The Effects of Cumulative Victimization on Mental Health Among Lesbian, Gay, Bisexual, and Transgender Adolescents and Young Adults

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Objectives. To examine the effects of the cumulative victimization experienced by lesbian, gay, bisexual, and transgender youths on mental disorders.

Methods. We recruited 248 participants from the Chicago, Illinois, area in 7 waves of data collected over 4 years, beginning in 2007 (83.1% retention rate). Mean age at enrollment was 18.7 years, and 54.7% were Black. We measured depression and posttraumatic stress disorder using structured psychiatric interviews.

Results. Latent class analyses of victimization over time identified a 4-class solution. Class 1 (65.4%) had low, decreasing victimization. Class 2 (10.3%) had moderate, increasing victimization. Class 3 (5.1%) had high, steady victimization. Class 4 (19.2%) had high, decreasing victimization. Controlling for baseline diagnoses and birth sex, lesbian, gay, bisexual, and transgender youths in classes 2 and 3 were at higher risk for depression than were those in class 1; youths in classes 2, 3, and 4 were at elevated risk for posttraumatic stress disorder.

Conclusions. Lesbian, gay, bisexual, and transgender youths with steadily high or increasing levels of victimization from adolescence to early adulthood are at higher risk for depression and posttraumatic stress disorder. (*Am J Public Health.* 2016;106:527–533. doi:10.2105/AJPH.2015.302976)

Lesbian, gay, bisexual, and transgender (LGBT) people experience greater mental health problems, such as depression, anxiety, suicide attempts,[1,2] and posttraumatic stress disorder (PTSD),[3] as well as physical health disparities (e.g., cardiovascular disease[4]), than do heterosexual and cisgender individuals (cisgender refers to those who are not transgender, i.e., their gender identity matches what is typically socially ascribed to those with their sex assigned at birth). Research with nationally representative samples has revealed greater odds of psychological distress among sexual minority youths than among heterosexuals.[1,5,6] Additionally, community-based samples of LGBT youths have shown that as many as 30% may experience psychological distress at clinically significant levels—including symptoms of somatization, depression, and anxiety.[7,8] LGBT youths experience greater stressors from childhood into early adulthood, such as child abuse and unstable housing, that exacerbate mental health problems, such as depression and anxiety,[1,9,10] and they face a host of minority stressors specific to their sexual and gender minority identities.

In the minority stress model,[11,12] both proximal and distal stressors, such as internalized homophobia, stigma consciousness, identity concealment, and experiencing heterosexism and victimization, are mechanisms that explain the higher rates of mental health problems in sexual minorities, and similar mechanisms have been hypothesized for transgender individuals.[13] One of the most consistent predictors of mental health issues for LGBT individuals is experiencing discrimination, harassment, and victimization, which LGBT youths experience disproportionately compared with heterosexual[14–18] and cisgender youths.[19] For example, a study with a community-based sample of LGBT youths found that 94% had experienced some form of sexual orientation–based victimization.[20] In addition, victimization has been associated with greater psychological distress (including symptoms of somatization and anxiety),[20] depression,[21] substance use,[22] suicide attempts,[23,24] and PTSD.[25]

As adults, LGBT individuals continue to report high rates of sexual orientation–based or gender identity–based discrimination, harassment, and victimization.[26–30] In addition, longitudinal investigations have shown that LGB individuals experience greater victimization and stressful life events than do heterosexuals over time.[31,32] Even so, longitudinal studies with large national samples do not regularly measure sexual orientation–based victimization and instead measure victimization more generally. The accumulation of these sexual orientation–specific stressors and repeated marginalization can exacerbate mental health problems, although more longitudinal research in this area with LGBT samples is needed. In addition, research may reveal predictors of LGBT individuals who are the most at risk for continued longstanding victimization, which could elucidate subgroups to target in intervention and prevention efforts to decrease mental health problems.

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From a life course perspective, marginalized groups may be at greater risk for mental and physical health problems later in life because of the accumulation of stressors over time instead of isolated and discrete events.[33] In addition, individuals may experience "stress proliferation," which is the production of new stressors that result from previous stressful life events and in turn exacerbate mental health problems and decrease an individual's ability to cope.[33,34] Similarly, stress sensitization theory highlights that repeated experiences of stressors impair the stress response system,[34] which also can affect individuals on a biological level. For example, repeated exposure to stress can exacerbate allostatic load[35] and disrupt cortisol levels.[36,37] Much of the research applying these theories has been conducted with racial minorities and individuals from lower socioeconomic statuses, and even though both LGBT youths and adults report high levels of victimization, longitudinal research in this area is very limited.

Although there is a dearth of research on cumulative patterns of sexual orientation–based victimization for LGBT youths, research shows that, overall, LGB youths experience more victimization than do heterosexuals.[31,32] In addition, some research with heterosexuals has examined trajectories of victimization more generally. For example, a 4-year study of adolescents found 4 trajectories that characterized victimization patterns.[38] They found that most participants (80%) had low levels of victimization across the study but that others had moderate victimization levels that declined progressively (16%), high victimization that quickly declined (2.2%), and low levels of victimization that increased (2.0%).

Although this study did not examine how these trajectories related to mental health—and in fact very few studies have examined cumulative victimization and mental health—a study with a heterosexual sample found that as victimization and experiences of adversity increase across the lifetime, levels of depression also increase.[39] In addition, individuals with multiple forms of victimization have been shown to have higher levels of trauma symptoms.[40] Because of the greater risk of victimization in LGBT individuals compared with heterosexuals starting as early as adolescence,[18] research is needed that examines how trajectories of sexual orientation–based victimization across development influence the risk for mental health problems for LGBT people.

Although LGBT people experience high levels of victimization, we do not know how patterns of victimization change over time, nor do we know how those trajectories of victimization affect psychiatric disorders. Therefore, we sought to (1) further validate a measure of victimization using item response theory (IRT) analyses, (2) identify trajectories of victimization in LGBT youths transitioning from adolescence to emerging adulthood, and (3) determine how these trajectories relate to depression and PTSD, using structured clinical interviews. As psychiatric disorders also were measured at the baseline assessment, we had the substantial advantage of being able to estimate victimization pattern effects across development on the emergence of psychiatric disorders over the course of our study (i.e., controlling for disorders at baseline).

METHODS

Participants were 248 LGBT youths from an ongoing longitudinal study, Project Q2. Previous publications provide detailed information about study recruitment and inclusion criteria.[7,41,42] In brief, we used incentivized peer recruitment, whereby we compensated participants $10 for each peer they recruited for the study, to recruit the sample. We recruited initial participants ("seeds") from the Chicago, Illinois, area through e-mail advertisements, cards, and flyers posted in spaces serving large numbers of LGBT youths. Previous studies have found no differences in mental health on the basis of recruitment source.[7] To be eligible for participation, individuals needed to identify as LGBT or report same-sex attractions.

Of the initial sample, 234 participants (53% female) met the age requirement (aged 16–20 years) at baseline—which we determined using identification-based age verification at later waves—and were included in study analyses. Of those participants we excluded from the analytic sample, 6 were younger than 16 years at baseline and 8 were older than 20 years. Data collection began in April 2007 and participants completed their seventh wave of data 4 years after their baseline visit. We collected data every 6 months, with the exception of the sixth wave, which occurred 1.5 years from the fifth wave. Retention was high at all follow-ups (77.0%–89.9%), and 206 participants from the age-verified sample (83.1%) were still active at the seventh wave of data collection.[43]

Measures

LGBT victimization. We administered a frequently used 10-item measure[44–46] of LGBT-specific victimization. Participants used a 4-point scale (range = 0 [never] to 3 [≥ 3 times]) to identify the frequency with which they experienced verbal and physical threats or assault in the past 6 months because they "are, or were thought to be, gay, lesbian, bisexual, or transgender." For psychometric analyses, we dichotomized the response categories (0 = never, 1 = at least 1 time) because of low endorsement for victimization experiences that occurred more than once.[47] The internal reliability of this measure was high at each time point (all $\alpha > 0.76$; average $\alpha = 0.84$).

Depression and posttraumatic stress disorder. We conducted developmentally appropriate, computer-guided, and interviewer-administered structured psychiatric interviews at baseline and the seventh wave of data collection to assess mental health diagnoses in the past year. We administered the Computerized Diagnostic Interview Schedule for Children, version IV (C-DISC-IV[48]) at baseline and the Computerized Diagnostic Interview Schedule, version IV (C-DIS-IV[49]) at the 48-month follow-up. The C-DISC and C-DIS are widely used structured clinical interviews for psychiatric diagnoses in adolescents and young adults.[50] We employed extensive training of lay interviewers along with ongoing fidelity supervision from a clinical psychologist.[50] We used diagnoses from the major depressive disorder (MDD) and PTSD modules for these analyses.

Statistical Analysis

We conducted latent class growth analyses (LCGA) to identify classes characterized by distinct victimization trajectories. This type of analysis allowed us to examine growth factor variations (i.e., both intercept and linear slopes of the trajectories) across classes

(e.g., high vs low intercepts with increasing vs decreasing trajectories). We conducted descriptive analyses to evaluate demographic differences across the LCGA classes. We included latent classes in logistic regression analyses as predictors of PTSD and MDD at the 48-month follow-up. We also included baseline diagnoses of PTSD and MDD as predictors in the model to estimate the unique effect of observed victimization trajectories after adjusting for preexisting mental disorders.

At each step in the analysis, we evaluated model (comparative fit index, root mean square error of approximation, Bayesian information criteria, entropy) and item metrics (parameter estimates, difficulty and discrimination values) to detect ill-fitting items and identify the best fitting model. We ran logistic regressions in SPSS version 21 (IBM, Somers, NY), and we performed LCGA analyses with Mplus version 7.11 (Muthen & Muthen, Los Angeles, CA).

The classic (e.g., frequencies, correlations, factor analyses) and modern (i.e., IRT) psychometric analyses that we conducted on the victimization items are available in Appendix A (available as a supplement to the online version of this article at http://www.ajph.org).

TABLE 1—Description of Lesbian, Gay, Bisexual, and Transgender Youths Sample at Baseline and the 48-Month Follow-Up: Chicago, IL, 2007–2013

Characteristic	Baseline (n = 234), No. (%)	48-Mo Follow-Up (n = 190), No. (%)
Birth sex		
Male	110 (47.0)	83 (43.7)
Female	124 (53.0)	107 (56.3)
Gender identity		
Male	100 (42.7)	74 (38.9)
Female	115 (49.1)	105 (55.3)
Transgender	17 (7.3)	9 (4.7)
Sexual orientation		
Gay or lesbian	143 (61.1)	119 (62.6)
Bisexual	66 (28.2)	47 (24.7)
Questioning, unsure, or other	23 (9.8)	16 (8.4)
Race/ethnicity		
White	35 (15.0)	28 (14.7)
Black	128 (54.7)	105 (55.3)
Latina or Latino	29 (12.4)	24 (12.6)
Other	42 (17.9)	33 (17.4)
Living situation		
Living with parents	138 (59.0)	64 (33.7)
Other stable housing	69 (29.5)	118 (62.1)
Unstable housing	25 (10.7)	7 (3.7)
Education		
Partial high school or less	105 (44.9)	18 (9.5)
High school graduate	60 (25.6)	52 (27.4)
Partial college	53 (22.6)	78 (41.1)
College graduate	14 (6.0)	41 (21.6)
Mental health diagnoses		
Depression	34 (14.5)	46 (24.2)
Posttraumatic stress disorder	22 (9.4)	29 (15.3)

Note. Demographic data were missing at baseline for 2 participants. Sample sizes vary for demographic items at the 48-month follow-up because of an additional response option ("I don't want to answer this question"). Individual participants were followed for 48 months. Accounting for time for enrollment, data from the sample were collected from 2007-2013.

RESULTS

Demographic characteristics of the sample at baseline and the 48-month follow-up are presented in Table 1. Logistic regression analyses indicated that birth sex (i.e., sex assigned at birth, not gender identity) was the only demographic characteristic to predict attrition at the 48-month follow-up; although retention was very high overall, females were significantly more likely to participate in this interview than were males (odds ratio [OR] = 2.01; 95% confidence interval [CI] = 1.12, 4.51; $P < .05$).

Psychometric Analyses

Results from the psychometric analyses conducted on the victimization items are available as Appendix B (available as a supplement to the online version of this article at http://www.ajph.org). On the basis of frequencies (Table A, available as a supplement to the online version of this article at http://www.ajph.org), reliabilities, and correlations, item 7 was removed from the measure. Factor analyses supported a unidimensional victimization measure.

The IRT analysis indicated that the scale score was more reliable for individuals who experienced moderate to high victimization (Figure A, available as a supplement to the online version of this article at http://www.ajph.org), which was not surprising considering that the purpose of the measure is to assess victimization rather than microaggressions.

Latent Class Growth Analyses

Victimization trajectories. Results from the LCGA are available in Appendix B. We used model fit parameters (Table B, available as a supplement to the online version of this article at http://www.ajph.org), theoretical justification, and class interpretability to arrive at a 4-class solution with linear slopes.

Figure 1 presents the victimization trajectories for the 4 latent classes. Class 1 (low, decreasing victimization; 65.4% of the sample) included youths who reported moderate initial levels of victimization (i.e., intercept) and had a significantly declining victimization trajectory (slope; b = –0.07; 95% CI = –0.10, –0.04; $P < .01$). Class 2 (moderate, increasing victimization; 10.3% of the sample) was composed of youths who reported moderate initial levels of victimization and

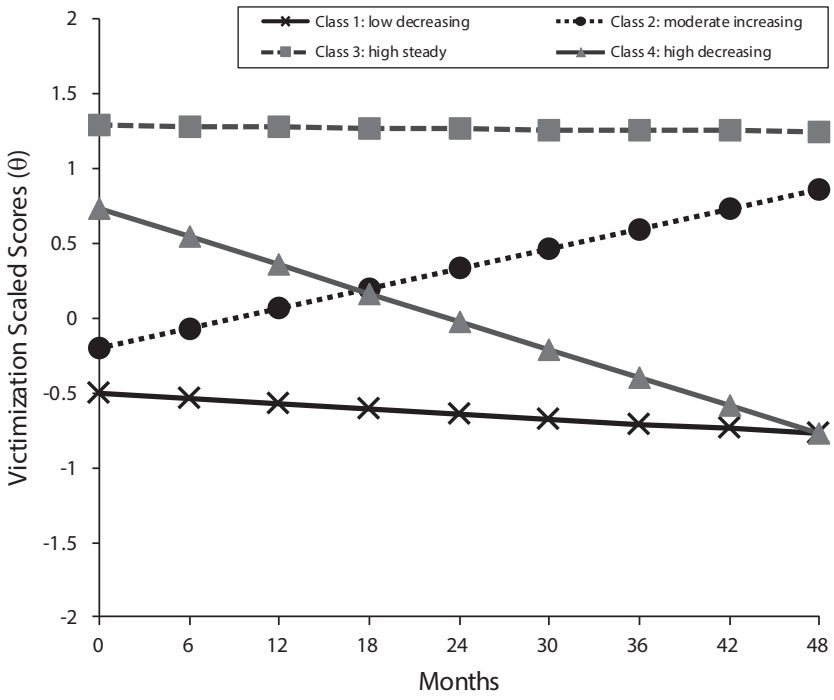

FIGURE 1—Latent Lesbian, Gay, Bisexual, and Transgender Victimization Trajectories for the 4-Class Latent Class Growth Analyses Model: Chicago, IL

demonstrated a significantly increasing victimization trajectory (b = 0.27; 95% CI = 0.09, 0.44; $P < .01$). Class 3 (high, steady victimization; 5.1% of the sample) contained youths who reported high initial levels of victimization and demonstrated no significant change in their victimization trajectory over time b = –0.01; 95% CI = –0.14, 0.12; $P = .87$). Class 4 (high, decreasing victimization; 19.2% of the sample) comprised youths who reported high initial levels of victimization and showed a significantly declining victimization trajectory (b = –0.38; 95% CI = –0.48, –0.29; $P < .01$).

Latent class characteristics. We examined differences in key demographic variables (race/ethnicity, age, birth sex) across the latent classes of victimization trajectories. Because of sample size limitations, we made racial/ethnicity comparisons between participants who identified as Black (54.7%) and the remainder of the sample. Differences by race and age were not significant. We found that the latent classes differed by birth sex, (χ^2 (3, n = 234) = 11.57; $P < .01$). There were a higher proportion of females (vs males) in class 1 (low, declining) and lower proportions in the remaining classes.

Mental Health Outcomes

We conducted logistic regressions to analyze differences in MDD and PTSD diagnoses across the 4 victimization trajectory groups, with the low victimization group (low intercept, declining slope) serving as the referent group (Tables 2 and 3). We included birth sex, age, and baseline diagnoses in each model. We also examined the impact of race but did not find it to be a significant covariate; because results did not change with the inclusion of the variable, we removed race from the final model. The latent victimization classes proved to be a significant predictor of MDD and PTSD even when including previous, corresponding diagnoses from baseline.

LGBT youths in class 2 (moderate, increasing; OR = 5.54; 95% CI = 1.94, 15.82; $P < .001$) and class 3 (high, steady victimization; OR = 4.23; 95% CI = 1.15, 15.48; $P < .05$) were at higher risk for a depression diagnosis at the 48-month follow-up than were youths in the normative, low victimization group. Similarly, we found youths in class 2 (moderate, increasing; OR = 9.37; 95% CI = 2.76, 31.88; $P < .001$) and class 3 (high, steady victimization; OR = 8.66; 95% CI = 1.93, 39.00; $P < .01$) to be at higher risk for a PTSD diagnosis than were youths in the normative, low victimization group. Unlike for MDD, youths in class 4 also were at elevated risk for PTSD (high, decreasing victimization; OR = 4.19; 95% CI = 1.39, 12.63; $P < .01$).

DISCUSSION

Mental health disparities in minority groups have been associated with the accumulation and proliferation of stress across the lifetime, particularly in research with racial/ethnic minorities and individuals with lower socioeconomic status.[33,34] Although research on the accumulation of sexual orientation–based victimization in the lives of LGBT individuals has thus far been lacking, cross-sectional data have shown that LGBT individuals experience greater discrimination, harassment, and victimization than do heterosexuals and cisgender individuals.[14,16,51] In response to these minority stressors, LGBT individuals experience more mental health problems than do heterosexual and cisgender individuals.[11,12,20–24,51] We examined how different patterns of accumulated victimization during the developmental transition from adolescence to emerging adulthood predicted such psychiatric outcomes.

For most youths in this study (84.6%), experiences of victimization decreased from baseline to the 4-year follow-up. Youths at baseline were mostly in high school, and transitioning out of high school may have resulted in less exposure to peer victimization because, as adults, participants had more agency in choosing settings and peers to affiliate with. As this sample aged, they also were likely better able to access LGBT-affirmative resources. Although comparisons to other studies on victimization trajectories for LGBT samples are not available, 2 longitudinal studies have shown declines on average across development.[52,53] Trajectory analyses with heterosexuals have shown that the majority either had low levels of victimization longitudinally or moderate levels that decreased over time, with few participants experiencing high or increasing

TABLE 2—Predictors of Major Depressive Disorder (MDD) Diagnoses at 48-Month Follow-Up: Chicago, IL, 2007–2013

Predictor	MDD– (n = 144), Mean ±SD or No (%)	MDD+ (n = 46), Mean ±SD or No (%)	OR (95% CI)
Age at baseline	18.7 ±1.3	18.7 ±1.4	1.02 (0.78, 1.34)
Baseline MDD			
No (–)	126 (76.8)	38 (23.2)	1 (Ref)
Yes (+)	18 (69.2)	8 (30.8)	1.60 (0.60, 4.26)
Birth sex			
Male	67 (80.7)	16 (19.3)	1 (Ref)
Female	77 (72.0)	30 (28.0)	2.01 (0.93, 4.30)
Trajectory			
Low, decreasing	98 (81.0)	23 (19.0)	1 (Ref)
Moderate, increasing	9 (47.4)	10 (52.6)	5.54 (1.94, 15.82)
High, steady	7 (58.3)	5 (41.7)	4.23 (1.15, 15.48)
High, decreasing	30 (78.9)	8 (21.1)	1.32 (0.50, 3.45)

Note. CI = confidence interval; OR = odds ratio. The sample size was n = 190. Individual participants were followed for 48 months. Accounting for time for enrollment, data from the sample were collected from 2007-2013.

rates of victimization.[38] In our sample of LGBT youths, 10.3% experienced significant increases in victimization, and 5.1% maintained high levels across development. In addition, our sample revealed similar rates of victimization at baseline to other LGBT-specific cross-sectional studies that have used a similar scale.[20,54]

After controlling for baseline diagnoses, age, and sex, class membership was a significant predictor of MDD and PTSD diagnoses. The control for baseline diagnoses was important because it allowed us to make stronger inferences about the effects of cumulative victimization across the period of our longitudinal study. Youths who experienced moderate levels of victimization that increased or who consistently experienced high levels of victimization were at greater risk for MDD and PTSD than were youths who experienced low levels of victimization. Furthermore, youths who had high initial levels of victimization that declined over time were still at elevated risk for PTSD. These findings corroborate previous research with the minority stress model, showing that victimization places LGBT youths at risk for mental illness.[20–24,51] In addition, our results highlight that it is not only isolated experiences of victimization that affect mental health (which has been the focus of much previous research) but instead the accumulation of these stressors that exacerbates mental health problems.

Youths who had high levels of victimization that decreased over time did not differ from youths who had low levels of victimization in regard to depression, but they were significantly more likely to meet criteria for PTSD. This could be because of the lasting effects of traumatic events on PTSD compared with depression. Research with nationally representative population samples has demonstrated that PTSD can be long lasting, and whereas most people (92%) will remit in their lifetime, the median number of years until remission was 14.[55] In addition, enduring traumatic events in childhood and interpersonal violence significantly prolonged the time to remission,[55] both of which could have lengthened the time our participants met criteria for PTSD even though their levels of victimization were decreasing. Comparatively, a meta-analysis of studies on untreated depression showed that 53% of cases remitted within 12 months, with children and adolescents being more likely to remit than were adults.[56] It is possible that youths who met depression criteria earlier in life

TABLE 3—Predictors of Posttraumatic Stress Disorder (PTSD) Diagnoses at 48-Month Follow-Up: Chicago, IL, 2007–2013

Predictor	PTSD– (n = 161), Mean ±SD or No (%)	PTSD+ (n = 29), Mean ±SD or No (%)	OR (95% CI)
Age at baseline	18.7 ±1.3	18.8 ±1.4	1.19 (0.86, 1.65)
Baseline PTSD			
No (–)	147 (86.0)	24 (14.0)	1 (Ref)
Yes (+)	14 (73.7)	5 (26.3)	1.73 (0.52, 5.78)
Birth sex			
Male	74 (89.2)	9 (10.8)	1 (Ref)
Female	87 (81.3)	20 (18.7)	3.25 (1.24, 8.50)
Trajectory			
Low, decreasing	111 (91.7)	10 (8.3)	1 (Ref)
Moderate, increasing	12 (63.2)	7 (36.8)	9.37 (2.76, 31.88)
High, steady	8 (66.7)	4 (33.3)	8.66 (1.93, 39.00)
High, decreasing	30 (78.9)	8 (21.1)	4.19 (1.39, 12.63)

Note. CI = confidence interval; PTSD = posttraumatic stress disorder; OR = odds ratio. The sample size was n = 190. Individual participants were followed for 48 months. Accounting for time for enrollment, data from the sample were collected from 2007-2013.

recovered faster from depression than from PTSD.

Strengths and Limitations

Our study had several strengths, including 7 waves of data collection over the course of 48 months, making this the longest published longitudinal study specifically targeting an LGBT youth sample. Although there have been other longitudinal studies with population-based samples that included LGBT participants, they often did not measure sexual orientation–specific minority stressors as we did in this study. Although LGBT-specific studies, such as ours, are not derived from probability samples, we were able to more specifically measure the types of victimization participants experienced. Also, this was one of the first studies to examine the cumulative impact of LGBT victimization using LCGA to classify individuals into victimization trajectory groups. In addition, we used structured clinical interviews to evaluate participants for *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed.[57] diagnoses instead of relying on self-report measures, which can have low positive predictive value in LGBT youth samples.[7] Also, our use of IRT analyses with the victimization measure improved on the more typical use of Likert-type scales or frequencies because it took into account the "difficulty," or severity, of the victimization.

Limitations of the study included that this was a nonprobability sample recruited from a geographically limited area, which limits our ability to generalize to the national population of LGBT youths. In addition, multiple forms of victimization may exacerbate psychological distress, such as trauma symptoms[40]; however, we did not measure other forms of victimization (e.g., racially motivated victimization). We also did not measure other childhood adverse events, such as child abuse, which are known to influence later mental health.[58] Finally, 95% CIs from some effects were large because of the sample size and variable frequencies; therefore, replication of these effects in larger samples would be advantageous.

Conclusions

Overall, future research on trajectories of victimization may benefit from measuring how the accumulation of multiple forms of victimization and negative childhood events may influence mental health, as well as how LGBT youths may be resilient in the face of cumulative stressors. Although the lives of LGBT youths are heavily influenced by heterosexism and marginalization,[59] youths vary in the degree to which these experiences accumulate across their lifetimes. As our results show, those trajectories of victimization have significant implications for mental health. Through identifying these trajectories, as well as the determinants and outcomes of these lived experiences, researchers can identify key factors in the paths to positive development and ways to decrease the elevated mental health problems experienced by LGBT people. AJPH

CONTRIBUTORS

B. Mustanski conceptualized the study, oversaw data collection, critically reviewed the article, and provided study supervision. R. Andrews analyzed the data. R. Andrews and J. A. Puckett prepared the article. All of the authors interpreted the data, approved the final article as submitted, and agreed to be accountable for all aspects of the work.

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HUMAN PARTICIPANT PROTECTION

The Northwestern University institutional review board approved this study. We obtained a waiver of parental permission for minor participants under US45CFR46.408(c) and a federal certificate of confidentiality. Participants provided written informed consent.

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