

Violence Victimization and Perpetration:
Potential Mediators of the Relationship Between Sexual Minority Status and Suicide Risk

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Abstract

Suicide is an area of significant public health concern, particularly for vulnerable populations such as youth and sexual minority students. Sexual minority youth (SMY) are at an additional risk, given their higher prevalence rates of suicidality. Rates of violence victimization and perpetration are also higher among SMY. Prior research has shown links between victimization and suicide risk, as well as perpetration and suicide risk, but has not examined the mechanisms behind the specific impact of these factors on suicide risk in SMY; we aimed to address this gap in the literature. The present study examined whether violence victimization and perpetration independently mediate the relationship between being a sexual minority and suicide risk, using a large ($N = 14,107$), nationally representative sample of high school student responses on the 2017 Youth Risk Behavior Survey (YRBS). We ran separate binary logistic regression models to examine whether or not victimization and perpetration mediated this relationship. All four models were statistically significant and showed partial mediation, although none were clinically significant (see Figures 1-4). More research on the specific mechanisms that underlie suicide risk for SMY is needed, since identifying the pathways that lead to increased risk can inform new targets for suicide prevention.

Keywords: suicide, violence, victimization, perpetration, sexual minority youth

Violence Victimization and Perpetration: Potential Mediators of the Relationship Between Sexual Minority Status and Suicide Risk

In 2016, suicide was the second leading cause of death for individuals in the United States between the ages of 10 and 34 (US Centers for Disease Control and Prevention [CDC], 2016). While suicide is certainly a public health concern for youth broadly, a more specific risk factor for suicidality among adolescents is sexual minority status (Russell, 2003). Sexual minority youth (SMY) are those who identify as lesbian, gay, or bisexual (LGB) by their sexual identity and/or report same or both sexes for sex of sexual contacts (Kann et al., 2016). In a prior study, approximately 37.4% of LGB youth endorsed suicidal ideation (Liu & Mustanski, 2012). This is an unusually large proportion, especially when compared to the percentage of heterosexual students who have seriously contemplated suicide (approximately 25%; Perrin, 2002). More recent data and a meta-analysis have shown similar differences between SMY and their heterosexual peers, with SMY typically at a higher risk for experiencing suicidal ideation and attempt (CDC, 2017; Marshal et al., 2015; Stone et al., 2014). According to survey results from a nationally representative sample of high school students (Youth Risk Behavior Survey [YRBS]), approximately 45-50% of SMY have seriously considered suicide, compared to approximately 13% of heterosexual students (CDC, 2017). Rates of suicide attempt are also high among SMY, with approximately 23% of SMY reporting having attempted suicide, compared to approximately 5% of nonsexual minority students (CDC, 2017). Overall, prevalence rates of suicidality are higher among SMY, leading research to explore risk factors specific to this group (Kann et al., 2016).

Prior studies have found that several factors may explain or contribute to the higher prevalence of suicidality among SMY. In the Interpersonal Theory of Suicide, a capacity for

suicide (which is hypothesized to be either acquired or have a genetic predisposition) develops over time as habituation. Specifically, a capacity for suicide refers to two key dimensions: lowered fear of death and pain tolerance, for example after multiple exposures to painful events or violence (Chu et al., 2017; Joiner, 2005; Sachs-Ericsson et al., 2017). Research has shown a positive relationship between adolescent victimization, or exposure to violence, and capacity for suicidal behavior (Cohen, 2000; Sachs-Ericsson et al., 2017). Prior research has also shown that, across sexual orientation, victimization was a predictor of suicide attempt (Shields et al., 2012). Prior research suggests that individuals who identify as sexual minorities or LGB experience both higher suicide risk and higher rates of victimization when compared to their heterosexual peers (CDC, 2017; Russell et al., 2014; Shields et al., 2012; as cited in Perrin, 2002). Similarly, a meta-analysis has shown that young victims (i.e., childhood to young adulthood) of interpersonal violence are twice as likely than non-exposed peers to attempt suicide (Castellví et al., 2017). Youth who report attraction to the same or both sexes are more likely to perpetrate, witness, and be a victim of violence (Russell, Franz, & Driscoll, 2001). Suicide risk has been strongly associated with participation in school bullying, in both general and minority (e.g., LGB) populations (Kim & Leventhal, 2008). Other studies have also shown that, for general populations, involvement in crime and the criminal justice system have been associated with higher suicide risk (Stokes et al., 2015). In another study, involvement with bullying, which was defined as having the role of victim and/or perpetrator, has been associated with increased suicidal ideation (Arango et al., 2016). Partner violence perpetration has been a growing concern, particularly for lesbian, gay, bisexual, transgender, and queer (LGBTQ) relationships (Edwards & Sylaska, 2012). Researchers found high levels of self-reported sexual orientation-related

victimization (73%) and moderate levels of perpetration (10.5%-19.9% varying by type of violence perpetration; Edwards & Sylaska, 2012).

These studies support the Interpersonal Theory of Suicide, which suggests that an acquired capacity for suicide develops after repeated exposures to painful events, such as violence (Chu et al., 2017; Joiner, 2005). Consistent in how exposure to violence and painful events can be a risk factor for suicidal behavior (as described in the Interpersonal Theory of Suicide) is the Minority-Stress Hypothesis. The Minority-Stress Hypothesis asserts that discrimination, victimization, and violence against minorities combine with stigma (and other cultural factors, such as a homophobic culture) to contribute to a high-stress environment which may increase mental health problems (Marshall et al., 2015; Friedman et al., 2013; Meyer, 2003). In a previous study that supported the Minority-Stress Hypothesis, targeted victimization and discrimination was found to partially explain the heightened prevalence of depressive symptoms and suicidality in SMY (Friedman et al., 2013). More recently, an expanded Minority-Stress Hypothesis model has been proposed, which is inclusive of gay-related stressors, such as familial rejection or tension, harassment, bullying, and victimization (Marshall et al., 2015).

Most of the prior literature has not examined violence victimization, perpetration, and sexual minority status together in relation to suicidality. One study found that being LGB and victimized was associated with higher health risk behaviors, such as suicide (Bontempo & D'Augelli, 2002). However, relatively little research has examined the mechanisms behind the impact of violence victimization or perpetration on suicide risk in adolescents, and even fewer still for SMY. For example, one study examined sexual minority-specific victimization as a mediator of mental health disparities and found preliminary results in support of the minority-stress hypothesis as it relates to depression and suicidality, though it was limited by a small

sample size and only used a single measure of suicidality and a single measure of sexual minority status (Friedman et al., 2013). Few studies were found that compared LGB and heterosexual students on the variables of violence and suicide, and those studies used YRBS data from 1993 and 1995 that was only collected in two states (Coker, Austin, & Schuster, 2010; Bontempo & Augelli, 2002; Garofalo et al., 1998). A recent study in China examined sexual minority status and suicidal ideation, but used school-victimization as a mediator with interpersonal relationships as a moderator; their study found small, indirect associations (Huang et al., 2018). A study examining violence victimization and perpetration, along with the mechanism(s) behind their impact on suicide risk for sexual minority youth, was not found.

Another limitation of past research on suicide and violence more broadly has been that studies have been traditionally limited to single-item measures of sexual minority status, and therefore experts argue that future studies should use data including variables that address more than one dimension of sexual minority status (i.e., sexual identity, orientation/behavior; Russell et al., 2014). Similarly, limitations exist when examining suicidality through only a single-item as well; studies on suicide traditionally asked mostly about the strongest predictor of future attempt, which has been prior suicide attempt (CDC, 2017). In contrast, more recent research using data such as the nationally representative YRBS has included multiple suicide-related behavior questions (CDC, 2017). Questions on the National Standard High School YRBS address currently more dimensions, such as hopelessness/depression, suicidal ideation, plan, suicide attempt, and medically serious suicide attempt (CDC, 2017).

The current study attempted to address these limitations. We included a variable composed of both sexual identity and sex of sexual contacts to examine sexual minority status, as opposed to a single item measure. Limitations also exist when assessing suicide risk with just

one question. More recent studies have made the transition to examining multiple variables associated with suicide risk, such as suicidal ideation and attempt, though few have used violence as a predictor (Nickerson & Slater, 2009). More severe suicidal ideation increases the likelihood of suicide attempt, and having a prior suicide attempt is among the strongest risk factors for death by suicide (CDC, 2017; Bridge, Goldstein, & Brent, 2006). Therefore, the present study examined violence as a mediator of both suicidal ideation and attempt, two of the most valid and commonly used markers of suicide risk (CDC Rationale, 2017).

The present study aimed to understand the mechanism underlying the specific impact of violence victimization and perpetration on suicide risk among sexual minority youth, through four hypotheses. We hypothesized that violence victimization and perpetration both would independently mediate the relationship between being a sexual minority and suicidal ideation and attempt. First, we hypothesized that victimization mediates the relationship between sexual minority status and suicidal ideation. Similarly, we hypothesized that victimization also mediates the relationship between sexual minority status and suicide attempt. Third, we hypothesized that perpetration mediates the relationship between sexual minority status and suicidal ideation. Likewise, we hypothesized that perpetration also mediates the relationship between sexual minority status and suicide attempt.

Method

Data Source

The current study utilized data from the high school version of the 2017 National Youth Risk Behavior Survey (YRBS; CDC, 2017). All participants completed the 2017 YRBS, a nationally representative school-based survey of public and private high school students (grades 9-12) conducted by the US Centers for Disease Control and Prevention (CDC). It is part of the

CDC's Youth Risk Behavior Surveillance System (YRBSS), administered bi-annually. The YRBS has been well studied and shown to be valid and reliable for assessing risk behaviors in adolescents (Brener et al., 2011; May & Klonsky, 2011; Brener et al., 2002). The suicidality items, for example, have demonstrated good convergent and discriminant validity (May & Klonsky, 2011).

Participants. The sample included 14,107 responses to the survey, filled out by students who were in public and private high schools, in grades 9 through 12. The mean age of participants was 15.96 ($SD = 1.3$). The sample was 51.4% Female and 16.1% were sexual minorities. The race/ethnicity composition was 50.9% White, 20.7% Black or African American, 4.9% Asian, 3.1% American Indian or Alaska Native, and 1.7% Native Hawaiian or Other Pacific Islander.

Variables

Sexual Minority Status. To avoid the use of single-item variables and address the limitations of prior research, sexual minority status in the present study is a composite variable based on two questions from the YRBS assessing sexual identity and orientation. Specifically, sexual minority status was defined as identifying as lesbian, gay, or bisexual (i.e., "Which of the following best describes you?" with the following response choices: Heterosexual (straight), Gay or lesbian, Bisexual, and Not sure) or having had sexual contact with persons of the same or both sexes (i.e., "During your life, with whom have you had sexual contact?" with the following response choices: I have never had sexual contact, Females, Males, or Females and males; CDC, 2017). For the purposes of analyzing the hypotheses in this study, inclusion in the study based on sexual minority status was dichotomized (yes or no). If someone indicated a sexual identity other

than heterosexual and/or if someone reported having sexual contact with the same or both sexes, they were coded as being SMY.

Victimization. Consistent with past research, victimization represents a composite variable of affirming experiences of feeling unsafe at school (i.e., “During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?”), being threatened or injured on school property (i.e., “During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?”), bullying at school or online (i.e., “During the past 12 months, have you ever been bullied on school property?” and “During the past 12 months, have you ever been electronically bullied? [Count being bullied through texting, Instagram, Facebook, or other social media]”), and sexual and dating violence (i.e., “Have you ever been physically forced to have sexual intercourse when you did not want to?”, “During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? [Count such things as kissing, touching, or being physically forced to have sexual intercourse.]”, “During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? [Count such things as being hit, slammed into something, or injured with an object or weapon.]”, and “During the past 12 months, how many times did someone you were dating or going out with force you to do sexual things that you did not want to do? [Count such things as kissing, touching, or being physically forced to have sexual intercourse.]”; CDC, 2017). It is important to note that since the variable was dichotomous, if one or more of the items comprising the composite were endorsed, victimization was considered present.

Perpetration. Consistent with past research, in this study perpetration is a composite variable including self-report of involvement in a physical fight (i.e., “During the past 12

months, how many times were you in a physical fight?”), involvement in a physical fight on campus (i.e., “During the past 12 months, how many times were you in a physical fight on school property?”), carrying a gun (i.e., “During the past 12 months, on how many days did you carry a gun? [Do not count the days when you carried a gun only for hunting or for a sport, such as target shooting.]), carrying a weapon (i.e., “During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?”), and carrying weapons on school property (i.e., “During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club on school property?”; CDC, 2017). It is important to note that since the variable was dichotomous, if one or more of the items comprising the composite were endorsed, perpetration was considered present.

Suicide Risk. Suicide risk represents two variables measured by including individual items endorsed for both suicidal ideation (i.e., “During the past 12 months, did you ever seriously consider attempting suicide?”) and suicide attempt (i.e., “During the past 12 months, how many times did you actually attempt suicide?”; CDC, 2017). For the purpose of examining our specific hypotheses, ideation and attempt were analyzed separately. Suicidal ideation was already dichotomous (yes/no) and suicide attempt was dichotomized (present/not present), whereby if the participant reported engaging in one or more attempts, the suicide attempt variable was coded as present.

Analysis Plan

The procedure included the use of archival data from the YRBS to analyze the four hypothesized mediational models and examine the prediction of suicidal ideation and attempt. Four separate mediation models were used: victimization-ideation (hypothesis one), victimization-attempt (hypothesis two), perpetration-ideation (hypothesis three), and

perpetration-attempt (hypothesis four). Using the aforementioned dichotomous YRBS composite variables, we ran four binary logistic regressions which followed the four-step method for establishing mediation (Baron and Kenny, 1986).

Results

SMY had a much higher likelihood of reported violence victimization, perpetration, suicidal ideation, and suicide attempt compared to their heterosexual peers. See Table 1 for percentages, odds ratios, and confidence intervals for these composite and singular YRBS variables. We found that being a sexual minority was a significant predictor of both suicidal ideation and suicide attempt (see Table 1 and Figures 1 - 4).

Mediational Analyses

We were interested in whether violence victimization and violence perpetration would mediate the relationship between sexual minority status and suicide risk (i.e., suicidal ideation and attempt). We tested four mediation models using logistic regression in SPSS, version 25. While we found that, as predicted, all of the individual paths for each of the four models were statistically significant ($p < 0.05$), none fully mediated the relationship between being a sexual minority and suicide risk (see Figures 1 - 4). When controlling for being a sexual minority, self-reported violence victimization and perpetration each directly predicted suicide risk. Considering the largest mediation, we found that the relationship between being a sexual minority and suicidal ideation was partially mediated by participants' self-report of experiencing violence victimization (see Figure 1). This relationship explained 19% (Nagelkerke R^2) of the variance in suicidal ideation and correctly classified 83% of cases (see Figure 1). The remaining three partial meditations were similar, with very small differences and less variance explained. The relationship between being a sexual minority and suicide attempt was partially mediated by

participants' self-report of experiencing violence victimization (see Figure 2). This relationship explained 16.1% (Nagelkerke R^2) of the variance in suicide attempt and correctly classified 94.3% of cases (see Figure 2). The relationship between being a sexual minority and suicidal ideation was partially mediated by participants' self-reported violence perpetration (see Figure 3). This relationship explained 10.6% (Nagelkerke R^2) of the variance in suicidal ideation and correctly classified 82.4% of cases (see Figure 3). Lastly, the relationship between being a sexual minority and suicide attempt was partially mediated by participants' self-reported violence perpetration (see Figure 4). This relationship explained 10.4% (Nagelkerke R^2) of the variance in suicide attempt and correctly classified 94.3% of cases (see Figure 4).

Discussion

When controlling for being a sexual minority, self-reported violence victimization and perpetration each directly predicted suicide risk. Consistent with prior research and the direction we hypothesized, we found that being a sexual minority was a significant predictor of both suicidal ideation and suicide attempt; these data replicate findings of increased suicide risk for SMY. While all four models statistically showed partial mediation, none showed full mediation (see Figures 1-4). Despite strong statistical significance, the mediational models were not clinically significant. For each of models, the difference in beta values between path c (sexual minority status as a predictor of suicide risk) and c prime (the effect of sexual minority status on suicide risk when controlling for victimization/perpetration) was quite small. Had the differences been larger (with a c prime value closer to zero), it would have indicated that the models were clinically significant, or had a noticeable application for practical settings.

These findings suggest that neither victimization nor perpetration completely explain the link between SMY and increased suicide risk. In terms of the theoretical framework of the

Interpersonal Theory of Suicide, an acquired capacity for suicide develops after exposure to violence or painful events and is thought to be necessary for suicidality to occur. However, the present study found that neither violence victimization nor violence perpetration fully explain the link between SMY and suicide risk. This evidence begins to question if the acquired capacity for suicide may be less of a contributor to suicide risk than was previously thought, at least for youth.

Other mechanisms that may explain the mechanism behind the SMY and increased suicide risk connection, aside from violence-related factors, include social support and social connectedness. Social support can include family, friends, school, and peer mentors (Marshal et al., 2015). Social connectedness is similar, but relates more to the perceived connections (or lack thereof) between an individual and their relationship between family, friends, and school (Marshal et al., 2015; Arango et al., 2016). These factors appear to potentially function in two directions, as both risk and protective factors. For example, familial rejection due to sexual minority status has been associated with suicide attempts (Marshal et al., 2015). A sexual minority student with low social support and low connectedness may be at a greater risk for suicide (Arango et al., 2016; Rimes et al., 2018), whereas high social support or connectedness could potentially act as a buffer for sexual minority students from negative outcomes (Meyer, 2003; Marshal et al., 2015).

Another example of how social factors may be both a risk and protective factor is that a perceived lack of social connectedness in relationships with family, peers, and school has been found to contribute to suicide risk, whereas in the presence of other factors (e.g., bullying) having high social connectedness may buffer students from suicide risk (Arango et al., 2016). Having a supportive environment, which includes both family (e.g., parental support) and school

(e.g., anti-harassment and anti-bullying policies specific to SMY), is a protective factor for SMY (Marshall et al., 2015). Suicide prevention efforts should identify ways to intervene and also focus on building resiliency, since many sexual minority students do transition healthily into adulthood (CDC, 2019; Meyer, 2003). Coping and resilience are found among many individuals who identify as a sexual minority, though among sexual minorities there are unique constructive and challenging aspects to both personal (e.g., coping mechanisms, resilience, etc.) and group-level coping (e.g., forming strong community cohesiveness with those who are similarly not part of the dominant culture; see Meyer, 2003 for a more detailed framework of minority-specific coping). Minority coping is thought to depend less on personal coping mechanisms and more on access to and use of reappraisal and destigmatization through group-level social resources (e.g., gay-affirming churches; Meyer, 2003). Future prevention research should focus on ways to increase resiliency and promote minority-specific, group coping among SMY who are at risk for suicidality.

Strengths and Limitations

There were several strengths to the present study, including the dataset. The use of nationally representative responses from the YRBS allowed for a large, diverse sample size and thus, implies sufficient external validity. It has also been conducted by the CDC and has been thoroughly tested for reliability and validity. While suicide among adolescents has been studied, there has been limited research on sexual minority youth and how victimization and perpetration may impact suicide risk. This study was also among the first to examine both victimization and perpetration as mediators of suicide risk, for students who identify as sexual minorities in particular. The present study also addressed limitations of prior research by not using single-item measures of sexual minority status, victimization, or perpetration. In the past, studies focused on

SMY were often limited and unable to include both self-reported sexual identity and sex of sexual contacts --- two important considerations when defining and examining sexual minority status (Russell et al., 2014).

However, as with many large datasets, there are also some limitations and considerations. First, data from the YRBS is cross-sectional in design and based on self-report, thus findings should be interpreted with caution and no causal inferences should be assumed. Also, self-report is subject to over- and under-reported results. Second, the statistical significance of the mediational paths may be inflated, due to the large ($N = 14,107$) sample size. Third, limitations exist when analyzing single-item variables, as previously mentioned. While we did include suicidal ideation and attempt to examine suicide risk, it is worth noting that they were looked at separately for the data analyses. Fourth, the questions on the National YRBS were limited. At present, there is not a question that includes an option for transgender students or those with non-binary gender identities; it is plausible that these respondents marked themselves in line with one of the LGB or “Not Sure” responses, but this much is not certain (CDC, 2017; Ballard, Jameson, & Martz, 2017; Haas et al., 2011). The current YRBS does assess for two of the three dimensions of sexual orientation (self-identity and sexual behavior) but does not ask questions about sexual attraction (CDC, 2017; Haas et al., 2011). The victimization questions on the National YRBS did not assess for minority-specific victimization, or when someone is targeted and victimized because of their minority status (Burton et al., 2013). There are other reasons (not specific to victimization among SMY) why a student may feel ‘unsafe’ at school, such as school shooting occurrences. Future versions of the National and State/Local YRBS should include options for transgender and non-binary students, as well as questions that address sexual attraction and differentiate between victimization and minority-specific victimization.

Conclusions and Directions for Future Research

More research on the specific mechanisms that underlie suicide risk for SMY is needed, since it is important to identify pathways that lead to increased risk for suicide in SMY and thus, inform new targets for suicide prevention. Future research should examine potential alternative mediators, such as minority-specific violence, LGB hate crimes, trauma, social support, and social connectedness (Friedman et al., 2013; Duncan and Hatzenbuehler, 2014; House et al., 2011; Rimes et al., 2018). Potential implications of such findings include the early identification of risk for suicidal ideation and attempt among sexual minority youth, an area of significant concern. Prevention efforts should take care in identifying SMY who may be at a higher risk for suicide and investigate ways to promote resilience and coping.

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APPENDIX A

Table of Percentages, Odds Ratios, and Confidence Intervals

Table 1

Percentage, Odds Ratio, and Confidence Interval for SMY Relative to Heterosexual Students for Composite and Multiple Risk Variables Surveyed from the YRBS

Variable	Percent ^a	OR [Exp(B)] ^b	95% C.I. for OR
Victimization ^c			
Sexual Minority	56%	2.15	[1.96, 2.36]
Heterosexual	32.6%		
Total	36.5%		
Perpetration ^c			
Sexual Minority	33.1%	1.30	[1.18, 1.43]
Heterosexual	27.7%		
Total	28.7%		
Suicidal Ideation ^d			
Sexual Minority	40.1%	4.39	[3.97, 4.85]
Heterosexual	13.2%		
Total	17.4%		
Suicide Attempt ^d			
Sexual Minority	14.8%	4.19	[3.61, 4.86]
Heterosexual	4%		
Total	5.7%		

Note. N=14,107. ^aThe percent refers to those who were coded as a yes/present for each variable.

^bThe odds ratio (OR) refers to the exponentiation of the B coefficient; OR was reported in place of risk ratios, because none of the variables were common outcomes. ^cDenotes the composite

variables used. ^dDenotes the singular risk variables used.

APPENDIX B

Figures Representing the Four Hypothesized Mediation Models

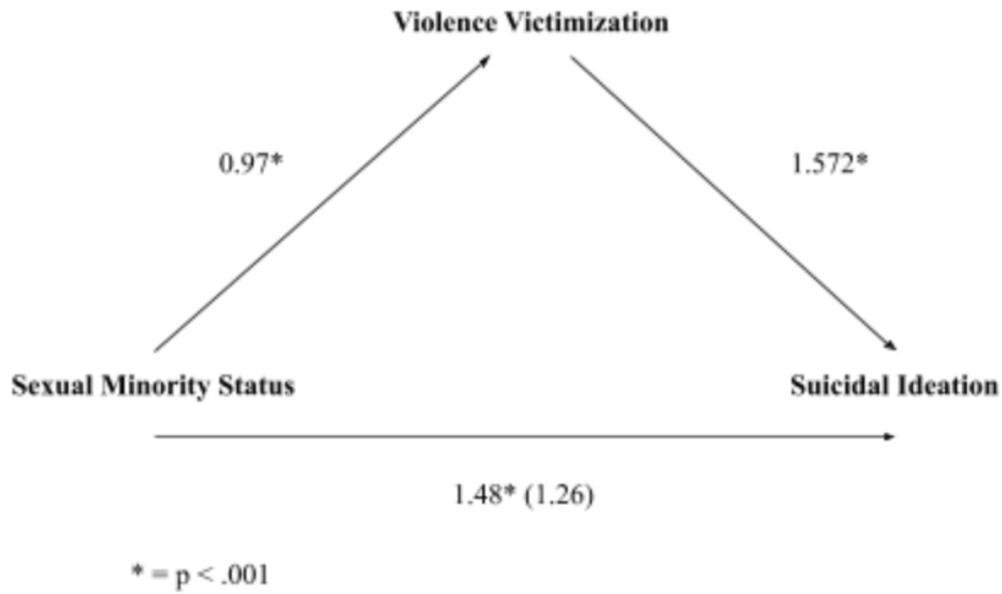


Figure 1. Partial mediation of suicidal ideation by violence victimization among sexual minority students.

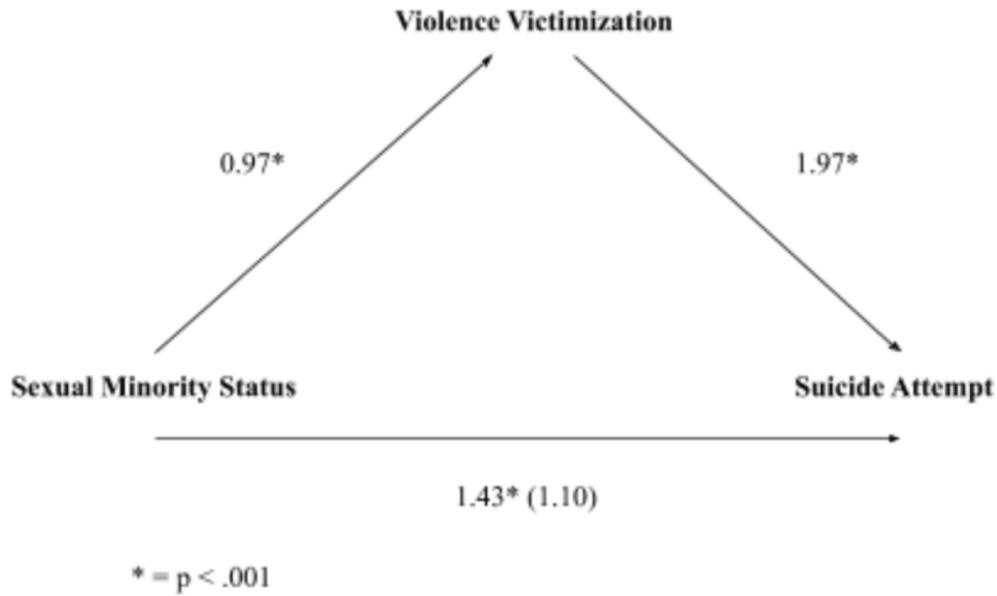


Figure 2. Partial mediation of suicide attempt by violence victimization among sexual minority students.

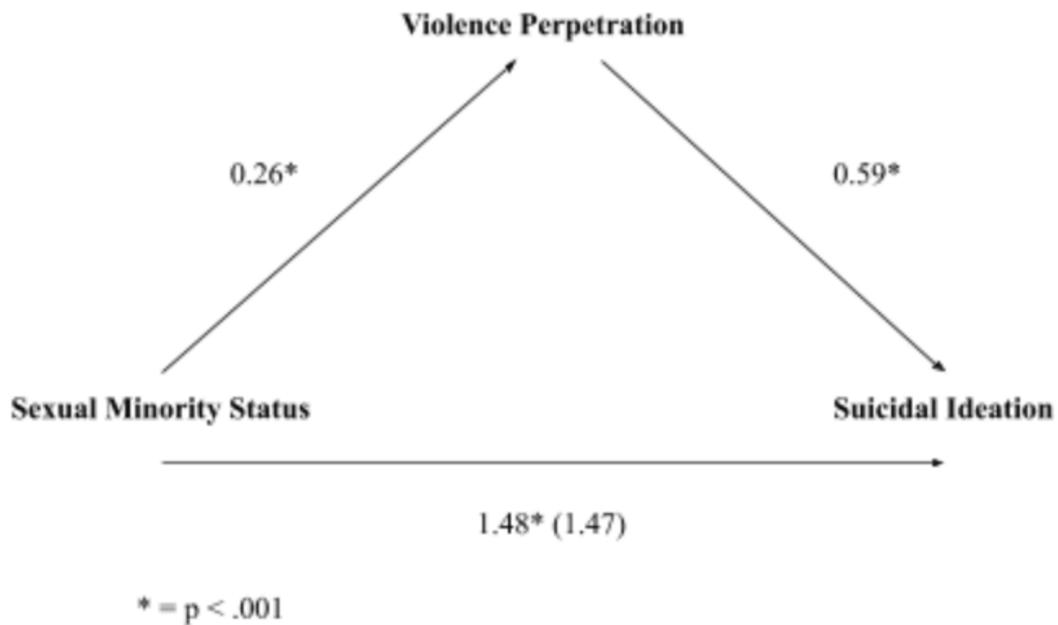


Figure 3. Partial mediation of suicidal ideation by violence perpetration among sexual minority students.

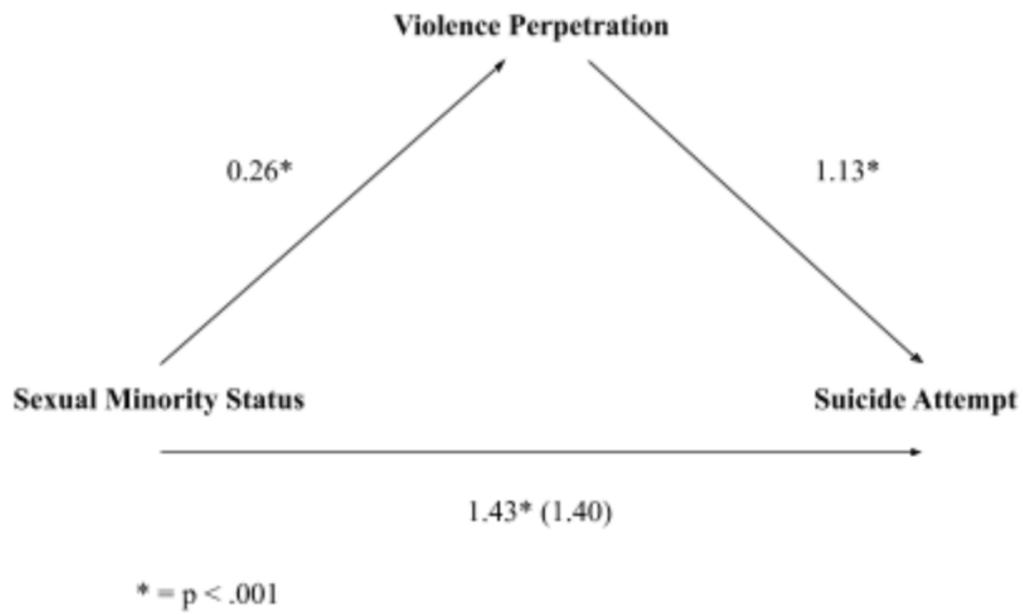


Figure 4. Partial mediation of suicide attempt by violence perpetration among sexual minority students.