Adolescent Sexual Orientation and Suicide Risk: Evidence From a National Study

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Sexual orientation has emerged as a muchdebated risk factor for adolescent suicide in recent years. It is commonly believed that the difficulties of dealing with the stigma of homosexuality might lead to depression and even suicide among gay men and lesbians; this may be particularly heightened during adolescence, when emerging sexuality becomes a central issue in young lives.¹ To date, more than 20 studies have addressed this question, using a variety of methods and samples. Owing to the methodological limitations of past studies, consensus has not been reached regarding the degree to which same-sex sexual orientation is a risk factor for suicide.

In the mid-1980s, research reports began to suggest that the suicide rate was dramatically higher for gay and lesbian youths than for the general adolescent population. Debate about this issue was heightened in 1989 with the publication of the report of the US Secretary of Health and Human Services, which suggested that gay and lesbian youths are 2 to 3 times more likely to attempt suicide and that they account for up to 30% of the total adolescent suicide rate.² Since that report, studies of gay and lesbian youths indicate that between $48\%^3$ and $76\%^4$ have thought of suicide, while between $29\%^3$ and $42\%^5$ have attempted suicide. The samples used in these studies were not random, however; the gay and lesbian youths represented in these research studies may have been at higher initial risk for suicide. Certainly these rates are much higher than those for the general adolescent population; recent studies report that between $19\%^6$ and $29\%^7$ of the adolescent population have a lifetime history of suicidal ideation, and between $7\%^6$ and $13\%^7$ report ever having attempted suicide.

Several recent studies have used random samples of adolescents to study the association between adolescent *sexual identity* (identifying oneself as gay or lesbian) and suicidality (including suicidal thoughts or intentions, or suicide attempts). In a study involving a represen*Objectives*. Sexual orientation has been a debated risk factor for adolescent suicidality over the past 20 years. This study examined the link between sexual orientation and suicidality, using data that are nationally representative and that include other critical youth suicide risk factors.

Methods. Data from the National Longitudinal Study of Adolescent Health were examined. Survey logistic regression was used to control for sample design effects.

Results. There is a strong link between adolescent sexual orientation and suicidal thoughts and behaviors. The strong effect of sexual orientation on suicidal thoughts is mediated by critical youth suicide risk factors, including depression, hopelessness, alcohol abuse, recent suicide attempts by a peer or a family member, and experiences of victimization.

Conclusions. The findings provide strong evidence that sexual minority youths are more likely than their peers to think about and attempt suicide. (*Am J Public Health.* 2001;91:1276–1281)

tative sample of Minnesota high schools, suicidal intent and suicide attempts were found to be significantly higher among high school boys identified as homosexual or bisexual; there were no significant differences by sexual orientation for girls.⁸ Among a sample of 9thto 12th-grade students in Massachusetts, youths who identified as gay, lesbian, or bisexual were 3 times more likely than their peers to have attempted suicide in the past year.⁹

The fundamental criticism of past work on the link between same-sex sexual orientation and adolescent suicidality has been the inadequacies of samples to enable generalization¹⁰; most studies have been based on convenience samples of gay and lesbian youths, with no heterosexual control groups. Only very recently have representative random sample studies of adolescents included information on sexual orientation.^{8,9,11} These studies are, however, geographically limited; no research to date has been based on nationally representative data.

Additionally, past studies have given little attention to other critical adolescent suicide risk factors. The research literature on adolescent suicide indicates that depression is a fundamental suicide risk factor for adolescents.^{12–14} Three other key risk factors have been well documented in past research: hopelessness,^{12,15,16} substance abuse,^{17,18} and the recent suicide or attempted suicide of a family

member or close friend.¹⁹ Although research indicates that gay and lesbian adolescents have high levels of depression²⁰ and substance abuse,⁹ studies of adolescent sexual orientation and suicidality, with few exceptions,^{3,8} have not taken these risks into account. Further, research on self-identified gay and lesbian teenagers indicates that they are at greater risk for experiencing victimization than their peers. It has been suggested that victimization may be a leading factor in the high rates of suicidality that have been demonstrated in past studies of gay and lesbian youths.⁵

In this study, we examined data from the National Longitudinal Study of Adolescent Health (Add Health Study), the most recent and arguably the most comprehensive study of adolescents in the United States to date. We asked the following questions:

1. Are youths who report same-sex sexual orientation indeed at greater risk for suicidal thoughts and suicide attempts than their peers?

2. Are these youths still at greater risk than their peers after critical adolescent suicide risk factors are taken into account?

METHODS

We used data from wave 1 of the main inhome sample of the Add Health Study. This is the first nationally representative study of US

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adolescents that includes questions on both sexual orientation and suicidality (suicidal thoughts and behaviors). The sampling frame included all high schools in the United States, as well as their largest feeder schools. Participating schools represent US schools with respect to region of the country, degree of urbanization, school type, ethnicity, and school size; a total of 134 schools were included in the study. More than 12000 adolescents, stratified by grade and sex, were selected from these schools to participate in an inhome survey, yielding a national sample of students in grades 7 to 12.21 Because responding adolescents are grouped in schools, the Add Health Study has a cluster design; we account for the study's cluster design through methods described below.

Our analytic sample included 6254 adolescent girls and 5686 adolescent boys who provided complete information on adolescent sexual orientation and suicidality (measures described below). Cases were individually weighted to estimate a national sample of US adolescents. On the basis of sample weights, these youths represented nearly 22 million US adolescents (10818 150 girls and 11 081 690 boys).

Audio computer-aided self-interview was used to collect sensitive information, including data on respondents' sexual orientation and suicidality. These sections of the survey were collected on a laptop computer as respondents listened to questions through earphones. This is a proven method for reducing the potential for interviewer or parental influence on the responses of adolescents.²² Our measure of adolescent same-sex sexual orientation combines reports of same-sex romantic attractions and same-sex romantic relationships. Respondents were asked, "Have you ever had a romantic attraction to a female?" and "Have you ever had a romantic attraction to a male?" Respondents were also asked questions about their 3 most recent romantic relationships, including the sex of the romantic partner. We refer to youths who reported same-sex romantic attractions or relationships as having same-sex sexual orientation. Reports of same-sex romantic relationships were less common than reports of same-sex romantic attraction. Same-sex relationships were reported by 1.1% of boys and 2.0% of girls,

compared with reports of romantic attractions by 7.3% of boys and 5% of girls (0.5% of boys and girls reported both same-sex romantic attraction *and* relationship). All analyses of romantic attractions and relationships were conducted separately, as well as combined in the single measure of same-sex sexual orientation. Because the results did not differ, we have combined these groups.

Although our measure of same-sex sexual orientation is not comparable with those used in past research on youths who identified themselves as gay, lesbian, or bisexual, we believe that it is particularly appropriate for the study of adolescent suicidality. Our measure likely captures a broad range of youths, both those who might identify themselves as gay, lesbian, or bisexual and those who would not. If stressors associated with same-sex sexual orientation are a primary factor driving the increased risk for suicidality among these youths, teenagers who have "come out," even if only to themselves, are likely to be different from those who may acknowledge romantic attraction but may not have adopted a homosexual identity.

We used 2 dichotomous reports of suicidal thoughts and behaviors: ever seriously thinking about suicide in the past 12 months and the number of times suicide was actually attempted in the past 12 months (0=never, 1=1 or more times). Because suicidality is more common among older adolescents, age was controlled for in all analyses. Additional controls included race/ethnicity (dichotomous variables for Black, Asian, and Hispanic), parental education (number of years of education of the parent with the most years), poverty status (1=current welfare dependency), and intact family status (1=married biological parents).

We focused on 6 critical adolescent suicide risk factors. Hopelessness was measured with a single item: "You felt hopeful about the future" (0=most of the time or all of the time, 3=never or rarely). Depression was measured with an 11-item scale derived from the Center for Epidemiologic Studies— Depression inventory (CES-D)²³ based on questions about the past week (items included "You were bothered by things that usually don't bother you," "You felt depressed," "You felt lonely," and "You felt sad"; 0=never or rarely, 3=most of the time or all of the time; Cronbach $\alpha = 0.81$ for boys and 0.85 for girls). The measure for alcohol abuse consisted of the sum of 9 items that indicate problems associated with alcohol use during the past 12 months (items included "You got into trouble with your parents because you had been drinking," "You did something you later regretted because you had been drinking," and "You were sick to your stomach or threw up after drinking"; 0 = never, 4 = 5 or more times). Items included in this measure are similar to ones typically used to indicate alcohol problems among adolescents.²⁴ Two questions pertained to recent experiences with suicide: "Have any of your friends tried to kill themselves during the past 12 months?" and "Have any of your family tried to kill themselves during the past 12 months?" (When responses to these questions were affirmative, respondents were then asked "Have any of them succeeded?") Finally, victimization experiences, because they have been linked to suicidality among gay and lesbian youths,⁵ were included as suicide risk factors. Victimization was measured with affirmative responses to any of the following 4 items: "Someone pulled a knife or gun on you," "You were jumped," "Someone shot you," and "Someone cut or stabbed you" (1 = victimized).

We first present population statistics for same-sex sexual orientation and suicidality for the boys and girls of the Add Health Study. We used Stata's survey means procedure to control for sample weights and the stratification indicators of the Add Health cluster design. This method was also used for the calculation of population means or proportions and confidence intervals for the adolescent suicide risk factors. After obtaining these descriptive results, we used survey logistic regression to model the odds of suicidal thoughts and suicide attempts for the males and the females of this sample. This method extends logistic regression to include statistical control for the study's cluster design.

RESULTS

Approximately 7% of the study youths reported having had a same-sex romantic at-

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TABLE 1—Adolescent Sexual Orientation and Suicidality: National Longitudinal Study of Adolescent Health

	Males (N =	5686) ^a	Females (N = 6254) ^b		
	Proportion, Mean	95% CI	Proportion, Mean	95% CI	
S	uicidality and Sexual	Orientation			
Same-sex romantic attraction or relationship	0.084	0.075, 0.093	0.066	0.058, 0.074	
Suicidal thoughts in past 12 months	0.102	0.093, 0.112	0.160	0.149, 0.172	
SSSO	0.154	0.119, 0.190	0.283	0.243, 0.322	
Non-SSSO	0.097	0.087, 0.107	0.152	0.141, 0.163	
Suicide attempt in past 12 months	0.023	0.019, 0.027	0.055	0.047, 0.064	
SSSO	0.050	0.030, 0.069	0.122	0.085, 0.159	
Non-SSSO	0.020	0.016, 0.024	0.050	0.043, 0.058	
	Youth Suicide Risk	Factors			
Hopelessness					
SSSO	2.18	2.07, 2.30	2.29	2.18, 2.40	
Non-SSSO	2.18	2.14, 2.22	2.16	2.12, 2.20	
Alcohol abuse					
SSSO	2.70	2.10, 3.30	2.50	1.97, 3.03	
Non-SSSO	1.60	1.45, 1.74	1.40	1.26, 1.54	
Depression					
SSSO	6.02	5.59, 6.45	8.14	7.64, 8.64	
Non-SSSO	5.10	4.94, 5.26	6.41	6.23, 6.59	
Family member's suicide/attempt					
SSSO	0.087	0.056, 0.118	0.071	0.043, 0.100	
Non-SSSO	0.032	0.027, 0.038	0.055	0.047, 0.063	
Friend's suicide/attempt					
SSSO	0.176	0.134, 0.218	0.335	0.279, 0.392	
Non-SSSO	0.128	0.117, 0.140	0.225	0.205, 0.245	
Victimization					
SSSO	0.332	0.276, 0.387	0.182	0.136, 0.228	
Non-SSSO	0.274	0.250, 0.299	0.115	0.097, 0.133	

Note. CI=confidence interval; SSSO=same-sex sexual orientation.

^aSSS0 = 453: non-SSS0 = 5233.

^bSSS0 = 414; non-SSS0 = 5840.

traction or relationship; same-sex attraction was slightly more common among males than among females (Table 1). Consistent with past research on adolescent suicidality, 6,25 the girls in this sample reported more frequent suicidal thoughts and suicide attempts.

Are indicators of suicidality elevated among sexual minority youths? Youths reporting same-sex sexual orientation are significantly more likely to report suicidality than their heterosexual peers. Consistent with the 1989 report of the US secretary of health and human services,² our results indicate that youths with same-sex orientation are more than 2 times more likely than their same-sex peers to attempt suicide. This proportion is somewhat lower than the attempted suicide rate among youths identified as gay or lesbian in the Massachusetts study⁹ and dramatically lower than was reported in past studies of gays and lesbians from non–population-based studies.^{3–5} Of the 458 youths who reported suicide attempts in this study, approximately 15% reported same-sex attraction or relationships (17.6% for males [23 of 131 attempts] and 14.4% for females [47 of 327 attempts] with same-sex sexual orientation), twice the proportional representation of this group in the sample.

Youths who reported same-sex sexual orientation also scored higher on several of the critical adolescent suicide risk factors. Compared with their same-sex peers, boys and girls with same-sex sexual orientation reported significantly more alcohol abuse and depression. The report of a suicide attempt by a family member appeared to be more common for boys with same-sex sexual orientation. For reasons that are unclear, there may be an actual difference between boys with and boys without same-sex sexual orientation in family member suicidality. Alternatively, the difference we find may be due to systematic underreporting by boys without same-sex sexual orientation; it may be that these boys are less likely than other youths to be told of or aware of suicide attempts by family members. In contrast, we found that girls with same-sex sexual orientation were more likely than heterosexual girls to report attempted suicide among friends. It may be that the friendship networks of these girls include peers who are similar in either their sexual orientation or the other adolescent suicide risk factors that may place girls with same-sex sexual orientation at risk for suicidality. For this reason, girls with same-sex sexual orientation may be more likely to have peers who attempt suicide. Finally, boys reported more victimization experiences than girls. However, girls with same-sex sexual orientation were more likely than heterosexual girls to report victimization.

In model 1 (Table 2), we tested whether the association between adolescent sexual orientation and suicidality persists when respondents' age and family background characteristics are controlled for. We found that, regardless of age and family background, males and females who reported same-sex romantic attraction or relationships were more likely than their peers to report suicidal thoughts (odds ratio [OR] of suicidal thoughts=1.68 for males and 2.14 for females) and suicide attempts (OR=2.45 for males and 2.48 for females).

In model 2 (Table 2), we added the adolescent suicide risk factors to model 1. We found, consistent with past research, that youths reporting suicidal thoughts or attempts were more likely to feel hopeless and depressed, to abuse alcohol, and to have experienced an attempted suicide by a family

TABLE 2—Adolescent Sexual Orientation and the Odds of Suicidality, With Control for Family Background and Youth Suicide Risk Factors: National Longitudinal Study of Adolescent Health

	Suicidal Thoughts				Suicide Attempts				
	Model 1		Model 2		Model 1		Model 2		
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	
/lales (n = 5686; N = 11 081 690) ^a									
Same-sex romantic attraction or relationship	1.68	1.25, 2.27	1.31	0.93, 1.84	2.45	1.53, 3.93	1.70	1.04, 2.7	
Hopelessness			1.24	1.10, 1.38			1.11	.89, 1.3	
Depression			1.15	1.13, 1.18			1.15	1.10, 1.1	
Alcohol abuse			1.04	1.02, 1.07			1.06	1.02, 1.0	
Suicide or attempt by family member			2.42	1.56, 3.74			2.22	1.34, 3.6	
Suicide or attempt by friend			1.91	1.47, 2.47			2.09	1.44, 3.0	
Victimization			1.58	1.27, 1.96			2.13	1.37, 3.3	
emales (n = 6254; N = 10 818 150) ^a									
Same-sex romantic attraction or relationship	2.14	1.75, 2.61	1.66	1.32, 2.08	2.48	1.74, 3.55	1.79	1.20, 2.6	
Hopelessness			1.27	1.15, 1.39			1.31	1.15, 1.5	
Depression			1.14	1.13, 1.16			1.12	1.10, 1.1	
Alcohol abuse			1.05	1.02, 1.08			1.07	1.04, 1.1	
Suicide or attempt by family member			1.64	1.25, 2.17			1.65	1.08, 2.5	
Suicide or attempt by friend			2.41	2.07, 2.80			2.25	1.76, 2.8	
Victimization			1.57	1.14, 2.15			2.40	1.71, 3.5	

Note. OR = odds ratio; CI = confidence interval. For explanation of model 1 and model 2, see Results section of text.

^an is the the number included in the analytic sample; N is the number of US adolescents represented on the basis of sample weights.

member or friend. We also found that for all youths, victimization experiences were associated with suicidality. Within the context of these major risk factors for adolescent suicide, we found that the effects of same-sex sexual orientation on suicidal thoughts or suicide attempts remained, but they were substantially mediated. The degree to which youths with same-sex sexual orientation reported elevated levels of suicidality can be explained in part by suicide risk factors common to all adolescents; nevertheless, samesex sexual orientation remained associated with higher risk for suicidal thoughts and suicide attempts among youths in this study.

DISCUSSION

Like many studies in the past, we found a strong link between same-sex sexual orientation and adolescent suicidal thoughts and suicide attempts. Our study is the first to use nationally representative data to document this link. Along with recent state-based studies of sexual orientation and youth suicidality, our findings confirm that same-sex sexual orientation is a significant risk factor for suicidality and thus presumably for suicide. At the same time, the findings also suggest that the risk may not be as great as is often cited.² Additionally, elevated levels of suicidality among youths reporting same-sex romantic attraction or relationships can be explained in part by other well-documented risk factors that are associated with suicide among all adolescents.

We are particularly interested in the degree to which our findings for girls in the Add Health Study differ from those of past studies. Of the recent representative studies of adolescents, 2 examined sex differences in suicidality for gay, lesbian, or bisexual youths. In striking contrast to our findings, those studies found no significant effect of sexual orientation on suicidality for girls who identified as bisexual or lesbian.^{8,26} It is important to note the difference between our measure of same-sex sexual orientation and the self-identification of gay, lesbian, or bisexual youths in past studies. We did not know the sexual self-identity of the adolescents in the Add Health Study. It is likely that our measure of same-sex sexual orientation included young people not identified as gay, lesbian, or bisexual who were excluded in prior studies. Thus, discrepancies between our findings and those of past studies may be due in part to our measure of same-sex sexual orientation. While "coming out" to oneself and one's family and peers during adolescence is a significant challenge for many gay, lesbian, or bisexual youths, adolescent girls who identify themselves as lesbians may benefit from their sexual identity. This is consistent with the notion that when youths identify as gay or lesbian, they benefit from social support from gay, lesbian, or bisexual individuals and communities that other youths do not receive.^{27,28} Girls with same-sex sexual orientation who do not identify themselves as lesbian, on the other hand, might be at greatest risk for suicidality. Without self-reported information on sexual identity, we are unable to test this hypothesis. Future studies of sexual orientation in adolescence should begin to include multiple and broader indicators of sexual orientation. From this, we may learn whether the suicidality seen here among girls with same-sex

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sexual orientation is unique to those who have not claimed a nonheterosexual identity.

This discussion points to a number of the benefits and limitations of our measure of same-sex sexual orientation. One important limitation is that our measure is based on a single dimension of sexual orientation: romantic attractions and relationships. Youths were not asked to identify their sexual orientation, nor were they asked about other dimensions (e.g., "sexual" or "emotional") of their attractions. Also, as discussed above, we are unable to directly compare our findings with those of past research on self-identified gay, lesbian, and bisexual adolescents. Ultimately, however, we believe that our measure of sexual orientation is an important step toward a richer understanding of adolescent sexuality. The development of sexual identities begins during adolescence and continues through adulthood. Past studies based on adolescent self-reports of gay, lesbian, or bisexual identity are limited, because it is during adolescence that sexual identities are being formed.

Ultimately, the concerns of families and communities are focused on why same-sex sexual orientation is associated with suicide risk. We find that for girls, same-sex sexual orientation is associated with increased risk for victimization. Sadly, the prevalence of victimization among the adolescents in this study was high, particularly among boys. Suicide prevention and intervention efforts should consider the role that victimization plays in the everyday lives of all contemporary youths and its potential effects on suicidality. Our study also raises questions about suicide in the social networks of youths reporting samesex romantic attraction or relationships. Why do more boys with same-sex sexual orientation report family suicidality than do heterosexual boys, while more girls with same-sex sexual orientation report suicidality among friends than do heterosexual girls? Ours is the first study to include the broad range of adolescent suicide risk factors in a study of sexual orientation and suicidality among youths. The findings are unique, and they require replication and further study.

Finally, our study indicates that among primary adolescent suicide risk factors, higher levels of depression and alcohol abuse are reported by youths with same-sex sexual orientation. Other research has indicated that gay and lesbian adolescents report high levels of depression^{29,30} and substance use and abuse.^{9,11,31} It has been suggested that for gay and lesbian youths who are concealing their sexual identities, alcohol may be used to numb the related anxiety and depression.³² Research and prevention efforts with this population should focus on depression and substance abuse as precursors to suicidality.

Some have argued that too much research attention has been paid to the psychopathologic effects of same-sex sexual orientation on adolescents' lives.33 We concur, and we look forward to future research on the unique strengths that characterize the lives of sexual minority adolescents. Our analyses indicate that even though adolescents who report same-sex romantic attractions or relationships are at more than 2 times the risk for suicide attempts, the overwhelming majority of sexual minority youths-84.6% of males and 71.7% of females with same-sex sexual orientation-report no suicidality at all. Nevertheless, it is our hope that this study can put to rest any doubt that while most youths reporting same-sex sexual orientation make it through adolescence with no more problems than heterosexual youths, a significant number are at risk for suicide. These youths deserve intervention and prevention that they only rarely receive.

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Contributors

The authors jointly conceptualized the study. S. T. Russell conducted the analyses and wrote the first draft. S. T. Russell and K. Joyner collaborated on the final written document and planned the manuscript revisions. S. T. Russell revised the analyses and text.

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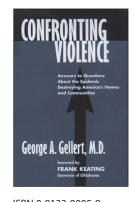
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