Protective Factors in the Lives of Bisexual Adolescents in North America

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Objectives. We compared protective factors among bisexual adolescents with those of heterosexual, mostly heterosexual, and gay or lesbian adolescents.

Methods. We analyzed 6 school-based surveys in Minnesota and British Columbia. Sexual orientation was measured by gender of sexual partners, attraction, or self-labeling. Protective factors included family connectedness, school connectedness, and religious involvement. General linear models, conducted separately by gender and adjusted for age, tested differences between orientation groups.

Results. Bisexual adolescents reported significantly less family and school connectedness than did heterosexual and mostly heterosexual adolescents and higher or similar levels of religious involvement. In surveys that measured orientation by self-labeling or attraction, levels of protective factors were generally higher among bisexual than among gay and lesbian respondents. Adolescents with sexual partners of both genders reported levels of protective factors lower than or similar to those of adolescents with same-gender partners.

Conclusions. Bisexual adolescents had lower levels of most protective factors than did heterosexual adolescents, which may help explain their higher prevalence of risky behavior. Social connectedness should be monitored by including questions about protective factors in youth health surveys. (*Am J Public Health.* 2009;99:110–117. doi:10.2105/AJPH.2007.123109)

Adolescence is a key developmental period with long-term effects on physical and psychological health, and adolescents negotiate a variety of environmental challenges during these years. Although public health practice often focuses on preventing or decreasing health risks, in the past decade increasing attention has been paid to identifying protective factors that can foster healthy development. Protective factors are events, circumstances, and life experiences that promote confidence and competence among adolescents and help to protect them from negative developmental risks and health outcomes.[1,2] Such protective resources enhance resilience among adolescents who face adversities,[3] and they arise from individual characteristics and social environments such as families, schools, and communities.[4]

Several individual assets and external resources have been identified as protective factors that reduce the likelihood of risky behaviors such as suicidality, substance use, unprotected sexual behavior, and disordered eating. Individual-level protective factors include higher levels of self-esteem, psychological well-being, and religiosity.[5–8] Relational factors such as strong connectedness to family[5,7–13] and school[5,7,9,10,12,13] also reduce the likelihood of engaging in behaviors that compromise health. Some community-level factors also appear to be protective against risk taking among adolescents; these include the presence of a caring adult role model outside the family[8,13] and community involvement, including volunteering.[8]

Most studies focus on adolescents in general, but some populations, such as lesbian, gay, and bisexual adolescents, face greater environmental challenges in negotiating adolescence and navigating developmental tasks. LGB adolescents are disproportionately subjected to violence and harassment at school[14–16] and to physical and sexual abuse.[17,18] In addition, LGB adolescents are more likely than their heterosexual peers to be involved in health-compromising behaviors, including substance use,[14–17] risky sexual behaviors and injection drug use,[14,19,20] and suicide attempts.[10,14,15,17,21–24]

Researchers have recently started illuminating relationships between lower levels of protective factors and negative health outcomes among LGB adolescents. In an analysis of the 2004 Minnesota Student Survey, Eisenberg and Resnick found that LGB students were less likely than were other students to report high levels of family connectedness, teacher caring, other adult caring, and perceived safety at school.[25] However, these protective factors, when present, decreased the likelihood of suicidal ideation and attempts, and protective factors accounted for more of the variation in suicide behaviors than did sexual orientation. Similarly, in his analysis of the National Longitudinal Study of Adolescent Health, Ueno found that less-positive relationships with parents, school, and friends explained higher levels of psychological distress among sexual-minority students than among heterosexual students.[26] Homma and Saewyc found that higher levels of perceived family caring and more-positive perceptions of school climate were linked to lower levels of emotional distress among Asian American LGB high school students in Minnesota.[27]

These studies provide some evidence that protective factors may work in similar ways for LGB adolescents as for other adolescents, but not consistently; for example, high levels of religious involvement in a faith with negative attitudes about nonheterosexual orientations might actually be more harmful than protective. Further, if LGB adolescents as a group experience lower levels of these assets, this might help explain their higher risks. Only a handful of population-based studies have focused on sexual-minority adolescents and protective factors, and they provide limited information about protective factors among bisexual adolescents separately from gay or lesbian adolescents; most research combines these groups because of small samples. Measuring sexual orientation during adolescence can be difficult; sexual identity development is a task of adolescence, and many youths engage in exploration of romantic attraction, sexual behavior, or identity labels during the adolescent

years. Behavior and self-labeling may be discordant at various times, and there is evidence that some adolescents' perception of their orientation and labels will shift during adolescence and young adulthood.

In the few studies that have disaggregated the groups, bisexual adolescents were more likely than were heterosexual peers to report risky sexual behaviors,[19,20] suicide attempts,[16] victimization,[16] delinquency,[28] and substance use[16,28]; in some cases gay and lesbian adolescents did not significantly differ from their heterosexual peers in these risks.[16,19,28] Some studies used romantic attraction as a measure of orientation,[23,24,26] some used self-labels,[18,22] and some used gender of sexual partners.[16,20,25,27,28] Few studies offer the opportunity to incorporate correlates for orientation measured in different ways in the same data set.

No matter how it is measured, it is important to examine levels of protective factors among bisexual adolescents separately, given the greater likelihood of risk-taking behavior and negative experiences at school among bisexual students. Drawing on data from different waves of the National Longitudinal Study of Adolescent Health, 2 studies have found lower levels of connectedness to family and school and lower perceived caring by other adults among bisexual than among heterosexual adolescents.[29,30] Bisexual and gay or lesbian adolescents generally did not differ in their levels of protective factors, but this may have been partly attributable to relatively small samples of LGB adolescents in the longitudinal study cohort, which limits statistical power for comparisons between the 2 groups. Furthermore, the study is nationally representative of US adolescents in general but may not reflect the full ethnic diversity of LGB populations across the United States or Canada. Studies analyzing larger regional population-based surveys offer opportunities to confirm those findings for specific regions.

Identifying whether protective factors work similarly for bisexual adolescents and their peers is useful, but it is equally important to monitor whether bisexual adolescents have the same levels of those protective factors in their lives. We therefore explored levels of protective factors among bisexual adolescents compared with heterosexual, mostly heterosexual, and gay or lesbian peers in 6 school-based surveys in the midwestern United States and western Canada. We posed 3 questions: (1) Are levels of protective factors different between bisexual adolescents and heterosexual adolescents? (2) Are levels of protective factors different between bisexual adolescents and gay or lesbian adolescents? (3) Are these patterns consistent across varying measures of sexual orientation?

METHODS

Data Sets and Samples

We used 6 data sets, all of which were large-scale, school-based adolescent health surveys in the United States and Canada. The data sets were the 1992, 1998, and 2001 Minnesota Student Surveys, and the 1992, 1998, and 2003 British Columbia Adolescent Health Surveys. These surveys included questions about perceived physical and mental health, health and risk behaviors, and risk and protective factors.

The Minnesota surveys were administered to all 6th, 9th, and 12th graders in the state's participating school districts. All but 1 of the Minnesota school districts participated in the 1992 Minnesota survey, and 92% participated in the 1998 and 2001 Minnesota surveys. Sixth graders were excluded from our analysis because they were not asked about sexual orientation and sexual behaviors. The British Columbia surveys were cluster-stratified random samples of adolescents in grades 7 to 12, from public schools throughout the province. These samples were weighted to provincial enrollment and adjusted for response rates and differential probability of selection. Details about the surveys are available elsewhere.[31–33]

Table 1 displays demographics of the samples. We included in our analysis only students who reported their sexual orientation. Participants in 3 Minnesota surveys were divided into 3 groups by their sexual partners in the past year: only partners of the opposite gender, only partners of the same gender, and partners of both the opposite and the same gender. British Columbia participants were divided into 4 groups according to a question assessing both self-labeling and romantic attractions: heterosexual, mostly heterosexual, gay or lesbian, and bisexual. Because the 2003 British Columbia survey also asked about gender of sexual partners, we used both types of sexual orientation questions to classify 2003 British Columbia survey participants (2003a British Columbia survey for self-labeling and attraction, 2003b British Columbia survey for gender of sexual partners). Table 2 shows the overlap between these 2 measures of sexual orientation among all 2003 British Columbia survey participants. Gender of sexual partners in the past year was not necessarily consistent with self-labeling of sexual identity; however, for brevity, we referred to students who reported sexual partners of opposite gender only, same gender only, or both genders as heterosexual, gay or lesbian, or bisexual, respectively.

Measures

Three domains of protective factors, theoretically and empirically derived and common to all 6 surveys were selected: (1) connectedness to family, (2) connectedness to school, and (3) religious or spiritual involvement. Family-connectedness scales represented an average of items such as perceptions of being cared about, understood, and paid attention to and being loved by or feeling close to family. Connection to school had 2 measures: liking school (how much students liked school) and the school-connectedness scale, which was created by averaging items such as liking school, relationships with teachers, and perceived safety at school. We used the 1 item about liking school, although it was a part of school-connectedness scales, because its wording was the same across all surveys. Religious or spiritual involvement was measured with responses to items such as a sense of religiosity or spirituality, the importance of religion, religious service attendance, and perceived caring by church or spiritual leaders.

The number of items included in each scale and score ranges varied by survey, as shown in Table 3. Higher scores indicated higher levels of connectedness to family and school and religious or spiritual involvement.

Analyses

General linear models were used to examine differences in the levels of protective factors between bisexual groups and heterosexual, mostly heterosexual (for British Columbia surveys), and gay or lesbian groups. Age was used to control for possible maturation effects and

TABLE 1—Demographic Characteristics of Adolescents in School-Based Surveys: Minnesota and British Columbia, 1992–2003

	Minnesota Student Survey			British Columbia Adolescent Health Survey			
	1992	1998	2001	1992	1998	2003a	2003b
Sample size, no.	25 137	22 241	22 703	239 975[a]	281 576[a]	265 132[a]	54 554[a]
Female, %	47.7	49.3	50.0	50.5	52.6	50.4	52.9
Sexual orientation measures	Sexual partners in past year[b]	Sexual partners in past year[b]	Sexual partners in past year[b]	Self-labeling/attraction	Self-labeling/attraction	Self-labeling/attraction	Sexual partners in past year[b]
Sexual orientation, %							
Heterosexual	93.1	90.7	90.6	92.5	91.6	90.8	95.3
Mostly heterosexual	. . .	. . .	. . .	5.5	6.2	6.6	. . .
Bisexual	6.0	8.2	8.1	1.7	1.6	2.1	3.9
Gay/lesbian	0.9	1.1	1.3	0.3	0.6	0.5	0.8

Note. Ellipses indicate that the measure was not applicable because the category could not be measured by gender of sexual partners. The sampling method in Minnesota was a statewide census of 9th- to 12th-grade students; the British Columbia surveys were cluster stratified and sampled 7th- to 12th-grade students. Because the 2003 British Columbia survey measured sexual orientation by gender of sexual partners as well as self-labeling and sexual attraction, we classified participants as 2003a for self-labeling and as attraction and as 2003b for gender of sexual partners in the past year.
[a]Weighted to provincial enrollment and adjusted for cluster sampling and differential response rates.
[b]Included only sexually active students.

differences in age distributions among orientation groups. All analyses were conducted separately by gender.

RESULTS

Comparisons of age-adjusted mean scores of protective factors by sexual orientation are shown for adolescents in Minnesota (Table 4) and British Columbia (Table 5). Overall, when orientation was measured by gender of recent sexual partners, bisexual adolescent boys and girls in all Minnesota cohorts and in the 2003b British Columbia survey tended to report lower levels of protective factors than did their heterosexual peers. In particular, bisexual students consistently reported feeling less connected to family and school (all, $P<.01$ to $P<.001$). Results for religious involvement or spirituality were generally more mixed; for example, only bisexual adolescent boys in the 1992 Minnesota survey and bisexual adolescent girls in the 1998 and 2001 Minnesota surveys reported lower mean scores for feeling cared about by church or spiritual leaders than did their heterosexual peers (all, $P<.001$). Levels of religious involvement were not significantly different between bisexual and heterosexual groups in the 1992 Minnesota survey, and only bisexual boys in the 2003b British Columbia survey reported lower levels of feeling religious or spiritual than did their heterosexual peers ($P<.01$).

When sexual orientation was measured by self-labeling or attraction, British Columbia bisexual adolescents reported lower levels of most protective factors than did heterosexual adolescents, with the exception of religiosity or spirituality. Lower mean family-connectedness scores were reported by bisexual adolescents in all cohorts except for bisexual adolescent girls in the 1992 British Columbia survey (all, $P<.001$). Bisexual girls in the 1992 British Columbia survey had a higher mean score of liking school than did their heterosexual peers, but bisexual girls in the 1998 and 2003 British Columbia surveys had lower mean scores than did heterosexual girls for both liking school and school connectedness (all, $P<.001$). School results for boys varied; although bisexual boys had higher mean scores of liking school than did their heterosexual peers in all 3 British Columbia surveys ($P<.01$ to $P<.001$), bisexual adolescent boys in the 1998 British Columbia survey reported lower levels of school connectedness ($P<.001$), and bisexual

TABLE 2—Overlap Between Measures of Sexual Orientation: British Columbia Adolescent Health Survey, 2003

		Gender of Sexual Partners in the Past Year			
Self-Labeling/Attraction	No.[a]	Opposite Gender Only, %	Same Gender Only, %	Both Genders, %	Not Sexually Active, %
Boys					
Heterosexual	118 608	19.3	<0.1	0.2	80.4
Mostly heterosexual	4 312	18.0	0.2	1.0	80.8
Bisexual	1 193	21.5	5.4	12.4	60.6
Gay	844	8.3	17.9	6.2	67.7
Girls					
Heterosexual	111 222	18.6	<0.1	0.2	81.1
Mostly heterosexual	12 478	35.8	<0.1	3.5	60.7
Bisexual	4 210	31.5	2.8	16.8	48.9
Lesbian	467	3.9	7.3	14.1	74.7

[a]Weighted to provincial enrollment and adjusted for cluster sampling and differential response rates.

TABLE 3—Measures of Potential Protective Factors Among Adolescents in School-Based Surveys: Minnesota and British Columbia, 1992–2003

Data Set	Examples of Survey Items	No. of Items (Scoring Range)	Cronbach α	
			Boys	Girls
	Family connectedness			
Minnesota				
1992	Family understands me, cares about me, respects my privacy	5 (1–5)	0.88	0.89
1998	Family understands me, cares about me, respects my privacy	5 (1–5)	0.88	0.89
2001	Family understands me, cares about me, respects my privacy	5 (1–5)	0.87	0.89
British Columbia				
1992	My parents understand me, trust me	7 (0–1)	0.78	0.83
1998	My father/mother cares about me, family understands me, have fun together, pays attention to me	11 (1–5)	0.86	0.90
2003	My father/mother cares about me, family understands me, have fun together, pays attention to me	11 (1–3)	0.87	0.87
	Liking school			
Minnesota				
1992	Liking school	1 (1–5)	NA	NA
1998	Liking school	1 (1–5)	NA	NA
2001	Liking school	1 (1–5)	NA	NA
British Columbia				
1992	Liking school	1 (1–5)	NA	NA
1998	Liking school	1 (1–5)	NA	NA
2003	Liking school	1 (1–3)	NA	NA
	School connectedness			
Minnesota				
1992	. . .			
1998	Liking school, feeling safe at school, school people care about me	5 (1–5)	0.75	0.73
2001	Liking school, feeling safe at school, school people care about me	5 (1–5)	0.76	0.76
British Columbia				
1992	. . .			
1998	Liking school, feeling safe at school, feel like a part of my school	7 (1–5)	0.82	0.81
2003	Liking school, feeling safe at school, feel like a part of my school	7 (1–5)	0.83	0.83
	Religious or spiritual involvement			
Minnesota				
1992	Frequencies of attending religious services	1 (1–4)	. . .	. . .
	Importance of religion in my life	1 (1–4)	. . .	. . .
	Feeling cared about by church leaders	1 (1–5)	. . .	. . .
1998	Feeling cared about by church leaders	1 (1–5)	. . .	. . .
2001	Feeling cared about by church or spiritual leaders	1 (1–5)	. . .	. . .
British Columbia			. . .	. . .
1992	Think of myself as a religious or spiritual person	1 (1–5)	. . .	. . .
1998	Think of myself as a religious or spiritual person	1 (1–5)	. . .	. . .
2003	Think of myself as a religious or spiritual person	1 (1–3)	. . .	. . .

Note. Ellipses indicate that the measure was not applicable because a Cronbach α could not be computed for a single-item measure.

and heterosexual boys in the 2003a British Columbia survey did not differ in school connectedness. Bisexual adolescents in all British Columbia cohorts except adolescent girls in the 2003a British Columbia survey (not significant) were more likely than were their heterosexual peers to report thinking of themselves as a religious or spiritual person ($P<.001$).

Mostly heterosexual adolescents (a category included only in the British Columbia surveys) reported generally higher levels of connection to family and school than did bisexual adolescents. Although bisexual and heterosexual adolescent boys in the 1992 British Columbia survey did not differ in family connectedness and bisexual girls in the 1992 British Columbia survey had higher levels of connection to family, 1998 and 2003a British Columbia survey participants reported feeling less connected to family (all, $P<.001$). Except for the respondents to the 1992 British Columbia survey, British Columbia bisexual adolescent girls generally had lower mean scores of both liking school and school connectedness than did their mostly heterosexual peers (all, $P<.001$).

For connection to school, we found mixed and contradictory results among adolescent boys in British Columbia. Mostly heterosexual boys reported higher levels of liking school in the 1992 British Columbia survey than did their bisexual peers ($P<.001$), and this difference disappeared in the 1998 British Columbia survey (not significant). In the 2003a British Columbia survey, higher levels of liking school were observed among bisexual boys ($P<.001$). By contrast, mean scores of school connectedness were lower among bisexual than among mostly heterosexual boys in the 1998 British Columbia survey ($P<.001$) and the 2003a British Columbia survey ($P<.01$). Higher levels of religious involvement or spirituality were observed among bisexual respondents in all cohorts (all, $P<.01$ to $<.001$) except among boys in the 1992 British Columbia survey (not significant).

Results for gay or lesbian adolescents differed for differing measures of sexual orientation. Where sexual orientation was assessed by gender of sexual partners in the past year, bisexual students in the Minnesota and 2003b British Columbia surveys reported lower ($P<.05$ to $<.001$) or similar (not significant) levels of protective factors than did gay

TABLE 4—Age-Adjusted Mean Scores by Sexual Orientation: Minnesota Student Survey, 1992–2001

Data Set (Scoring Range)	Boys			Girls		
	Bisexual	Heterosexual	Gay/Lesbian	Bisexual	Heterosexual	Gay/Lesbian
Family connectedness						
1992 (1–5)	3.32	3.54***	3.54*	3.18	3.36**	3.37
1998 (1–5)	3.29	3.58***	3.53**	3.10	3.49***	3.08
2001 (1–5)	3.29	3.53***	3.19	3.19	3.51***	3.25
Liking school						
1992 (1–5)	2.78	3.03***	3.13***	2.94	3.22***	2.65
1998 (1–5)	2.63	2.81***	2.75	2.68	3.06***	3.08**
2001 (1–5)	2.60	2.73***	2.95***	2.76	2.99***	3.05*
School connectedness						
1998 (1–5)	2.94	3.17***	3.13***	2.90	3.30***	3.13*
2001 (1–5)	2.96	3.17***	3.15**	3.03	3.29**	3.29**
Religious attendance						
1992 (1–4)	2.45	2.48	2.62	2.52	2.59	2.65
Importance of religion						
1992 (1–4)	2.28	2.24	2.43*	2.41	2.41	2.45
Perceived caring by church or spiritual leaders						
1992 (1–5)	2.77	2.90***	2.97	2.67	2.86	2.62
1998 (1–5)	2.76	2.86	2.67	2.52	2.90***	2.25
2001 (1–5)	2.75	2.83	2.55	2.61	2.87***	2.44

Note. Sexual orientation was measured by the gender of sexual partners reported in the past year.
*$P<.05$; **$P<.01$; ***$P<.001$, for comparisons with bisexual youth.

or lesbian students. In particular, bisexual adolescents in the 2003b British Columbia survey had lower mean scores for all protective factors than did their gay or lesbian peers; the only exception was school connectedness among girls (not significant). Among adolescent girls in Minnesota, bisexuals and lesbians had similar scores for family connectedness and religious or spiritual involvement in all cohorts, but bisexuals reported lower levels of connection to school in the 1998 and 2001 Minnesota surveys (all, $P<.05$ to $<.01$). By contrast, in most cohorts of British Columbia students, those who were categorized as bisexual by self-labeling or attraction generally reported higher levels of protective factors than did those with gay or lesbian self-labeling or attraction (all, $P<.05$ to $<.001$).

DISCUSSION

Despite variations in measures of sexual orientation and survey sites and years, levels of most protective factors were lower among bisexual adolescents than among heterosexual or mostly heterosexual adolescents. In particular, bisexual adolescents reported lower levels of connection to family and school than did heterosexual adolescents in almost all cohorts. Disparities in levels of protective factors between bisexual and heterosexual students were more significant for adolescent girls than boys. Bisexual girls, regardless of whether they reported bisexual identity or attractions or sexual behavior with both genders, reported feeling less connected to family and school.

Other studies have also reported gender differences,[29,30] with lower levels of family interaction[30] and school belonging[29] among adolescent girls, but not boys, who were attracted to both genders. These lower levels of supportive social relationships for bisexual adolescent girls may lead to poor health outcomes; for example, Galliher et al. found the poorest psychosocial adjustment among bisexual females aged 11 to 21.[29] Past studies have focused more on gay or bisexual boys or relied on venue-based samples, the majority of whom were gay or lesbian adolescents.[34] The dearth of research on bisexual adolescent girls may mirror societal perspectives that render them less visible than lesbians or adolescent boys, yet in these cohorts, bisexual girls felt less connected with family or school, 2 key protective resources.

For bisexual and heterosexual adolescent boys, we found somewhat contradictory results for school-related factors. When orientation was measured by self-labeling or attraction, bisexual boys were more likely than were their heterosexual peers to like going to school in all 3 British Columbia surveys, but their levels of school connectedness were not similarly higher. Of the 2, school connectedness is the stronger measure, being a scale rather than a single indicator and more commonly used in other studies.[5,7,8,10,12] Despite liking school, bisexual male students did not necessarily have a strong sense of belonging, teacher fairness, or school safety. At school, sexual minority adolescents are often verbally or sexually harassed, and they may be assaulted or threatened with a weapon,[35–37] engendering fear for their safety.[38] Although this lack of safety may disconnect sexual minority adolescents from school, it does not explain the gap between bisexual boys' levels of liking school and school connectedness. Further research is needed to explore school experiences of bisexual adolescent boys.

Regardless of how orientation was measured, differences between bisexual and heterosexual adolescents in their levels of protective factors maintained similar patterns. The differences between bisexual and gay or lesbian adolescents, however, varied by measures of sexual orientation. When orientation was measured by sexual identity or attractions, the British Columbia surveys found that bisexual students were more likely than or as likely as gay or lesbian students to report high levels of protective factors. However, when gender of sexual partners during the past year was the measure, the 2003 British Columbia Survey (b) survey found lower levels of almost all protective factors among bisexual participants. The latter results were more similar to those from the Minnesota surveys, which used the same measures of orientation, than to results from

TABLE 5—Age-Adjusted Mean Scores by Sexual Orientation: British Columbia Adolescent Health Survey, 1992–2003

Data Set (Scoring Range)	Boys				Girls			
	Bisexual	Heterosexual	Mostly Heterosexual	Gay/ Lesbian	Bisexual	Heterosexual	Mostly Heterosexual	Gay/ Lesbian
Family connectedness								
1992 (0–1)	0.63	0.69***	0.63	0.60	0.67	0.63***	0.64***	0.48***
1998 (1–5)	3.80	4.13***	3.98***	3.85	3.78	4.05***	3.93***	3.80
2003a (1–3)	2.40	2.59***	2.51***	2.47***	2.26	2.55***	2.43***	2.20**
2003b (1–3)	2.38	2.48***	. . .	2.32*	2.30	2.39***	. . .	2.41**
Liking school								
1992 (1–5)	3.07	3.01**	3.22***	2.66***	3.36	3.18***	3.34	3.31
1998 (1–5)	3.07	2.89***	3.00	2.76***	2.96	3.21***	3.17***	2.67***
2003a (1–3)	2.08	1.87***	1.96 ***	1.81***	1.87	2.00***	1.95***	1.94**
2003b (1–3)	1.59	1.74***	. . .	2.01***	1.71	1.81***	. . .	1.91***
School connectedness								
1998 (1–5)	3.30	3.39***	3.40***	3.12***	3.31	3.59***	3.50***	3.10***
2003a (1–5)	3.43	3.42	3.50**	3.32***	3.25	3.58***	3.44***	3.18
2003b (1–5)	2.79	3.22***	. . .	3.58***	3.07	3.33***	. . .	3.06
Religious or spiritual identity								
1992 (1–5)	2.45	2.14***	2.40	2.18***	2.70	2.32***	2.47***	2.03***
1998 (1–5)	2.70	2.26***	2.49***	2.57**	2.81	2.59***	2.58***	2.42***
2003a (1–3)	1.72	1.61***	1.66**	1.68	1.79	1.78	1.71***	1.85
2003b (1–3)	1.50	1.56**	. . .	1.75***	1.62	1.63	. . .	1.83***

Note. Ellipses indicate that the measure was not applicable because the category could not be measured by the gender of sexual partners. Sexual orientation was measured by self-labeling and sexual attraction in 2003a and by gender of the past year's sexual partners in 2003b.
*P < .05; **P < .01; ***P < .001, for comparisons with bisexual youth.

the British Columbia surveys that measured sexual identity or attractions. This difference may be explained by the issue of sexual experience: when bisexuality is measured by the gender of sexual partners, only sexually active adolescents are included. Other studies have shown that higher levels of protective factors delay sexual debut,[4,7] and among self-identified bisexual adolescents in our analysis, the majority had no sexual experience.

Our results support previous research suggesting that surveys that use different measures of sexual orientation may be tapping slightly different groups and are thus difficult to compare.[39] As some researchers have pointed out,[16,39] multiple measures of sexual orientation are needed for comparing results from studies in different regions and for examining the complicated intersections of different dimensions of sexual orientation.

Strengths and Limitations

Our study compared only the levels of protective factors by sexual orientation; we have yet to examine whether the presence of these protective factors actually reduces the odds of health risks among sexual minority adolescents. The lower levels of protective factors found in these large-scale surveys, particularly among students reporting sexual partners of both genders, might help to explain the greater rates of various risk behaviors found in previous population-based studies. For example, Robin et al. found that students who reported sexual experience with both genders also reported higher rates of substance use, violence, and suicide attempts than did students who reported only sexual experience with the opposite gender.[16] The authors speculated that bisexual behavior may be part of interrelated risk behaviors engaged in by at-risk adolescents, but they did not examine protective factors in relation to those risky health behaviors.

Data sets used in this study were all drawn from statewide or provincewide school-based surveys, which may better represent LGB student populations in those regions. Many studies have used convenience, venue-based samples of predominantly gay and lesbian adolescents.[36,40–42] By contrast, population-based student surveys[16–20,30,43] have found that far more adolescents self-identify as bisexual or report attractions to or relationships with members of both genders than report exclusively same-gender sexual identities, attractions, or relationships. Research such as ours that uses large-scale, population-based youth surveys includes those who do not necessarily publicly identify themselves as gay, lesbian, or bisexual and may more accurately reflect experiences and circumstances encountered by bisexual adolescents.

A limitation of this study is the way sexual orientation was measured. A question about the gender of recent sexual partners has limited capacity to capture all LGB adolescents. Focusing exclusively on recent sexual intercourse is problematic. As noted by others,[39,44] many adolescents, especially those in early or middle adolescence, have never had sexual intercourse or have not been sexually active in the past year. Asking only about sexual intercourse excludes other types of sexual behaviors.[16] However, sexually active adolescents of any orientation are more likely to report other health risks, such as sexually transmitted infections and pregnancy, as well as mental health issues, such as depression and suicide attempts[45] and substance use.[46] Protective factors have been shown to buffer that risk, even for sexually experienced adolescents.[47] We found that among adolescents who reported recent sexual experience, those with sexual partners of the same gender or both genders appeared to have fewer protective factors to draw upon.

Another potential limitation is the reliance on self-reporting. Given the sensitive nature of questions about sexual identity and behavior and the social stigma attached to nonheterosexual orientation, some LGB students may have hesitated to report their orientation. Our LGB samples thus may have been underestimated. We used regional data from the Midwest in the United States and from western Canada; because environmental factors such as culture, health and school policy, and public

awareness of LGB issues differ across regions, our findings may not be applicable to other areas. Our analyses were restricted to 3 domains of protective factors. Other factors, such as self-esteem, community involvement, and peer relationships, should be explored, but these items were not common to all 6 surveys in our study.

Conclusions

Future research should examine the link between these protective factors and specific risk behaviors among adolescents. Separate analyses by sexual orientation should be performed, because the effect of protective factors on risk behaviors may differ between groups. For example, a recent longitudinal study found that religiosity during adolescence served as a protective factor against substance use only for heterosexual but not for sexual-minority young adults.[48] Identifying protective factors for specific risks helps us to develop more-focused interventions for health promotion among LGB adolescents.

Youth health surveys should include questions about protective factors. Tracking changes in levels of protective factors along with trends in health-compromising behaviors and negative outcomes could help us assess the effectiveness of efforts to reduce risks for LGB adolescents and of efforts to promote healthful and nurturing environments for all adolescents. ■

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This article was accepted March 30, 2008.

Contributors

E.M. Saewyc originated the study, supervised all aspects of implementation, and led the development of the article, including revising the final draft. Y. Homma contributed to literature review and analyses, and wrote several drafts of the article. C.L. Skay guided the statistical analyses and psychometric evaluation of the measures and edited the article. L.H. Bearinger and M.D. Resnick helped create many of the original protective factor measures and contributed to conceptualization of the study and to the analytic strategies and interpretation. E. Reis assisted with the interpretation of the analyses. All authors helped to conceptualize ideas, interpreted findings, and reviewed drafts of the article.

Acknowledgments

The analyses in this article were supported by grants to E.M. Saewyc from the National Institute of Mental Health (R01 MH6258601), the National Institute of Drug Abuse (R01 DA1797901), and the Michael Smith Foundation for Health Research, Vancouver.

Preliminary results of some analyses in this article were presented at the annual meeting of the Society for Adolescent Medicine, March 2005.

The original sources of the database gave permission for their use: the McCreary Centre Society for the BC Adolescent Health Surveys, and the Minnesota Department of Education for the Minnesota State Surveys.

Human Participant Protection

The institutional review board of the University of Minnesota reviewed and approved this study, as did the behavioral research ethics board of the University of British Columbia.

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