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EMPIRICAL RESEARCH

Gay-Straight Alliances are Associated with Lower Levels of School-Based Victimization of LGBTQ+ Youth: A Systematic Review and Meta-analysis

Robert A. Marx[1] · **Heather Hensman Kettrey**[2]

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Abstract Gay-straight alliances (GSAs) are school-based organizations for lesbian, gay, bisexual, transgender, and queer (LGBTQ+) youth and their allies that often attempt to improve school climate for sexual and gender minority youth. This meta-analysis evaluates the association between school GSA presence and youth's self-reports of school-based victimization by quantitatively synthesizing 15 primary studies with 62,923 participants. Findings indicate GSA presence is associated with significantly lower levels of youth's self-reports of homophobic victimization, fear for safety, and hearing homophobic remarks, and these results are robust, controlling for a variety of study-level factors. The findings of this meta-analysis provide evidence to support GSAs as a means of protecting LGTBQ+ youth from school-based victimization.

Keywords Gay-straight alliances · LGBTQ+ youth · Victimization · Bullying

Introduction

School-based victimization (i.e., bullying, harassment, and engendering of fear) is a serious problem threatening the health and psychosocial development of adolescents. Results from the 2013 Youth Risk Behavior Surveillance survey, a nationally representative survey of students in grades nine through twelve, indicated that 19.6 % of respondents had been victimized on school property (i.e., repeatedly teased, victimized by rumors, hit, shoved, or hurt by one or more students) within the 12-month period prior to the survey (Kann et al. 2014). This prevalence rate is alarming considering that school-based victimization is associated with both immediate and long-term deleterious outcomes, including poor psychosocial adjustment (Nansel et al. 2001), increased suicidality (Rigby and Slee 1999), delinquency (Hanish and Guerra 2002), poor physical health (Nishina et al. 2005), and poor academic outcomes (Schwartz et al. 2005).

Although school-based victimization can potentially affect all students, certain sub-populations are at greater risk not only for increased victimization but also for differential negative effects of such victimization. Adolescents who are perceived to be lesbian, gay, bisexual, transgender, queer, or gender non-conforming (LGBTQ+) are at an elevated risk for victimization (Berlan et al. 2010; Dempsey 1994; Schneider et al. 2012). Further, homophobic victimization can have detrimental consequences on the development of LGBTQ+ youth, as it has been associated with negative outcomes such as depression (Poteat and Espelage 2007; Russell et al. 2011; Toomey et al. 2010), substance use (Bontempo and D'Augelli 2002; Espelage et al. 2008; Goldbach et al. 2014), and suicidality (Bontempo and D'Augelli 2002; Friedman et al. 2006; Russell et al. 2011). In fact, homophobic victimization is more strongly associated with depression and suicidal ideation than non-homophobic victimization of youth (Patrick et al. 2013).

Given these negative outcomes, it is clear that addressing school-based victimization is vital for promoting the

✉ Robert A. Marx
robert.a.marx@vanderbilt.edu

[1] Department of Human and Organizational Development, Peabody College of Education, Vanderbilt University, 230 Appleton Place, Nashville, TN 37203-5721, USA

[2] Peabody Research Institute, Vanderbilt University, Nashville, TN, USA

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healthy development of all adolescents, especially LGBTQ+ youth; however, solutions for such victimization are more ambiguous. Previous meta-analyses exploring the effects of programs addressing school-based victimization have yielded mixed findings, as some have indicated these programs have meaningful effects on victimization (Ttofi and Farrington 2011), whereas others have suggested that these programs have small, or infrequent, effects that are of little practical significance (Ferguson et al. 2007; Merrell et al. 2008). Importantly, the school-based programs included in these meta-analyses rarely focus on homophobic and anti-LGBTQ+ victimization; thus, there is little evidence that school-based programs are effective in protecting LGBTQ+ students. Moreover, these programs tend to situate victimization at the level of the individual's behavior and, therefore, rarely address cultural elements of the school climate that may contribute to violence (e.g., homophobia or heterosexism, in the case of homophobic victimization).

One promising approach to promoting the wellbeing of LGBTQ+ students is the establishment of student-directed clubs and organizations for LGBTQ+ youth, commonly known as Gay-Straight Alliances (GSAs), although nomenclature may differ from school to school or district to district. The earliest GSAs were established in the late 1980s by students and teachers in Massachusetts who shared the goal of promoting respect for all students, regardless of their sexual orientation or gender identity. Since then, organizations such as the GSA Network, the Gay, Lesbian, and Straight Educators Network, Project 10 in Los Angeles, and the Massachusetts Safe Schools Program for LGBTQ Students have been instrumental in expanding the establishment of GSAs across the United States (Schindel 2008).

The expansion of GSAs across the United States has inspired a growing body of research on the benefits that such organizations bring to students and schools. Utilizing both quantitative data (normally amassed through school- or community-based surveys) and qualitative data (normally amassed through interviews, focus groups, and observations with GSAs and their members), researchers have worked to better understand relationships between GSAs and students' behaviors and experiences. Much of the quantitative research has focused on students' experiences of victimization (Portnoy 2012; Toomey et al. 2012; Walls et al. 2010), drug use (Heck et al. 2014) and mental health concerns (Poteat et al. 2012; Walls et al. 2013). Qualitative research has focused more explicitly on students' subjective experiences within GSAs and the ways in which GSAs have led them to feel more empowered, connected, and supported, especially in schools where LGBTQ+ youth have traditionally been marginalized and victimized (Griffin et al. 2004; Mayberry et al. 2013; Mayo 2013).

Just as the benefits of GSAs can vary widely, so too are the roles that GSAs play in schools varied, with some providing individual-level support to LGBTQ+ students and others engaging in broader political activism. For example, in their field observations of GSAs in 22 Massachusetts schools, Griffin and colleagues identified the following major roles of GSAs: (1) providing counseling and support to individual students, (2) creating safe spaces where LGBTQ+ students and their allies can meet to discuss issues pertinent to sexuality and gender identity, (3) increasing visibility of LGBTQ+ issues in school, and (4) making school safer for LGBTQ+ students (Griffin et al. 2004). Additionally, from a statewide survey of Massachusetts GSA members, Poteat and colleagues noted a variety of GSA activities that ranged from socialization with other GSA members (e.g., dances, movie nights, Facebook) to broader advocacy activities (e.g., Day of Silence, workshops/conferences, classroom presentations, t-shirt/wrist band campaigns) (Poteat et al. 2015). It is through these political and activist roles that GSAs have the potential to promote a supportive school climate and, thus, promote the wellbeing of LGBTQ+ students, regardless of whether those students are GSA members.

As youth-led organizations that are established by students with requisite sponsorship of a faculty advisor, GSAs have been conceptualized as a form of youth activism that can be empowering to LGBTQ+ youth (Herdt et al. 2007; Russell et al. 2009). Interestingly, adults rarely perceive youth activism to be a serious political endeavor (Gordon 2010; Taft 2011); however, there is evidence suggesting that some adults do perceive the establishment of GSAs to be a political threat. That is, at times, youth have faced political opposition when attempting to form GSAs in local schools.

In the United States, students' rights to establish GSAs are protected by the Federal Equal Access Act of 1984, which states that federally funded schools with at least one student-led extracurricular club cannot discriminate against students who wish to form additional clubs, provided that such clubs do not interfere with educational activities. However, youth who wish to establish GSAs in their local schools have, at times, been met with political opposition from parents, school boards, and local communities who fear that GSAs promote homosexuality in schools. In some cases, opponents have successfully thwarted the establishment of GSAs by banning all extracurricular clubs or invoking anti-obscenity laws and abstinence-only education policies (Mayberry 2006; Mayo 2008). Such political opposition can also make faculty members reticent to sponsor the clubs, fearing that they may lose their jobs or

be accused of recruiting youth into a "gay lifestyle" (Valenti and Campbell 2009; Watson et al. 2010).

Political opposition to GSAs makes the empirical assessment of their effects both difficult and necessary. That is, variable degrees of community-level resistance to GSAs may reflect important cultural differences between schools with and without GSAs. As Fetner and Kush (2008) have demonstrated, the earliest high schools to adopt GSAs were in suburban communities and had larger student bodies and fewer lower income students. Additionally, these schools tended to be located in western or north-western states, regions of the country traditionally accepting of gay and lesbian rights, states prohibiting discrimination based on sexual orientation, and states with LGBTQ+ organizations. Thus, differences in the wellbeing of LGBTQ+ students who attend schools with and without GSAs may be explained, in some part, by differences in surrounding communities. The implementation of randomized controlled trials (RCTs) could, in theory, mitigate the influence of community-level variables. However, in practice, randomly assigning particular schools to establish GSAs is not entirely feasible, as it would undermine the fundamental nature of these student-led and student-organized clubs. Despite the aforementioned challenges, there is an emerging body of research using quasi-experimental designs that compare outcomes for LGBTQ+ students in schools with and without GSAs. Results from these studies provide important insight into the effects of a somewhat politically contentious approach to promoting the safety and healthy development of a frequently marginalized group of youth.

The Current Study

Understanding the relationship between GSAs and adolescents' health and wellbeing is critical for advancing the study of adolescent development. In particular, it highlights the interplay between youth activism and the healthy development of an often-marginalized group of youth. That is, youth activists who establish GSAs in their local schools have the potential to foster a school climate that is supportive of all students regardless of sexual orientation or gender expression and, thus, promote the general wellbeing of LGBTQ+ students regardless of whether or not they are members of the GSA. This is particularly instructive since adults tend to view youth as a vulnerable population in need of empowerment from adult-led initiatives, rather than agents for change themselves (Gordon 2010; Taft 2011). Thus, research that evaluates GSA outcomes both challenges dismissive views of youth activism and demonstrates the potential for youth initiatives to have a positive impact on youth development. Although results of individual studies appear to be promising, to date we are unaware of any systematic reviews or meta-analyses that have synthesized the available evidence regarding the relationship between GSAs and the wellbeing of LGBTQ+ youth. Through this systematic review and meta-analysis, we aim to quantify the association between GSAs and student reports of victimization.

Methods

We followed recommended procedures for conducting systematic reviews and meta-analyses, as outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al. 2009).

Eligibility Criteria

To develop a broad evidence base that strongly speaks to the association between GSAs and student reports of victimization, we did not limit our search strategy by language, publication status, country, or date. Studies were eligible for this review if they reported quantitative measures of victimization outcomes for students at schools with GSAs or other school-based gender and sexuality diversity clubs, compared to students at schools without such clubs. We did not require eligible studies to identify these clubs with the specific term "gay-straight alliance"; rather, we limited eligible interventions to school-based clubs or organizations explicitly created for gender and sexual minority students. Community organizations not based in a school were not eligible, as they fall beyond the scope of this review of school-based GSAs.

Eligible participants were current high school students. Eligible comparators were current high school students without GSAs or school-based sexuality and gender diversity clubs, regardless of their participation in similar community organizations. Quantitative measures of student victimization outcomes could include any form of victimization based on sexual orientation or gender identity (e.g., self-reported harassment or bullying, fear for safety, verbal threats, physical altercations, or homophobic remarks). Both RCTs and quasi-experimental studies were eligible for inclusion. Although we did not expect to find RCTs that analyze GSA outcomes, we allowed for their inclusion to account for the rare possibility of finding such studies.

Information Sources and Search Strategy

In an effort to identify all eligible studies, the first author conducted a comprehensive literature search of 62 databases including Educational Resource Information Center (ERIC), PsycINFO, ProQuest Dissertations and Theses,

PubMed, Sociological Abstracts, ProQuest Research Library, and ProQuest Education Journals. The first author searched these databases using the key term "gay straight alliance." This search included studies reported any year through April 2016 with no limitations on language, country, or publication status. To ensure that no relevant studies were missed, the first author also searched a subset of the 62 databases using the key terms (1) "gay" and "club" or "organization" and (2) "sexual minority" and "club" or "organization"; no additional relevant articles were returned. In addition to these electronic searches, the first author hand-searched the proceedings from the annual meetings of the American Educational Research Association from 2010 to 2015 and the International Conference on Education and New Developments from 2013 to 2015, reviewed the websites and curricula vitae of the first authors of eligible studies (when available), and reviewed reference lists of all eligible studies.

Study Selection

The two authors independently screened titles and abstracts for eligibility, with an agreement rate of 96.98 %, and resolved all disagreements by consensus. We then independently screened all abstract-eligible studies at the full text level with an agreement rate of 96.77 % and resolved any disagreements through discussion and consensus.

Coding of Variables

The two authors independently extracted study data on the following: report details (e.g., bibliographic information), research design (e.g., experimental, quasi-experimental), type of population (e.g., LGBTQ+, heterosexual, universal), participant characteristics (e.g., age, sex, race, sexual orientation), sub-sample sizes (e.g., focal and comparison group size), type of outcome (e.g., physical violence, verbal harassment), and quantitative outcome measures. In categorizing the type of outcome reported, each author independently described the outcome, and then the two authors worked together to group all related outcomes along broad lines of similarities (e.g., studies that mentioned verbal slurs, studies that explicitly referenced feelings of safety, studies that operationalized victimization broadly). To account for the quality of studies in our sample, we also extracted data summarizing sampling procedures (e.g., random or non-random), method of data collection (e.g., self-report, direct observation, official records), GSA validation (e.g., self-reported, researcher verified presence of GSA), and risk of bias (e.g., potential biases due to funding sources, sampling methods, etc.).

When available, we extracted raw data (e.g., means and standard deviations or percent failures for focal and comparison groups), but when raw data were unavailable, we extracted correlation coefficients, odds ratios, regression coefficients, and standardized mean differences. When outcome data were not available or insufficient data were available to calculate requisite statistics, we contacted the authors of the primary studies. If data could not be obtained from the authors, we were not able to include the study in the meta-analysis.

Outcome Measures

We reported all dependent variables as standardized mean differences (i.e., the difference in means between the focal group of respondents with GSAs in their high schools and the comparison group of respondents without GSAs in their high schools divided by the pooled standard deviation for those two groups). In the case of binary outcomes, we used methods described by Hasselblad and Hedges (1995) to convert odds ratios to standardized mean differences. We adjusted standardized mean differences with the small-sample correction factor (g) to provide unbiased estimates (Hedges 1981). All outcomes were coded such that negative values indicated desirable outcomes (i.e., lower levels of victimization).

Analytic Strategies

The studies in the final sample reported a wide range of victimization outcomes. When studies reported more than one outcome of interest, we extracted all relevant data and calculated multiple standardized mean differences from each study sample. Then, the two authors worked together to classify outcomes into broad constructs and, subsequently, conducted separate meta-analyses for each of these constructs. To avoid dependencies in any given analysis, we classified no more than one outcome from a particular study into a particular construct and, thus, only included one standardized mean difference from a particular study in a particular meta-analysis. Additionally, we did not classify any single outcome into more than one construct.

Assuming a priori that a distribution of true mean differences underlies the relationship between GSAs and student victimization, we used random effects inverse variance weighting in our analyses. To assess study heterogeneity, we examined the Q, I^2, and τ^2 statistics, evaluating both their magnitudes and statistical significance at a predetermined α value of .05. We conducted post hoc moderator analyses, examining the potential effects that publication status (i.e., peer-reviewed or not peer-reviewed), publication date, sampling (i.e., random or non-

random), scope of sample (i.e., local or national), reported gender (i.e., percent male of sample), reported race (i.e., percent white of sample), and age have on observed standardized mean differences. We conducted bivariate meta-regression for each of the potential moderators of interest and then calculated the correlation between each of the moderators of interest to determine potential confounding effects of collinearity. To assess publication bias and the possibility of small-study bias, we visually inspected funnel plots and conducted both an Egger test and a trim and fill procedure.

Results

Study Selection

The electronic database search revealed 772 reports, 597 of which were unique citations reviewed at the title-abstract screening level. Subsequent grey literature searches identified 6 additional reports. Following the title-abstract screening and inclusion of grey literature, we reviewed 63 reports at the full-text level. Our final sample of eligible studies consisted of 19 reports representing 15 unique studies (see Fig. 1). Of the excluded studies, 18 reports provided no eligible victimization outcomes; instead, these reports often focused on psychosocial or academic outcomes associated with the presence of a GSA. Eleven reports were excluded because they did not draw on individual student data, but rather often created a composite index based on the total number of GSAs in a city or state. Six reports did not include an eligible comparison group, meaning that they only compared students within a GSA. Six reports were excluded because they did not provide sufficient data to calculate standardized mean differences, and the report author did not respond to requests for such data. Three reports focused on former students' retrospective reflections on their high school experiences, rather than examining current students' experiences; after deliberation, we determined that these students' reports of victimization would draw on more distant memories and therefore should not be synthesized with current students' reports of victimization.

Study Characteristics

Characteristics of included studies are summarized in Table 1. The final sample consisted of 15 studies ($N = 62{,}923$) reported in journal articles ($k = 6$), dissertations ($k = 2$), and advocacy organization reports ($k = 7$) published between 2001 and 2014. When a study was associated with more than one publication, we chose to code and include the document that provided

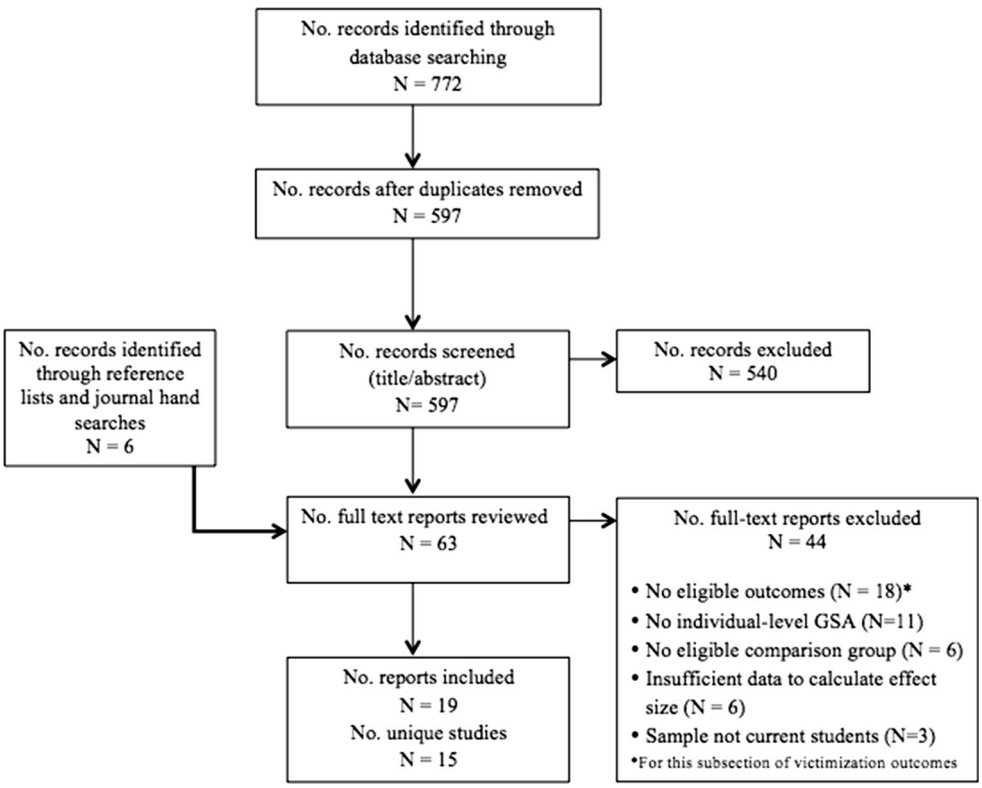

Fig. 1 Flow diagram for studies included in the systematic review and meta-analysis

Table 1 Characteristics of included studies, $k = 15$

Author	Publication format	Peer reviewed	Population type	Sampling strategy	Scope of sample	% LGBTQ	Total *N*	Focal *n*	Comparison *n*	% White	% Male	*M* age
Davis et al. (2014)	Journal article	Yes	Universal	Random	Local	NR	10,000	446	9,554	NR	NR	NR
Goodenow et al. (2006)	Journal article	Yes	LGBTQ+	Random	Local	52	202	109	93	66	51	NR
Jurgensen (2013)	Dissertation	No	LGBTQ+	Non-random	Local	100	352	83	269	NR	NR	NR
Kosciw et al. (2012)	Report	No	LGBTQ+	Non-random	National	100	8,552	3,908	4,644	67.9	35.2	16
Kosciw et al. (2010)	Report	No	LGBTQ+	Non-random	National	100	7,261	3,238	4,023	67.4	33.2	16.3
Kosciw (2004)	Report	No	LGBTQ+	Non-random	National	100	887	481	406	73.2	41.7	16.6
Kosciw (2002)	Report	No	LGBTQ+	Non-random	National	100	904	281	623	71.9	52	16.4
Kosciw and Diaz (2006)	Report	No	LGBTQ+	Non-random	National	100	1,715	817	898	69.2	47.8	16.3
Kosciw et al. (2008)	Report	No	LGBTQ+	Non-random	National	100	6,209	2,254	3,955	64.4	33.4	15.9
Kosciw et al.(2014)	Report	No	LGBTQ+	Non-random	National	100	7,378	3,711	3,667	68.1	32	16
Poteat et al. (2012)	Journal article	Yes	Universal	Random	Local	5.8	15,965	8,481	8,885	76.2	50	14.87
Szalacha (2001)	Dissertation	No	Universal	Random	Local	6.9	1,646	691	955	71.3	46.6	NR
Toomey and Russell (2013)	Journal article	Yes	LGBTQ+	Non-random	Local	100	230	171	59	47.39	35.65	15.69
Toomey et al. (2012)	Journal article	Yes	LGBTQ+	Non-random	Local	NR	1,415	1,160	255	32.86	38.51	16.04
Walls et al. (2010)	Journal article	Yes	LGBTQ+	Non-random	Local	100	207	135	72	74.4	38.16	NR

"Author" lists first author of primary report only; see references for complete citations. *NR* indicates that a value was not reported in the original study. Focal *n* indicates number of youth reporting GSA presence. Comparison *n* indicates number of youth reporting no GSA presence. *M* age is the mean age for the sample

the most complete and comprehensive sample and outcome information.

Included studies ranged widely in sample size (from $n = 202$ to $n = 15{,}965$), but both the mean sample size ($N = 4{,}195$) and the median sample size ($N = 1{,}646$) demonstrate most studies ($k = 9$) drew from samples of over 1,000 students. On average, the study samples were approximately 66 % White and 41 % male-identified, with a mean age of 16.0. Twelve studies drew samples from LBGTQ+ populations, whereas three drew from universal populations (i.e., LGBTQ+ and straight). Eleven studies used non-random sampling procedures, and four used random sampling. Seven studies drew from national samples and eight drew from local samples. All studies used surveys to collect respondents' self-reports of victimization and relied on respondents' knowledge of the presence of a GSA in their high school. None of the studies reported possible implementation or administration problems, nor did they report attrition rates. Although the search was not limited by language or country, all studies were written in English and conducted in the United States.

Synthesis of Results

After completing data extraction, victimization measures were classified into the following three constructs: Homophobic Victimization ($k = 9$), Fear for Safety, ($k = 12$), and Homophobic Remarks ($k = 3$). We then completed three primary meta-analyses—one for each outcome construct. Finally, we conducted post hoc moderator analyses to examine the effects of the following on the findings: publication date, publication status (peer-reviewed or non-peer-reviewed), sampling strategy (random or non-random), scope of sample (national or local), gender, race, and age, as well as the Egger test for small-study bias and trim and fill procedure to correct for any funnel plot asymmetry and publication bias.

Homophobic Victimization

Nine studies in the sample reported a measure of homophobic victimization. These studies typically included measures of physical victimization, bullying, and harassment at school based on sexual orientation, although one study measured harassment due to gender nonconformity (Toomey et al. 2012). Eight studies relied on a single item related to students' experiences of victimization or harassment, and one (Poteat et al. 2012) relied on a four-item scale. All items asked whether respondents had been victimized, harassed, and/or threatened or injured at school. In synthesizing findings from these 9 studies, the overall standardized mean difference was $g = -0.19$, 95 % CI [−0.31, −0.08], indicating that GSAs were associated with significantly lower levels of homophobic victimization. Students at schools with GSAs reported mean scores of homophobic victimization that were approximately one-fifth of a standard deviation lower than their peers at schools without GSAs (see Fig. 2). The synthesis is marked by significant, true heterogeneity in estimates across studies ($\chi^2 = 256.0$ [$p < .001$], $I^2 = 96.9$ %, $\tau^2 = 0.0257$), albeit with a small dispersion of true mean differences. As a sensitivity analysis, we removed the one study that measured harassment due to gender nonconformity (Toomey et al. 2012), and found a larger pooled estimate ($g = -0.23$, 95 % CI [−0.34, −0.11).

We conducted meta-regression as a means of post hoc moderator analysis to determine if the synthesized mean difference varied significantly based on whether studies were peer-reviewed, used random sampling, drew from national samples, or drew from universal (i.e., LGBTQ+ and straight) populations. Further, we examined whether publication year, percentage of males in the sample, percentage of white students in the sample, or average age of the sample were associated with significantly different synthesized results. Due to lack of power within the sample, we conducted bivariate regressions for each of the moderators of interest, with the plan that we would examine correlations among all moderators if any predictors were significant.

As summarized in Table 2, only the regression coefficients for publication status (i.e., peer-reviewed or non-peer-reviewed) and scope of sample (i.e., national or local) were significant ($b = .26$, 95 % CI [.02, .51] for publication status; $b = -.26$, 95 % CI [−.51, −.02] for scope of sample). Publication status and scope of sample were perfectly negatively correlated (i.e., all studies that were not peer-reviewed drew from a national sample); thus, we cannot determine the extent to which lower victimization outcomes are uniquely associated with each of these variables. This significant variation could be attributed to the national sample variable; perhaps the estimates for national samples are more accurate, suggesting that our overall estimate may be conservative. On the other hand, the variation could also be attributable to peer-review status; peer-review studies may follow more rigorous methodology and reporting standards, suggesting that our overall estimate may be generous.

None of the other regression coefficients for moderators of interest were significantly different from zero, meaning that the standardized mean difference did not significantly vary along lines of sampling strategy, population type, publication year, percentage male or white of the sample, or average age of the sample. The results of the Egger test for small-study bias was non-significant ($p = .47$), meaning that there was not evidence that our standardized mean difference was impacted by the omission of small studies,

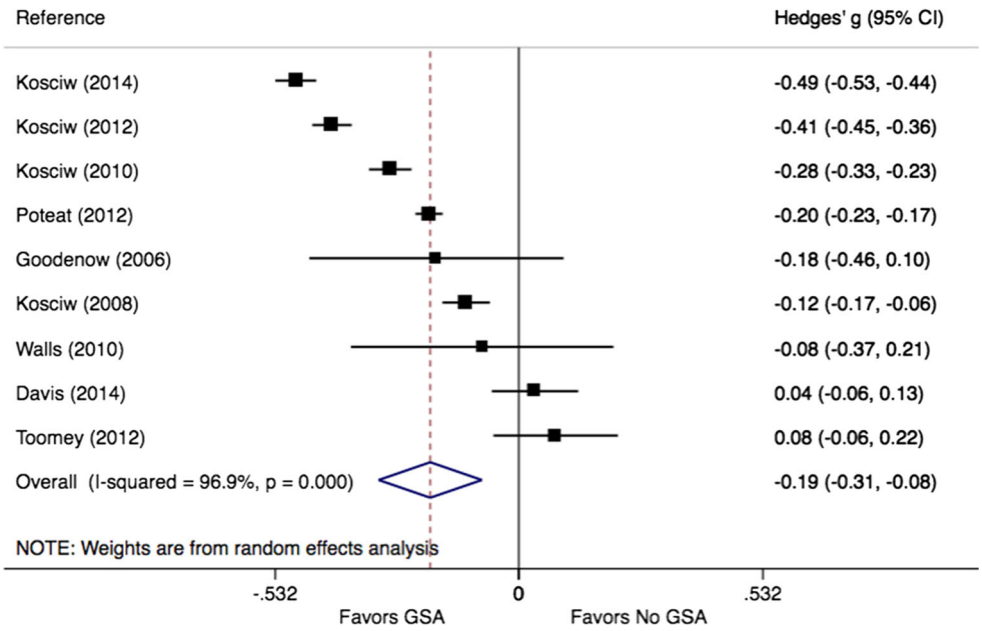

Fig. 2 GSA presence and homophobic victimization

Table 2 Meta-regression coefficients and standard errors

Moderator	Homophobic victimization			Fear for safety		
	B	SE	95 % CI	B	SE	95 % CI
Peer-reviewed	0.26*	0.10	0.02, 0.51	0.08	0.08	−0.10, 0.27
Sampling strategy	0.12	0.14	−0.22, 0.45	0.05	0.17	−0.34, 0.43
Scope of sample	−0.26*	0.10	−0.51, −0.02	−0.13	0.07	−0.30, 0.04
Population type	−0.14	0.16	−0.51, 0.23	NA	NA	NA
Publication year	−0.01	0.03	−0.08, 0.06	−0.01	0.01	−0.03, 0.01
% Male	0.01	0.01	−0.02, 0.03	0.01	0.00	−0.00, 0.00
% White	−0.01	0.00	−0.02, 0.00	−0.00	0.00	−0.01, 0.00
Average age	−0.049	0.20	−0.60, 0.51	0.13	0.15	−0.23, 0.49

* $p < .05$, Peer-reviewed (0 = yes, 1 = no), Sampling (0 = non-random, 1 = random), Scope (0 = local, 1 = national), population type (0 = universal, 1 = LGBTQ+), *NA* (not applicable = meta-regression not conducted due to absence of variability for the moderator)

and the trim and fill procedure resulted in no change to the estimate.

Fear for Safety

Twelve studies reported a measure of respondents' perceived safety at school based on sexual orientation and/or gender expression. Eleven studies relied on a single question that asked how often a student felt safe or unsafe in their school environment, and one study (Goodenow et al. 2006) asked specifically how often a student had avoided school due to feeling unsafe. Our synthesis of findings from these 12 studies revealed a statistically significant standardized mean difference demonstrating that GSA presence was associated with lower levels of fear for safety ($g = -0.25$, 95 % CI [−0.31, −0.18) (see Fig. 3). As in the previous synthesis, there is significant, true heterogeneity ($\chi^2 = 69.32$ [$p < .001$], $I^2 = 84.1$ %, $\tau^2 = 0.0086$) with a very small dispersion of true mean differences. To ensure that all mean differences measured a similar construct, we conducted a sensitivity analysis, removing the one study that operationalized safety with students' skipping school (Goodenow et al. 2006). The synthesized estimate did not meaningfully change with the removal of this study ($g = -0.25$).

We again conducted meta-regression as a means of post hoc moderator analysis, using the same moderators described above when appropriate (i.e., as there was no variation in the sample along type of population, it was not included). As is evident from the regression coefficients presented in Table 2, the standardized mean difference did not vary significantly by any of the moderators of interest.

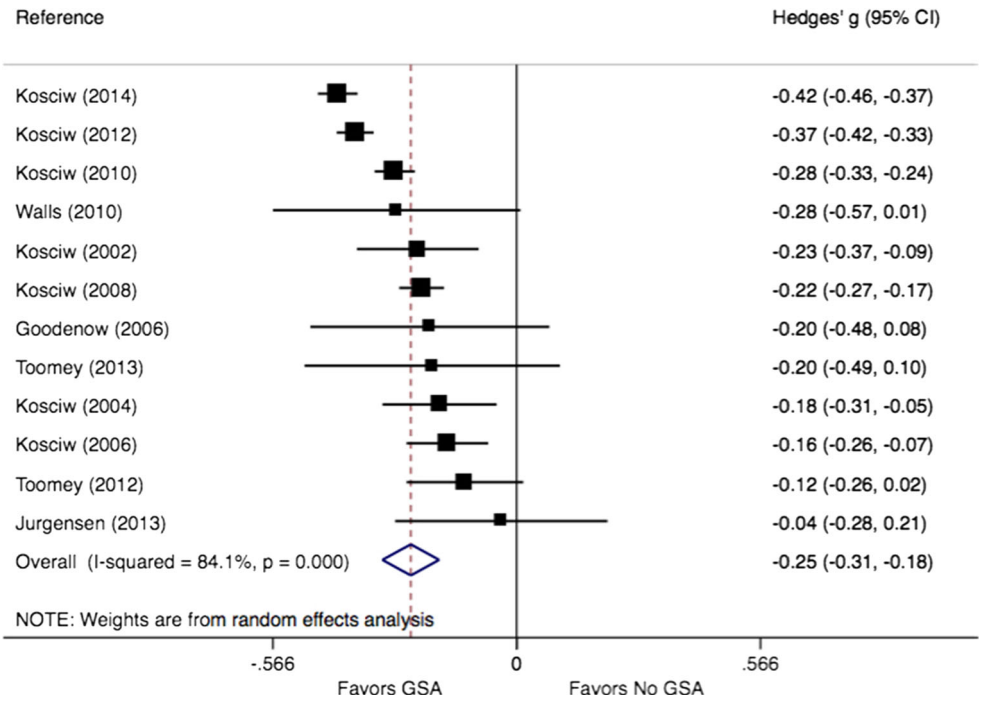

Fig. 3 GSA presence and fear for safety

An Egger test for small-study bias was not significant ($p = .06$), but the trim and fill procedure resulted in the trimming and filling of six hypothetical mean differences and a corrected pooled estimate that demonstrated a greater decrease in fear for safety than our original estimate (trim-and-filled $g = -.32$). If anything, this indicates that our estimate is conservative and may reflect the omission of smaller studies that demonstrate lower levels of fear for safety.

Homophobic Remarks

Three studies included a measure of participants' reports of hearing anti-gay language and/or slurs in school. The three studies used similar measures of hearing homophobic remarks, asking if students frequently or often heard (1) gay slurs or (2) the word gay used in a negative way. Synthesis of findings from these three studies revealed a statistically significant standardized mean difference ($g = -0.41$, 95 % CI [-0.44, -0.38]) with no significant heterogeneity ($\chi^2 = 1.01$ [$p = .60$], $I^2 = 0.0$ %, $\tau^2 = 0.00$) (see Fig. 4). This standardized mean difference indicates that students at schools with GSAs reported hearing homophobic remarks almost half of a standard deviation less often than their peers at schools without GSAs.

Because there was no significant heterogeneity in the synthesis, meta-regression was not appropriate as a post hoc moderator analysis, as the estimate is robust to variation. The Egger test for small-study bias was not significant ($p = .23$), and the trim and fill procedure did not alter the estimate.

Discussion

School-based victimization is a major health concern for adolescents, especially considering the important psychosocial development that occurs during this life stage. Compared to youth who are not victimized, high school students who are victims of peer violence are more likely to commit acts of interpersonal violence and exhibit suicidal behavior (Cleary 2000). Further, a recent meta-analysis demonstrates that victimized adolescents demonstrate psychosomatic problems at an odds twice that of their non-victimized peers (Gini and Pozzoli 2009).

There is compelling evidence that LGBTQ+ adolescents are victimized at a higher rate than their peers (Berlan et al. 2010; Dempsey 1994; Schneider et al. 2012) and may suffer more drastically than adolescent victims who are not LGBTQ+ (Patrick et al. 2013). Although many school systems have attempted to respond to these problems with anti-victimization programs (e.g., the Olweus Bullying Prevention Program, Positive Behavioral Interventions and Supports), such programs do not address LGBTQ+ adolescents' needs specifically. One promising alternative intervention is adolescent-driven GSAs. Because GSAs can sometimes be politically contentious and, thus, difficult to establish, many school districts, advocates, and adolescents

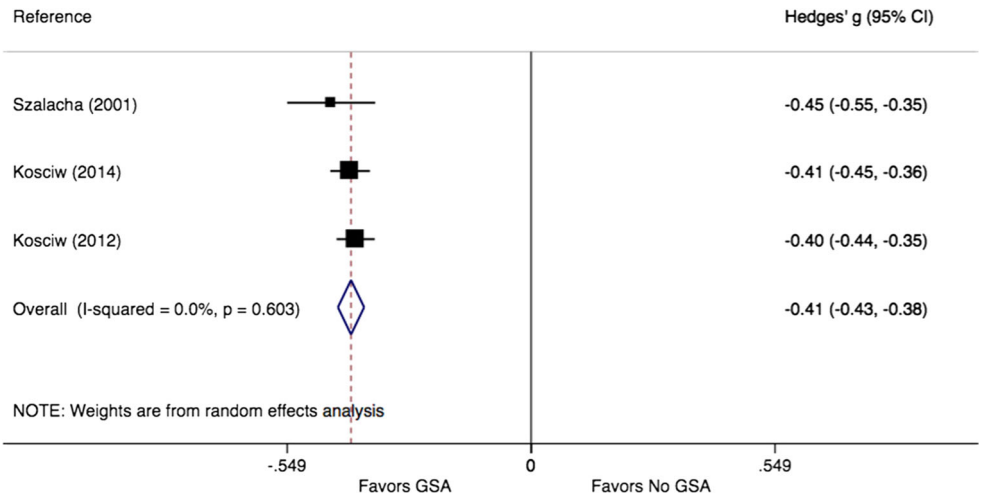

Fig. 4 GSA presence and homophobic remarks

themselves would benefit from comprehensive and rigorous evidence demonstrating the association between GSAs and adolescent wellbeing.

This review provides strong evidence of the association between the presence of GSAs in schools and lower reports of victimization among adolescents. Standardized mean differences for each measure of victimization (i.e., homophobic victimization, fear for safety, and homophobic remarks) were statistically significant and indicated that students in schools with GSAs reported approximately one-quarter of a standard deviation less victimization than their peers in schools without GSAs. Stated in terms of odds ratios, students at schools with GSAs reported homophobic victimization at a rate .70 that of their peers at schools without GSAs (30 % lower odds), fearing for their safety at .64 the rate (36 % lower odds), and hearing homophobic remarks at .48 the rate (52 % lower odds). Thus, GSAs may be a promising resource for protecting LGBTQ+ students from victimization.

Importantly, meta-regression demonstrated that, for the most part, these findings remained consistent and robust when post hoc moderator analyses were conducted. That is, only students' reports of homophobic victimization varied significantly along any identified lines of potential study design features, and then only based on whether studies were peer-reviewed and whether samples were national or local. Findings for homophobic victimization did not vary significantly along the lines of sampling methodology, population, publication year, or demographic features (percentage of males in the sample, percentage of white students in the sample, or average age). Findings for fear for safety did not vary significantly along the lines of any of the moderators of interest, and findings for homophobic remarks lacked sufficient heterogeneity to perform such analyses, demonstrating their robustness.

Although this meta-analysis provides compelling evidence of the potential benefits of GSAs, it is important to consider the current study's limitations. First, a meta-analysis is only as good as the studies it synthesizes, and it is important to attend to limitations of the primary studies included in this review. The majority of the studies in our analysis failed to use random sampling and/or report baseline equivalence measures to assess similarity between the focal group (i.e., those with a GSA in their school) and comparison group (i.e., those without a GSA in their school). There may be fundamental differences between schools with and without GSAs (see Fetner and Kush 2008), and thus the findings from the meta-analysis may reflect such fundamental differences rather than the impact of GSAs on students. For instance, schools with GSAs might be more likely than those without GSAs to be located within communities that are relatively supportive of LGBTQ+ rights. Thus, it is not necessarily surprising that, in two of our three meta-analyses, true heterogeneity remained unexplained (although the dispersion of true mean differences remained quite small). Future research should explore differences between local school communities as a source of heterogeneity in the association between GSA presence and school-based victimization of LGBTQ+ youth.

Another limitation of the current study is the fact that our analysis only synthesized research that assessed relationships between victimization and the *presence* of GSAs. Findings from this study therefore do not represent the association between GSA *membership* and victimization. Unfortunately, only three studies reported associations between GSA membership and any type of victimization outcome, and as none of these studies provided data for the same outcome, meta-analytic synthesis was not possible. Nonetheless, findings from these three individual studies indicated that GSA membership was not associated with

greater benefits beyond those associated with GSA presence in a particular school (Jurgensen 2013; Toomey and Russell 2013; Walls et al. 2010). This pattern is open to multiple interpretations. First, it might imply the influence of GSAs on school climate is more meaningful than the support GSAs provide to individual students. Alternatively, the stronger relationship between GSA presence and victimization, relative to GSA membership and victimization, could be explained by a greater tendency for youth who have been victims of homophobic violence to join GSAs compared to their peers who have not been directly affected by homophobic violence. Future research should explore patterns of pre-membership victimization among youth who ultimately decide to become members of GSAs.

Conclusion

As a whole, findings from our meta-analysis suggest that GSAs are associated with lower levels of at-school victimization of an often-marginalized group of youth. Thus, the establishment of GSAs in local schools may have important implications for the healthy development of LGBTQ+ youth, as previous research has indicated that homophobic victimization is more strongly associated with negative mental health outcomes (i.e., depression, suicidality) than other forms of victimization that are not based on sexual orientation (Patrick et al. 2013). The findings of this meta-analysis should therefore be of value to advocates, educators, and policymakers who are interested in alleviating school-based victimization of youth, as those adolescents who are perceived to be LGBTQ+ are at a marked risk for such victimization (Berlan et al. 2010; Dempsey 1994; Schneider et al. 2012).

It may be most compelling to understand our findings in relation to meta-analyses of research on more general programs designed to decrease student victimization (i.e., those not specifically targeting LGBTQ+ youth victimization). The overall standardized mean difference from each outcome of our study is in line with previous research on interventions' associations with student-reported victimization (Merrell et al. 2008; Ttofi and Farrington 2011; Wong 2009). These previous meta-analyses reported standardized mean differences similar to (or lower than) those reported here (ranging from −0.14 to −0.27) and therefore contextualize our findings as both reasonable and reflective of plausible reductions to student reported victimization. It is important to note, though, that the previous meta-analyses synthesized results from research evaluating specific anti-victimization programming that included a formal curriculum or program protocol that was imposed by educators for the explicit purpose of decreasing student victimization. This stands in contrast to GSAs, which are student-led groups that offer a safe space for the collaboration of LGBTQ+ and straight youth and, thus, require minimal resources to implement (Griffin et al. 2004; Poteat et al. 2015). That is, since GSAs require minimal staff involvement (i.e., only a volunteer sponsor) and no formal curriculum, they may provide a cost-effective approach to minimizing the victimization of LGBTQ+ youth.

Importantly, findings from this analysis suggest benefits of one form of youth activism in promoting the healthy development of adolescents. Although adults often dismiss youth activism as ineffective or apolitical (Gordon 2010; Taft 2011), these findings demonstrate the promise of a somewhat politically contentious case of youth activism in promoting the safety of an often-marginalized group of adolescents. In fact, as previously discussed, comparison of results from meta-analyses that synthesize research on general school-wide initiatives indicates that this youth-led initiative is associated with equal or lower rates of school-based victimization of adolescents/youth. Future research should examine the effects of other forms of youth activism on adolescent development, as this remains an understudied area.

In light of the findings of this study, as well as the limitations of primary studies, several other avenues of further research may be fruitful. At the primary study level, research that uses high quality research designs, examines GSA membership, and firmly establishes baseline equivalence of the two groups compared is needed. At the meta-analytic level, further synthesis is required to examine outcomes of GSAs that are not tied to victimization; for example, many studies report students' rates of depression, drug use, or risky sex behavior. Future research should synthesize these outcomes to provide a more detailed picture of the benefits of these student-led clubs. What remains clear from current research, though, is that GSAs are associated with lower levels of victimization and represent an important step forward in keeping youth safe in schools.

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Robert A. Marx is a doctoral student at the Peabody College of Education at Vanderbilt University. He received his Masters of Arts in Teaching from Boston University and Masters of Science in Community Research and Action from the Peabody College of Education at Vanderbilt University. His major research interests include adolescent development; lesbian, gay, bisexual, trans*, and queer students; prosocial student development; social and emotional learning; and research synthesis.

Heather Hensman Kettrey is a Research Associate at the Peabody Research Institute at Vanderbilt University. She received her doctorate in Sociology from Vanderbilt University. Her major research interests include violence against women, gender-based violence, gender and sexuality, adolescence and emerging adulthood, collective behavior, and media and social problems.