomic achievement of the Millennial LGB. It is also likely that because these policies are unevenly distributed across U.S. schools, we do not see a marked effect on general population well-being. Moreover, because Millennials and Generation Xers in our sample inhabit an earlier life course stage than current Baby Boomers+, it is likely that the cumulated life skills with advancing age provide LGB Baby Boomers+ more copying resources, thus alleviating their distress, than their younger counterparts.

A growing body of research suggests that bisexuals are the most disadvantaged groups among LGB populations.[3,4] Our study advances this line of research, finding that bisexuals experience the greatest disadvantage in psychological distress along with the largest widening trend across cohorts relative to their straight counterparts. Relative to gays/lesbians and straights, bisexuals, who appear to be more prevalent in recent cohorts,[15] suffer from more negative stereotypes such as being confused or indecisive about their sexual orientation, less able to commit to the values and norms of either heterosexual or gay/lesbian community, and less trustworthy in a romantic relationship.[33-36] Prejudice against bisexuality can come from both heterosexual and gay/lesbian communities, referred as the "double stigma".[37] Therefore, recent progress in gay/lesbian civil right movement may not benefit the bisexual population. Bisexuals in more recent cohorts might have been more marginalized in both the heterosexual and gay/lesbian communities, leading to higher levels of psychological distress.

CONCLUSION

The United States has witnessed significant progress in social support for LGB people and in promoting and securing legal rights for the LGB population during the past few decades.[10] However, our results show that this social legal progress does not appear to directly relate to decreases in

psychological distress, as previously theorized. Increasing visibility of LGB Millennials ang Generation Xers may have made them more susceptible to public stigma and discrimination relative to their more closeted counterparts of previous generations. Our finding that bisexuals experience the most deleterious trend relative to their straight counterparts also draws attention to the diversity of the sexual minority population. Public policies and programs should be designed and implemented to reduce the societal homophobia and, perhaps more importantly, biphobia in order to reduce psychological distress and other major disadvantages among LGB Millennials.

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Table 1. Unweighted Frequency of Sexual Orientation by Age Cohorts, NHIS 2013-17

	Age Cohort			
Sexual orientation	Baby Boomers +	Generation Xers	Millennial	Total
Straight	76,536	38,275	37,418	152,229
Gay/lesbian	1,066	779	848	2,693
Bisexual	306	319	816	1,441
Total	77,908	39,373	39,082	156,363

Table 2. Weighted Mean/SD of K6 Scores by Sexual Orientation and Age Cohorts, NHIS 2013-17 (N=156,363)

	Age cohorts			
Sexual orientation	Baby Boomers +	Generation Xers	Millennial	Total
Straight	2.434	2.643 [ab]	2.610 [ab]	2.541
	(3.924)	(3.961)	(3.668)	(3.863)
Gay/lesbian	2.940 [ab]	3.797 [ab]	3.891 [ab]	3.535 [a]
	(4.307)	(4.527)	(4.212)	(4.359)
Bisexual	3.843 [ab]	5.677 [ab]	6.004 [ab]	5.568 [a]
	(5.317)	(5.865)	(5.137)	(5.379)
Total	2.446	2.683 [b]	2.702 [b]	2.585
	(3.936)	(3.998)	(3.747)	(3.901)

[a] $p < .001$, comparing with the straight within cohort. [b] $p < .001$, comparing with Baby Boomers+ within sexual orientation group.

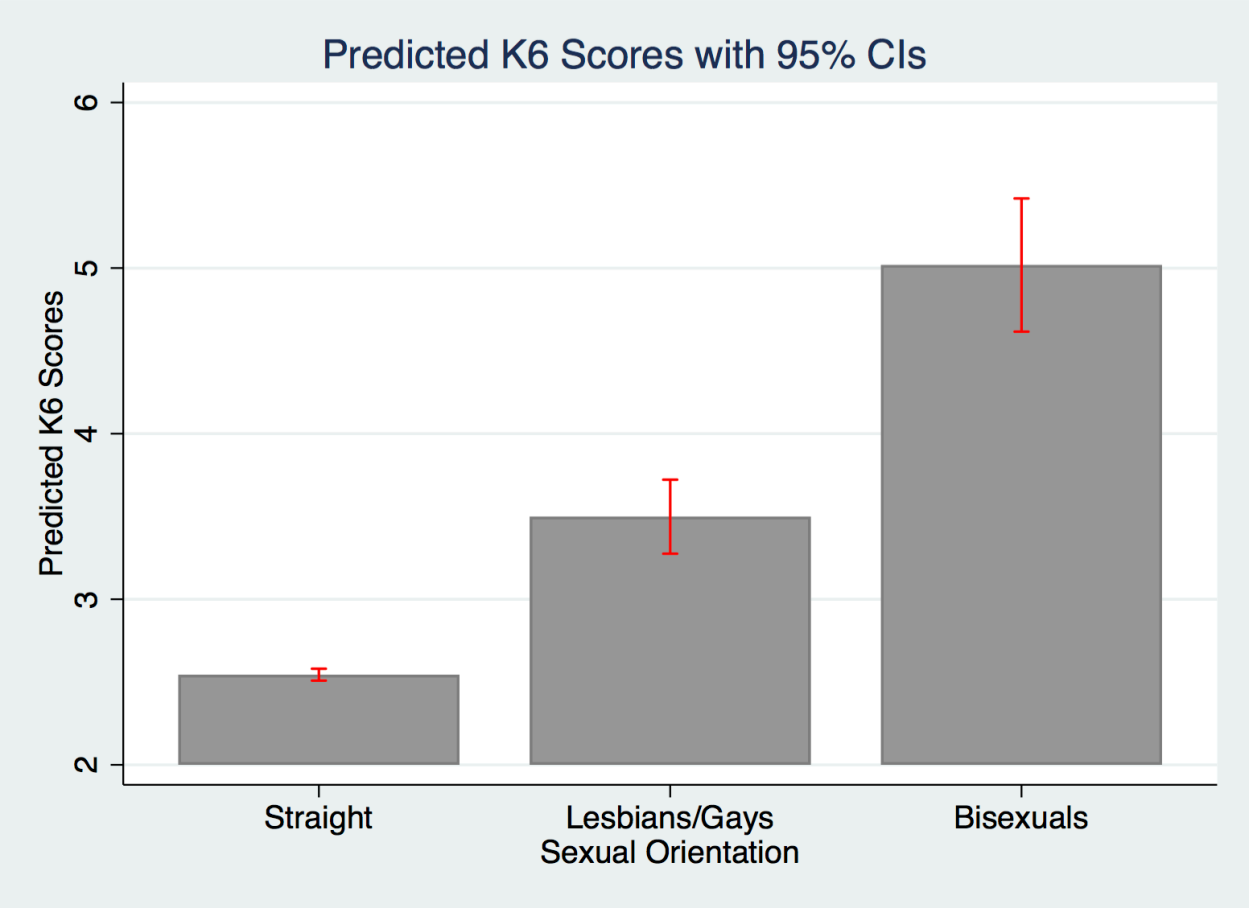
Table 3. Estimated Incidence Rate Ratios for K6 Scores from Negative Binomial Regression Models, NHIS 2013-17 (N=156,363)

	Model 1	Model 2	Model 3
Sexual Orientation (0=Straight)			
Gays/Lesbians	1.375***	1.161*	1.191**
Bisexuals	1.972***	1.507***	1.418***
Age Cohorts (0=Baby Boomers+)			
Generation Xers	0.869***	0.864***	0.911***
Millennial	0.711***	0.704***	0.648***
Sexual Orientation X Cohorts			
Gays/Lesbians X Generation Xers		1.252**	1.227*
Gays/Lesbians X Millennial		1.308***	1.316***
Bisexuals X Generation Xers		1.373*	1.200
Bisexuals X Millennial		1.376**	1.327**
Socio-demographic Covariates			
Age	0.989***	0.989***	0.984***
Female	1.278***	1.278***	1.216***
Survey Year (0=2013)			
2014	0.910***	0.910***	0.920***
2015	1.005	1.005	1.031
2016	0.990	0.991	1.016
2017	1.025	1.025	1.075***
Race/ethnicity (0=NHW)			
NHB	0.977	0.976	0.844***
Hispanic	1.019	1.019	0.875***
Others	0.875***	0.875***	0.875***
Region (0=Northeast)			
North Central/Midwest	1.077***	1.078***	1.062**
South	1.024	1.023	0.987
West	1.102***	1.102***	1.103***
Nativity (0=US Born)			
Born outside of US	1.144***	1.143***	1.100***
Missing	0.855	0.854	0.938
SES			
Education (0=Less Than High School)			
High School Graduate			0.850***
Some College			0.834***
College Graduate			0.687***
Missing			0.991
Poverty (0=No)			

Yes			1.341***
Missing			0.840***
Employment (0=Employed)			
Unemployed			1.672***
Not in Labor Fore			1.436***
Missing			0.797
Marital Status (0=Different-sex Married)			
Same-sex married			1.027
Different-sex Cohabiting			1.302***
Same-sex Cohabiting			1.171*
Divorced			1.436***
Widowed			1.248***
Never married			1.184***
Missing			1.114***
Constant	3.765***	3.802***	4.685***

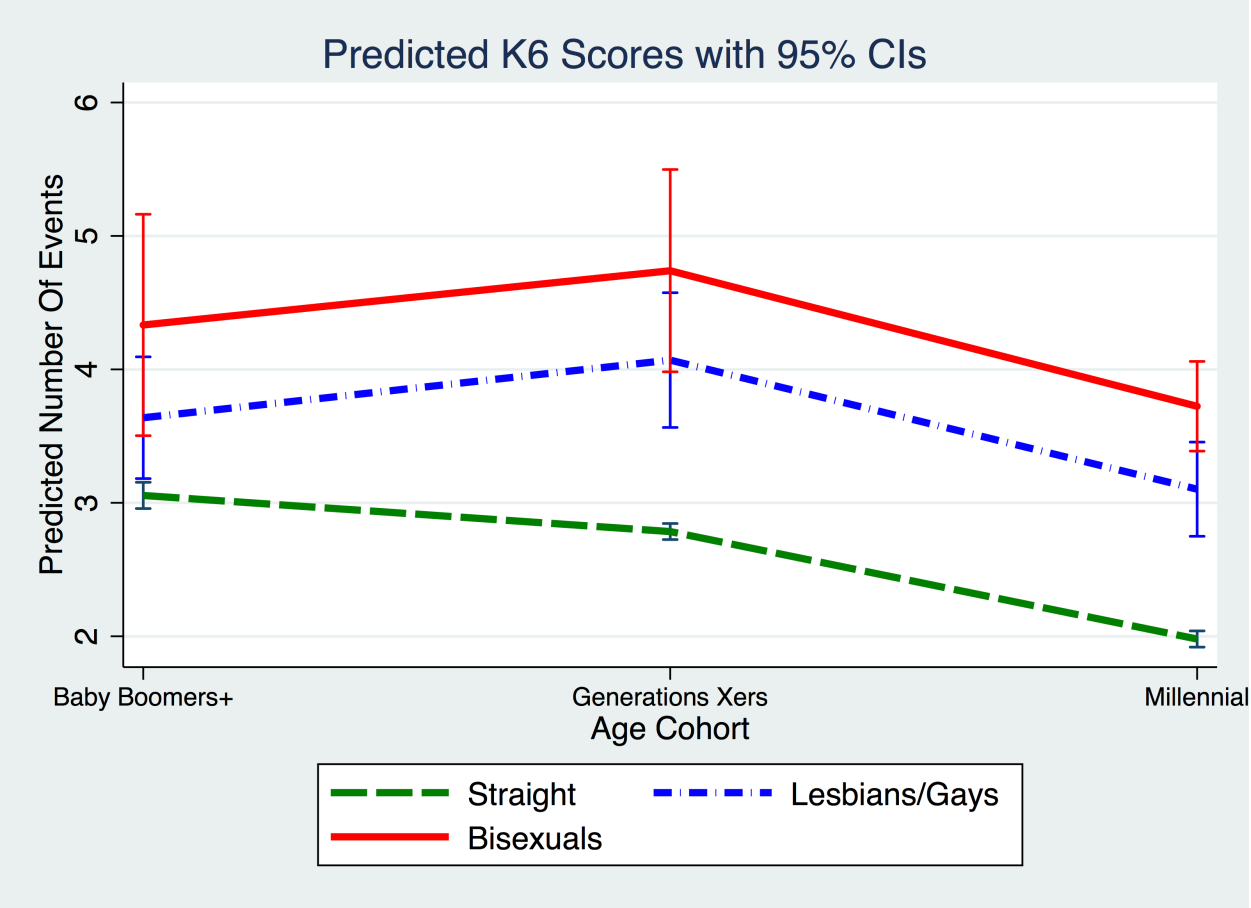
* p<.05; ** p<.005; *** p<.001.

Figure 1. Predicted K6 Scores by Sexual Orientation



NOTES: Predicted K6 scores and 95% confidence intervals (shown as error bars) are from a Negative Binomial regression model controlling for age in years, sex, survey year, race/ethnicity, geographic region and nativity (Model 1 of Table 3).

Figure 2. Predicted K6 Scores by Sexual Orientation across Cohorts



NOTES: Predicted K6 scores and 95% confidence intervals (shown as error bars) are from a Negative Binomial regression model controlling for age in years, sex, survey year, race/ethnicity, geographic region, nativity, education, employment status, immigration status, and marital status (Model 3 of Table 3).