A Meta-Analysis of Disparities in Childhood Sexual Abuse, Parental Physical Abuse, and Peer Victimization Among Sexual Minority and Sexual Nonminority Individuals

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Objectives. We compared the likelihood of childhood (i.e., <18 years) sexual abuse, parental physical abuse, and peer victimization based on sexual orientation.

Methods. We conducted a meta-analysis of adolescent school-based studies that compared the likelihood of childhood abuse among sexual minorities vs sexual nonminorities.

Results. Sexual minority individuals were on average 3.8, 1.2, 1.7, and 2.4 times more likely to experience sexual abuse, parental physical abuse, or assault at school or to miss school through fear, respectively. Moderation analysis showed that disparities between sexual minority and sexual nonminority individuals were larger for (1) males than females for sexual abuse, (2) females than males for assault at school, and (3) bisexual than gay and lesbian for both parental physical abuse and missing school through fear. Disparities did not change between the 1990s and the 2000s.

Conclusions. The higher rates of abuse experienced by sexual minority youths may be one of the driving mechanisms underlying higher rates of mental health problems, substance use, risky sexual behavior, and HIV reported by sexual minority adults. (*Am J Public Health.* 2011;101:1481–1494. doi:10.2105/AJPH.2009.190009)

The number of substantiated annual cases of childhood (i.e., <18 years) physical abuse in the United States declined 52% between 1992 and 2007, and cases of childhood sexual abuse declined 53% during the same period.[1] Criminal victimization of students in school declined 60% between 1995 and 2005.[2] Although these represent public health success stories, the abuse of children and adolescents is still a major problem. Child welfare agencies confirmed 79 866 cases of physical abuse and 56 460 cases of sexual abuse in the United States during 2007.[3] One nationally representative sample found that 17% of youths reported having been the victim of moderate or frequent bullying at school during the previous 2 months,[4] and another found that 13% experienced being hit, kicked, pushed, shoved around or locked indoors during the same time period.[5]

Children and adolescents who experience sexual abuse are more likely to experience depression and dysthymia, borderline personality disorder, somatization disorder, substance abuse disorder, posttraumatic stress disorder, dissociative identity disorder, or bulimia nervosa; to attempt suicide; to become pregnant earlier; to engage in HIV sexual risk behaviors; to perform poorly at school; to be arrested for sex crimes; or to commit other criminal offenses.[6–10] Children and adolescents who experience parental physical abuse are more likely to experience similar psychological, substance use, behavioral, and criminal problems.[11–15] Outcomes of peer victimization among children and adolescents include depressive, anxiety, and drug abuse disorders, suicidal ideation, social isolation, psychosomatic symptoms, poor school performance, and delinquency.[16–20] In addition, these types of abuse are associated with negative psychological, behavioral, and physical outcomes in adulthood.[21–23] Risk markers of childhood abuse include the characteristics of parents (e.g., substance abuse, history being victims of physical or sexual abuse, social isolation, low self-esteem), families (e.g., marital conflict, spousal abuse, financial stress), the individuals themselves (e.g., emotional, psychological, or physical disabilities; low self-esteem; an inability to defend oneself; lack of social skills), and environments (e.g., negative school atmosphere, low socioeconomic status).[24–26]

One risk factor for experiencing these types of abuse may be sexual orientation. Studies suggest that sexual minority youths (i.e., youths who experience same-sex attractions, self-label as gay, lesbian, or bisexual, or engage in same-sex sexual activity), compared with sexual nonminority youths, are more likely to experience sexual abuse, parental physical abuse, and peer victimization during childhood.[27–42] However, these studies vary in effect sizes, measurement of abuse and sexual orientation, the group being compared with heterosexuals (e.g., gays, lesbians, and bisexuals combined vs comparing groups individually; combining males and females vs comparing gender individually), sampling and recruitment strategies, and the decade in which the studies were conducted. Thus, relying on any one study to determine whether sexual orientation is a risk factor for child abuse, as well as determining the robustness of the difference in child abuse rates, is problematic. However, if sexual minority youths suffer greater rates of violence victimization, this phenomenon could be one explanation for the existence of substantial health disparities that exist among sexual minority adult populations.[43]

This meta-analysis therefore addressed the following question: are sexual minority adolescents more likely than are sexual nonminority adolescents to experience childhood sexual abuse, parental physical abuse, and peer victimization? Beyond examining disparities, we tested the possible moderating role of bisexuality status because data suggest that

bisexual adolescents are at greater risk than are gay and lesbian adolescents for engaging in certain risk behaviors[44,45]; the decade of survey administration because rates of violence perpetrated against sexual minority youths relative to heterosexuals may have decreased over recent decades[46]; the dimension used to measure sexual orientation (i.e., behavior or identity) because disparities in abuse between sexual minority and sexual nonminority individuals may be greater when sexual minority status is based on self-identification as gay, lesbian, or bisexual than when it is based on same-sex or both-sex sexual activity[44]; and gender because this variable has been shown to moderate the association between sexual orientation and both substance use[44] and suicide attempts[47] in sexual minority youths.

METHODS

To be included in this meta-analysis, studies had to (1) compare the likelihood of self-reported childhood sexual abuse, physical abuse perpetrated by parents or guardians, or peer victimization between sexual minority and sexual nonminority individuals and (2) report abuse occurring prior to age 18 years (with the exception that in school-based studies some participants were 18 years or older and could have reported abuse occurring since their 18th birthday). Only school-based studies conducted in North America were included in the meta-analysis. Studies using samples of convenience[27,32,34–36,48–50] were not included because of the limited external validity of their results. Two population-based studies[28,33] were not included because of the dissimilarity between these and the school-based studies with respect to the populations included and measures used.

Using these criteria, we identified studies by searching medical and social science journals from 1980 to 2009 using MEDLINE and PsychInfo. We used various combinations of key words such as "gay," "lesbian," "bisexual," "sexual orientation," "homosexual," "homosexuality," "sexual abuse," "physical abuse," "peer victimization," and "bullying." Using these strategies, we identified 694 abstracts. These abstracts were independently reviewed by Friedman and a coauthor to determine eligibility. On the basis of this review, we retrieved 70 full articles and examined them to confirm that they were appropriate for inclusion. We deemed 17 articles appropriate on the basis of the inclusion criteria. We also reviewed citation listings from these articles, although doing so did not identify additional relevant publications.

To identify additional published or unpublished studies that met our eligibility criteria, we contacted all corresponding authors of studies deemed eligible for this meta-analysis, as well as several state agencies responsible for conducting school-based studies. As a result, we added 14 sets of data from the Youth Risk Behavioral Surveillance survey (or a similar survey with respect to the sample and questions asked). Using these methods, we identified a total of 37 studies conducted in 18 geographic areas in the United States and Canada for inclusion. [29,38–41,51–59] One of these articles provided data about 7 independent samples[41] and another provided data about 2 studies.[38] Unpublished YRBS data were obtained from the following agencies through written communication: State of Rhode Island Department of Health (March 2010), Chicago Department of Health (March 2010), Delaware Department of Education (March 2009), District of Columbia Public Schools HIV/AIDS Education Program (February 2010), and Milwaukee Public School System (March 2010). In addition, written communication with E.M. Saewyc, PhD, McCreary Society (March 2010); C. Goodenow, PhD, Massachusetts Department of Education (September 2009); B. Reis, MS, Safe Schools Coalition, and P. Hillard, Seattle Public Schools (March 2010); and E. Edwards, MPH, Vermont Department of Health (March 2010) provided data from 7 studies, 3 studies, 1 study, and 1 study, respectively.

Coding of Studies

Four coauthors independently coded the studies and extracted effect-size data. Only 94 of 1701 data points extracted were discrepant, generating a 94.5% absolute agreement rate (interclass correlation=0.99). Before estimating final results, Friedman resolved disagreements and coding errors.

Data included the independent variable (sexual orientation), outcome variables (childhood sexual abuse, parental physical abuse, and peer victimization), moderating variables (bisexuality status, decade of survey administration, dimension used to assess sexual orientation, and gender), and effect-size data.

Independent and Outcome Variables

Sexual orientation. Sexual orientation, the independent variable, was coded as sexual minority or sexual nonminority on the basis of self-report of attraction, behavior, or identity.

Childhood sexual abuse. Studies asked about whether respondents were (1) forced to have sex or were sexually abused, (2) forced to engage in sexual intercourse, or (3) touched sexually against their wishes or forced to touch someone else sexually. All affirmative answers were coded as "sexual abuse." Questions did not address the issue of who perpetrated the abuse.

Parental physical abuse. Studies asked a general question about physical abuse perpetrated by a parent or guardian or about being physically attacked, hit, hurt, or injured by a parent or guardian. One set of studies asked respondents to indicate physical abuse perpetrated by an adult in their household. This question was also coded as "physical abuse" perpetrated by a parent or guardian.

Peer victimization. Two relevant peer victimization outcome variables were identified and used as outcome variables. "Assault" variables asked about being injured or threatened with a weapon or otherwise assaulted by a peer at school. "Missing school" variables were components of a battery of items on peer victimization that asked whether the respondent missed school because of fear. Peer victimization in the school-based studies was, by definition, operationalized as abuse occurring before or during the 12th grade. Thus, it was assumed that the vast majority of these youths were aged 18 years or younger.

Moderator Variables

Bisexuality status. Codes were based on what sexual minority group was compared with heterosexuals. Groups were coded as "lesbian," "gay," or "bisexual" except in cases when the lesbian and gay groups were combined ("lesbian/gay") or when all 3 groups were combined ("LGB").

Decade of survey administration. Decade of survey administration was based on when the study was conducted and was coded as either "1990s" or "2000s."

Dimension used to assess sexual orientation. Coding of these dimensions was based on how sexual orientation was assessed: (1)

"self-identification," (2) the gender of sexual partner(s) ("behavior"), (3) romantic attractions ("attraction"), or (4) combinations of 2 or more of these categories.

Gender. Gender was coded as either "male" or "female" on the basis of self-report.

Data Analysis Plan

The data analyses proceeded in several steps. First, we examined and described the distribution of the individual effect sizes for each outcome. Second, because most studies included more than 1 effect-size estimate for each of the 3 outcome variables (because of either multiple subgroups within a study, multiple effect estimates for a given outcome variable, or both), we calculated the mean effect size for each study. Third, we estimated an overall effect by combining weighted effects across all studies using a random-effects model. Fourth, we examined the distribution of study-level effect sizes via tests of heterogeneity for each outcome and depicted it via forest plots.

Fifth, we performed moderator (i.e., subgroup) analyses using a mixed-effects model. In mixed-effects model analyses, we used a random-effects model to compute summary effects within subgroups. In addition, we recalculated the overall summary effect (across subgroups) by combining the subgroup effects, assuming that the subgroup categories were fixed.[60] Sixth, for descriptive purposes, regardless of the presence of moderators, we calculated average absolute rates of abuse for each outcome variable and reported them for each of 6 groups (gay or lesbian, bisexual, and heterosexual males and females). Finally, we performed sensitivity analyses to identify potential outliers, publication biases, and other threats to the validity of the results.[61] We conducted data management and analyses using software sponsored by the National Institutes of Health (Comprehensive Meta Analysis, Biostat, Englewood, NJ). We report effects using an odds ratio effect-size metric, and report 95% confidence intervals (CIs).

RESULTS

We present the results of this meta-analysis with respect to relative rates of abuse between sexual minority and sexual nonminority individuals and the moderating role of gender, decade of survey administration, dimension used to assess sexual orientation, and bisexuality status.

Childhood Sexual Abuse

Compared with sexual nonminority adolescents, sexual minority adolescents were on average 2.9 times more likely (odds ratio [OR]=3.94; 95% CI=3.45, 4.57) to report childhood sexual abuse. The mean of the absolute prevalence was 40.4% for bisexual females, 32.1%, for lesbian females, and 16.9% for heterosexual females. The mean of the absolute prevalence was 24.5% for bisexual males, 21.2% for gay males, and 4.64% for heterosexual males.

These analyses were based on 26 school-based studies (with a total of 65 effect-size estimates) in 11 geographic areas. The characteristics for each study are summarized in Table 1 and study-level effect-size estimates and confidence intervals are presented in Figure 1. Several studies included weighted and scaled effect sizes, yielding sample sizes that were significantly larger than were the other studies. These sample sizes yielded particularly small confidence intervals. On average, the effect sizes of the scaled studies were smaller than were those of the other studies. When we reran these analyses excluding these studies, the overall effect size increased, suggesting that the inclusion of these studies yields a more conservative overall estimate of the relationship between sexual orientation and sexual abuse. The odds ratios for the individual effects ranged from 1.04 to 12.49. Of all individual effects (measured as odds ratios), 13.7% were between 1.04 and 1.99, 24.7% between 2.00 and 2.99, 27.4% between 3.00 and 4.99, 16.4% between 5.00 and 6.99, and 19.2% between 7.00 and 12.49. The average number of effect-size estimates tested within each study was 2.70 and ranged from 1 to 6. Sensitivity analyses showed that when the overall effect was recalculated with each study removed, the reestimated effect sizes ranged from 3.86 to 4.10.

Regardless of which study was removed, the overall tests of significance remained significant ($P<.001$). Begg and Mazumdar's rank correlation test ($P=.14$) and Egger's linear regression test ($P=.12$) suggested that there was not a significant relationship between the standard errors and the effect sizes. We also examined funnel plots. Results identified 1 unpublished study that appeared to have both a small sample size and large effect size.[54] However, the inclusion of these data did not have a significant impact on the size of the overall effect (with this study removed, the overall effect changed from 3.033 to 3.031). Orwin's fail-safe N test suggested that 588 missing studies with null effects (OR=1.00) would be needed to decrease the overall effect size to a trivial size (OR=1.05). Cochran's Q test showed that the effects were significantly heterogeneous ($Q_{26}=1514.36$, $P<.001$).

Potential Moderators of Childhood Sexual Abuse

Gender moderated the association between sexual orientation and childhood sexual abuse ($Q_1=33.10$, $P=.001$). Compared with male sexual nonminority individuals, male sexual minority individuals were 4.9 times more likely (OR=5.97; 95% CI=4.81, 7.41) to experience childhood sexual abuse. Compared with female sexual nonminority individuals, female sexual minority individuals were 1.5 times more likely (OR=2.55; 95% CI=2.14, 3.03) to experience childhood sexual abuse. The estimate for the overall relationship comparing sexual minority and sexual nonminority individuals changed from 3.94 to 4.78 when we took gender group differences into account using a mixed-effects model. Only studies that compared disparities between sexual minorities and nonsexual minorities for each gender separately were included in tests of gender as a potential moderator.

Decade of survey administration, dimension used to assess sexual orientation, and bisexuality status did not moderate the association between sexual orientation and childhood abuse. We included only states that conducted the same health survey in both the 1990s and the first decade of the 2000s when testing decade of survey administration as a potential moderator of the relationship between sexual orientation and abuse. Including states that began assessing sexual orientation in the first decade of the 2000s might have biased the findings. Only 1 study administered in the 1980s met inclusion criteria.[40] We did not include this study in this particular moderation analysis because the survey implemented in 1987 was of a different form than surveys administered in subsequent decades in Minnesota.

TABLE 1—Descriptive Statistics and Study Characteristics for Studies Testing the Association Between Sexual Orientation and Childhood Sexual Abuse

Survey (Location, Year)	Sexual Minority Group (No.)	Heterosexual Comparison Group (No.)	Effect Size, OR	Type of Abuse	Grade or Age	SO Marker
YRBS (Boulder, CO, 2003)[54]	Lesbian, gay, bisexual, unsure, female and male (59)	Female and male (991)	12.49	FS/SA	7–12	SI
BCAHS (BC, Canada, 1992)[a]	Lesbian female (203)	Female (110 080)	2.88	FS/SA	7–12	SI
	Bisexual female (2112)	Female (110 080)	1.80			
	Gay male (546)	Male (109 689)	9.02			
	Bisexual male (1909)	Male (109 689)	5.43			
BCAHS (BC, Canada, 1998)[a]	Lesbian Female (447)	Female (132 767)	1.86	FS/SA	7–12	SI
	Bisexual female (2721)	Female (132 767)	2.71			
	Gay male (1158)	Male (124 866)	11.18			
	Bisexual male (1528)	Male (124 866)	10.69			
BCAHS (BC, Canada, 2003)[a]	Lesbian female (465)	Female (110 651)	3.32	FS/SA	7–12	SI
	Bisexual female (4151)	Female (110 651)	4.56			
	Gay male (762)	Male (117 624)	3.07			
	Bisexual male (1167)	Male (117 624)	8.49			
BCAHS (BC, Canada, 2008)[a]	Lesbian female (669)	Female (115 593)	5.82	FS/SA	7–12	SI
	Bisexual female (4458)	Female (115 593)	4.62			
	Gay male (1477)	Male (115 347)	12.25			
	Bisexual male (1147)	Male (115 347)	11.27			
YRBS (Chicago, IL, 2007)[b]	Lesbian and gay, female and male (32)	Female and male (951)	4.51	FSI	9–12	SI
	Bisexual female and male (46)	Female and male (951)	6.38			
YRBS (DE, 2007)[c]	Lesbian, gay, and bisexual female and male (130)	Female and male (2428)	6.65	FSA	9–12	SI
YRBS (MA, 1995, 1997)[38]	Lesbian and gay, female and male (106)	Female and male (3948)	1.04	FSI	9–12	Behavior
	Bisexual female and male (122)	Female and male (3948)	7.32			
YRBS (MA, 1999)[57]	Lesbian, gay, and bisexual female and male (202)	Female and male (3534)	5.25	FSC	9–12	Behavior and SI
YRBS (MA, 2003)[d]	Lesbian, gay, and bisexual female and male (217)	Female and male (3407)	7.98	FSA	9–12	Behavior and SI
YRBS (MA, 2005)[d]	Lesbian, gay, and bisexual female and male (211)	Female and male (3311)	5.25	FSA	9–12	Behavior and SI
YRBS (MA, 2007)[d]	Lesbian, gay, and bisexual female and male (169)	Female and male (2901)	5.11	FSA	9–12	SI
MSS (MN, 1987)[40]	Lesbian and bisexual female (182)	Female and male (1881)	1.56	FSA	9–12	SI
YRBS (MN, 1992)[d]	Lesbian female (46)	Female (11 534)	2.04	FSA	<18 y	Behavior
	Bisexual female(281)	Female (11 534)	1.24	FSA		
	Gay male (175)	Male (11 603)	4.27	FSA		
	Bisexual male (1208)	Male (11 603)	5.49	FSA		
YRBS (MN, 1998)[a]	Lesbian female (51)	Female (10 374)	2.49	FSA	9–12	Behavior
	Bisexual female(405)	Female (10 374)	2.54	FSA		
	Gay male (177)	Male (9600)	4.14	FSA		
	Bisexual male (1354)	Male (9600)	5.54	FSA		
YRBS (MN, 2001)[a]	Lesbian female (66)	Female (10 144)	1.83	FSA	9–12	Behavior
	Bisexual female(579)	Female (10 144)	2.95	FSA		
	Gay male (169)	Male (9045)	5.79	FSA		
	Bisexual male (1203)	Male (9045)	7.57	FSA		

Continued

TABLE 1—*Continued*

YRBS (MN, 2004)[a]	Lesbian female (86)	Female (10 260)	2.81	FSA	9–12	Behavior
	Bisexual female(668)	Female (10 260)	3.42	FSA		
	Gay male (190)	Male (8848)	4.40	FSA		
	Bisexual male (1144)	Male (8848)	6.83	FSA		
YRBS (MN, 2007)[a]	Lesbian female (127)	Female (10 819)	2.07	FSA	9–12	Behavior
	Bisexual female (806)	Female (10 819)	2.90	FSA		
	Gay male (301)	Male (9377)	4.66	FSA		
	Bisexual male (2012)	Male (9377)	4.95	FSA		
NLSAH (United States)[41]	Lesbian female (40)	Female (3611)	1.59	FSI	<18 y	Romantic attraction
	Bisexual female (137)	Female (3611)	2.05	FSI		
YRBS (RI, 2007)[f]	Lesbian, gay, and bisexual female and male (225)	Female and male (1954)	4.10	FSA	9–12	SI
	Bisexual female(137)	Female and male (1954)	5.23	FSA		
YRBS (Seattle, WA, 1995)[41]	Lesbian female (27)	Female (3611)	4.15	FSI	<18 y	SI
	Bisexual female (156)	Female (3611)	2.15	FSI		
	Gay male (46)	Male (3512)	2.91	FSI		
	Bisexual male (96)	Male (3512)	7.37	FSI		
YRBS (Seattle, WA, 1999)[41]	Lesbian female (23)	Female (3707)	2.13	FSI	<18 y	SI
	Bisexual female(171)	Female (3707)	3.72	FSI		
	Gay male (38)	Male (3589)	7.67	FSI		
	Bisexual male (82)	Male (3589)	8.08	FSI		
YRBS (Seattle, WA, 2008)[a]	Lesbian, gay, and bisexual female and male (101)	Female and male (1795)	4.92	FSI	<18 y	SI
YRBS (VT, 1995, 1997)[38]	Lesbian and gay, female and male (279)	Female and male (6893)	1.84	FSI	9–12	Behavior
	Bisexual female and male (336)	Female and male (6893)	4.43	FSI		
YRBS (VT, 2007)[e]	Lesbian and bisexual female (141)	Female (1478)	4.01	FSA	9–12	Behavior
	Gay and bisexual male (104)	Male (1465)	10.30	FSA		
YRBS (WI, 2007)[55]	Lesbian, gay, and bisexual female and male (111)	Female and male (1181)	4.03	FSA	<18 y	Behavior

Note. BCAHS = British Columbia Adolescent Health Survey; FS/SA = forced sex/sexual abuse; FSA = forced sexual activity; FSI = forced sexual intercourse; MSS = Minnesota Student Survey; NLSAH = National Longitudinal Study of Adolescent Health; OR = odds ratio; SO = sexual orientation; SI = self-identification; YRBS = Youth Risk Behavioral Surveillance Survey.

[a]E. M. Saewyc, PhD, McCreary Society, written communication, March 2010.

[b]Chicago Department of Health, written communication, March 2010.

[c]Delaware Department of Health, written communication, March 2010.

[d]C. Goodenow, PhD, Massachusetts Department of Education, written communication, September 2009.

[e]E. Edwards, MPH, Vermont Department of Health, written communication, March 2010.

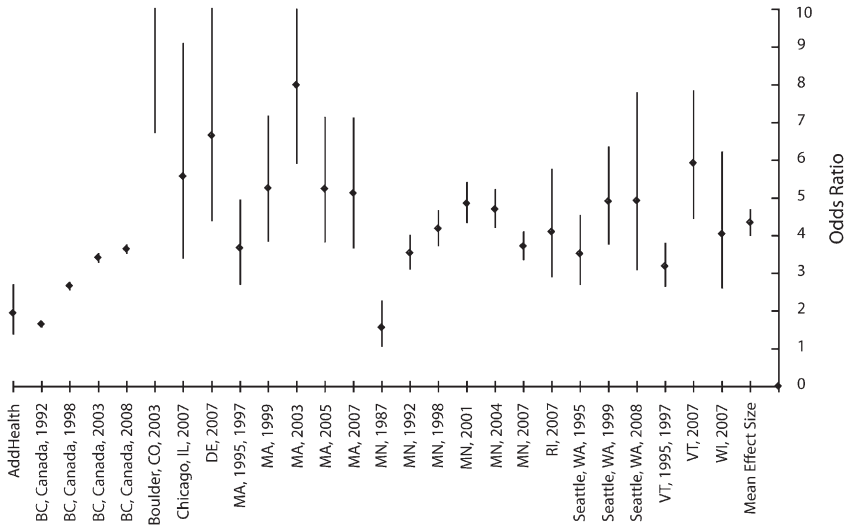
[f]State of Rhode Island Department of Health, written communication, March 2010.

With respect to testing the dimension used to assess sexual orientation as a potential moderator, we coded studies that used a combination of "identity and attraction" as self-identification. This was done because (1) there were only a few instances of this combination, (2) it was believed that participants answer this question on the basis of how they self-identify, and (3) the results of analyses were the same whether these effects were left out or included. We used only self-identification and sexual behavior to examine this potential moderator because very few studies used romantic attraction or "behavior and self-identification" to assess sexual orientation. Finally, studies that compared sexual minority and sexual nonminority adolescents by combining gay and bisexual groups could not be included in tests of bisexuality status (disparities between gay or lesbian and heterosexual adolescents vs disparities between bisexual and heterosexual adolescents) as a possible moderator.

Physical Abuse

Compared with sexual nonminority adolescents, sexual minority adolescents were on average 1.3 times more likely (OR=2.34; 95% CI=2.11, 2.60) to report parental physical abuse. The mean of the absolute prevalence for parental physical abuse was 33.4% for bisexual females, 31.2% for lesbian females, and 18.4% for heterosexual females. The mean of the absolute prevalence was 24.2% for bisexual males, 18.5% for gay males, and 11.4% for heterosexual males.

These analyses were based on 5 school-based studies (with a total of 20 effect-size estimates) administered in Minnesota. The characteristics for each study are summarized in Table 2 and study-level effect sizes and confidence intervals are presented in Figure 2. The odds ratios for the individual effects



Note. AddHealth = National Longitudinal Study of Adolescent Health.

FIGURE 1—Study effects and 95% confidence intervals for studies testing the association between sexual orientation and childhood (under age 18) sexual abuse.

ranged from 1.36 to 3.21. Of all individual effects (measured as odds ratios), 30% were between 1.36 and 1.99, 65% were between 2.00 and 2.99, and 5% were above 3.00. All studies had 4 effects. Sensitivity analyses showed that when the overall effect was recalculated with each study removed, the reestimated effect sizes ranged from 2.27 to 2.45. Regardless of which study was removed, the overall tests of significance remained significant ($P<.001$). Begg and Mazumdar's rank correlation test ($P=.33$) and Egger's linear regression test ($P=.54$) suggested that there was no significant relationship between the standard errors and the effect sizes. We also examined funnel plots. Results suggested that studies with small samples were not associated disproportionately with large effects. Orwin's fail-safe N test suggested that 83 missing studies with null effects (OR=1.00) would be needed to decrease the overall effect size to a trivial size (OR=1.05). Cochran's Q test showed that the effects were significantly heterogeneous ($Q_4=20.41$, $P<.001$).

TABLE 2—Descriptive Statistics and Study Characteristics for Studies Testing the Association Between Sexual Orientation and Parental Physical Abuse

Survey (Location, Year)	Sexual Minority Group (No.)	Heterosexual Comparison Group (No.)	Effect Size, OR	Type of Abuse	Grade	SO Marker
YRBS (MN, 1992)[41]	Bisexual female (281)	Female (11 590)	1.43	PAAH	9–12	Behavior
	Lesbian female (45)	Female (11 590)	1.36	PAAH	9–12	Behavior
	Bisexual male (1207)	Male (11 636)	2.20	PAAH	9–12	Behavior
	Gay male (175)	Male (11 636)	1.49	PAAH	9–12	Behavior
YRBS (MN, 1998)[41]	Bisexual female (405)	Female (10 406)	2.29	PAAH	9–12	Behavior
	Lesbian female (51)	Female (10 406)	3.21	PAAH	9–12	Behavior
	Bisexual male (1360)	Male (9606)	2.57	PAAH	9–12	Behavior
	Gay male (179)	Male (9606)	1.44	PAAH	9–12	Behavior
YRBS (MN, 2001)[a]	Bisexual female (579)	Female (10 179)	2.33	PA	9–12	Behavior
	Lesbian female (66)	Female (10 179)	1.56	PA	9–12	Behavior
	Bisexual male (1214)	Male (9064)	2.71	PA	9–12	Behavior
	Gay male (169)	Male (9064)	2.18	PA	9–12	Behavior
YRBS (MN, 2004)[a]	Bisexual female (672)	Female (10 297)	2.80	PA	9–12	Behavior
	Lesbian female (85)	Female (10 297)	2.21	PA	9–12	Behavior
	Bisexual male (1153)	Male (8886)	2.84	PA	9–12	Behavior
	Gay male (193)	Male (8886)	1.82	PA	9–12	Behavior
YRBS (MN, 2007)[a]	Bisexual female (802)	Female (10 777)	2.61	PA	9–12	Behavior
	Lesbian female (127)	Female (10 777)	2.08	PA	9–12	Behavior
	Bisexual male (2005)	Male (9351)	2.10	PA	9–12	Behavior

Note. OR = odds ratio; PA = physical abuse; PAAH = physical abuse by adult in household; SO = sexual orientation; YRBS = Youth Risk Behavioral Surveillance Survey.
[a]E. M. Saewyc, PhD, McCreary Society, written communication, March 2010.

Potential Moderators of Parental Physical Abuse

Sexual orientation status moderated the association between sexual orientation and parental physical abuse ($Q_1=7.439$, $P=.006$). Compared with heterosexual individuals, bisexual adolescents were 1.4 times more likely (OR=2.39; 95% CI=2.16, 2.64) to experience parental physical abuse. Compared with heterosexual adolescents, gay and lesbian adolescents were 0.89 times more likely (OR=1.89; 95% CI=1.65, 2.17) to experience parental physical abuse. The estimate for the overall relationship comparing sexual minority and sexual nonminority individuals did not significantly change (2.34 vs 2.22) when we took sexual orientation status into account using a mixed-effects model. Gender, dimension used to assess sexual orientation, and decade of survey implementation were not found to moderate the relationship between sexual orientation and parental physical abuse.

Peer Victimization

Assault by peers. Compared with sexual nonminority adolescents, sexual minority adolescents were on average 1.7 times more likely (OR=2.68; 95% CI=2.40, 2.98) to report being threatened or injured with a weapon or otherwise assaulted. The mean of the absolute prevalence for being threatened or injured with a weapon or otherwise assaulted was 44.4% for lesbian females, 39.9% for bisexual females, and 21.2% for heterosexual females.

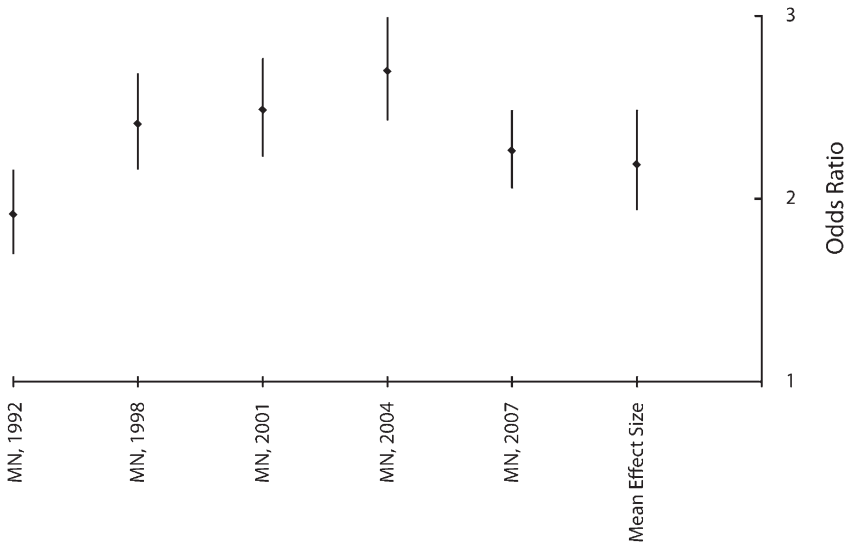


FIGURE 2—Study effects and 95% confidence intervals for studies testing the association between sexual orientation and parental abuse.

The mean of the absolute prevalence was 50.2% for bisexual males, 43.2% for gay males, and 35.0% for heterosexual males.

Analyses of the relationship between sexual orientation and being threatened or injured with a weapon or otherwise assaulted were based on 26 school-based studies (with a total of 50 effect-size estimates) in 15 geographic areas. The characteristics for each study are summarized in Table 3 and Figure 3. The odds ratios for the individual effects ranged from 0.49 to 9.68. Of all individual effects (measured as odds ratios), 3% were between 0.49 and 0.99, 29% were between 1.00 and 1.99, 25% were between 2.00 and 2.99, 16% were between 3.00 and 3.99, 18% were between 4.00 and 5.99, and 9% were between 6.00 and 9.68. The average number of effect-size estimates tested within each study was 2.00 and ranged from 1 to 8. Sensitivity analyses showed that when the overall effect was recalculated with each study removed, the reestimated effect sizes ranged from 2.59 to 2.71.

Regardless of which study was removed, the overall tests of significance remained significant ($P<.001$). Begg and Mazumdar's rank correlation test ($P=.89$) and Egger's linear regression test ($P=.44$) suggested that there was no significant relationship between the standard errors and the effect sizes. We also examined funnel plots. Results suggested that studies with small samples were not associated disproportionately with large effects. Orwin's fail-safe N test suggested that 799 missing studies with null effects (OR=1.00) would be needed to decrease the overall effect size to a trivial size (OR=1.05). Cochran's Q test showed that the effects were significantly heterogeneous ($Q_{26}=923.79$, $P<.001$).

Missing school through fear. Compared with sexual nonminority adolescents, sexual minority adolescents were on average 2.8 times more likely (OR=3.85, 95% CI=3.47, 4.28) to report missing school because of fear. The mean of the absolute prevalence for missing school through fear was 22.8% for bisexual females, 15.8% for lesbian females, and 6.7% for heterosexual females. The mean of the absolute prevalence was 22.6% for bisexual males, 14.5% for gay males, and 7.8% for heterosexual males.

Analyses of the relationship between sexual orientation and missing school through fear were based on 18 school-based studies (with a total of 31 effect-size estimates) in 9 geographic areas. The characteristics for each study are also summarized in Table 3 and Figure 4. The odds ratios for the individual effects ranged from 1.51 to 6.53. Of all individual effects (measured as odds ratios), 33% were between 1.51 and 2.99, 50% were between 3.00 and 4.99, and 17% were between 5.00 and 6.53. The average number of effect-size estimates tested within each study was 1.77 and ranged from 1 to 12. Sensitivity analyses showed that when the overall effect was recalculated with each study removed, the reestimated effect sizes ranged from 3.65 to 3.97.

Regardless of which study was removed, the overall tests of significance remained significant ($P<.001$). Begg and Mazumdar's rank correlation test ($P=.79$) and Egger's linear regression test ($P=.20$) suggested that there was no significant relationship between the standard errors and the effect sizes. We also examined funnel plots. Results suggested that studies with small samples were not associated disproportionately with large effects. Orwin's fail-safe N test suggested that 457 missing studies with null effects (OR=1.00) would be needed to decrease the overall effect size to a trivial size (OR=1.05). Cochran's Q test showed that the effects were significantly heterogeneous ($Q_{16}=42.10$, $P<.001$).

Potential Moderators of Peer Victimization

Assault by peers. Gender moderated the association between sexual orientation and assault ($Q_1=14.64$, $P<.001$). Compared with female sexual nonminority individuals, female sexual minority individuals were 2.3 times more likely (OR=3.31; 95% CI=2.82, 3.89) to experience assault. Compared with male sexual nonminority individuals, male sexual minority individuals were 1.03 times more likely (OR=2.03; 95% CI=1.68, 2.46) to experience assault. The estimate for the overall relationship comparing sexual minority and sexual nonminority individuals changed from 2.68 to 2.73 when we took gender group differences into account using a mixed-effects model. Decade of survey administration, dimension used to assess sexual orientation, and bisexuality status were not found to moderate the association between sexual orientation and assault.

Missing school through fear. Sexual orientation status moderated the association between sexual orientation and missing school because of fear ($Q_1=23.960$, $P=.001$). Compared with heterosexual individuals, bisexual adolescents were 3.3 times more likely (OR=4.32; 95% CI=3.53, 5.30) to experience missing

TABLE 3—Descriptive Statistics and Study Characteristics for Studies Testing the Association Between Sexual Orientation and Peer Victimization

Survey (Location, Year)	Sexual Minority Group (No.)	Heterosexual Comparison Group (No.)	Effect Size, OR	Type of Abuse	Grade or Age	SO Marker
YRBS (Boulder, CO, 2003)[54]	Lesbian, gay, and bisexual female and male (59)	Female and male (991)	3.70	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (59)	Female and male (991)	9.05	Scared		
YRBS (BC, Canada, 1998)[41]	Lesbian (390)	Female (130 601)	8.27	AttAs	9–12	SI
	Bisexual female (2827)	Female (130 601)	3.50	AttAs		
	Gay male (1061)	Male (121 636)	2.30	AttAs		
	Bisexual male (1515)	Male (121 636)	2.44	AttAs		
YRBS (BC, Canada, 2003)[a]	Lesbian female (464)	Female (114 192)	4.57	AttAs	9–12	SI
	Bisexual female (4240)	Female (114 192)	4.47	AttAs		
	Gay male (830)	Male (122 086)	0.49	AttAs		
	Bisexual male (1185)	Male (122 086)	2.48	AttAs		
YRBS (BC, Canada, 2008)[a]	Lesbian female (657)	Female (112 038)	7.99	AttAs	9–12	SI
	Bisexual female (4336)	Female (112 038)	5.69	AttAs		
	Gay male (1089)	Male (111 310)	2.27	AttAs		
	Bisexual male (1444)	Male (111 310)	4.01	AttAs		
YRBS (Chicago, IL, 2007)[b]	Lesbian and gay, female and male (32)	Female and male (951)	1.54	TI	9–12	SI
DCYS (Dane County, WI, 2000)[58]	Lesbian, gay, and bisexual female and male (1065)	Female and male (11 924)	1.30	TI	9–12	SI
DCYS (Dane County, WI, 2005)[53]	Lesbian and bisexual female (516)	Female (5681)	1.65	TI	9–12	SI
	Gay and bisexual male (556)	Male (5518)	1.24	TI		
YRBS (DC, 2007)[c]	Lesbian, gay, and bisexual female and male (124)	Female and male (1351)	2.19	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (124)	Female and male (1351)	3.00	Scared		
YRBS (MA, 1993)[56]	Lesbian and bisexual female and male (105)	Female (1563)	2.35	TI	9–12	Behavior
	Lesbian and bisexual female and male (105)	Female (1563)	4.04	Scared		
YRBS (MA, 1995, 1997)[38]	Lesbian and gay, female and male (122)	Female and male (3948)	1.52	TI	9–12	Behavior
	Bisexual female and male (106)	Female and male (3948)	8.21	TI		
	Lesbian and gay, female and male (122)	Female and male (3948)	1.51	Scared		
	Bisexual female and male (106)	Female and male (3948)	6.53	Scared		
YRBS (MA, 1999)[57]	Lesbian, gay, and bisexual female and male (202)	Female and male (3435)	3.99	TI	9–12	Behavior and SI
	Lesbian, gay, and bisexual female and male (202)	Female and male (3435)	4.14	Scared		
YRBS (MA, 2005)[d]	Lesbian, gay, and bisexual female and male (211)	Female and male (3311)	3.04	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (211)	Female and male (3311)	4.77	Scared		
YRBS (MA, 2003)[d]	Lesbian, gay, and bisexual female and male (217)	Female and male (3407)	5.41	TI	9–12	Behavior and SI
	Lesbian, gay, and bisexual female and male (217)	Female and male (3407)	4.16	Scared		

Continued

TABLE 3—*Continued*

YRBS (Milwaukee, WI, 2007)[e]	Lesbian, gay, and bisexual female and male (103)	Female and male (813)	0.98	TI	9–12	Behavior
	Lesbian, gay, and bisexual female and male (103)	Female and male (813)	2.29	Scared		
MSS (MN, 2001)[a]	Lesbian female (65)	Female (10 194)	2.20	TI	9–12	Behavior
	Bisexual female (589)	Female (10 194)	2.51	TI		
	Gay male (173)	Male (9100)	1.55	TI		
	Bisexual male (1225)	Male (9100)	1.87	TI		
	Lesbian female (65)	Female (10 194)	2.35	Scared		
	Bisexual female (589)	Female (10 194)	3.80	Scared		
	Gay male (173)	Male (9100)	1.62	Scared		
	Bisexual male (1225)	Male (9100)	3.49	Scared		
MSS (MN, 2004)[a]	Lesbian female (86)	Female (10 309)	4.04	TI	9–12	Behavior
	Bisexual female (682)	Female (10 309)	2.83	TI		
	Gay male (195)	Male (9005)	1.47	TI		
	Bisexual male (1186)	Male (9005)	2.04	TI		
	Lesbian female (86)	Female (10 309)	3.29	Scared		
	Bisexual female (682)	Female (10 309)	4.66	Scared		
	Gay male (195)	Male (9005)	2.21	Scared		
	Bisexual male (1186)	Male (9005)	3.93	Scared		
MSS (MN, 2007)[a]	Lesbian female (125)	Female (10 752)	2.50	TI	9–12	Behavior
	Bisexual female (811)	Female (10 752)	2.47	TI		
	Gay male (304)	Male (9416)	1.19	TI		
	Bisexual male (2032)	Male (9416)	1.43	TI		
	Lesbian female (125)	Female (10 572)	2.33	Scared		
	Bisexual female (811)	Female (10 572)	3.99	Scared		
	Gay male (304)	Male (9416)	2.28	Scared		
	Bisexual male (2032)	Male (9416)	3.24	Scared		
LS (NEC, DNI)[51]	Lesbian, gay, and bisexual female and male (46)	Female and male (470)	3.60	TI	14–19 y	SI
YRBS (RI, 2007)[f]	Lesbian, gay, and bisexual female and male (225)	Female and male (1984)	3.13	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (225)	Female and male (1984)	4.38	Scared		
YRBS (Seattle, WA, 1995)[41]	Lesbian, gay, and bisexual female and male (378)	Female and male (8028)	1.92	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (378)	Female and male (8028)	2.45	Scared		
YRBS (Seattle, WA, 2008)[a]	Lesbian, gay, and bisexual female and male (103)	Female and male (1812)	2.68	TI	9–12	SI
	Lesbian, gay, and bisexual female and male (103)	Female and male (1812)	4.97	Scared		
YRBS (Vermont, 1995, 1997)[38]	Lesbian and gay, female and male (249)	Female and male (6873)	1.69	TI	9–12	Behavior
	Bisexual female and male (336)	Female and male (6873)	6.98	TI		
	Lesbian and gay, female and male (249)	Female and male (6873)	1.60	Scared		
	Bisexual female and male (336)	Female and male (6873)	5.77	Scared		

Continued

TABLE 3—*Continued*

YRBS (VT, 2005)[g]	Gay and bisexual female (123)	Female (1376)	9.68	TI	9–12	Behavior
	Gay and bisexual male (118)	Male (1562)	5.22	TI		
	Gay and bisexual female (123)	Female (1376)	6.13	Scared		
	Gay and bisexual male (118)	Male (1562)	5.81	Scared		
YRBS (VT, 2007)[g]	Gay and bisexual female (144)	Female (1273)	5.15	TI	9–12	Behavior
	Gay and bisexual male (104)	Male (1476)	5.18	TI		
	Gay and bisexual female (144)	Female (1273)	3.93	Scared		
	Gay and bisexual male (104)	Male (1476)	6.12	Scared		
YRBS (WI, 2007)[55]	Lesbian, gay, and bisexual female and male (111)	Female and male (1181)	3.43	TI	9–12	Behavior
	Lesbian, gay, and bisexual female and male (111)	Female and male (1181)	4.03	Scared		
Local Survey (LSCCC, DNI)[59]	Lesbian, gay, and bisexual female and male (44)	Female and male (44)	1.59	Multiple	14–19 y	SI
Local Survey (TKM, DNI)[52]	Lesbian, gay, and bisexual female and male (130)	Female and male (130)	1.98	Multiple	14–18 y	SI

Note. AttAs = Attempted Assault; Scared = missed school because felt scared; DCYS = Dane County Youth Survey; DNI = did not identify; LSCCC = large south central Canadian city; MSS = Minnesota Student Survey; NEC = New England community; OR = odds ratio; SI = self-identification; SO = sexual orientation; TI = threatened or injured with a weapon or otherwise assaulted; TKM = Toronto, Kingston, and Montreal; YRBS = Youth Risk Behavioral Surveillance Survey.

[a]E. M. Saewyc, PhD, McCreary Society, written communication, March 2010.

[b]Chicago Department of Health, written communication, March 2010.

[c]District of Columbia Public Schools HIV/AIDS Education Program, written communication, February 2010.

[d]C. Goodenow, PhD, Massachusetts Department of Education, written communication, September 2009.

[e]Milwaukee Public School System, written communication, March 2010.

[f]State of Rhode Island Department of Health, written communication, March 2010.

[g]E. Edwards, MPH, Vermont Department of Health, written communication, March 2010.

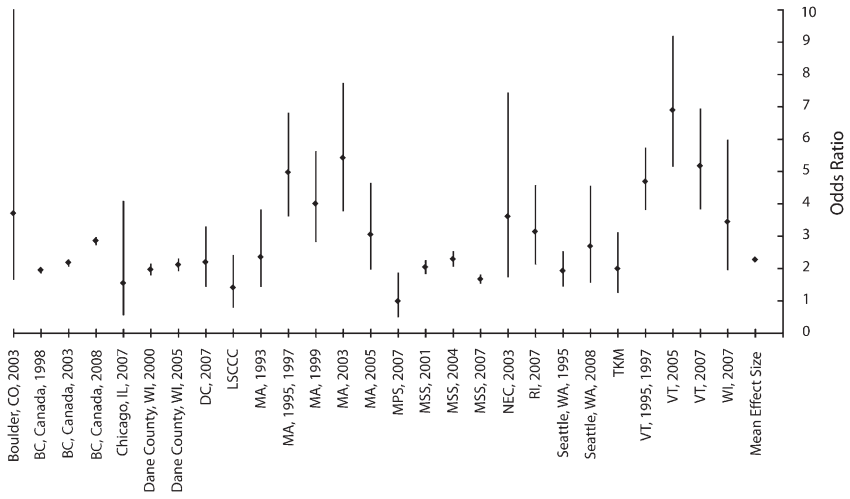
school. Compared with heterosexual adolescents, gay and lesbian adolescents were 1.2 times more likely (OR=2.18; 95% CI=1.81, 2.62) to miss school. The estimate for the overall relationship comparing sexual minority and sexual nonminority individuals changed from 3.85 to 3.42 when we took sexual orientation status into account using a mixed-effects model. Decade of survey administration, dimension used to assess sexual orientation, and gender were not found to moderate the association between sexual orientation and assault.

DISCUSSION

In this meta-analysis, we found a particularly robust pattern of effects such that, compared with sexual nonminority individuals, sexual minority individuals were 3.8 times more likely to experience childhood sexual abuse, 1.2 times more likely to be physically abused by a parent or guardian, 1.7 times more likely to be threatened or injured with a weapon or otherwise assaulted by a peer at school, and 2.4 times more likely to miss school because of fear. Not only was the average disparity across studies large, but nearly all of the studies indicated significant group differences in childhood sexual abuse, parental physical abuse, and peer victimization.

Beyond disparities in rates of abuse, we found that gender moderated the relationship between sexual orientation and childhood sexual abuse in that the disparity in sexual abuse between sexual orientation groups was greater for males than females. Studies revealed high rates of sexual abuse among bisexual female, lesbian, bisexual male, gay male, and heterosexual female adolescents (40%, 32%, 24%, 21%, and 17%, respectively), compared with 5% of heterosexual male adolescents reporting having been sexually abused. Gender also moderated the relationship between sexual orientation and being threatened or injured with a weapon or otherwise assaulted in that the disparity between sexual orientation groups was greater for females than males. Bisexuality moderated the relationships between sexual orientation and parental physical abuse and between sexual orientation and missing school through fear in that the disparities between bisexual and heterosexual adolescents were larger than were those between gay or lesbian and heterosexual adolescents.

The decade in which studies were administered did not moderate the relationship between sexual orientation and abuse. We had hypothesized that the abuse of sexual minority youths would have decreased as these individuals have found more acceptance and support in some parts of the United States. In fact, disparities in prevalence rates of sexual abuse, parental physical abuse, and peer victimization between sexual minority and sexual nonminority youths did not change from the 1990s to the first decade of the 2000s. Geographic areas that assess sexual orientation in youth surveys may be areas that are more supportive of sexual minority youths. It could be that such environments motivate sexual minority youths to identify themselves publicly, thus becoming targets for abuse. Additional research is needed to determine whether this hypothesis is correct.



Note. LSCCC = large south central Canadian city; MPS = Milwaukee Public Schools; MSS = Minnesota Student Survey; NEC = New England community; TKM = Toronto, Kingston, and Montreal, Canada.

FIGURE 3—Study effects and 95% confidence intervals for studies testing the association between sexual orientation and assault by peers.

Limitations

This study has several limitations. First, these data were collected through retrospective self-reports, which may be biased. Second, it was not possible to test for ethnic and racial differences because of the lack of diversity within the studies themselves. Third, studies did not collect data or test possible factors such as disclosure of one's sexual orientation, gender-role nonconforming behavior, age of achieving various gay-related developmental milestones, various coping strategies, acculturation into gay communities, and exposure to gay role models, all of which are sexual minority–related factors that may be associated with childhood abuse. This omission limits our understanding of the mechanisms involved with abuse of sexual minority youths.

The studies also did not measure childhood abuse in terms of age of initiation, frequency, identity of perpetrator and victim's relationship to perpetrator, and other characteristics of the abuse itself. Relatively few studies assessed parental physical abuse, and all were based in Minnesota, thus limiting the generalizability of this effect. Tests of moderation necessarily included fewer studies than did tests of the overall effect size for each type of abuse, thus decreasing the external validity of the findings. For example, tests of gender as a moderator of the relationship between sexual orientation and childhood sexual abuse could only include studies that assessed disparities for males and females separately (i.e., studies in British Columbia, Massachusetts, Minnesota, Washington State, and Vermont). The number of comparisons of individuals who self-identified as "mostly heterosexual" with heterosexuals was low. These analyses were therefore not included in the meta-analysis. Studies do suggest, however, that individuals who self-identify as "mostly heterosexual" are at greater risk for negative outcomes.[42]

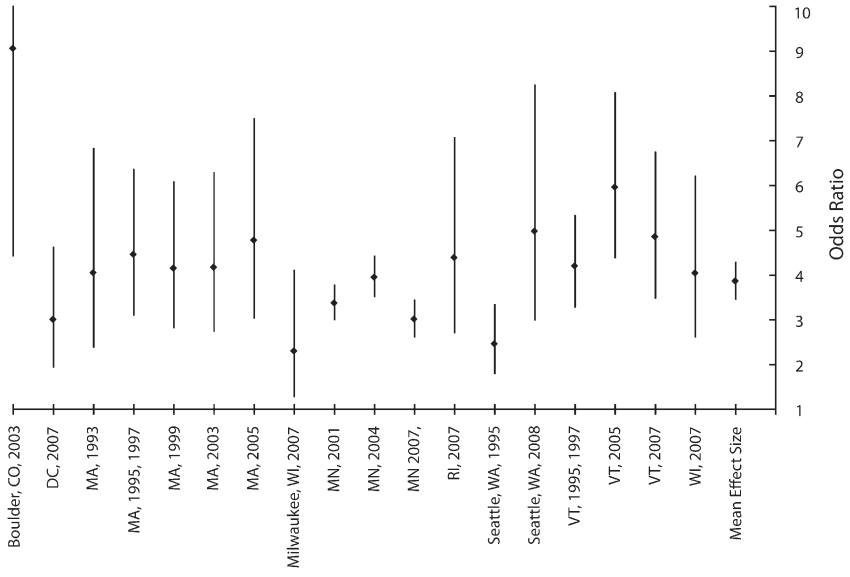


FIGURE 4—Study effects and 95% confidence intervals for studies testing the association between sexual orientation and missing school through fear.

Conclusions

It is well established that childhood physical and sexual abuse and peer victimization are associated with many short-term[62–64] and long-term[22,65,66] negative outcomes. Numerous studies suggest that this is also the case with sexual minority individuals.[67–79] Preventing abuse of sexual minority youths and supporting those who have been victimized will thus decrease morbidity and possibly mortality during adolescence and adulthood.

Although an exhaustive research agenda for this field is beyond the scope of this article, a few of many relevant research questions requiring investigation are as follows.

1. What is the prevalence of childhood abuse among subgroups of sexual minority (e.g., racial/ethnic minorities) individuals?
2. To what degree do other specific types of victimization (e.g., harassment, corporal punishment, interpersonal violence, emotional abuse, sibling assault, robbery, peer assaults) occur among sexual minorities?

3. How does the nature and impact of various types of abuse vary across developmental periods of childhood and adolescence?
4. How do dose (number of attacks) and time (length of attacks) compare among sexual minority and sexual nonminority youths, and how do these factors relate to outcomes?
5. What sexual minority–related factors (e.g., gender-role nonconformity; responses to coming out; level of familial, peer, and community support; age of achievement of gay-related developmental milestones such as age of self-labeling as gay, of first same-sex sexual activity, of disclosure) moderate or mediate the relationship between childhood abuse and health outcomes?
6. What are the help-seeking behaviors of sexual minority youths in response to childhood abuse? And similarly, what are the general coping strategies used or not used by sexual minority youths in response to childhood abuse?
7. What are the responses of caregivers to reports of abuse among sexual minority youths?
8. Who are the perpetrators of various types of childhood abuse?
9. Which youths prove to be resilient in the face of childhood abuse and what factors support such resiliency?
10. How do all of these factors differ by gender, developmental period (e.g., early, middle, late adolescence), and with respect to parental physical abuse vs childhood sexual abuse among sexual minority individuals?

Various theories could be used to support research in this area and to develop prevention and treatment interventions. For example, syndemics theory suggests that interventionists may need to target multiple, interacting psychosocial risk factors to mitigate the negative effects of childhood abuse. Of great importance, theories of stress, coping, and resiliency should provide direction with respect to research and interventions.[80]

It is important to note that organizations as diverse as the American Academy of Pediatrics[81] and the US Department of Veteran Affairs[82] have stated that sexual abuse does not cause individuals to become gay, lesbian, or bisexual. Sexual minority individuals are instead more likely to be targeted for sexual abuse, as youths who are perceived to be gay, lesbian, or bisexual are more likely to be bullied by their peers.

The treatment of sexual minority youths in various systems (e.g., educational, mental health, medical, social service, criminal, child welfare, religious) needs to be improved as it has been shown that more supportive environments are associated with less abuse of these youth populations.[57] Policies that protect sexual minority youths and programs that train personnel should be implemented. Interventions that empower youths, regardless of their sexual orientation, to intervene on behalf of sexual minority youths are needed. Programs are urgently needed to promote the health of sexual minority youths by providing healthy opportunities for socialization, support to cope with abuse, role models, and opportunities for engaging in advocacy. ■

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Contributors

M.S. Friedman conceptualized the study; led data retrieval, coding and analysis activities; and wrote most of the manuscript. M.P. Marshal helped to conceptualize the study, provided consultation with respect to data coding, participated extensively in data analysis, and wrote parts of the manuscript. T.E. Guadamuz, C. Wei, and C.F. Wong participated in data retrieval and coding and provided extensive feedback about all drafts of the manuscript. E.M. Saewyc assisted in securing several data sets, participated in data analysis, and reviewed drafts of the manuscript. R. Stall helped to conceptualize the study and participated in writing and reviewing the manuscript.

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Human Participant Protection

This study was approved by the institutional review board of the University of Pittsburgh.

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