

Gay–Straight Alliances Are Associated With Student Health: A Multischool Comparison of LGBTQ and Heterosexual Youth

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Few studies have examined school-based factors associated with variability in the victimization and health of lesbian, gay, bisexual, transgender, and questioning (LGBTQ) youth. Among 15,965 students in 45 Wisconsin schools, we identified differences based on Gay–Straight Alliance (GSA) presence. Youth in schools with GSAs reported less truancy, smoking, drinking, suicide attempts, and sex with casual partners than those in schools without GSAs, with this difference being more sizable for LGBTQ than heterosexual youth. GSA-based differences were greatest for sexual minority girls on reported sex while using drugs. GSA effects were nonsignificant for general or homophobic victimization, grades, and school belonging. Findings suggest that GSAs could contribute to attenuating a range of health risks, particularly for LGBTQ youth.

It has become well known that lesbian, gay, bisexual, transgender, and questioning (LGBTQ) youth experience frequent victimization at school and compromised health (Coker, Austin, & Schuster, 2010; Kosciw, Greytak, & Diaz, 2009). Research is needed to identify factors that prevent such experiences. Few studies, however, have examined factors at the school level that account for variability in the health and well-being of LGBTQ youth. This is despite documentation that many schools fail to extend explicit protection to LGBTQ students in their policies, do not represent LGBTQ individuals within the standard curriculum, in some cases prevent same-sex partners from attending school-sponsored functions (e.g., prom), or are perceived as generally unwelcoming by these youth (Chesir-Teran, 2003; Chesir-Teran & Hughes, 2009). Thus, a greater focus on school-based youth settings and their role in promoting LGBTQ youth development is needed.

A Focus on the Role and Effects of Gay–Straight Alliances

Emerging research has given attention to Gay–Straight Alliances (GSAs). These clubs originated

from community-based youth programs extended to the school context, many of which were led by teachers or counselors in the 1990s (Uribe, 1994). They have since become more student-led and have grown to over 4,000 nationally across the United States (Gay, Lesbian, & Straight Education Network [GLSEN], 2012). Their presence also has extended into middle schools in addition to high schools, as many LGBTQ youth are coming out at younger ages and face significant bullying during this time (GLSEN, 2012; Grov, Bimbi, Nanín, & Parsons, 2006; Poteat & Espelage, 2007). In principle, GSAs are intended to provide safe environments for LGBTQ and heterosexual youth to socialize, receive support, and engage in advocacy efforts (Griffin, Lee, Waugh, & Beyer, 2004; Russell & McGuire, 2008; Russell, Muraco, Subramaniam Aarti, & Laub, 2009). For instance, GSA members can provide emotional support to peers undergoing difficult experiences (e.g., homophobic victimization, parental rejection). They can also provide a setting in which youth engage in recreational or social activities. Finally, GSAs can encourage leadership by providing opportunities to develop initiatives to address inequality in schools or communities (Griffin et al., 2004). In these ways, GSAs are positioned to provide multiple services

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and opportunities to LGBTQ and heterosexual youth that may otherwise be unavailable to them.

The intended roles of GSAs can be framed within the broader literature on youth empowerment and positive youth development (Lerner, Phelps, Forman, & Bowers, 2009). These models note the value of placing youth in leadership roles with adult support, building on youths' strengths, and encouraging civic engagement. In turn, these functions can promote positive developmental outcomes such as positive self-identities, mental health, and academic achievement (Lerner et al., 2009). Within the context of GSAs, youth can attain leadership experience because GSAs are highly youth-driven and civic engagement can take the form of leading school- or community-wide programs such as ThinkB4YouSpeak, Day of Silence, or Ally Week (GLSEN, 2012). Indeed, many LGBTQ youth report experiencing support and empowerment in multiple ways through their GSA involvement (Russell et al., 2009).

Despite the clear potential for GSAs to have an effect on the well-being of LGBTQ youth, few studies have actually tested for such effects. One study in 33 Massachusetts schools found that sexual minority and heterosexual students in schools with GSAs reported more positive diversity climates than those in schools without GSAs (Szalacha, 2003). A similar study of only LGB youth in 52 Massachusetts schools found that those in schools with LGB support groups, though not exclusive to GSAs, reported lower victimization and suicidality than those in schools without these groups (Goode-now, Szalacha, & Westheimer, 2006). In both studies, however, the sexual minority samples were limited in size and representativeness, particularly in terms of the number of sexual minorities represented within each school. Nonetheless, the findings suggest the potential for GSAs to have some positive effects for sexual minority youth in terms of school climate and certain mental health indices. Retrospective reports from an LGBT adult sample have noted similar findings (Heck, Flentje, & Cochran, 2011).

Other results suggest these patterns of school differences for LGBTQ youth are evident regardless of their GSA membership status. LGBTQ youth in schools with GSAs did not differ from one another in their perceived safety or truancy based on whether they were members of their GSA; however, they both differed from LGBTQ youth in schools without GSAs (Walls, Kane, & Wisneski, 2010). Similarly, another retrospective study among young adults showed that the presence of a GSA

was more salient for their well-being than whether they had been a member (Toomey, Ryan, Diaz, & Russell, 2011). GSA benefits may extend to non-members for several reasons. Many GSA initiatives (e.g., Day of Silence, Ally Week) are intended to benefit the entire school, not just club members. Also, LGBTQ students who do not join their GSA may still benefit psychologically by perceiving the GSA presence as a symbolic affirmation of their identity. Similarly, GSA members may provide non-GSA peers with a positive perspective on LGBTQ issues.

Current Limitations in GSA Research

Emerging findings suggest the benefits of GSAs, yet several issues warrant greater attention in an effort to build on these studies. First, the primary focus has been on school climate and extreme health risk behavior (e.g., suicidality). Attention to a broader set of health and academic indices is needed to provide a more comprehensive assessment of the areas in which GSAs may or may not have effects on student well-being. For instance, research has documented elevated smoking, drinking, and high-risk sexual behavior among LGBTQ youth relative to heterosexual youth (Coker et al., 2010; Herrick, Marshal, Smith, Sucato, & Stall, 2011; Marshal et al., 2008, 2012), yet these issues are largely absent in research connected to GSAs. Formal sexual health education is rarely inclusive of LGBTQ issues (Fine & McClelland, 2006), in spite of the seriousness of sexual health risk behaviors and the importance of preventive programming. Similarly, many schools struggle to implement school-wide substance use prevention programs (Dusenbury, Brannigan, Falco, & Hansen, 2003); tailoring such programs for specific sub-groups is even less common or feasible. However, GSAs may provide safe spaces for youth to learn about and discuss issues related to this. If GSAs play this role, they may be particularly beneficial for LGBTQ youth.

Gay–Straight Alliance studies have typically relied on retrospective, small, or convenience samples with somewhat restricted representation of the LGBTQ population or geographic diversity. For instance, much of what is known about GSAs from an empirical basis has been taken from Massachusetts-based data from several hundred LGBTQ students from over a decade ago (i.e., from 1999 or 2000). Because of changes in national and school demographic diversity (Suarez-Orozco, Yoshikawa, Teranishi, & Suarez-Orozco, 2011) and as sexual minority youth are coming out at earlier ages

(Groves et al., 2006), it is imperative to maintain current data on the statuses of GSAs and their contributions to youth outcomes. In this same respect, it is important to note characteristics of schools that have GSAs and how they compare to those without GSAs.

It is unclear whether GSAs have similar effects for heterosexual and LGBTQ youth. Most studies have focused on the experiences of LGBTQ youth. Yet, heterosexual youth also could benefit from the presence of GSAs at their school. For instance, many heterosexual youth experience homophobic victimization (Poteat & Espelage, 2007; Poteat, Mereish, DiGiovanni, & Koenig, 2011), and the presence of or programs provided by GSAs could lower the perpetration of homophobic bullying against both LGBTQ and heterosexual youth. Also, several studies suggest that many GSA members identify as heterosexual (Goldstein & Davis, 2010; Szalacha, 2003). Studies that have included both LGBTQ and heterosexual youth are themselves limited, however, by small samples that do not allow for reliable comparisons to be made between LGBTQ and heterosexual participants.

In a similar manner, it is unclear whether GSA-related effects are comparable across gender. The general adolescent literature tends to document gender differences on certain mental health concerns (Zahn-Waxler, Shirtcliff, & Marceau, 2008). Building on this, GSA effects may be more pronounced for some concerns among adolescent girls, whereas they may be more pronounced for other concerns among adolescent boys. Attention to nuance related to students' multiple intersecting social identities has been limited in extant GSA studies partly because of smaller sample sizes. Yet, knowledge of differential effects could inform how GSAs may be tailored to be beneficial to the diversity of their members.

Purpose of the Current Study

In spite of much attention to LGBTQ youth at an individual level, there remains limited research that has examined how GSAs relate to the health and well-being of youth. Our purpose in this study was to test whether student variability on multiple health and academic indices was associated with the presence or absence of a GSA at their school. We were further interested to test whether these effects were comparable for LGBTQ and heterosexual youth or whether instead the pattern of effects differed for these two groups. As a secondary aim, we were interested to compare GSA and non-GSA

schools based on factors such as school size, diversity, and socioeconomic status (SES).

In examining these issues, we aim to address several current limitations in the literature. First, we consider a broader range of health and academic indices than have typically been assessed in prior studies. Although GSA presence may not be associated uniformly with healthier functioning in all areas of youth development, it is important to identify the scope of their effects. Second, we analyze data from a large, population-based sample drawn from an underrepresented geographic location in this area of research to increase the geographic breadth of the literature on LGBTQ youth and GSAs. Third, we test for differences attributable to GSA presence by comparing these effects for heterosexual and LGBTQ youth, with additional attention to potential gender differences within these groups.

We hypothesized students in schools with GSAs would report lower victimization, suicidal ideation and attempts, truancy, smoking, alcohol use, and sexual risk behavior, and greater school belonging and higher grades than those in schools without GSAs. We expected to identify these effects while controlling for other covariates. Victimization, school belonging, and suicidality effects would be congruent with past findings (Goodenow et al., 2006; Szalacha, 2003). In addition, we anticipated effects across a wider range of indices because GSAs address myriad issues through discussions among group members. Because GSAs are a place for socializing, youth may have frequent informal conversations about a range of issues. Similarly, because many negative indicators and outcomes are associated (e.g., victimization, compromised mental health, substance use, and lower academic achievement; D'Augelli, 2002; Poteat et al., 2011; Schwartz, Gorman, Nakamoto, & Toblin, 2005), alleviating risk on one issue could indirectly lower risk on others. Further, education and advocacy initiatives developed and implemented in schools by GSAs often cover a range of issues, including awareness of school policies, bullying, prejudice, legal rights, and LGBTQ history (Russell & McGuire, 2008; Russell et al., 2009; Schindel, 2008). In addition, we hypothesized that patterns of these effects would differ for LGBTQ and heterosexual youth. Although GSAs could have positive effects for all youth, GSAs likely have distinct effects for LGBTQ youth. LGBTQ youth, unlike heterosexual youth, experience discrimination, marginalization, and invisibility in schools and society based on their sexual orientation. The presence of a GSA

that validates, promotes awareness of, and symbolizes affirmation of sexual minorities likely has a particularly strong and positive effect for these youth.

METHOD

Participants and Procedures

Participants were 17,366 students in Grades 7–12, ages 10–18, from the 2009 Dane County Youth Assessment (DCYA). We limited the sample to students who responded to the question about sexual orientation and who were identified as LGBTQ or heterosexual. This produced a final sample of 15,965 students ($M_{\text{age}} = 14.87$, $SD = 1.74$; 50% males; 94.2% heterosexual); 76.2% were White, 6.5% Black, 6.5% bi- or multiracial, 3.7% Hispanic, 2.0% non-Hmong Asian, 2.0% Hmong, 1.1% Native American, 1.8% “other”, and 0.3% did not respond.

The DCYA is a county-wide survey partially modeled from the Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention [CDC], 2009). The county, located in Wisconsin, ranges from small working farms to a large city. In 2010, its population was approximately 490,000 (88.5% White), and in 2009, the median household income was about \$58,000 and 13.1% of individuals were below the poverty level (U.S. Census Bureau, 2010). The public middle schools and high schools in the county were asked to participate in the project, and all but two volunteered ($n = 45$). These schools collaborated with several community organizations on this project: Dane County Youth Commission, United Way of Dane County, Dane County Human Services, and Public Health of Madison and Dane County. The schools and their review board approved the survey, a waiver of active parental consent, and use of child assent. Data were collected during the late fall 2008 and early spring 2009 school year. Students completed the anonymous electronic survey independently in school computer laboratories. Proctors monitored sessions to ensure confidentiality and to answer questions. Students were given resources and contact information to access free mental health services and were encouraged to utilize these services if they experienced any emotional discomfort in completing the survey.

Finally, schools were coded for the presence of a GSA during the 2008–2009 school year based on data from the GSA for Safe Schools, Madison, Wisconsin. This is a statewide education organization that supports GSAs in schools.

Measures

Demographics. Students reported their race or ethnicity, gender, age, grade, qualification for free or reduced cost lunch (a proxy for SES), and sexual orientation. The sexual orientation item was, “Do you identify yourself as any of the following (Check all that apply)?” Options were *Gay*, *Lesbian*, *Bisexual*, *Transgender*, *Questioning my sexual orientation*, or *None of the above*. This item has undergone several revisions and improvements across the history of the DCYA, and the current item was generated based on the feedback provided by school officials, community organizations, and researchers. Because of the options and their many combinations, we used several criteria to identify students as LGBTQ or heterosexual. Those who marked only *None of the above* were considered heterosexual. Those with any combination of responses to *Gay*, *Lesbian*, *Bisexual*, *Transgender*, or *Questioning* and who did not mark *None of the above* were considered LGBTQ. This provided a conservative estimate of LGBTQ students. Because of the numerous combinations of responses, it was impractical and would raise serious validity concerns to separate or tabulate participants meaningfully or reliably into subgroups (i.e., gay, lesbian, bisexual, or transgender only). While recognizing that subgroups within the sexual minority community have different experiences, a commonality is their shared experience of discrimination, and thus, these broader comparisons between heterosexual and LGBTQ individuals remain consistent with testing models related to discrimination faced by marginalized groups (Meyer, Schwartz, & Frost, 2008).

Victimization. The four-item University of Illinois Victimization scale (Espelage & Holt, 2001) assessed self-reported victimization in the last thirty days (e.g., “I got hit and pushed by other students”; $\alpha = .87$). Response options were *Never*, *1 or 2 times*, *3 or 4 times*, *5 or 6 times*, or *7 or more times* (scored 1–5). The scale has been widely used among adolescents, and scores converge with sociometric peer nominations (Espelage & Holt, 2001). An additional item assessed perceived homophobic victimization: “In the past twelve months, how often have you been bullied, threatened, or harassed about being perceived as gay, lesbian, or bisexual?” Response options were *Never*, *Rarely*, *Sometimes*, *Often*, or *Very often* (scored 0–4). This item, slightly modified, has been used in other youth surveys (e.g., Preventing School

Harassment Survey [California Safe Schools Coalition, 2008]).

Suicidality. We assessed self-reported suicidal ideation (“During the past thirty days, have you seriously thought about killing yourself?” Response options: *No, Yes but rarely, Yes, some of the time, and Yes, all of the time* [scored 0–3]) and suicide attempts (“During the past twelve months have you attempted to kill yourself?” Response options: *No, Yes one time, or Yes more than one time* [scored 0–2]). These items are similar to the YRBS (CDC, 2009).

School-related indices. We assessed school belonging with the four-item psychological sense of school membership scale (Bosworth, Espelage, & Simon, 1999; for example, “I feel like I belong at this school”; $\alpha = .80$). Response options ranged from 0 (*strongly disagree*) to 3 (*strongly agree*). One item assessed truancy: “During the last 4 weeks, how many days of school have you missed because you skipped (absent without permission)?” Response options were *None, 1–2 days, 3–5 days, 6–10 days, or More than 10 days*. Because of the distribution of the data, we dichotomized truancy to indicate that a student had or had not skipped school in the last 4 weeks. Finally, students reported their *average grades*. Response options, modeled from the YRBS, were as follows: *Mostly A’s, Half A’s and Half B’s, Mostly B’s, Half B’s and half C’s, Mostly C’s, Half C’s and Half D’s, Mostly D’s, or Mostly below D’s*. Responses were coded to reflect GPA scores that ranged from 0 to 4. Self-reported grades are common in research, although associations with other factors such as victimization tend to be smaller in size than in studies with official academic records (Nakamoto & Schwartz, 2010). To determine the general trustworthiness of the grades and truancy data, we presented descriptive statistics for these variables to school administrators to compare with their records. They confirmed that the averages did not appear deflated or inflated.

Substance use. Students reported frequency of smoking cigarettes or cigars and drinking beer or wine over the past 12 months. Response options were *Not at all, Once or twice, 1–3 times per month, 1–3 times per week, 4–6 times per week, and Daily*. Although additional substance use items were included (e.g., prescription drugs to get high, inhalants, or steroids), the distribution of responses for these items was greatly skewed with little prevalence of reported use and minimal variability among

those who had reported use of these substances. Thus, we focused specifically on smoking and drinking, as these substances also have been among the most prominently examined in the LGBTQ youth population and for which this population has been found to have particularly elevated risk for using (Marshal et al., 2008, 2012).

Sexual health risks. Two items assessed sexual health risk behaviors: “How many people have you had sex with that you just met or didn’t know very well?” (response options: *None ever; 1–2 people; 3–4 people; 5–6 people; 7–8 people; 9–10 people; more than 10 people*; scored 0–6), and “Have you ever had sex with someone while under the influence of alcohol, marijuana, or other drugs?” (response options: *No, never; Yes, a few times; Yes, many times; Yes, all the time*; scored 0–3). These items were developed and included in consultation with public health representatives in the county, at the request of schools, and because they represent high-risk sexual behaviors. Furthermore, meta-analyses show that LGBTQ youth are nearly twice as likely as heterosexual youth to engage in sexual behavior while intoxicated (Herrick et al., 2011).

School characteristics. Based on the data collected from participants, we calculated values for several school-level factors. These included school size, the proportion of racial minority students in the school, the proportion of LGBTQ students in the school, and overall school SES (i.e., the proportion of students who received a free or reduced cost lunch). Along with presence of a GSA, these values were entered as school-level data in the multilevel analyses.

Data Analytic Strategy

To examine potential school characteristics related to GSA presence (i.e., our secondary aim), we conducted a multivariate analysis of variance (MANOVA) to compare GSA and non-GSA schools on these factors (i.e., school size, racial and sexual orientation diversity, and socioeconomic status). Next, to test for GSA-related effects on our set of outcome indices (i.e., our primary aim), we used multiple imputation with bootstrapping through the Amelia package (<http://gking.harvard.edu/amelia>) for the R program (<http://www.r-project.org/>) to impute missing values with simulated values based on the available data. Within the guidelines suggested by Schafer (1999), we produced five complete data sets on which we performed our

analyses. We modeled the nested data of students within schools using the SPSS MIXED procedure. Our independent variables of interest were the presence of a GSA at the school, student sexual orientation, and student gender, as well as the interactions among these variables, primarily the GSA \times sexual orientation interaction (Figure 1). Because we did not expect a three-way interaction among these variables a priori, we excluded it in the models in which it was not significant to present the most parsimonious model and results. We also controlled for several covariates in these models: school size, whether the school was a middle school or high school, the racial and sexual orientation diversity of the school, and student SES. Because variability on our set of outcomes could potentially be attributed in part to these factors, their inclusion provided a finer test of effects related to GSA presence. Following these analyses, we aggregated the beta coefficient estimates and standard errors from the results of each of the five datasets according to Rubin's method (Rubin, 1987; Schafer, 1999) to obtain correct variance estimates. For significant interaction effects, we then examined simple main effects to aid in the

interpretation of the interaction pattern (Rosnow & Rosenthal, 1989).

RESULTS

Descriptive Information

At the time of the study, a GSA was present at 14 schools; 31 schools had no GSA. A total of 8,481 students attended schools with a GSA and 8,885 students attended schools without a GSA. Five of the 25 middle schools and nine of the twenty high schools had GSAs. We present descriptive data on the included measures and the correlations among these measures in Table 1. As expected, variables were significantly associated, ranging in size from small to large, in ways consistent with past research. We discuss these patterns in finer detail in our test of associations based on GSA presence in the next sections.

Comparison of Schools With or Without GSAs

We also tested whether GSA presence was associated with school size, racial and sexual orientation

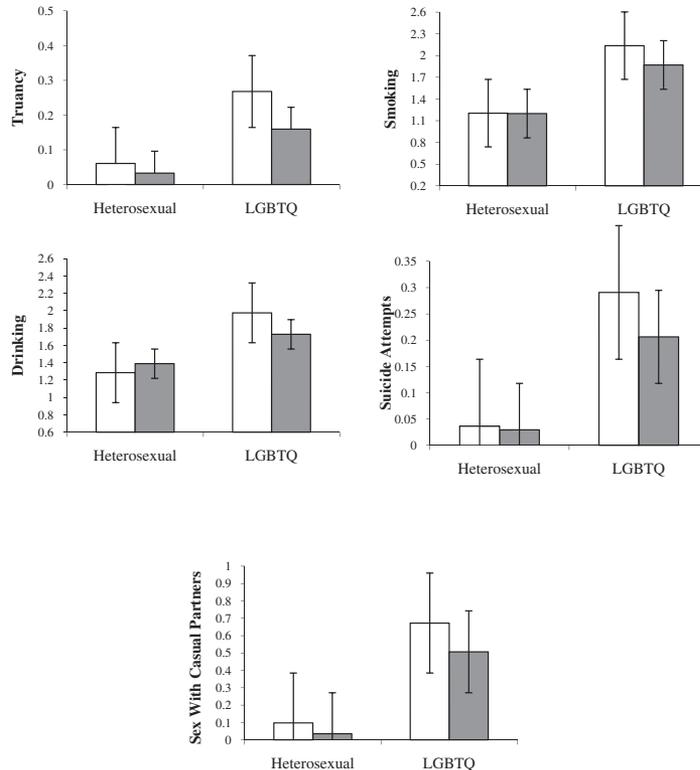


FIGURE 1 GSA \times sexual orientation interaction effects. White bars represent students in schools without GSAs, and gray bars represent students in schools with GSAs. Range of vertical axes represent ± 1 standard deviation from the mean. Standard errors are displayed on each bar.

TABLE 1
Correlations, Means, and Standard Deviations of Dependent Variables

Variable	1	2	3	4	5	6	7	8	9	10
General victimization	—									
Homophobic victimization	.39	—								
School belonging	-.17	-.15	—							
Truancy	.08	.11	-.18	—						
Smoking	.06	.12	-.20	.34	—					
Drinking	.06	.11	-.21	.32	.57	—				
Suicidal ideation	.23	.22	-.20	.17	.21	.18	—			
Suicidal attempts	.18	.18	-.11	.14	.20	.17	.55	—		
Sex with casual partners	.12	.17	-.14	.24	.33	.34	.22	.25	—	
Sex and drugs	.08	.12	-.17	.32	.54	.51	.20	.21	.58	—
Mean	1.47	0.25	3.10	0.15	1.44	1.62	0.15	0.06	0.18	0.16
(SD)	(0.82)	(0.73)	(0.61)	(0.35)	(1.15)	(1.00)	(0.50)	(0.29)	(0.76)	(0.51)
[Range]	[1–5]	[0–4]	[1–4]	[0–1]	[1–6]	[1–6]	[0–3]	[0–2]	[0–6]	[0–3]

Note. All correlations are significant at $p < .001$.

diversity, and socioeconomic status. A MANOVA with these factors included as dependent variables and GSA presence as an independent variable was significant, Wilks's $\Lambda = .41$, $F(4,16704) = 6021.85$, $p < .001$, $\eta_p^2 = .59$. Follow-up ANOVAs indicated significant differences on all measures, which ranged in effect sizes. Differences were smallest in size in relation to the proportion of the school that received free or reduced cost lunches, $F(1,16707) = 283.77$, $p < .001$, $\eta_p^2 = .02$. In order of increasing effect sizes, this was followed by the proportion of the school that identified as LGBTQ, $F(1,16707) = 652.82$, $p < .001$, $\eta_p^2 = .04$, the proportion of the school that identified as White, $F(1,16707) = 2748.45$, $p < .001$, $\eta_p^2 = .14$, and school size, $F(1,16707) = 10378.10$, $p < .001$, $\eta_p^2 = .38$. Schools with GSAs were larger (GSA schools: $M = 1,024$ students, $SD = 435$ students; non-GSA schools: $M = 464$ students, $SD = 256$ students), had a lower proportion of White students (GSA schools: $M = 70.51\%$, $SD = 14.19\%$; non-GSA schools: $M = 80.64\%$, $SD = 10.64\%$), a higher proportion of LGBTQ students (GSA schools: $M = 6.23\%$, $SD = 1.67\%$; non-GSA schools: $M = 5.44\%$, $SD = 2.28\%$), and lower proportion of students who received free or reduced cost lunch (GSA schools: $M = 24.17\%$, $SD = 6.60\%$; non-GSA schools: $M = 26.27\%$, $SD = 9.22\%$) than schools without GSAs.

GSA Presence in Relation to Student Health and Academic Indices

For our main research question on patterns of GSA-related effects, we tested models in which we

included the main and interaction effects among our independent variables of GSA presence, sexual orientation, and gender. We included our set of covariates in all models (school size, middle school vs. high school, racial and sexual orientation diversity, and student SES). No covariates were significantly associated with the outcomes in these models. Results from these models are reported in Table 2, and the estimated means corresponding with significant interaction effects are reported in Table 3.

As hypothesized, there was a significant GSA \times sexual orientation interaction for truancy, smoking, drinking, suicide attempts (but not ideation), and sexual behavior with casual partners. Counter to our hypothesis, there were no GSA main or interactive effects for general or homophobic victimization, school belonging, or grades. We next examined simple main effects to aid in the descriptive interpretation of the statistically significant interaction. These simple main effects indicated a pattern in which LGBTQ and heterosexual youth in schools with GSAs reported lower truancy, smoking, drinking, suicide attempts, and sexual behavior with casual partners than youth in schools without GSAs, with this difference being larger for LGBTQ than heterosexual youth (as indicated by the significant interaction effect).

One three-way interaction was significant, which corresponded with sexual behavior under the influence of alcohol, marijuana, or other drugs. Thus, the size of the difference in this behavior between

TABLE 2
Final Coefficient Estimates and Standard Errors From Five Multiply-Imputed Data Sets Using Rubin's Method

Dependent Variable	GSA	S. O.	Gender	Gender × S. O.	GSA × S. O.	GSA × Gender	GSA × Gender × S. O.
	General victimization	.16* (.08)	-.37*** (.05)	.12 (.06)	.02 (.07)	-.13 (.07)	-.02 (.03)
Homophobic victimization	.03 (.06)	-.90*** (.04)	.02 (.06)	.14* (.06)	-.04 (.06)	.03 (.02)	—
School belonging	-.03 (.06)	.26*** (.03)	.06 (.04)	-.09* (.04)	.08(.04)	-.01 (.02)	—
Truancy	.11*** (.03)	-.12*** (.02)	.05* (.03)	-.02 (.03)	-.08** (.03)	.00 (.01)	—
Smoking	.31** (.01)	-.67*** (.00)	.17 (.01)	-.01 (.01)	-.26** (.01)	-.10** (.00)	—
Drinking	.26 (.01)	-.28*** (.00)	.24 (.01)	-.12 (.01)	-.35* (.01)	-.03 (.00)	—
S. Ideation	.08* (.00)	-.50*** (.00)	-.03 (.00)	.03 (.00)	-.03 (.00)	-.05** (.00)	—
S. Attempts	.09*** (.00)	-.17*** (.00)	.01 (.00)	-.00 (.00)	-.08*** (.00)	-.02* (.00)	—
Sex with casual partners	.21*** (.05)	-.22*** (.04)	.69*** (.05)	-.51*** (.05)	-.10* (.05)	-.09*** (.02)	—
Sex and drugs	.26*** (.05)	-.17*** (.03)	.23*** (.05)	-.17 (.05)	-.17 (.04)	-.20 (.07)	.15* (.07)

Note. Each row represents a separate model for the respective dependent variable listed; the values for that row represent the effects of the independent variables (GSA, sexual orientation, and gender) and their interactions. S. O., sexual orientation; S. Ideation, suicidal ideation; S. Attempts, suicide attempts; Sex with casual partners, sexual behavior with casual partners; Sex and drugs, sexual behavior under the influence of alcohol or other drugs. Values in parentheses represent standard errors.

* $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 3
Estimated Means for Simple Main Effects Following Significant Two-Way Interaction Effects

	GSA × Sexual Orientation				GSA × Gender				Sexual Orientation × Gender			
	Heterosexual		LGBTQ		Male		Female		Heterosexual		LGBTQ	
	No GSA	GSA	No GSA	GSA	No GSA	GSA	No GSA	GSA	Male	Female	Male	Female
	Homophobic victimization	—	—	—	—	—	—	—	—	0.37	0.20	1.15
School belonging	—	—	—	—	—	—	—	—	3.23	3.27	3.02	2.96
Truancy	0.06	0.03	0.27	0.16	—	—	—	—	—	—	—	—
Smoking	1.20	1.20	2.14	1.87	1.70	1.62	1.64	1.45	—	—	—	—
Drinking	1.29	1.39	1.98	1.73	—	—	—	—	—	—	—	—
S. Ideation	—	—	—	—	0.35	0.34	0.42	0.36	—	—	—	—
S. Attempts	0.04	0.03	0.29	0.21	0.16	0.12	0.17	0.11	—	—	—	—
Sex with casual partners	0.10	0.04	0.67	0.51	0.56	0.49	0.21	0.05	0.13	0.00	0.91	0.26

Note. Adjusted means are reported while controlling for our covariates of school size, middle school vs. high school, SES, racial diversity, and sexual orientation diversity of the school.

students in schools with or without GSAs was not only dependent on the sexual orientation of these students, but also on their gender. The simple main effects indicated youth in schools with GSAs reported less frequent sexual behavior under the influence of alcohol, marijuana, or other drugs than youth in schools without GSAs, and this difference was most sizable for sexual minority girls (GSA schools: $M = .47$; non-GSA schools: $M = .21$), followed by heterosexual girls (GSA schools: $M = .12$;

non-GSA schools: $M = .03$), sexual minority boys (GSA schools: $M = .50$; non-GSA schools: $M = .44$), and heterosexual boys (GSA schools: $M = .14$; non-GSA schools: $M = .10$).

The GSA × gender interaction was significant for suicidal ideation, attempts, smoking, and sexual behavior with casual partners. For suicidal ideation and attempts, the simple main effects indicated a general trend where adolescent boys and girls (heterosexual and LGBTQ alike) reported lower suicidal

ideation and attempts in schools with GSAs than those in schools without GSAs, with this difference being larger for girls than boys (as indicated by the significant interaction effect). This same pattern applied for sexual behavior with casual partners.

Finally, the sexual orientation \times gender interaction was significant for three indices: homophobic victimization, school belonging, and sexual behavior with casual partners. In the case of homophobic victimization and school belonging, the simple main effects pattern indicated that boys reported higher rates of homophobic victimization and lower school belonging than girls, with these gender differences being larger for heterosexual than LGBTQ youth. Also, the main effects for sexual behavior with casual partners indicated that boys reported higher rates than girls, with these gender differences being larger for LGBTQ than heterosexual youth.

DISCUSSION

Our findings provide evidence for a broader scope of potential positive contributions of GSAs to youth health than previously indicated. In many cases, differences among students on health and academic indices were associated with the presence of GSAs at their school. In some cases, this applied especially for LGBTQ youth relative to heterosexual youth. This GSA \times sexual orientation pattern extended to smoking, drinking, truancy, suicide attempts, and sex with casual partners. The potential benefits of GSAs also were reflected in the GSA \times gender interactions for suicidal ideation, suicide attempts, smoking, and sexual behavior with casual partners. The scope of the effects we documented may be in part because GSAs address a number of issues faced by youth. These findings underscore the potential contributions of GSAs within schools.

Although our GSA-related findings for victimization and school belonging were not significant, their trends were conceptually consistent with the significant effects documented in other studies (Goodenow et al., 2006; Szalacha, 2003). It is possible the smaller number of schools in our sample may have limited our statistical power, which may have contributed in part to this. At the same time, GSAs cannot be expected to serve as the sole or even primary mechanism of change for these issues faced by students (Toomey et al., 2011). Rather, a mixture of factors in addition to GSAs is likely necessary to produce sizable and robust effects. These may include school protective policies and their enforcement, inclusive curriculum, school-based counseling services, and anti-bullying program-

ming (O'Shaughnessy, Russell, Heck, Calhoun, & Laub, 2004).

The GSA \times sexual orientation interaction was significant for suicide attempts, in that youth in schools with GSAs were less likely to report suicide attempts than those in schools without GSAs, with this difference being larger for LGBTQ than heterosexual youth. Also, the GSA \times gender interaction is encouraging in that it suggests the benefits of GSAs also extend to heterosexual youth with regard to suicidal ideation and attempts, albeit more for girls than for boys, irrespective of sexual orientation. Several GSA qualities may explain these results. Because GSAs are meant to provide a safe and supportive context (Griffin et al., 2004), GSA presence may have some effect on how students, particularly LGBTQ students, perceive their level of safety and belonging at school. GSAs are also intended to provide leadership opportunities and advocacy through school programs (e.g., National Coming Out Week or ThinkB4YouSpeak). These activities may instill a sense of empowerment and healthy self-identity (Russell et al., 2009). Finally, GSA-sponsored initiatives may foster safer school climates in general and benefit all students, not only those who are GSA members. This may explain why our trends emerged even without distinguishing GSA membership among students.

Homophobic victimization levels did not vary across schools based on GSA presence. In line with other studies, however, heterosexual boys did report more frequent homophobic victimization than heterosexual girls (Poteat & Espelage, 2007). With regard to sexual orientation, LGBTQ youth in schools with GSAs may still perceive much of the victimization they experience as homophobic. Homophobic language is used frequently in schools (Kosciw et al., 2009; Poteat, O'Dwyer, & Mereish, 2012), and while some GSAs lead periodic campaigns against this behavior, more sustained efforts may be needed to counter this behavior effectively. The ability of GSAs to reduce victimization is distinct from their ability to foster resilience among students who experience it. This may be why some findings, including our own, remain mixed with regard to the association between GSA presence, level of victimization, and health among LGBTQ youth (Goodenow et al., 2006; Toomey & Russell, in press; Walls et al., 2010).

Of interest, our anticipated GSA \times sexual orientation effect was significant for truancy but not grades. Drawing again from the intended function

of GSAs to provide supportive environments, this may lead students, especially LGBTQ students, to maintain more consistent school attendance. They may be motivated by a desire to interact with their friends in the GSA or by the connection they have with their GSA advisor. Similarly, LGBTQ nonmembers also may perceive greater safety at these schools and thus may be more likely to attend school consistently. This highlights the need for research to more closely examine how factors such as safety and belonging promote school engagement among LGBTQ youth, as the issue of school engagement and academic achievement among LGBTQ youth remains an understudied area of research (Russell, Seif, & Truong, 2001).

Gay–Straight Alliance presence may not have been associated with grades because these clubs place a greater emphasis on psychosocial issues than academic performance. LGBTQ students at these schools may be more likely to attend school consistently, but they may continue to face victimization, which our data suggest to be the case. Because victimization predicts poorer academic achievement (Schwartz et al., 2005), this may explain the lack of either a main or interaction effect for GSA presence in our data. At the same time, other studies do indicate an association between GSA presence and student grades (Walls et al., 2010). Thus, research should examine academic achievement more closely while also considering potential moderators.

Substance use is a serious concern for LGBTQ youth, and a particular focus has been given to alcohol use and smoking (Marshal et al., 2008, 2012). Thus, our findings that youth, particularly LGBTQ youth, in schools with GSAs were less likely to have smoked cigarettes or drank alcoholic beverages in the past year are encouraging. The additional GSA \times gender interaction for smoking also alludes to the potential contributions of GSAs. Several factors could explain these differences. GSAs provide substance-free socializing environments. Also, if GSAs contribute to safer school climates and less victimization, this could account for lower substance use, which itself is associated with victimization (Coker et al., 2010). In addition, GSA-based discussions related to substance use may be framed in ways that are more relevant or address unique factors (e.g., chronic discrimination) that elevate risk for using them among LGBTQ youth. This latter possibility could explain why the differences between students on account of GSA presence were more sizable for LGBTQ youth than heterosexual youth.

Although studies have focused on sexual health risk behaviors among LGBTQ youth, few have identified factors that decrease them and none to our knowledge have considered the role of GSAs. Several factors could explain our findings of lower sexual health risk behavior among LGBTQ youth in schools with GSAs. Formal sexual health education is rarely inclusive of sexual minorities (Fine & McClelland, 2006). Thus, GSAs may be a valuable place where LGBTQ youth can discuss relevant health issues or receive referrals to community-based resources. Further, GSA-sponsored school programs may promote knowledge about sexuality and health that could benefit LGBTQ youth who are not GSA members. We also note that the effects were more sizable for adolescent girls than boys, irrespective of sexual orientation. Because of the seriousness of high-risk sexual behaviors in general, and their elevation among LGBTQ youth specifically, more research is needed to examine the mechanisms by which GSAs may decrease these risk behaviors and how they could be tailored to be maximally effective across gender, sexual orientation, or other social identities.

Limitations and Future Research Directions

We note several limitations and strengths to our current study. As with all other GSA studies to our knowledge, our data were cross-sectional. This prevents our ability to state with certainty that GSAs cause or lead to positive outcomes for youth at these schools. It could be argued that GSAs are established at schools that are already high-functioning. However, we did control for several important covariates in our models, including school size, SES, and racial and sexual orientation diversity. However, longitudinal data would be preferable and could elucidate the directionality of GSA effects and if they are sustained over time. Also, we could not account for GSA membership. Nevertheless, a recent study showed that among LGBTQ young adults, it was the presence of a GSA in their high school—not their participation in it—that had the strongest links with their well-being (Toomey et al., 2011). Research might test for other moderators such as the visibility of the GSA within the school. Such moderators could explain discrepant findings across studies on GSA effects. In relation to this, although GSAs themselves have been conceptualized within a positive youth development framework, extant studies and our current study have focused primarily on risk outcomes. Future research might examine other indices that

directly reflect positive outcomes. Also, while our sample was population based, it remained limited to a single county. Although the Midwestern context of this study extends representation of LGBTQ youth beyond those of past studies, research is needed to account for potential differences based on regional context and culture. For instance, it is possible that certain GSA activities or functions differ for those in more politically conservative or liberal communities. We also note the need to focus on specific subgroups within the sexual minority community that have been underrepresented in the literature (e.g., bisexual or questioning youth). We were unable to do so in the current study based on the response format and myriad response patterns on our sexual orientation item. Finally, although our student sample was large in size, the number of schools remained limited. This may have weakened the power to detect significant differences at the school level, which may have contributed in part to the nonsignificant trends documented for several variables.

Despite these limitations, our study has several strengths. Using a large population-based sample, we avoided limitations of other studies that have relied on retrospective reports or that have relied on convenience or small samples with limited representation of LGBTQ youth. Also, we examined an expansive set of indices, which highlighted key issues for future research in this area to pursue (e.g., sexual health). In sum, our findings suggest GSA presence is associated with better health and academic outcomes for youth, particularly LGBTQ youth, in these schools, and that these effects span across a much broader range of indices than previously examined. Building on this point, research is now needed to examine even greater nuance in identifying for whom GSAs are most effective and what contributes to their effectiveness.

The continued victimization of LGBTQ youth in schools and consequences associated with these experiences necessitate attention to factors at multiple levels that counter this serious issue. Whereas most research has focused on individual-level factors, our findings broaden this scope and add support for GSAs as an important school-wide resource. As researchers, practitioners, and policy advocates seek ways to promote the health of LGBTQ youth, greater attention should be given to the potential role and effects of GSAs as a school-based resource, as well as to other school-based and out of school programs that serve these youth.

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