

University of Groningen

Suicidality among sexual and gender minority youth

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DOI:
[10.33612/diss.215899326](https://doi.org/10.33612/diss.215899326)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2022

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
de Lange, J. (2022). *Suicidality among sexual and gender minority youth: Minority stress and mental healthcare*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.215899326>

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CHAPTER 2

Minority stress and suicidal ideation and suicide attempts among lesbian, gay, bisexual, and transgender adolescents and young adults: a meta-analysis

Published as: de Lange, J., Baams, L., van Bergen, D.D., Bos, H.M.W., & Bosker, R.J. (2022). Minority stress and suicidal ideation and suicide attempts among LGBT adolescents and young adults: A meta-analysis. *LGBT Health*. Advance online publication. <https://doi.org/10.1089/lgbt.2021.0106>

Abstract

This meta-analytic study examined associations between minority stressors and suicidal ideation and suicide attempts among lesbian, gay, bisexual, and transgender (LGBT) adolescents and young adults (12-25 years). Identified studies were screened using inclusion and exclusion criteria. Studies had to include an association between a minority stressor and a suicidality outcome and were categorized into 10 meta-analyses. Overall effect sizes were calculated using three-level meta-analyses. In addition, moderation by sampling strategy was examined. A total of 44 studies were included. Overall, LGBT bias-based victimization, general victimization, bullying, and negative family treatment were significantly associated with suicidal ideation and/or suicide attempts. Associations of discrimination and internalized homophobia and transphobia with suicidal ideation and/or suicide attempts were not significant. No moderation effects were found for sampling strategy. Although overall effect sizes were small, our meta-analytic study shows a clear link between various minority stressors and suicidal ideation and suicide attempts among LGBT adolescents and young adults.

Introduction

Rates of suicidal ideation and suicide attempts among lesbian, gay, bisexual, and transgender (LGBT) adolescents and young adults are higher compared to rates among heterosexual and cisgender adolescents and young adults (Marshal et al., 2011; Miranda-Mendizábal et al., 2017; Perez-Brumer et al., 2017). Research has shown associations between various minority stressors and suicidal ideation and attempts among LGBT adolescents (Baams et al., 2015; Goldbach et al., 2017; Kuper et al., 2018; Ryan et al., 2009). However, it is not clear to what extent different types of minority stressors are associated with suicidal ideation and attempts. With this meta-analytic study, we synthesize and examine the associations of different types of minority stressors with suicidal ideation and attempts among LGBT adolescents and young adults. The ideation-to-action framework suggests distinct processes for developing suicidal ideation and the (potential) transition to suicide attempts (Klonsky & May, 2015); therefore, we examine associations for suicidal ideation and suicide attempts separately. In this meta-analytic study, suicidality is used as an umbrella term for suicidal ideation and suicide attempts.

Minority stress and suicidality

The minority stress framework explains how mental health disparities among sexual minority individuals develop from the experience of minority stress (Meyer, 2003). Minority stressors include distal stressors, for example, victimization and family rejection, and proximal ones, for example, internalized homophobia. These minority stressors are unique to sexual minority groups and additive to general stressors (Meyer, 2003). Extensions of the minority stress model have made it applicable to gender minority groups, including transgender and nonbinary individuals (Hendricks & Testa, 2012; Testa et al., 2015). The gender minority stress framework added minority stressors that are unique to gender minority individuals, such as transphobia and non-affirmation of gender identity (Testa et al., 2015). Research shows that LGBT young individuals are especially likely to experience interpersonal rejection from friends and family (Baams, 2018) and this is associated with mental health problems (Kiekens et al., 2020).

The majority of studies among LGBT young individuals on the links between minority stress and suicidality focused on distal minority stressors such as family rejection or victimization, including experiences that are not linked to a minority identity, but may be interpreted in that way by minority groups (e.g., victimization). Fewer studies focused on the association between proximal minority stressors and suicidality, such as internalized homophobia, internalized transphobia, and expected rejection. There is one meta-analytic review that examined internalized homophobia and internalizing health problems. However, this study did not focus solely on adolescents and young adults and did not examine suicidality as an outcome (Newcomb & Mustanski, 2010). Overall, empirical research among LGBT adolescents and young adults shows that both

proximal and distal minority stressors are associated with suicidality (Lea et al., 2014; Poteat et al., 2011; Taliaferro & Muehlenkamp, 2017).

Studies on the association between minority stress and suicidality use a wide range of instruments to assess minority stressors and suicidality. For example, studies commonly ask about experiences with victimization that are explicitly related to young people's sexual orientation (Burton et al., 2013; Huebner et al., 2004; Mustanski & Liu, 2013), while others examine victimization more broadly without defining it as discriminatory (Button & Worthen, 2014; Hatchel, Valido, et al., 2019; Poteat et al., 2011). For suicidal ideation and attempts, there is also variability in the measures that are used. Some studies assess lifetime suicidal ideation, while others assess recent suicidal ideation. A synthesis of associations by minority stressors and suicidality outcome will improve our understanding of the extent to which different types of minority stressors are related to suicidal ideation and attempts and gives crucial insights into shortcomings of the current literature.

To our knowledge, there are currently two meta-analyses on risk factors for suicidal ideation and attempts among LGBT youth (Hatchel, Polanin, et al., 2019; Williams et al., 2021). Hatchel and colleagues' (2019) meta-analysis demonstrated a medium effect size for victimization and a small effect size for stigma and discrimination in relation to suicidality. Of the studies that were included in this meta-analysis, only two studies examined the relationship between internalized homophobia and suicidality, and they found a small association (Hatchel, Polanin, et al., 2019). The meta-analytic study included studies up to 2017, and since then at least 20 additional studies examining associations between minority stress and suicidality have been published. A second meta-analytic study by Williams and colleagues (2021) found that victimization among LGBT young people was associated with experiences of self-harm, suicidal ideation, or suicide attempts. A merit of that study is that recent studies (also after 2017) were included, however, 'victimization' was used as an umbrella term for experiences of victimization, bullying, discrimination, and negative treatment. Furthermore, these two meta-analyses did not assess whether study results differed by sampling strategy (Hatchel, Polanin, et al., 2019; Williams et al., 2021). Using fine-grained analyses, the current meta-analytic study examines the associations of multiple types of minority stressors with suicidal ideation and attempts.

Differences by sampling strategy in the association between minority stress and suicidality

There are large differences in study designs and data-collection methods in studies on minority stress and suicidality among LGBT young individuals. Some studies included non-probability samples, such as convenience and snowball sampling, while others used probability or population-based sampling. Although research indicated that

there are small or no differences between non-probability and probability samples in demographics of LGBT populations (Krueger et al., 2020; Kuyper et al., 2016), research also showed that non-probability samples are more likely to include individuals who identify as exclusively same-sex attracted (Kuyper et al., 2016), gay, lesbian, and queer (Krueger et al., 2020) than probability samples. In addition, one study showed a stronger association between internalized homonegativity and suicidality for a community convenience sample than a randomly selected (from a panel) sample (Kuyper et al., 2016). In the current meta-analytic study we, therefore, examine whether the sampling strategy in a study moderates associations between minority stress and suicidal ideation and attempts.

The current study

The current study aimed to synthesize the associations between various types of minority stress and suicidal ideation and attempts among LGBT adolescents and young adults aged 12 to 25 years old. In addition, we examined differences for sampling strategy in the associations between minority stress and suicidal ideation and attempts. The current meta-analytic study includes studies up until January 2020.

Method

Study inclusion and exclusion

To be included in the meta-analytic study, the following inclusion criteria had to be met: studies had to 1) report a form of suicidal ideation or suicide attempts as an outcome, 2) report a minority stressor, 3) report a relation between a minority stressor and a form of suicidal ideation or attempt, or provide data to calculate an association, 4) include self-identified sexual or gender minority adolescents and young adults, 5) include participants with a minimum age of 12 years old, 6) include a sample with a maximum mean age of 25 years old, and 7) be empirical articles, published in English.

A database search on Web of Science was conducted for studies published until January 2020. The search included a combination of terms related to sexual orientation, gender identity, minority stressors, and suicidal ideation and attempts (see Table 2.1).

Table 2.1 Search strategy

Database	Web of Science
Date	09/13/2018; 12/10/2019; 01/10/2020
Search Query	<p>#1 TS=(“sexual minorit*” OR LGB* OR LG OR lesbian OR gay OR homosexual OR bisexual OR transgender OR transsexual OR transmen OR “trans men” OR transwomen OR “trans women” OR genderqueer OR queer OR “sexual orientation” OR “Sexual attract*” OR “Same-sex attract*” OR “Sexual identit*” OR “same-sex sexual behav*” OR MSM OR “Men who have sex with men” OR WSW OR “Women who have sex with women” OR “gender identit*” OR “non-binary” OR “gender nonconform*” OR “same-gender attract*” OR “same-gender sexual behav*”)</p> <p><i>DocType=All document types; Language=All languages;</i></p> <p>#2 TS=(“minority stress” OR prejudice OR discrimination OR homophob* OR stigma OR rejection OR concealment OR victimization OR bull* OR violen* OR disclos* OR harassment OR assault OR abuse OR “internal* homonegativ*” OR transphob*)</p> <p><i>DocType=All document types; Language=All languages;</i></p> <p>#3 TS=(suicid* OR “deliberate self-harm”)</p> <p><i>DocType=All document types; Language=All languages;</i></p> <p>#4 #3 AND #2 AND #1</p> <p><i>DocType=All document types; Language=All languages</i></p>

Five authors were contacted because of missing data in the paper, three of those papers were included in the final selection. In total, 44 studies were included in the meta-analytic study. Data of included studies were extracted and entered into a coding form. Extracted data included, for example, country where the study was conducted, sample size, age (range, mean), gender and sexual orientation composition of the sample, ethnicity, sample procedure, predictor, type of predictor (e.g., dichotomous, ordinal), outcome, type of outcome, effect size, and type of effect size (e.g., odds ratio, correlation). The data extraction and coding were conducted by the first author. The first five completed coding forms were discussed with the second author, as well as any coding decisions and uncertainties about studies meeting the inclusion criteria.

Measures

Suicidal ideation

Included studies used measures that assessed suicidal ideation, or used the term “suicidal thoughts”. Suicidal ideation was assessed in the past month, past year, or lifetime. Some studies used a scale to measure suicidal ideation, for example, Suicide

Behaviours Questionnaire-Revised (SBQ-R) (Kuper et al., 2018; Muehlenkamp et al., 2015; Rimes et al., 2018). Most studies used one or two questions to assess suicidal ideation, for example, “During the past 6 months, did you have any thoughts of ending your life. If yes, how often?” (Ryan et al., 2009). These measures with different time-frames were combined for the purpose of the current meta-analytic study.

Suicide attempts

Included studies used measures that assessed suicide attempts in the past month, past year, or lifetime. Some studies used an item of a scale, for example, an item of the Diagnostic Interview Schedule for Children (DISC) (Mustanski & Liu, 2013) or SBQ-R (Kuper et al., 2018; Muehlenkamp et al., 2015; Rimes et al., 2018). Most studies used one or two questions to assess suicide attempts, for example, ‘Have you ever attempted suicide?’ (Lea et al., 2014). These measures with different time-frames were combined for the purpose of the current meta-analytic study.

LGBT bias-based victimization

Included studies used measures that assessed victimization related to one’s actual or perceived sexual orientation or gender identity. For example, studies assessed experiences of violence, physical or verbal harassment or abuse, and property damage related to youth’s LGBT identity (Liu & Mustanski, 2012; Woodford et al., 2018).

Discrimination

Included studies used measures that assessed experiences with discrimination. Studies asked about experiences such as being treated unfairly because of one’s sexual orientation or gender identity, for example, in-home, at school, or the workplace (Huebner et al., 2004; Thoma & Huebner, 2013).

General victimization

Included studies used measures that assessed victimization that was not explicitly related to one’s sexual orientation or gender identity. For example, a question about being kicked or pushed at school (Hatchel, Ingram, et al., 2019; Perez-Brumer et al., 2017; Poteat et al., 2009; Taliaferro & Muehlenkamp, 2017).

Bullying

Included studies used measures that assessed experiences with bullying. For example, studies included measures of cyberbullying or in-person bullying. An example item of cyberbullying was “During the past 12 months, have you ever been electronically bullied, such as through e-mail, chat rooms, instant messaging, websites, or text messaging?” (Duong & Bradshaw, 2014), and an example item of in-person bullying was “During the past 12 months, have you ever been bullied on school property?” (Feinstein et al., 2019).

Negative family treatment

Included studies used measures that assessed negative family treatment such as family rejection, bad treatment by parents or siblings, or neglect from parents. Studies asked about, for example, physical and verbal abuse by family members because of sexual orientation or gender identity (Peng et al., 2019; Walls et al., 2008).

Internalized homophobia or transphobia

Included studies used measures that assessed internalized homophobia or transphobia, or internalized heterosexism. Studies asked about attitudes or self-concept of one's sexual orientation or gender identity, for example, feeling ashamed of one's gender identity (Kuper et al., 2018) or feelings of discomfort with one's sexual orientation (Puckett et al., 2017).

Moderator

Sampling strategy was used as a dichotomous moderator and coded as probability sample (1) and non-probability sample (0).

Data synthesis and analysis

The initial search included several types of minority stressors (see Table 2.1). After data extraction, we created minority stress themes (see Measures) based on the measures in the studies. For example, we combined studies that examined parental or family rejection, or parental neglect and named this *negative family treatment*. This resulted in 10 different associations of a minority stress measure and a suicidality outcome. Each association included at least one study with multiple effect sizes, and therefore there was no independence among effect sizes. Thus, we conducted a three-level meta-analysis for each association (Assink & Wibbelink, 2016). A three-level meta-analysis measures variance at the within-study level and the between-study level, and accounts for the dependence among effect sizes (Van den Noortgate et al., 2013). Because there was variability in the study designs used, a random-effects model was used in all meta-analyses (Borenstein et al., 2010). All analyses were conducted in R version 4.0.3 using the Metafor package version 2.4-0 (Viechtbauer, 2010).

First, an overall effect size was calculated for each association. When effect sizes needed to be converted, formulae of Borenstein et al. (2009) were used as well as guidelines by Lipsey and Wilson (2001). Some studies did not provide standardized effect sizes for associations without control variables, and in these cases, the adjusted effect size was included in our analyses. Eight meta-analyses were conducted using log odds as effect size and two meta-analyses were conducted using Fisher-Z as effect size. Second, heterogeneity tests were conducted for each meta-analysis to test whether within-study variance and between-study variance were significant. We also calculated

the amount of variance that contributed to each level. Third, moderator analyses were conducted for all significant associations when the total amount of variance that contributed to sampling variance was less than 75% (Assink & Wibbelink, 2016).

In addition, some studies met our inclusion criteria but there were too few associations for that particular minority stressor to be included in a meta-analysis. These studies and associations are synthesized in the section Additional Minority Stressors.

Results

Inclusion and exclusion of studies

A total of 1,137 records were identified through database screening using the search terms. See Figure 2.1 for a PRISMA flow diagram (Moher et al., 2009).

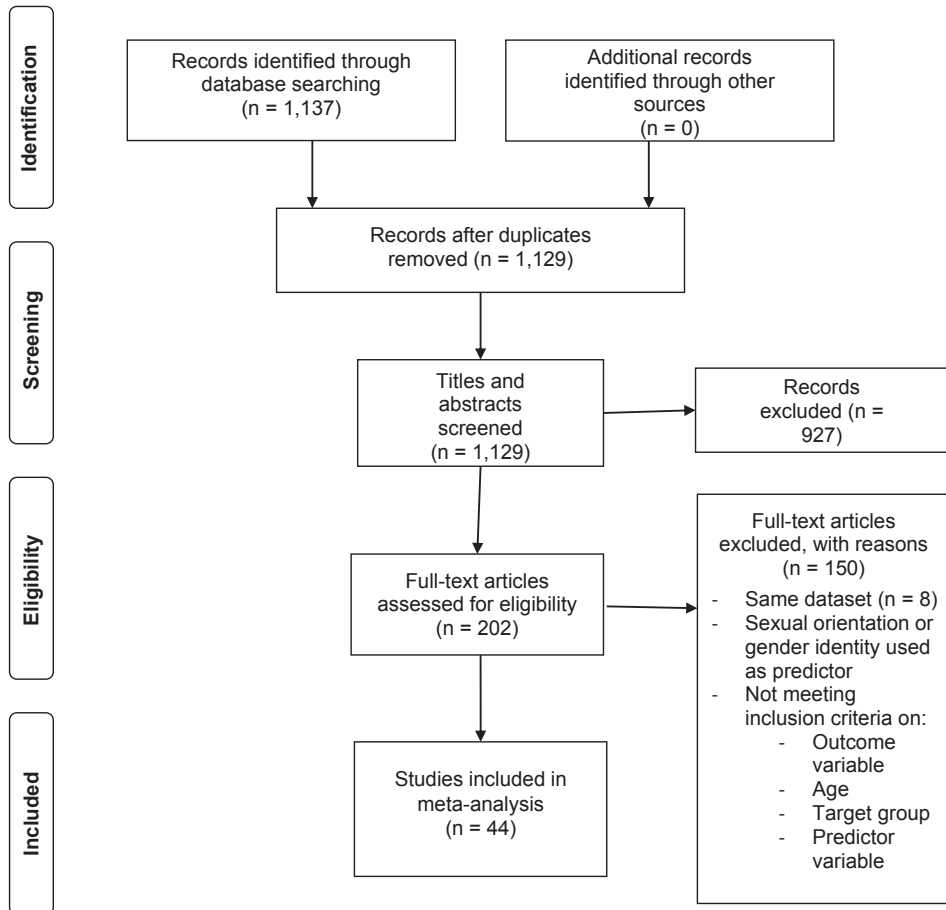


Figure 2.1 PRISMA flow diagram (Moher, 2009).

Of these 1,137 records, eight duplicates were removed. A total of 1,129 titles and abstracts were screened using the inclusion and exclusion criteria, and this resulted in the exclusion of 927 records. A total of 202 full-text records were screened of which 142 were excluded for not meeting the inclusion criteria. In addition, eight records that used the same data to assess the same association (Button, 2016; Chen et al., 2019; D'Augelli & Hershberger, 1993; Eisenberg et al., 2016; Espelage et al., 2018; Gnan et al., 2019; Hershberger & D'augelli, 1995; Savin-Williams & Ream, 2003) and eight studies that did not provide separate effect sizes for suicidal ideation and suicide attempts were also excluded (Burton et al., 2013; Button & Worthen, 2014; Friedman et al., 2006; McDermott et al., 2018b; McKay et al., 2019; Poteat et al., 2011; Turpin et al., 2019; Wang et al., 2019). A total of $k = 38$ records were included for 10 meta-analyses on the associations between minority stress and suicidal ideation and suicide attempts¹ (see Table 2.2 and Table 2.3) and $k = 6$ records met the inclusion criteria but were not included in a meta-analysis because of too few effect sizes or insufficient data to convert the effect size (Bontempo & D'Augelli, 2002; Duong & Bradshaw, 2014; Hegna & Wichstrøm, 2007; Hill & Pettit, 2012; Liu & Mustanski, 2012; Muehlenkamp et al., 2015).

¹Albuquerque et al., 2018; Baams et al., 2015; Blosnich & Bossarte, 2012; Boyas et al., 2019; D'Augelli et al., 2002, 2005; Feinstein et al., 2019; Gibbs & Goldbach, 2015; Goldbach et al., 2017; Goodenow et al., 2006; Hatchel, Ingram, et al., 2019; Hatchel, Merrin, et al., 2019; Hatchel, Valido, et al., 2019; Hershberger et al., 1997; Huebner et al., 2004; Kuper et al., 2018; Kuyper & Bos, 2016; Lea et al., 2014; Livingston et al., 2015; Mustanski & Liu, 2013; Nguyen et al., 2016; Peng et al., 2019; Perez-Brumer et al., 2017; Poteat et al., 2009; Puckett et al., 2017; Reyes et al., 2017; Rimes et al., 2018; Russell et al., 2011; Ryan et al., 2009; Stahlman et al., 2016; Taliaferro & Muehlenkamp, 2017; Thoma & Huebner, 2013; Van Bergen et al., 2013; Walls et al., 2008; Whitaker et al., 2016; Wilton et al., 2018; Woodford et al., 2018; Ybarra et al., 2015.

Table 2.2 Meta-analyses of a minority stressor and suicidal ideation

	Number of studies (effect sizes)	Overall effect OR	Overall effect Pearson's <i>r</i>	95% CI
LGBT bias-based victimization	10 (17)	1.52*	--	1.23, 1.89
Discrimination	3 (4)	1.47	--	0.79, 2.77
General victimization	9 (14)	--	0.23*	0.13, 0.32
Bullying	4 (10)	2.31*	--	1.53, 3.47
Negative family treatment	5 (9)	2.01*	--	1.57, 2.57
Internalized homophobia and transphobia	7 (11)	--	0.10	-0.00, 0.21

Note. LGBT = lesbian, gay, bisexual, transgender; OR = odds ratio; CI = confidence interval

* $p < .05$.

Table 2.3 Meta-analyses of a minority stressor and suicide attempt

	Number of studies (effect sizes)	Overall effect OR	95% CI
LGBT bias-based victimization	13 (24)	1.88*	1.49, 2.36
Discrimination	3 (4)	--	--
General victimization	6 (11)	1.98*	1.64, 2.39
Negative family treatment	6 (13)	1.80*	1.42, 2.28
Bullying	2 (7)	--	--
Internalized homophobia and transphobia	6 (10)	1.15	0.97, 1.35

Note. LGBT = lesbian, gay, bisexual, transgender; OR = odds ratio; CI = confidence interval

* $p < .05$

Study characteristics

Sample sizes in the included studies varied from $N = 50$ to $N = 18,515$. Most studies used a sample that included a combination of (self-identified) lesbian, gay, bisexual, queer, and/or transgender adolescents and young adults, while $k = 4$ studies included only transgender adolescents and young adults (Hatchel, Valido, et al., 2019; Kuper et al., 2018; Peng et al., 2019; Perez-Brumer et al., 2017). Thirteen studies used a probability sampling method² and $k = 31$ studies used a non-probability sampling method.³ Studies were conducted in the United States ($k = 34$), Europe ($k = 4$), Asia ($k = 3$), Australia ($k = 1$), Brazil ($k = 1$) and West-Africa ($k = 1$). Of the included studies in the meta-analyses, a total of $k = 28$ studies examined suicidal ideation and $k = 23$ studies examined suicide attempts. All studies used self-report questionnaires to assess minority stress and suicidal ideation and attempts. Study characteristics are summarized in Table 2.4.

²Blosnich & Bossarte, 2012; Bontempo & D'Augelli, 2002; Duong & Bradshaw, 2014; Feinstein et al., 2019; Hatchel, Ingram, et al., 2019; Hatchel, Merrin, et al., 2019; Hatchel, Valido, et al., 2019; Perez-Brumer et al., 2017; Poteat et al., 2009; Taliaferro & Muehlenkamp, 2017; Whitaker et al., 2016.

³Albuquerque et al., 2018; Baams et al., 2015; Boyas et al., 2019; D'Augelli et al., 2002, 2005; Gibbs & Goldbach, 2015; Goldbach et al., 2017; Goodenow et al., 2006; Hegna & Wichstrøm, 2007; Hershberger et al., 1997; Hill & Pettit, 2012; Huebner et al., 2004; Kuper et al., 2018; Kuyper & Bos, 2016; Lea et al., 2014; Liu & Mustanski, 2012; Livingston et al., 2015; Mustanski & Liu, 2013; Puckett et al., 2017; Reyes et al., 2017; Rimes et al., 2018; Russell et al., 2011; Ryan et al., 2009; Stahlman et al., 2016; Thoma & Huebner, 2013; Van Bergen et al., 2013; Walls et al., 2008; Wilton et al., 2018; Woodford et al., 2018; Ybarra et al., 2015.

Table 2.4 Study characteristics

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Perez-Brumer et al., 2017	280	$M = 15.3$)	60% male 40% female 100% transgender	49% LGB 36% unsure 41% no reported sexual orientation	School-based victimization	Suicidal ideation
Baams et al., 2015	876	15-21 ($M = 18.3$)	47% male 54% female	53% gay/lesbian 47% bisexual	Sexual orientation victimization	Suicidal ideation
Goldbach et al., 2017	346	14-17	44% male 56% female	73% gay/lesbian 27% bisexual/pansexual	1) Family rejection 2) Internalized homonegativity	1) Suicidal ideation 2) Suicide attempts
Ryan et al., 2009	224	21-25 ($M = 22.8$)	51% male 49% female	--	Family rejection	1) Suicidal ideation 2) Suicide attempt
Kuper et al., 2018	1896	14-30 ($M = 21.1$)	100% transgender 22% male 78% female	--	1) Gender-related self-concept negativity 2) Gender-related victimization 3) Sexual orientation-related victimization	1) Suicide attempt (past year) 2) Suicidal ideation (past year)
Lea et al., 2014	572	18-25 ($M = 21.5$)	56% male 44% female	78% lesbian/gay 22% bisexual	1) Stigma 2) Internalized homophobia 3) Homophobic physical and verbal abuse	1) Suicide attempt ever 2) Suicidal thoughts in past month
Taliaferro and Muehlenkamp, 2017	4960	13-19 ($M = 15.5$)	--	13% gay/lesbian 45% bisexual 42% questioning	1) Bully victimization 2) Violence at school	1) Suicidal ideation 2) Suicide attempts
Mustanski and Liu, 2013	237	16-20 ($M = 18.8$)	Birth gender 48% male 52% female	62% gay/lesbian 29% bisexual 10% unsure/questioning/ other	LGBT victimization	1) Suicide attempt lifetime 2) Suicide attempt past year

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Huebner et al., 2004	1248	18-27 (<i>M</i> = 23)	100% male	83% gay 16% bisexual	1) Verbal harassment 2) Discrimination 3) Physical violence	Suicidal ideation
Hatchel et al., 2019	4778	10-18 (<i>M</i> = 14.7)	Sex assigned at birth: -- 55% male 41% female		Peer victimization	Suicidal ideation
Rimes et al., 2018	3,275	16-24 (<i>M</i> = 24.4)	51% male 49% female	74% gay/lesbian 26 % bisexual	1) Harassment 2) Crime 3) Bad reaction father 4) Bad reaction mother 5) Bad reaction sibling	1) Suicidal ideation 2) Suicide attempt
Muehlenkamp et al., 2015 ^a	137	<i>M</i> = 19.9	16% male 74% female 3% transgender	31% gay/lesbian 29% bisexual 24% questioning 15% pansexual 17% queer 13% other	Minority stress	Suicidal thoughts and behavior
Wilton et al., 2018	161	<i>M</i> = 24.1	91% male 9% trans woman	81% gay 14% bisexual 6% other	Biased victimization	1) Suicidal ideation 2) Suicide attempts
Liu and Mustanski, 2012 ^a	246	16-20 (<i>M</i> = 18.3)	Birth gender 49% male 51% female	62% gay/lesbian 29% bisexual 9% unsure/questioning/other	LGBT victimization	Suicidal ideation

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Woodford et al., 2018	776	<i>M</i> cisgender = 22.7, <i>M</i> transgender = 22.8)	Cisgender LGBQ: 44% male 55% female Trans*: 14% male 14% female 38% genderqueer 14% transgender 21% other identity	Cisgender: 57% gay/lesbian 39% bisexual/other Trans*: 21% gay/lesbian 68% bisexual /other	1) LGBQ and trans environmental microaggressions 2) LGBQ and trans interpersonal microaggressions 3) LGBQ and trans victimization	Suicide attempts
Thoma and Huebner, 2013	276	14-19 (<i>M</i> = 17.5)	59% male 33% female 8% transgender	59% gay/lesbian 27% bisexual 14% queer/other	Anti-gay discrimination	Suicidal ideation
Poteat et al., 2009	1981	--	--	--	Victimization	Depressed/suicidal feelings
Hatchel et al., 2019	713	12-18 (<i>M</i> = 15)	23% male 66% female 4% transgender 6% other	--	Peer victimization	1) Suicidal ideation 2) Suicide attempt
Duong and Bradshaw, 2014 ^a	951	--	31% male 69% female	--	1) Cyberbullying 2) School bullying	Suicide attempt
Feinstein et al., 2019	18515	<i>M</i> = 16.2	23% male 77% female	100% bisexual	1) In-person bullying 2) Electronic bullying	Suicidal ideation
Walls et al., 2008	142	14-21	52% male 44% female 4% transgender	68% gay/lesbian 23% bisexual 6% questioning 4% pansexual/other	1) In-school victimization 2) Familial abuse	Suicide attempt

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Peng et al., 2019	385	12-18 (<i>M</i> = 16.7)	28% trans boys 43% trans girls 28% gender nonbinary	--	1) Bullying or abuse in school 2) Abuse, bullying, neglect from family	Suicidal ideation
Puckett et al., 2017	61	14-23 (<i>M</i> = 18.0)	38% male 62% female	48% totally gay or lesbian 18% almost totally gay or lesbian 5% mostly gay or lesbian	1) Guilt or shame about same-sex attraction 2) Internalized heterosexism	Suicide attempt
Albuquerque et al., 2018	316	<i>M</i> = 24.3	74% male 26% female 10% transgender	76% gay/lesbian 17% bisexual	Physical violence	Suicide attempt
Blosnich and Bossarte, 2012	4,303	18-24 (<i>M</i> gay/lesbian = 20.3, <i>M</i> bisexual = 20.2)	39% male 60% female	42% gay/lesbian 58% bisexual	1) Physical assault 2) Discrimination	1) Suicidal ideation 2) Suicide attempt
Boyas et al., 2019	451	--	35% male 65% female	26% gay/lesbian 74% bisexual	Bullying	1) Suicidal ideation 2) Suicide attempt
D'Augelli et al., 2002	350	14-21 (<i>M</i> = 19.2)	56% male 44% female	75% gay/lesbian 6% bisexual 19% bisexual but mostly gay/lesbian	Biased victimization	Suicidal ideation: 1) lifetime, 2) past year and 3) related to sexual orientation

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
D'Augelli et al., 2005	361	15-19 (<i>M</i> = 17)	56% male 44% female	28% lesbian/gay 21% bisexual 20% bisexual, but mostly gay/lesbian 16% bisexual but mostly heterosexual	Gay-related verbal abuse	Suicide attempt
Gibbs and Goldbach, 2015	2,949	18-24 (<i>M</i> = 20.7)	76% male 22% female 2% transgender	62% gay or lesbian 27% bisexual 10% questioning 2% other	Internalized homophobia	1) Suicidal thoughts 2) Suicide attempt
Goodenow et al., 2006	202	--	--	21% LGB, no same-sex sexual contact 50% same-sex experience, but do not identify as LGB 28% LGB and same-sex experience	School victimization	Suicide attempt
Hatchel et al., 2019	934	14-18 (<i>M</i> = 15.9)	30% assigned male at birth 70% assigned female at birth	16% gay/lesbian 44% bisexual 22% questioning 6% transgender	Peer victimization	1) Suicidal ideation 2) Suicide attempts
Hershberger et al., 1997	194	15-21 (<i>M</i> = 18.9)	73% male 27% female	75% lesbian/gay 19% bisexual but mostly gay 6% bisexual	Victimization: 1) verbal insults 2) property damage 3) physical assault 4) hurt by other	Suicide attempt
Kuyper and Bos, 2016	580	16-25 (<i>M</i> = 21.2)	32% male 68% female	26% lesbian/gay 74% mostly heterosexual	Internalized homonegativity	Suicidal ideation

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Livingston et al., 2015	412	18-25 (<i>M</i> = 20.8)	29% male 50% female 7% transgender 14% other	43% gay/lesbian 30% bisexual 30% other	1) Discrimination 2) Victimization 3) Internalized heterosexism 4) Concealment	Suicide attempt
Nguyen et al., 2016	1936	18-52 (<i>M</i> = 22.6)	100% female	54% lesbian 28% bisexual 15% unsure	Family treatment: 1) pressure 2) aggressive 3) aggressive -severe 4) aggressive - extreme	Lifetime suicide attempt history
Reyes et al., 2017	185	18-25 (<i>M</i> = 20.2)	67% male 33% female	100% gay/lesbian	1) Self stigma 2) Societal stigma	Suicidal ideation
Stahlman et al., 2016	1555	<i>M</i> = 23	Self-identified gender 77% male 23% female/ intersex	--	1) Family exclusion, gossip, and rejection 2) Physically hurt	Suicidal ideation
Van Bergen et al., 2013	274	<i>M</i> = 16.8	39% male 61% female	82% (mostly) same-sex attracted 8% same- and opposite-sex attracted 11% other	Victimization 1) by parents 2) by other family members 3) in school context	1) Suicidal ideation 2) Suicide attempts
Whitaker et al., 2016	356	--	46% male 54% female 17% trans	36% gay/lesbian 64% bisexual	1) LGB specific victimization 2) General bullying/ victimization at school	Suicidal ideation

Table 2.4 (continued)

Authors and year	N	Age	Gender (%)	Sexual orientation (%)	Minority stressor(s)	Outcome(s)
Ybarra et al., 2015	2162	13-18 (<i>M</i> GLQ = 16.1, <i>M</i> bisexual = 15.9, <i>M</i> questioning = 15.4)	35% cisgender male 45% cisgender female 19% transgender or nonconforming	59% gay/lesbian/ queer 30% bisexual 10% questioning/unsure/ other	1) Peer harassment 2) Bully victimization	Suicidal ideation
Russell et al., 2011	245	21-25 (<i>M</i> = 22.8)	47% male 45% female 9% transgender	--	Adolescent school victimization due to LGBT status	1) Suicidal ideation 2) Suicide attempt
Bontempo et al., 2002 ^a	315	<i>M</i> = 16.2	38% female 62% male	--	School victimization	Suicide attempts
Hegna and Wichstrøm, 2007 ^a	407	15-25 (<i>M</i> = 21.7)	57% male 43% female	80% gay/lesbian 8% bisexual 9% gay with elements of heterosexuality 2% hetero with elements of same-sex attraction 1% unsure	1) Physical violence associated with sexual orientation 2) Anti-gay harassment	Suicide attempt
Hill and Pettit, 2012 ^a	50	--	--	28% gay/lesbian 52% bisexual 8% unsure/questioning 12% other	Perceived acceptance of sexual orientation	Suicidal ideation

Note. *M* = mean; LGB = lesbian, gay, bisexual; LGBQ = lesbian, gay, bisexual, queer; LGBT = lesbian, gay, bisexual, transgender; GLQ = gay, lesbian, queer.

^aNot included in a meta-analysis

LGBT bias-based victimization and suicidality

A total of $k = 10$ studies (Baams et al., 2015; Huebner et al., 2004; Kuper et al., 2018; Lea et al., 2014; Rimes et al., 2018; Stahlman et al., 2016; Taliaferro & Muehlenkamp, 2017; Van Bergen et al., 2013; Whitaker et al., 2016; Wilton et al., 2018) with 17 effect sizes assessed the association between LGBT bias-based victimization and suicidal ideation (total $N = 10,203$). Among these studies, one included only transgender participants (Kuper et al., 2018). Adolescents and young adults who experienced LGBT-bias-based victimization were significantly more likely to report suicidal ideation (Overall OR = 1.52, 95% CI [1.23, 1.89], $p < .001$). See Supplementary Figure S2.1 for a forest plot.

A total of $k = 13$ studies (D'Augelli et al., 2005; Hershberger et al., 1997; Kuper et al., 2018; Lea et al., 2014; Livingston et al., 2015; Mustanski & Liu, 2013; Rimes et al., 2018; Russell et al., 2011; Taliaferro & Muehlenkamp, 2017; Van Bergen et al., 2013; Walls et al., 2008; Wilton et al., 2018; Woodford et al., 2018) with 24 effect sizes assessed the association between LGBT bias-based victimization and suicide attempts (total $N = 8,562$). Among these studies, one included only transgender participants (Kuper et al., 2018). Adolescents and young adults who experienced LGBT bias-based victimization were significantly more likely to report suicide attempts (Overall OR = 1.88, 95% CI [1.49, 2.36], $p < .001$). See Supplementary Figure S2.2 for a forest plot.

Discrimination and suicidality

A total of $k = 3$ (Blosnich & Bossarte, 2012; Huebner et al., 2004; Thoma & Huebner, 2013) and four effect sizes were included to assess the association between discrimination and suicidal ideation (total $N = 5,758$). Taken together, discrimination was not significantly associated with suicidal ideation (Overall OR = 1.47, 95% CI [0.79, 2.77], $p = .145$). None of the studies included only transgender participants. See Supplementary Figure S2.3 for a forest plot.

Three studies (Blosnich & Bossarte, 2012; Hegna & Wichstrøm, 2007; Livingston et al., 2015) provided data of the effect sizes for discrimination and suicide attempts, however, one study reported an odds ratio and did not provide the necessary data to calculate a comparable effect size. Therefore, too few studies were included to assess this association. However, three studies showed that discrimination was associated with significantly more suicide attempts.

General victimization and suicidality

A total of $k = 9$ studies (Blosnich & Bossarte, 2012; D'Augelli et al., 2002; Hatchel, Ingram, et al., 2019; Hatchel, Merrin, et al., 2019; Hatchel, Valido, et al., 2019; Perez-Brumer et al., 2017; Poteat et al., 2009; Taliaferro & Muehlenkamp, 2017; Whitaker et al., 2016) and 14 effect sizes assessed the association between victimization and suicidal ideation (total $N = 10,505$). Among these studies, two included only transgender participants

(Hatchel, Valido, et al., 2019; Perez-Brumer et al., 2017). Among adolescents and young adults, victimization was significantly associated with higher levels of suicidal ideation (Overall correlation $r = 0.23$, $p = .001$). See Supplementary Figure S2.4 for a forest plot. One study did not provide sufficient data to calculate an effect size (Bontempo & D'Augelli, 2002).

A total of $k = 6$ studies (Albuquerque et al., 2018; Blosnich & Bossarte, 2012; Goodenow et al., 2006; Hatchel, Ingram, et al., 2019; Hatchel, Merrin, et al., 2019; Taliaferro & Muehlenkamp, 2017) and 11 effect sizes assessed the association between victimization and suicide attempts (total $N = 8,562$). None of the studies included only transgender participants. Adolescents and young adults who experienced victimization were more likely to report suicide attempts (Overall OR = 1.98, 95% CI [1.64, 2.39], $p < .001$). See Supplementary Figure S2.5 for a forest plot.

Bullying and suicidality

A total of $k = 4$ studies (Boyas et al., 2019; Feinstein et al., 2019; Peng et al., 2019; Ybarra et al., 2015) and 10 effect sizes assessed the association between bullying and suicidal ideation (total $N = 21,513$). Among these studies, one included only transgender participants (Peng et al., 2019). Adolescents and young adults who experienced bullying were more likely to report suicide suicidal ideation (Overall OR = 2.31, 95% CI [1.53, 3.47], $p = .001$). See Supplementary Figure S2.6 for a forest plot. Only two studies provided data on bullying and suicide attempts (Boyas et al., 2019; Duong & Bradshaw, 2014). Both studies found that adolescents and young adults who were bullied reported significantly more suicide attempts.

Negative family treatment and suicidality

A total of $k = 5$ studies (Goldbach et al., 2017; Peng et al., 2019; Ryan et al., 2009; Stahlman et al., 2016; Van Bergen et al., 2013) and nine effect sizes assessed the association between negative family treatment and suicidal ideation (total $N = 5,356$). Among these studies, one included only transgender participants (Peng et al., 2019). Participants who experienced negative family treatment were more likely to report suicidal ideation (Overall OR = 2.01, 95% CI [1.57, 2.57], $p < .001$). See Supplementary Figure S2.7 for a forest plot.

A total of $k = 6$ studies (Goldbach et al., 2017; Nguyen et al., 2016; Rimes et al., 2018; Ryan et al., 2009; Van Bergen et al., 2013; Walls et al., 2008) and 13 effect sizes were included to assess the association between negative family treatment and suicide attempts (total $N = 5,247$). None of the studies included only transgender participants. Participants who experienced negative family treatment were more likely to report suicide attempts (Overall OR = 1.80, 95% CI [1.42, 2.28], $p < .001$). See Supplementary Figure S2.8 for a forest plot.

Internalized homophobia and transphobia and suicidality

A total of $k = 7$ studies (Gibbs & Goldbach, 2015; Goldbach et al., 2017; Kuper et al., 2018; Kuyper & Bos, 2016; Lea et al., 2014; Livingston et al., 2015; Reyes et al., 2017) and 11 effect sizes assessed the association between internalized homophobia and transphobia and suicidal ideation (total $N = 6,940$). Among these studies, one included only transgender participants (Kuper et al., 2018). Internalized homophobia and transphobia was not significantly associated with suicidal ideation (Overall correlation $r = 0.10$, $p = .053$). See Supplementary Figure S2.9 for a forest plot.

A total of $k = 6$ studies (Gibbs & Goldbach, 2015; Goldbach et al., 2017; Kuper et al., 2018; Lea et al., 2014; Livingston et al., 2015; Puckett et al., 2017) and 10 effect sizes assessed the association between internalized homophobia and transphobia and suicide attempts (total $N = 6,236$). Among these studies, one included only transgender participants (Kuper et al., 2018). Internalized homophobia and transphobia was not significantly associated with suicide attempts (Overall OR = 1.15, 95% CI [0.97, 1.35], $p = .094$). See Supplementary Figure S2.10 for a forest plot.

Moderator analyses

For most significant associations between a minority stressor and a suicidality outcome, we were able to conduct moderation analyses for sampling strategy. However, included studies for negative family treatment only consisted of non-probability samples, and we were unable to examine a moderation analysis for this minority stressor. We did not find significant moderation by sampling strategy for the associations of LGBT bias-based victimization, general victimization, and bullying with either suicidal ideation or suicide attempt. See Table 2.5.

Additional minority stressors

We were unable to include some studies in a meta-analysis because there were too few effect sizes for a single minority stressor and a suicidality outcome. One study among LGB college students found that higher perceived acceptance is significantly associated with lower suicidal ideation (Hill & Pettit, 2012). Another study among sexual minority college students showed that a higher level of experienced discrimination and expected rejection (combined) was associated with a higher level of suicidal ideation (Muehlenkamp et al., 2015). In addition, some of the studies that *were* included in the meta-analytic study also examined other additional minority stressors that we could not include in a meta-analysis (again due to few effect sizes). For example, LGB coming out stress (Baams et al., 2015), perceived stigma (Lea et al., 2014; Reyes et al., 2017), and friendships lost after coming out (Puckett et al., 2017) were significantly associated with either suicidal ideation or suicide attempts among LGBT adolescents and young adults.

Table 2.5 Moderation analyses by minority stressor and suicidality outcome

	Probability sample ^a		
	<i>B</i> (<i>SE</i>)	<i>p</i>	<i>k</i>
LGBT bias-based victimization			
Suicidal ideation ^b	-.09 (.27)	.752	17
Suicide attempts ^b	-.22 (.39)	.574	24
General victimization			
Suicidal ideation ^c	.09 (.16)	.586	14
Suicide attempts ^b	-.16 (.33)	.631	11
Negative family treatment			
Suicidal ideation ^b	--	--	--
Suicide attempt ^b	--	--	--
Bullying			
Suicidal ideation ^b	-.01 (.44)	.974	10

Note. Data presented are the coefficients and p-values of the moderator analysis with *k* = number of effect sizes included in the analysis; *SE* = standard error; LGBT = lesbian, gay, bisexual, and transgender.

^a Reference category is non-probability sample.

^b *B* is expressed in log odds.

^c *B* is expressed in Fisher's *z*'s.

Discussion

This meta-analytic study examined to what extent different types of minority stressors are associated with suicidal ideation and suicide attempts among LGBT adolescents and young adults, and whether there is a difference by sampling strategy in the strength of these associations. We found that seven of 10 overall effect sizes showed a significant association between minority stress and suicidal ideation and attempts for LGBT adolescents and young adults. Although overall effect sizes were small, adolescents and young adults who experienced LGBT bias-based victimization, general victimization, bullying, or negative family treatment were more likely to report suicidal ideation and attempts. These findings are in line with theoretical frameworks such as the minority stress framework (Meyer, 2003) and its extensions (Hendricks & Testa, 2012; Testa et al., 2015) that theorize how excess stress and minority stress in particular is associated with negative mental health outcomes, including suicidality. Our findings are also in line with the only two existing meta-analyses on minority stress and suicidality (Hatchel, Polanin, et al., 2019; Williams et al., 2021), showing that victimization is an important

contributor to developing suicidality among LGBT adolescents and young adults.

In the current study, we did not find an association of discrimination with suicidal ideation for LGBT adolescents and young adults. Inconsistent with a previous meta-analysis on internalized homophobia and mental health (not specifically among youth) (Newcomb & Mustanski, 2010), we did not find an overall association between internalized homophobia and transphobia and suicidal ideation or attempts. For all other associations, we found small effect sizes. The small and non-significant overall effect sizes may be explained by aspects from the integrated motivational-volitional model (IVM) of suicidal behavior (O'Connor & Kirtley, 2018) or the ideation-to-action framework (Klonsky & May, 2015). The IVM model posits that a combination of background factors such as stressful events and individual characteristics can influence feelings of humiliation and entrapment. Subsequently, an interaction of humiliation and entrapment with factors such as rumination, and lack of social support influences the development of suicidal ideation (O'Connor & Kirtley, 2018). The ideation-to-action framework suggests that a combination of emotional or psychological pain and hopelessness contribute to the development of suicidal ideation (Klonsky & May, 2015). Taken together, both models indicate that the interaction of several factors contributes to the development of suicidal ideation. In this meta-analytic study, we only assessed associations between single minority stressors and suicidal ideation or suicide attempt. It is possible that interactions of minority stressors with interpersonal factors would give more insight into these associations. In addition, for suicidal ideation to develop, LGBT youth may have to endure these minority stressors over a prolonged period of time, or they would have to occur in combination with other minority stressors.

Further, our findings point to the need for future research on the meaning of internalized transphobia and homophobia for LGBT young individuals, and whether these constructs can be readily compared. In the association between internalized homophobia and transphobia with suicidal ideation and attempts, we were only able to include one study assessing the association between internalized transphobia and suicide outcomes for transgender youth (Kuper et al., 2018). Thus, it is not clear to what extent internalized transphobia is associated with suicidality. In addition, some included studies used a measure that assessed internalized homophobia (Gibbs & Goldbach, 2015) or internalized heterosexism (Livingston et al., 2015), while they also included transgender individuals in the study. Because transgender individuals may experience stress related to their gender identity, in some cases in addition to stress related to their sexual orientation, these experiences may not be fully grasped by measures of internalized homophobia (Testa et al., 2015).

Furthermore, in this meta-analytic study, we assessed whether sampling strategy affected the strength of the association between minority stress and suicidal ideation and attempts, and we found no support for this. Similar to research that did not

find differences between a community and a general sample regarding associations of minority stress and psychological distress (Kuyper et al., 2016), our findings indicate that the strength of associations between minority stress and suicidality did not differ between probability or non-probability samples.

Moreover, because sexual orientation and gender identity were assessed in different ways across the studies, we were unable to assess moderation by sexual orientation or gender identity. Differences by sexual orientation and gender identity are important to consider because there may be important group differences in the impact of some minority stressors on suicidality (Mereish et al., 2019; Salway et al., 2019; Thoma et al., 2019; Toomey, Syvertsen, et al., 2018). Research on differences by sexual orientation and gender identity is still limited and more research is needed to understand their role in the development of suicidality among LGBT young individuals.

Age also may play a role in the association between minority stress and suicidality. However, we were unable to assess age as a moderator in the associations between minority stress and suicidal ideation and attempts because we were limited by the ages reported and included in the meta-analyses. Age range varied considerably across included studies; hence it was not possible to include age as a moderator. Previous literature among sexual minority young individuals indicates that LGB individuals are at highest risk for suicidal thoughts during adolescence compared to young adulthood (Boyas et al., 2019; Fedewa & Ahn, 2011; Russell & Toomey, 2012). Future in-depth studies of age- and cohort-effects of adolescents and young adults may be able to expand our knowledge of particularly risky developmental stages (Fish et al., 2019; Russell & Fish, 2019).

Strengths, limitations, and future directions

To our knowledge, this is the first meta-analytic study that examined associations between different minority stressors and suicidal ideation and attempts among LGBT adolescents and young adults. Although empirical work from past decades has shown the negative impact of minority stress on mental health outcomes, we were able to synthesize and quantify these associations and examine potential group differences in the strength of these associations. This meta-analytic study also has some limitations. First, not all studies assessed or reported sexual orientation and gender identity in the same way and most studies did not provide separate effect sizes for the association of minority stress and suicidal ideation or attempts by sexual orientation or gender identity. In addition, bisexual participants were underrepresented in the included samples, and few studies had included exclusively transgender or cisgender adolescents and young adults or provided effect sizes for transgender or cisgender participants. Hence, we were unable to assess moderation by sexual orientation and gender identity. Second, as the current meta-analytic study only included correlational and cross-sectional research,

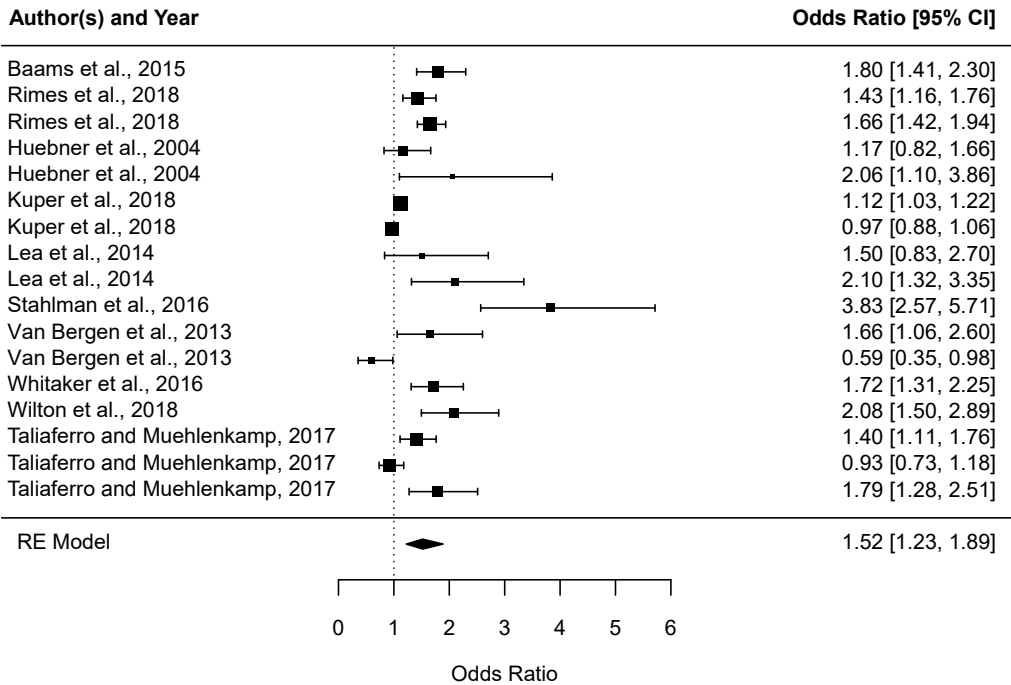
we cannot make statements about the causality of the relationship between minority stressors and suicidal ideation. Third, the associations in the current meta-analytic study may be inflated because we did not include the findings from unpublished papers. Finally, few studies examined proximal stressors, such as concealment and expected rejection. Consequently, we were unable to assess the association between these stressors and suicidality.

Future studies should focus on potential group differences in the association between minority stress and suicidal ideation and attempts and whether some groups are more vulnerable to the impact of particular minority stressors. This would improve our understanding of risk and resilience among LGBT young individuals. Further, research should include a range of minority stressors in interaction with other important individual characteristics or factors to examine suicidality development over time, during adolescence, and into young adulthood. For example, interactions between minority stressors and factors proposed by the IVM model (O'Connor & Kirtley, 2018) or the ideation-to-action framework (Klonsky & May, 2015). Last, looking at minority stress with an intersectional lens could provide helpful insights on adequate healthcare and policies for LGBT youth.

Conclusion

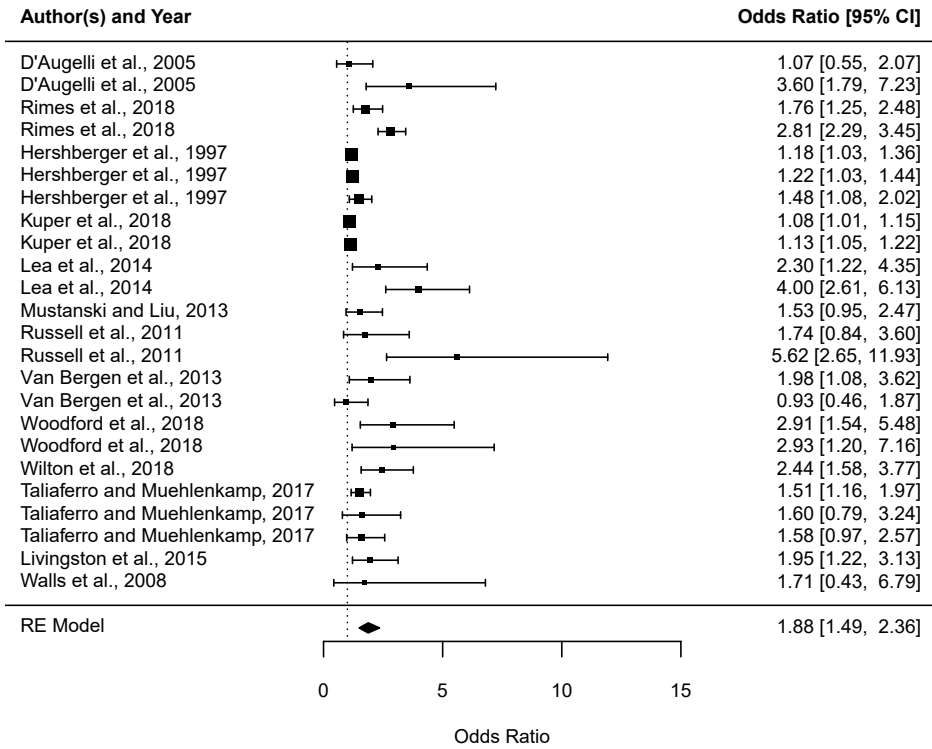
Overall, this meta-analysis shows a clear and concerning link between minority stress and suicidal ideation and attempts among LGBT adolescents and young adults. Given the high rates of suicidal ideation and attempts among LGBT adolescents and young adults and the evident role that interpersonal rejection and stigma play, our research underlines the need for prevention and intervention work focused on peer and family victimization and rejection.

Supplementary material



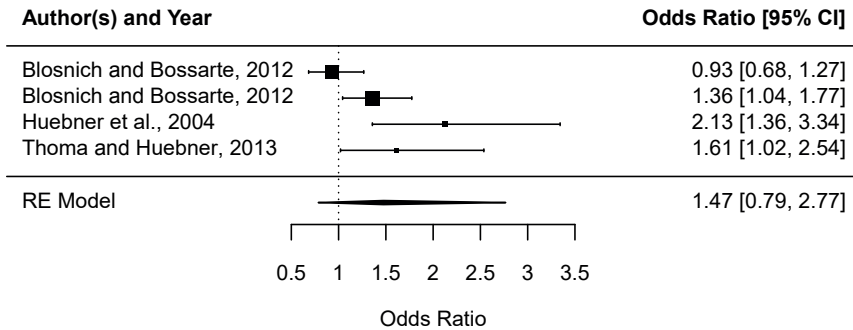
LGBT = lesbian, gay, bisexual, transgender; CI = confidence interval; RE = random effects

Figure S2.1 Forest plot of the association between LGBT bias-based victimization and suicidal ideation.



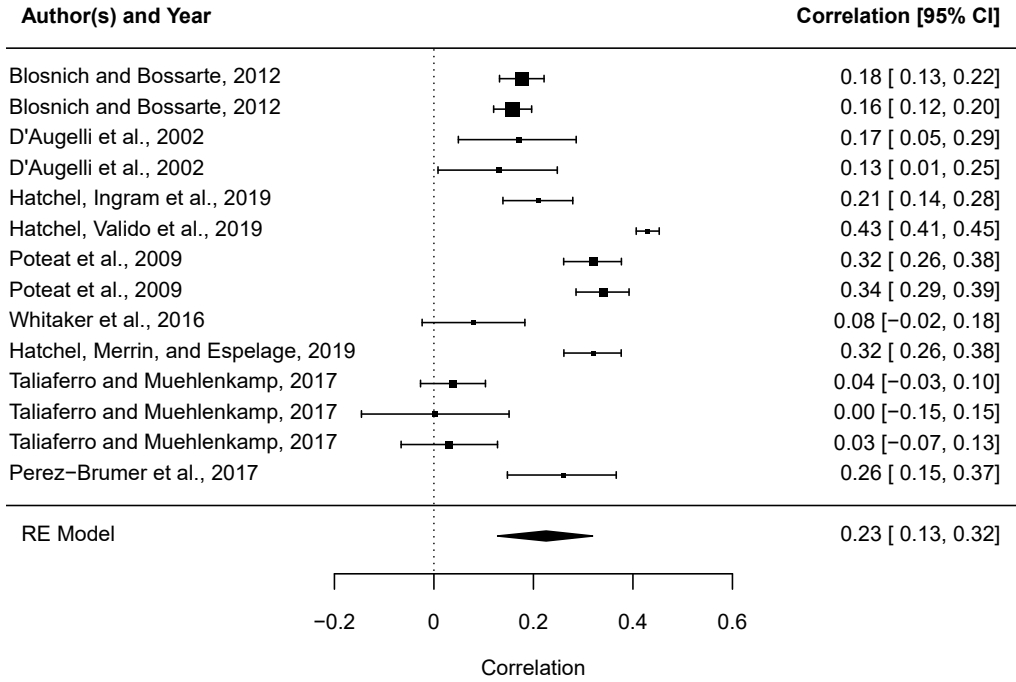
LGBT = lesbian, gay, bisexual, transgender; CI = confidence interval; RE = random effects

Figure S2.2 Forest plot of the association between LGBT bias-based victimization and suicide attempts.



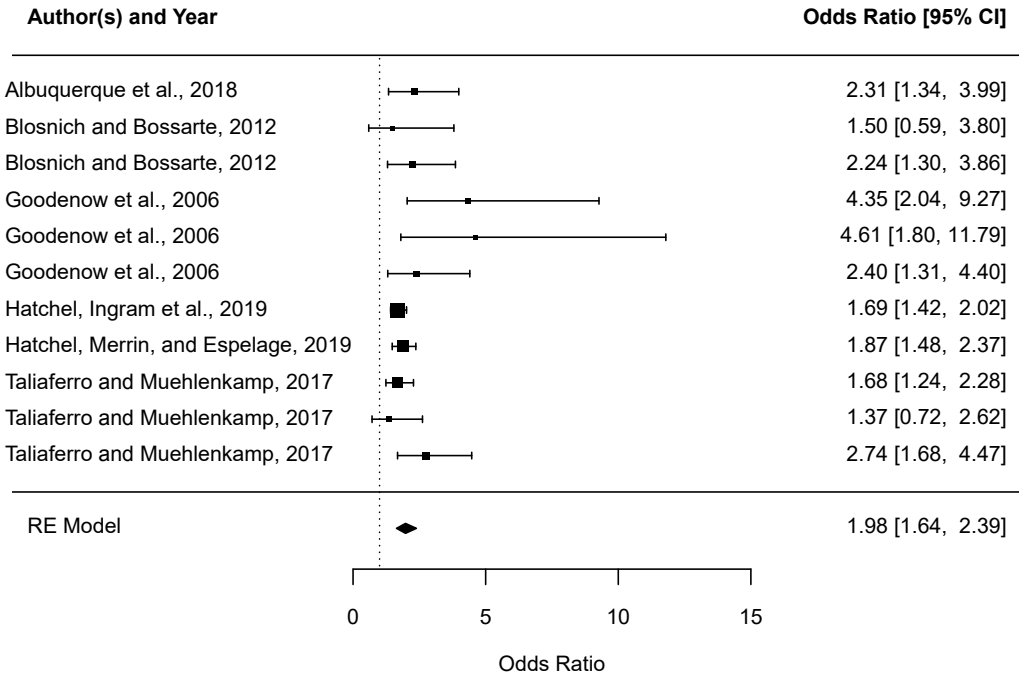
CI = confidence interval; RE = random effects

Figure S2.3 Forest plot of the association between discrimination and suicidal ideation.



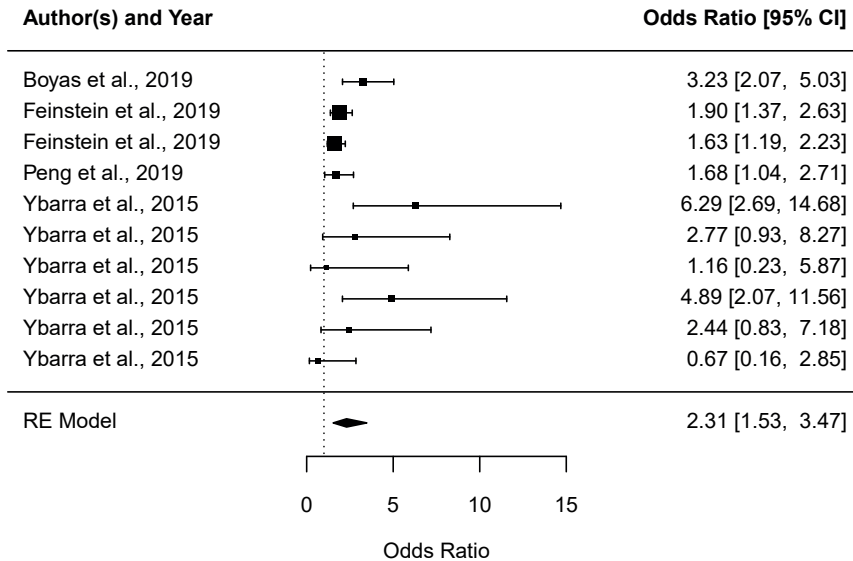
CI = confidence interval; RE = random effects

Figure S2.4 Forest plot of the association between general victimization and suicidal ideation.



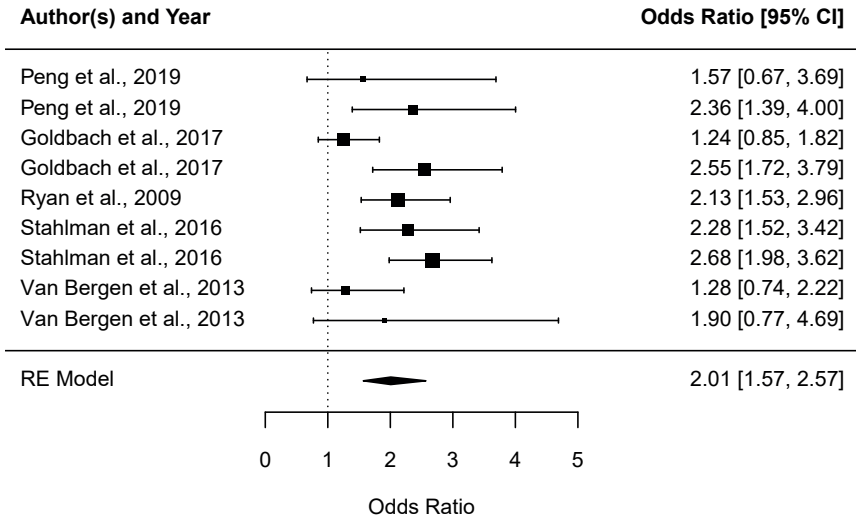
CI = confidence interval; RE = random effects

Figure S2.5 Forest plot of the association between general victimization and suicide attempts.



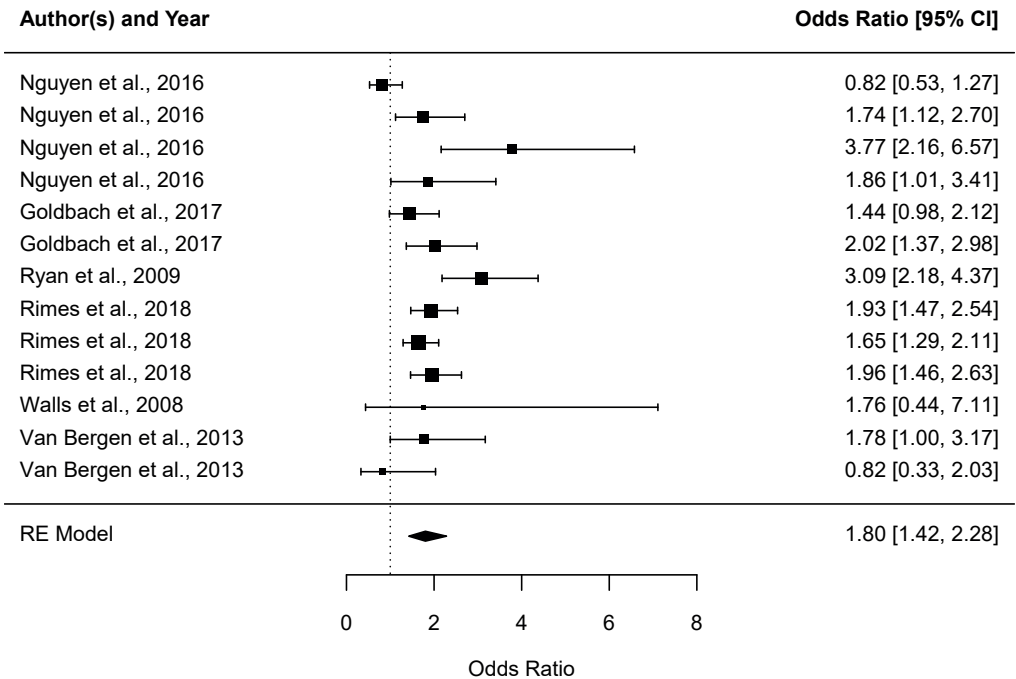
CI = confidence interval; RE = random effects

Figure S2.6 Forest plot of the association between bullying and suicidal ideation.



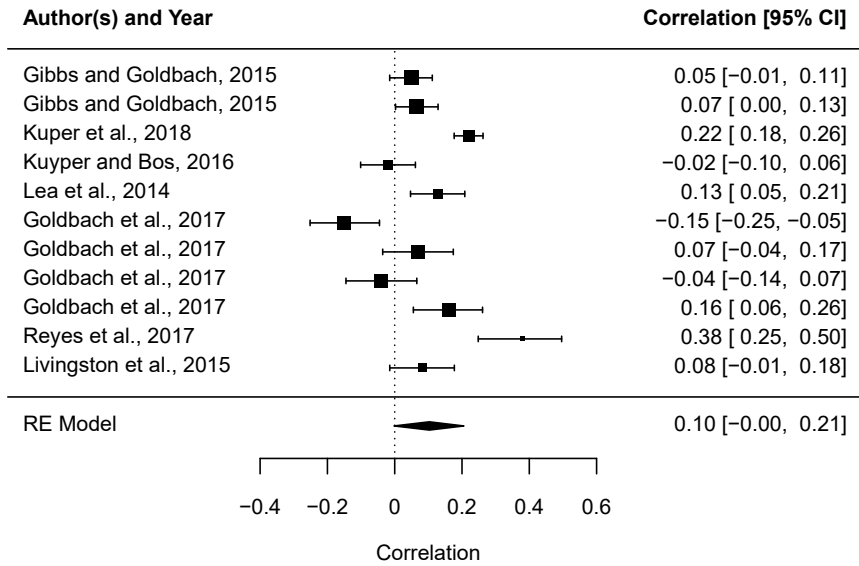
CI = confidence interval; RE = random effects

Figure S2.7 Forest plot of the association between negative family treatment and suicidal ideation.



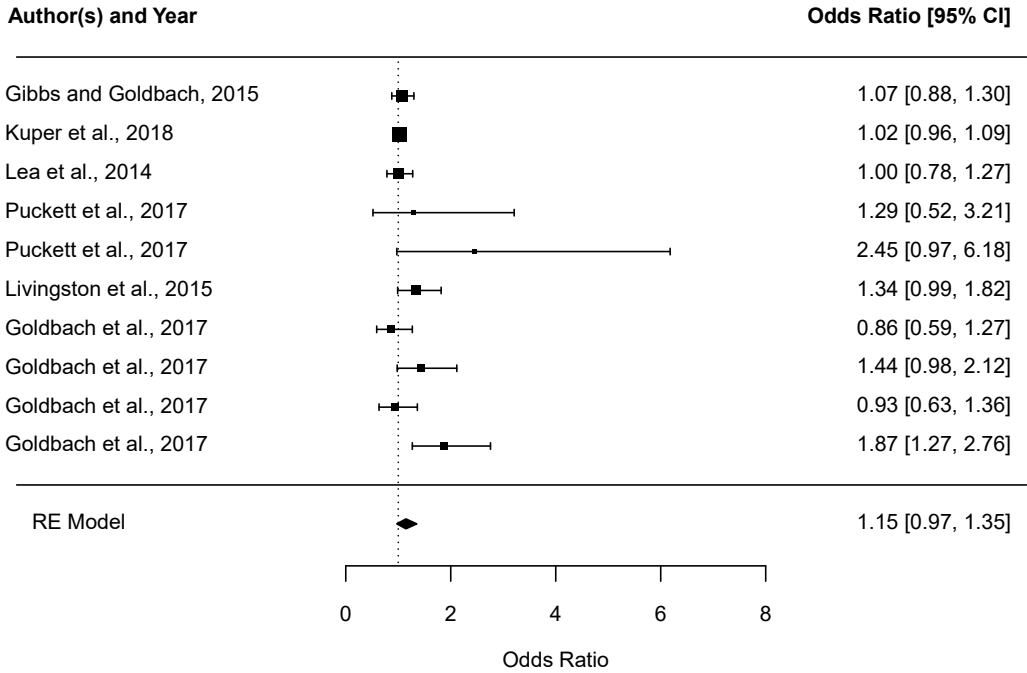
CI = confidence interval; RE = random effects

Figure S2.8 Forest plot of the association between negative family treatment and suicide attempts.



CI = confidence interval; RE = random effects

Figure S2.9 Forest plot of the association between internalized homophobia and transphobia and suicidal ideation.



CI = confidence interval; RE = random effects

Figure S2.10 Forest plot of the association between internalized homophobia and transphobia and suicide attempts.