

Suicidal Ideation and Self-Harm in Lesbian, Gay, Bisexual, and Transgender Youth

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Background: Suicide is the third-leading cause of death among adolescents and nonsuicidal self-harm occurs in 13%–45% of individuals within this age group, making these phenomena major public health concerns. Lesbian, gay, bisexual, and transgender (LGBT) youth particularly are at risk for engaging in these behaviors. Nevertheless, relatively little is known about the specific risk factors associated with suicidal ideation and self-harm behaviors in the population.

Purpose: This study provides a longitudinal evaluation of the relative contributions of general and LGBT-specific risk factors as well as protective factors to the occurrence of suicidal ideation and self-harm in an ethnically diverse sample of LGBT youth.

Methods: A community sample of 246 LGBT youth (aged 16–20 years) was followed prospectively over five time points at regular 6-month intervals. Participants completed a baseline structured interview assessing suicide attempt history and questionnaires measuring gender nonconformity, impulsivity, and sensation-seeking. At follow-up assessments, participants completed a structured interview assessing self-harm and questionnaires for suicidal ideation, hopelessness, social support, and LGBT victimization. Data were collected from 2007 to 2011, and HLM analyses were conducted in 2011.

Results: A history of attempted suicide ($p=0.05$); impulsivity ($p=0.01$); and prospective LGBT victimization ($p=0.03$) and low social support ($p=0.02$) were associated with increased risk for suicidal ideation. Suicide attempt history ($p<0.01$); sensation-seeking ($p=0.04$); female gender ($p<0.01$); childhood gender nonconformity ($p<0.01$); and prospective hopelessness ($p<0.01$) and victimization ($p<0.01$) were associated with greater self-harm.

Conclusions: General and LGBT-specific risk factors both uniquely contribute to likelihood of suicidal ideation and self-harm in LGBT youth, which may, in part, account for the higher risk of these phenomena observed in this population.

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Introduction

Suicide is a major health concern, accounting for approximately 10.8 per 100,000 deaths in the U.S.¹ It is the third-leading cause of death among adolescents,² making this a particularly high-risk age group. Indeed, there is consistent epidemiologic evidence that the risk of suicide and first onset of related behaviors (e.g., ideation, plans, and attempts) increases substantially during adolescence.^{1–4} Further, there is some indication

that suicide rates in youth have increased in recent years.⁵ Given that the U.S. Preventive Services Task Force reported the absence of an adequate evidence base for it to recommend a clinical preventive service for suicide,⁶ and, similarly, the observation by some researchers of a lack of reliable interventions for decreasing risk of reattempt during adolescence,⁷ increasing understanding of the risk factors associated with precursors of attempted suicide is crucial for improving prevention and treatment strategies.

An important precursor of suicide attempts is suicidal ideation. In one epidemiologic study,² approximately 17% of adolescents in the U.S. endorsed experiencing suicidal ideation over the prior 12-month period. Moreover, the first lifetime onset of suicidal ideation increases dramatically around age 12 years and peaks during mid- to late adolescence.^{1,3} Suicidal ideation is associated with

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eventual attempted suicide, with approximately 29% of all ideators transitioning to an attempt.¹ Further, one multinational epidemiologic study⁴ found risk for attempting suicide is especially elevated during the first year of suicidal ideation onset, particularly in younger ideators.

Despite increased prevention efforts and treatment utilization in the past 2 decades,⁸⁻¹⁰ rates of suicidal ideation during this period correspondingly have not declined,⁹ indicating the need for greater understanding of suicidal ideation etiology. Limiting advancement in this regard is the paucity of studies that have examined the temporal course of suicidal ideation in relation to its risk factors within a longitudinal framework.¹¹ Additionally, the few such studies tended to use only two data collection intervals or several widely spaced apart, limiting precise assessments of the degree to which fluctuations in suicidal ideation are preceded by changes in putative risk factors (see Prinstein et al¹¹ for an exception).

Self-harm behaviors, particularly nonsuicidal self-injury, defined as deliberate and direct destruction of one's own bodily tissue in the absence of suicidal intent,^{12,13} is another growing public health concern. As with suicidal ideation, self-harm tends to have its first onset during adolescence.^{14,15} Adding to the increasing concern surrounding this behavior, rates of self-harm among adolescents have risen in recent years,^{16,17} with recent estimates of between 13% and 45% of community samples having participated in this behavior at some point in the past.¹⁸ The growing concern with the high prevalence of self-harm has led several DSM-V workgroups to consider the possibility of defining nonsuicidal self-injury as a distinct syndrome in DSM-V rather than simply a symptom of borderline personality disorder as presented in DSM-IV.¹⁹

Also worth noting is that, although most individuals who regularly self-harm receive mental health services, there is presently no empirically supported prevention or treatment protocol specifically designed to target this behavior,¹⁸ a reflection of our still-nascent understanding of this phenomenon and the need for greater elucidation of its underlying risk factors. A previously noted limitation of research on suicidal ideation similarly is relevant here; few studies have examined risk factors for self-harm within a longitudinal design.²⁰ Such work is essential for distinguishing potentially causal risk factors from correlates and consequences of self-harm, and ultimately for informing prevention and treatment efforts.

Although adolescents are a high-risk group for suicidal ideation and self-harm, there is increasing evidence that lesbian, gay, and bisexual (LGB) youth are a subgroup especially vulnerable to both.^{5,15,21-24} The few stud-

ies²⁵⁻²⁷ to include transgender youth have been cross-sectional, but also indicate greater risk for suicidal ideation and self-harm. Most past research on suicidality in LGBT youth has involved cross-sectional surveys.²⁸ Such studies (e.g., Hatzenbuehler²⁹), especially on the large scale (i.e., population-based surveys), are important for establishing rates of suicidal ideation and self-harm in these hard-to-reach groups, but their methodology precludes the possibility of inferring causality between putative risk factors and these behaviors.²⁸

Moreover, the extant research largely has focused on documenting the association between LGBT status and suicidal ideation and self-harm, with less attention toward uncovering factors that confer risk and resilience in this population, particularly in the case of self-harm. Although the need to evaluate general risk factors in LGBT populations previously has been noted,³⁰⁻³² research examining these general processes relative to LGBT-specific risk factors particularly is lacking. Community-based samples, with strong measurement of these constructs, are well suited for this purpose.

The present study sought to build on previous research in several ways. Specifically, it examined several general and LGBT-specific risk factors as well as protective factors for suicidal ideation and self-harm concurrently and longitudinally over multiple 6-month intervals in a community sample of LGBT youth. Several risk and protective factors were evaluated based on past research. Cross-sectional studies of LGBT samples have suggested suicidality to be associated with female gender³³; gender nonconformity³⁴; victimization,³⁵ particularly in the form of LGBT-targeted victimization²⁸; and poor social support.³⁶ Past research with non-LGBT samples have found suicidality to be linked with impulsivity³⁷ and past suicidal behavior.³⁸

The research examining risk and protective factors for self-harm in LGBT youth is notably limited. One cross-sectional study,²⁵ however, found some support for an association between LGBT-specific discrimination and self-harm. Given the lack of studies in this area, the current study drew on research with non-LGBT samples. In non-LGBT youth, suicidal behavior,¹⁶ impulsivity,^{19,39} sensation-seeking,^{12,40} and hopelessness²⁰ have been linked to self-harm. Based on the extant research, it was hypothesized that general (e.g., gender, sensation-seeking, impulsivity, hopelessness, suicide attempt history) and LGBT-specific risk factors (e.g., gender nonconformity, LGBT victimization) would be associated both uniquely and longitudinally with suicidal ideation and self-harm. It also was hypothesized that social support may buffer against the risk for these behaviors.

Methods

Participants

Participants were 246 LGBT youth (aged 16–20 years at baseline; $M=18.30$, $SD=1.32$) who self-identified their sexual orientation based on the question *Which of the following best describes you?* Possible response options included *gay*, *lesbian*, *bisexual*, *heterosexual*, and *questioning/unsure/other*. Demographic data are summarized in Table 1. Eighty-six percent of participants were racial/ethnic minorities, which is higher than the 69% estimated by the U.S. Census Bureau (factfinder.census.gov) for Chicago but not substantially different from estimates for areas neighboring the primary site of data collection. Youth were recruited from multiple sources, including flyers distributed in LGBT-identified neighborhoods and events, group listservs, and through respondent-driven sampling strategies.⁴¹ This process started with a small number of members of the target population and expanded through successive waves of peer recruitment.

Procedure and Design

The University of Illinois, Chicago, and Howard Brown Health Center IRBs approved a waiver of parental permission for minor participants under US45CFR46.408(c), and appropriate mechanisms for protecting youth were put in place (i.e., youth advocate, Federal Certificate of Confidentiality). In those cases, written informed assent was obtained. All other participants provided written consent. The IRB of Northwestern University approved the use of existing data and ongoing prospective follow-up data collection.

Participants were assessed at baseline and four 6-month follow-ups. Retention was high at all follow-ups (e.g., 91% at second and 78% at fourth). Suicide attempt history, gender nonconformity, impulsivity, and sensation-seeking were assessed at baseline and suicidal ideation, self-harm, hopelessness, social support, and LGBT victimization at prospective follow-ups. Data for the analysis with suicidal ideation as the outcome variable were taken from all five time points. Hopelessness was excluded from this analysis as it was not measured at the last two follow-ups. As self-harm was measured at earlier time points only, the analysis relating to this outcome was restricted to the first three time points. Participants received \$40 for 2-hour assessments at baseline and the third time point, and \$25 for 1-hour assessments at each of the remaining time points. Data collection occurred from 2007 to 2011, and analyses were conducted in 2011.

Suicidal ideation. The Brief Symptom Inventory (BSI-18)⁴² is a widely used self-report measure of current psychological distress. The BSI-18 includes an item assessing current suicidal ideation: *How much has this distressed or bothered you in the last 7 days, including today: thoughts of ending your life.* Scores ranged from 0 = *not at all* to 4 = *extremely*.

Self-harm. The ARBA⁴³ is a computerized self-administered interview designed for use with adolescents. It has been used with ethnically diverse adolescents, adolescents with psychiatric disorders, and young MSM.^{43–45} The ARBA includes an item assessing recent self-harm: *In the last six months, how many times have you intentionally cut yourself?*

Impulsivity. The Barratt Impulsiveness Scale (BIS-11) is a widely used 30-item measure of impulsivity.⁴⁶ Item values

Table 1. Description of LGBT youth sample at baseline (N=246), *n* (%) unless otherwise noted

Variable	Value
Birth gender	
Male	121 (49.2)
Female	125 (50.8)
Sexual identity	
Male	107 (43.5)
Female	119 (48.4)
Male-to-female transgender	12 (4.9)
Female-to-male transgender	8 (3.3)
Sexual orientation	
Gay	83 (34.0)
Lesbian	68 (27.9)
Bisexual	70 (28.7)
Questioning/unsure/other	23 (9.4)
Race/ethnicity	
White	34 (13.8)
Black	141 (57.3)
Latino	28 (11.4)
Other	43 (17.5)
Living situation	
Living with parents	146 (59.8)
Other stable housing	86 (34.5)
Unstable housing	14 (5.7)
Highest education at baseline^a	
College	14 (5.7)
Partial college	55 (22.5)
High school	64 (26.2)
Partial high school	98 (40.2)
Less than high school	13 (5.3)
Suicide attempt history	77 (31.3)
Gender nonconformity (M [SD]; scale range)	3.17 (1.58); 0–6
Impulsivity (M [SD]; scale range)	64.87 (10.78); 30–120
Sensation-seeking (M [SD]; scale range)	3.19 (0.68); 1–5

^aTwo participants did not report their level of educational attainment. LGBT, lesbian, gay, bisexual, transgender

ranged from 1 = *rarely/never* to 4 = *almost always*. Higher scores indicate greater impulsiveness. Its psychometric properties have been well documented,⁴⁷ and Cronbach's α in the current sample was 0.76.

Sensation-seeking. The Brief Sensation Seeking Scale (BSSS)⁴⁸ is an eight-item adaptation of Zuckerman's original sensation-seeking scale, higher scores indicating greater sensation-seeking. Item ratings ranged from 1=*strongly agree* to 5=*strongly disagree*. Although Cronbach's alpha was not high in this sample ($\alpha=0.63$), Hoyle and colleagues⁴⁸ reported that reliability is lower among black men/boys ($\alpha=0.68$), and more reliable measures of sensation-seeking in this population are not available. Given that young black men form a large component of the current study sample, reliability is comparable to previous findings.⁴⁸

Gender nonconformity. Gender nonconformity was measured using the Boyhood Gender Conformity Scale⁴⁹ in men/boys and a validated adaptation for women/girls.⁵⁰ The scales assess frequency of thoughts and behaviors culturally typified as masculine and feminine. Ratings ranged from 0=*never or almost never true* to 6=*always or almost always true*, a higher scale mean score indicated greater nonconformity. Cronbach's α was 0.69 for men/boys and 0.73 for women/girls.

History of attempted suicide. The Diagnostic Interview Schedule for Children (DISC), computerized version 4.0,⁵¹ is the most widely used structured clinical interview for assessing psychiatric diagnoses in adolescents and is appropriate for use with young adults. The DISC includes an assessment of past suicide attempts (i.e., *Have you ever, in your whole life, tried to kill yourself or made a suicide attempt?*). Interviewers were advanced psychology students or staff with at least a bachelor's degree with backgrounds in psychology and experience with LGBT youth. Extensive interviewer training was conducted following the recommendations of Shaffer et al.⁵¹

Hopelessness. The Brief Hopelessness Scale⁵² is an adaptation of the Hopelessness Scale for Children,^{53,54} designed for use with ethnic-minority youth. It was modified in the current study to allow for greater sensitivity to response variability by changing item response options from *true/false* to a Likert scale (from 0=*strongly agree* to 4=*strongly disagree*), with higher total scores reflecting greater hopelessness. Cronbach's α was 0.85 in the current sample.

Lesbian, gay, bisexual, and transgender victimization. A 10-item measure based on the work of D'Augelli and colleagues⁵⁵ assessed the frequency over the most recent 6-month period of experiences of property damage and verbal and physical threats or assault *because you are, or were thought to be, gay, lesbian, bisexual, or transgender*. Ratings range from 0=*never* to 3=*three times or more*. A composite of these items was created by taking the mean across items. Cronbach's α in the current sample was 0.87.

Social support. The Multidimensional Scale of Perceived Social Support (MSPSS) is a self-report measure of social support, with higher scores indicating greater perceived support.⁵⁶ Ratings ranged from 1=*very strongly disagree* to 7=*very strongly agree*. The MSPSS demonstrated adequate internal consistency for subscales assessing perceptions of family (Cronbach's $\alpha=0.90$) and peer support (Cronbach's $\alpha=0.91$).

Data Analysis

Hierarchical linear modeling (HLM)⁵⁷ was used to examine between-person differences and within-person changes in suicidal ideation and self-harm over time. HLM is well suited to longitudi-

nal analysis of predictors of risk as it accounts for dependency in observations in data that contain a nested or multilevel structure. A Poisson distribution was used in estimating the count of self-harm behaviors. The model also accounted for overdispersion in the outcome variable resulting from the presence of outliers and an overpreponderance of cases with values of zero. Estimates are from population-average models using robust SEs. Data availability allowed for both contemporaneous (i.e., within time point) and cross-lagged (i.e., prior time point as predictor) analyses for suicidal ideation (five time points), and for contemporaneous analyses for self-harm (three time points).

Results

As most participants were peer-recruited, cross-tabulations and chi-square tests were calculated to assess potential recruitment sources effects. No recruitment source had consistently higher levels of suicidality or self-harm and all chi-square tests were nonsignificant, suggesting no systematic source effects. Descriptive data for baseline variables are summarized in Table 1. Approximately 37.4% of participants endorsed some presence of suicidal ideation (i.e., score of 1 or higher on the BSI-18 suicidal

Table 2. Multivariate hierarchic linear model of predictors of suicidal ideation

Predictors	Coefficient (SE)	t	p
CONTEMPORANEOUS MODEL			
Within-person			
LGBT victimization	0.089 (0.041)	2.17	0.03
Social support	-0.047 (0.020)	-2.28	0.02
Between-person			
Male gender	-0.042 (0.076)	-0.55	0.59
Gender nonconformity	0.042 (0.025)	1.70	0.09
Suicide attempt history	0.174 (0.088)	1.97	0.05
Impulsivity	0.008 (0.003)	2.49	0.01
Sensation-seeking	0.068 (0.053)	1.29	0.20
TIME-LAGGED MODEL			
Within-person			
LGBT victimization	0.105 (0.046)	2.259	0.02
Social support	-0.049 (0.023)	2.140	0.03
Between-person			
Male gender	-0.044 (0.079)	0.557	0.58
Gender nonconformity	0.044 (0.026)	1.684	0.09
Suicide attempt history	0.174 (0.092)	1.882	0.06
Impulsivity	0.008 (0.003)	2.545	0.01
Sensation-seeking	0.079 (0.055)	1.442	0.15

LGBT, lesbian, gay, bisexual, transgender

ideation item) at least once in the study. Additionally, 15.4% of participants engaged in self-harm at some point in the study (for endorsers, mean frequency=3.09, SD=2.91).

For the multilevel analysis involving suicidal ideation, the within-person (i.e., time-varying) level assessed whether wave-to-wave changes in LGBT victimization and social support predicted wave-to-wave changes in suicidal ideation, whereas the between-person (i.e., person-varying) level examined whether baseline suicide attempt history, gender nonconformity, impulsivity, sensation-seeking, and gender predicted overall level of suicidal ideation. The results of the analysis are summarized in Table 2. Baseline impulsivity and a history of attempted suicide were associated with greater suicidal ideation, whereas gender, gender nonconformity, and sensation-seeking did not predict suicidal ideation. LGBT victimization and lower social support were associated with greater suicidal ideation. This analysis was repeated with time-lagging wave-to-wave variables (i.e., testing associations between suicidal ideation and within-person variables from the previous time point). The results were essentially unchanged, indicating that LGBT victimization and social support have both contemporaneous and predictive effects on suicidal ideation.

For the analysis involving self-harm, the within-person level evaluated whether wave-to-wave changes in social support, LGBT victimization, and hopelessness were associated with wave-to-wave changes in self-harm, whereas the between-person level examined the same predictors as the suicidal ideation analysis. Results of this multivariate analysis are summarized in Table 3. Greater self-harm was predicted by female gender, gender nonconformity, history of attempted suicide, and sensation-seeking, but not impulsivity. Among within-person vari-

ables, hopelessness, and LGBT victimization, but not social support, were associated with greater self-harm. Multilevel analyses for suicidal ideation and self-harm were repeated with depression symptoms, as assessed with the DISC, as a predictor in place of suicide attempt history, yielding essentially identical results.

Discussion

Although past research has documented LGBT-specific and general risk factors for suicide attempts in LGBT youth,⁵⁸ the current study extends the literature in several important ways. It not only provides the first longitudinal evaluation of risk factors for self-harm in LGBT youth but also offers the first longitudinal assessment of the relative effects of general and LGBT-specific risk and protective factors on suicidal ideation and self-harm in a high-risk population at a vulnerable period of development. Prior research indicates that LGBT youth are at higher risk for suicidal ideation and self-harm.^{5,15,21–24} The current results demonstrate that general and LGBT-specific factors both uniquely contribute to risk for these phenomena within this population.

Although suicidal ideation and self-harm had several predictors in common, several notable differences were observed. Within-person over time, LGBT victimization was associated with both suicidal ideation and self-harm, as was a history of attempted suicide. In contrast, impulsivity and social support predicted suicidal ideation, whereas sensation-seeking, gender, and gender nonconformity predicted self-harm in their respective multivariate models. These findings are consistent with the view that suicidal ideation and self-harm are related yet relatively distinct phenomena, rather than simply variations in severity of essentially the same behavior.⁵⁹

The findings relating to sensation-seeking and impulsivity are worth noting. That sensation-seeking was not associated with suicidal ideation parallels previous findings in a heterosexual sample,³⁷ as was the association between this risk factor and self-harm.^{12,40} That impulsivity did not predict self-harm after controlling for the effects of sensation-seeking suggests the latter may better account for self-harm in LGBT youth. Indeed, sensation-seeking has been identified as a notable reinforcing

Table 3. Multivariate hierarchic linear model of predictors of self-harm

Predictors	Coefficient SE	ERR (95% CI)	t	p
Within-person				
Hopelessness	0.567 (0.112)	1.76 (1.42, 2.20)	5.07	<0.01
LGBT victimization	0.914 (0.106)	2.50 (2.03, 3.07)	8.65	<0.01
Social support	−0.023 (0.105)	0.98 (0.80, 1.20)	−0.22	0.83
Between-person				
Male gender	−1.810 (0.362)	0.16 (0.08, 0.33)	−5.00	<0.01
Gender nonconformity	0.276 (0.103)	1.32 (1.08, 1.61)	2.68	<0.01
Suicide attempt history	1.169 (0.382)	3.22 (1.52, 6.84)	3.06	<0.01
Impulsivity	0.011 (0.024)	1.01 (0.96, 1.06)	0.45	0.66
Sensation-seeking	0.574 (0.274)	1.78 (1.03, 3.05)	2.09	0.04

ERR, event rate ratio; LGBT, lesbian, gay, bisexual, transgender

reason for self-harm behaviors.¹² Although heightened impulsivity and sensation-seeking are normative in this age group, it should be noted that individual variability nevertheless exists and these traits are associated with multiple health outcomes.^{60,61}

The victimization of LGBT youth is widespread and has been characterized as an important but unexamined reason for higher rates of self-harm.^{15,62} The current study found that victimization experienced across the assessment waves prospectively predicted self-harm and suicidal ideation. Indeed, after suicide attempt history, LGBT victimization was the strongest predictor of self-harm, being associated with a 2.5-fold increased risk. Similarly, gender nonconformity was another LGBT-specific risk factor with significant effects. These results highlight the importance of studying within-group, or culturally specific, risk factors for suicidality and self-harm.

A notable strength of this unique study is its use of a longitudinal framework, allowing for a sensitive examination of within-person predictive relationships. However, several limitations also should be noted in interpreting findings. First, the study did not use a random sample. Possible sampling biases were reduced through the use of peer recruitment starting at LGBT events and neighborhoods frequented by LGBT youth, rather than sampling at venues that could potentially produce an overrepresentation of mental health conditions (e.g., support groups), and thus magnify observed effect sizes. An added advantage of recruiting through social networks is that it has been found effective for locating and recruiting samples of traditionally hard-to-reach participants, such as LGBT youth.⁶³ Additionally, a priori statistical comparisons of outcomes by recruitment sources yielded no consistent or statistical differences. Given the nonrandom sample, however, care should be taken in generalizing current findings to other populations. Second, only one type of self-harm was assessed: cutting. Although this is the most prevalent form of self-harm,^{14,64} future studies should include other self-harm behaviors. Finally, the sample size may have limited the ability to detect the significance of small effects. It also precluded the possibility of disaggregating LGBT subgroups in the current analyses, a point worth noting given some past research⁶⁵ found greater suicidality in bisexual relative to lesbian and gay youth.

The current findings are important in that they suggest several promising targets for prevention and intervention. They highlight the importance of enhancing social support networks for LGBT youth. Given the role of impulsivity in suicidal ideation and sensation-seeking in self-harm, limiting opportunities for engaging in suicidal and nonsuicidal self-harm (e.g., increased parental super-

vision and removing instruments of self-harm) may prove an effective strategy. On a broader societal level, the findings relating to LGBT victimization and gender nonconformity suggest that, despite increasing social acceptance of sexual minorities in recent years and the protective effects this has been shown to have against suicidal behavior,^{29,66} additional efforts are required to reduce stigma.

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Supplementary data

A pubcast created by the authors of this paper can be viewed at http://www.ajpmonline.org/content/video_pubcasts_collection.