The Mediation Effect of Hopelessness on the Relationship between Bullying Experiences and Suicidal Ideation among U.S. Adolescents

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Abstract

Suicide is the second leading cause of death among people aged 10 to 24 years in the United States (USA). Recently, the number of suicide cases linked to bullying among adolescents has risen. Although previous research shows a relationship between bullying and suicidal ideation among adolescents, little is known regarding the transmission mechanism through which experienced bullying translate to suicidal ideation. The Klonsky Three Step theory of suicide posits the connection between hopelessness and suicidal ideation, but this relationship has not been widely examined regarding adolescents experiencing bullying. The present study examines the extent to which hopelessness mediates the relationship between bullying and suicidal ideation among US adolescents. Results showed that hopelessness partially mediated the experiences of bullying and suicidal ideation. In addition to bullying preventative measures, it is necessary for schools and policy makers to devise measures to address hopelessness for students that report being bullied.

Keywords: suicidal ideation, hopelessness, bullying, mediation, prevention

1. Introduction

The number of adolescents deaths attributed to suicide in the U.S.A has been rising during the past two decades (Huffington Post, 2017). Suicide has been identified as the second leading cause of deaths amongst people aged 10 to 24 in the U.S. (Sullivan et al., 2015), suggesting the critical importance of the topic among policy makers and practitioners. According to a 2015 survey conducted by the Center for Disease Control (CDC; 2015), over 17% of students in grades 9-12 seriously considered attempting suicide during the year 2013, whereas 8% attempted suicide at least more than once during the previous school year. Around 2.7% of suicidal attempts resulted in some serious harm or injury warranting medical attention. The survey also showed that male students were at higher odds of considering or attempting suicide compared to females (CDC, 2015). In relation to racial disparities, the survey showed that American Indian/Alaska native males had the highest recorded cases compared to any other group of students. Sexual minority youths also had a rate that was two times higher than that of bisexual youths on suicidal ideation (Shain, 2016).

Lately, the number of suicide cases linked to bullying has been increasing (CDC, 2015; Hertz et al., 2013). According to a National Center for Education Statistics survey (NCES; 2015), 21.5% of students aged between 12 to 18 years reported having been bullied at school, whereas 6.9% reported having been cyberbullied during the 2012–2013 school year. The report also showed that a higher percentage of females were bullied relative to males. Bullying is associated with some negative and long-lasting effects on mental and emotional wellbeing of youths (Seixas et al., 2013). Students who report experiencing bullying are at increased risk for mental health problems (Gloppen et al., 2017). Rivers and colleagues (2009) examined the effects of bullying on the mental health of students who witnessed or were victims of bullying and they found out that experiencing bullying was associated with increased risk for mental health problems regardless of whether one was a victim or perpetrator. Bullying is also linked to a variety of negative outcomes including anxiety, depression, and risky behaviors like drug and substance abuse (Gloppen et al., 2017). Luk and colleagues (2010) investigated the connection between bullying victimization and substance abuse among 10th graders in the U.S. They found victimization to be positively associated with substance abuse in both male and female students.

Furthermore, students involved in bullying (either victims, bullies, or bully-victims) are more likely to perform poorly in school (Jan & Husain, 2015). Although school authorities put in place measures to curb and report bullying, many cases go unreported due to fear of victimization (Petrosino et al., 2010).

Cases of bullying linked to sexual harassment in U.S. schools are also generally high and considered an unfortunate aspect of everyday life in middle and high schools (Hill & Kearl, 2011). A 2011 *Sexual Harassment at Schools* survey conducted with 7–12th grade students indicated that over 48% of students experienced some form of sexual harassment at school, and a majority of the students responded that it had affected them negatively (Hill & Kearl, 2011). Commonly reported forms of harassment included unpleasant sexual comments, jokes, or gestures, harassment through electronic messages, and physical contact. Females were more likely than males to experience all forms of sexual harassment. Chang et al. (2019) examined the effect of a history of sexual harassment on self-destructive behaviors (i.e., both non-suicidal self-injuries (NSSI) and suicidal behaviors) among 287 female college students. They found out that sexual assault consistently predicted both NSSI and suicidal behaviors. Similarly, Tomasula and colleagues (2012) investigated the extent to which sexual assault predicted suicidality among U.S. adolescents. They found out that students who reported having experienced sexual assault were at increased odds of reporting at least a single suicidal attempt relative to students who were not sexually assaulted. Other studies also reported similar findings (e.g., Anderson et al., 2015; Chang & Hirsch, 2015; Reed et al., 2019). In all studies, the effect of sexual assault on suicidal behaviors was higher for females compared to males. Although some institutional definitions divorce the definition of sexual harassment from bullying, sexual harassment is a form of victimization that has similar consequences to those of bullying.

Given the intensity of suicide prevalence in recent years, intervention efforts targeted at addressing suicidality in the USA have intensified as well. Some prior research on suicidal behaviors differentiates suicidal ideation from suicidal attempts (e.g., Donath et al., 2019). However, Klonsky and colleagues (2016) proposed a different approach to understand the relationship between suicidal attempts and suicidal ideation, the ideation-to-action concept. Klonsky and colleagues posited that since all attempters have been ideators at some point, certain risk factors associated with ideation (e.g., knowledge of and access to lethal weapons) result in the progression to attempts. Consequently, interventions that target addressing suicidal ideation are highly likely to prevent the progression from ideation to attempts. The ideation-to-action framework posits that any ideation of suicide begins as a pain in life that is compounded by hopelessness to do something about the pain (Klonsky et al., 2016). When someone experiences pain and is hopeless about how to end the pain, they begin to feel punished for living, thereby leading to suicidal thoughts.

1.1 Hopelessness as a factor of ideation

Prior research has investigated the connection between hopelessness and suicidal ideation (e.g., Kim et al, 2016; Tianyou et al., 2017). Tianyou and colleagues (2017) examined the relationship between hopelessness and suicidal ideation versus suicidal attempts among 142 depressed patients recruited from a psychiatric clinic in New York. They found out that hopelessness was high in lifetime suicidal individuals relative to non-suicidal individuals. There was no significant difference in hopelessness between suicidal attempters and ideators. Similarly, Sher et al. (2017) examined psychopathology in 683 depressed patients with a history of major depressive or bipolar disorders. They found out that attempters (patients with a history of one to three suicidal attempts) and multiple attempters (patients with four or more suicidal attempts) both had higher levels of depression, hopelessness, and impulsivity compared to non-attempters. Attempters and multiple attempters also showed greater levels of suicidal ideation and family history of suicide compared to non-attempters.

In another study, Bonanno and Hymel (2010) investigated the role of hopelessness as a risk factor for suicidal ideation among 399 predominantly Asian-Canadian 8th–10th graders from an urban community high school in British Columbia, Canada. They made a distinction between global measures of hopelessness (general hopelessness) and social hopelessness. They defined social hopelessness as "both negative expectations regarding one's future interpersonal relations, and one's ability to deal with their interpersonal relations" (p. 423). They did not give an explicit definition of general hopelessness but inferred that the measure used to collect its data measured "the extent of adolescents and adults' negative attitudes about their perceived short and long-term future" (p. 426). They found out that while social hopelessness partially mediated bullying victimization and suicide ideation, general feelings of hopelessness were not significantly related to self-reported bullying in adolescents and therefore did not mediate the bullying victimization/suicidal ideation relationship. They concluded that social hopelessness is an important form of hopelessness among victimized adolescents given the importance of social relationships to adolescents.

Kim et al. (2016) examined the risk factors and mediators of suicidal ideation among 569 10th and 11th grade students from Pyeongtaek, Korea. The risk factors examined were thwarted belongingness, perceived burdensomeness, hopelessness, school related stress, bullying victimization, and previous suicidal behaviors. They found out that both hopelessness and bullying victimization significantly affected suicidal ideation, and that hopelessness mediated the relationship between each of the predictor factors (thwarted belongingness, perceived burdensomeness, school related stress) and suicidal ideation. However, Kim and colleagues found out that hopelessness did not mediate the relationship between bullying victimization and suicidal ideation because of the insignificant direct effect of bullying victimization on suicidal ideation with no mediation. In another study, Fleming and Jacobsen (2009) examined the association between bullying and symptoms of depression amongst 8131 middle school students in Chile. Amongst some of the depression factors examined were hopelessness, loneliness, and suicidal thoughts. They found out that students who reported having been bullied were more likely to report more unhealthy behaviors like tobacco use, alcohol use, drug abuse, physical inactivity, and skipping classes. They also reported more symptoms of depression and suicidal thoughts amongst bullied students compared to students that were not bullied.

Although these studies shed light on the roles of hopelessness and bullying on suicidal ideation, none of the studies focused on a wider population of U.S. high schoolers. The characteristics of participants included in the respective studies therefore limit the generalizability of the findings particularly to a diverse population such as U.S. high schoolers. There are not a lot of studies that have examined the relationships of bullying victimization and suicidality specifically on U.S. high school students. Since different countries may institute different policies and approaches to deal with mental health related issues and violence in schools, analyzing the issues from the context of the USA is important to give a more realistic picture of the state of the affairs in the USA. Furthermore, the participants in some of the studies were mental health patients with a history of depressive disorders. This potentially brings into play other factors associated with hopelessness other than just peer victimization.

Understanding the mediation effect of hopelessness on the relationship between bullying and suicidal ideation in U.S. students can help policy makers to create programs to supplement preventative measures, thereby giving students the emotional and mental support to desist from suicidal behaviors. Targeting suicidal ideation for prevention is particularly important to prevent progression to attempts. Previous research shows that attempters tend to exhibit increased aggression towards attempting suicide and are at increased odds of making a later attempt compared to non-attempters (Miranda et al., 2008). According to Holland and colleagues (2017), if students experiencing hopelessness as a result of bullying do not receive the necessary help, or if schools do not have in place effective measures to curb bullying, victims may end up conceiving suicidal thoughts or engaging in harmful behaviors meant for emotional escape. Efforts targeted at preventing bullying in schools can mitigate its prevalence. However, since many cases of bullying go unreported for different reasons, including fear of victimization or embarrassment, devising strategies for mental counselling and well-being can help minimize or stop existence of suicidality. The purposes of this study were to (i) assess differences in incidences of bullying and suicidal ideation between males and females, (ii) assess the mediation effect of feelings of hopelessness on the relationship between experiences of bullying (i.e., bullied, forced sex, and threats at school) and suicidal ideation among U.S. high school students, and (iii),assess the moderation effect of sex on the relationship between each of the forms of bullying (i.e., bullying, forced sex, and threats at school) and suicidal ideation. Figure 1 shows a conceptual framework of the study.

Figure 1. Conceptual Model
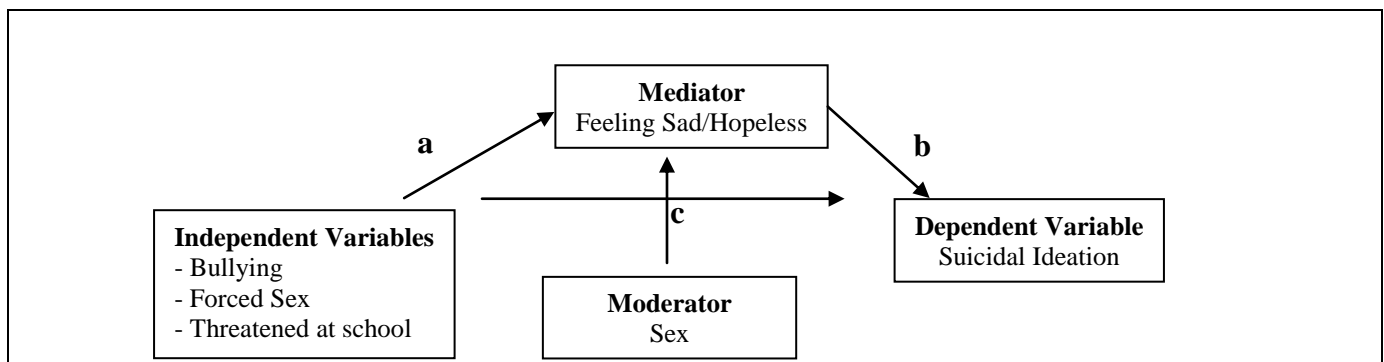
2. Methodology

2.1 Participants

The data for this study were obtained from the Centers for Disease Control and Prevention (CDC) national survey on youth risk behaviors (YRBSS) conducted during the period 2015. The sample consisted of 4577 students enrolled in U.S. high schools (both private and public) across 50 states. The participants were in grades 9 to 12. The sampling frame was based on the Market Data Retrieval (MRD) database, which includes information from both private and public schools. The YRBSS survey monitors six elements of health behaviors among youth and young adults, which are behaviors contributing to unintentional injuries or violence, alcohol and drug abuse, sexual behaviors, unhealthy dietary behaviors, and physical inactivity (CDC: Kann et al., 2016). The survey report includes data on 118 health related behaviors from 2015 national survey conducted over 37 states and 19 large urban school districts. The reliability of the testing instrument was established through a study consisting of 4,619 participants that took the test at two different periods two weeks apart (Brener et al., 2002).

2.2 Measures

The following predictor variables were used: *Bullied* was a dummy coded variable with two response choices, yes and no. Students were asked if they had ever been bullied on school property during the previous 12 months, to which they responded with yes (1) or no (0),*Forced sex* pertained to whether students were ever physically forced to have sexual intercourse when they did not want, the responses of which were coded as either yes (1) or no (0), *Hopelessness* was a dummy coded variable with two response choices, yes or no. Students were asked if they felt sad or hopeless almost every day for two weeks or more in a row to the extent of not doing some usual activities, to which they responded with yes (1) or no (0). *Threatened at school* pertained to whether a respondent was threatened with a weapon such as a gun, knife, or club at school during the previous 12 months to the survey date. The variable was dummy coded with two response categories, yes (1) or no (0). *Suicidal ideation* was the dependent variable and was defined as the number of times a respondent considered attempting suicide during the last 12 months. Responses were in five categories, namely A (zero times), B (1 time), C (2–3times), D (4–5 times), and E (6 or more times). The variable was dummy coded with two categories, 0 for not having considered attempting suicide, and 1 constituting having considered attempting suicide at least once during the last 12 months.

2.3 Data analysis

Separate mediation analyses were conducted to assess the mediation effect of *hopelessness* on the relationship between *(1) bullying* and *suicidal ideation*, *(2) forced sex* and *suicidal ideation*, and *(3) threatened at school* and *suicidal ideation*. The analyses were conducted using the SPSS PROCESS tool by Hayes (2013). Using the same procedure, separate moderation analyses were also conducted to assess whether or not *sex* moderated the relationship between each of the independent variables and *suicidal ideation*.

2.4 Mediation analysis

Baron and Kenny (1986) defined mediation as the internal psychological mechanism linking stimuli to the reactions observed in the environment. In order for a variable to function as a mediator, three specific conditions must be met: (1) an independent variable of interest significantly predicts the mediator, (2) mediator variable predicts the dependent variable, and (3) when a mediator variable is controlled for, the previously significant relationship between the predictor and dependent variables should become insignificant. If one or more of the three conditions is not met, it can be concluded that mediation does not exist (Baron & Kenny, 1986). The mediation effect can be either partial or full, depending on how much the effect of the independent variable on the outcome goes through the mediator.

Mediation regression was conducted using SPSS PROCESS modelling tool developed by Hayes (2013). The tool consists of 32 different versions of statistical analytic models designed to accommodate varying numbers of variables for mediation analysis. Model 4 consisting of a single independent variable, a mediator, and a single dependent variable was the most ideal for the present study. However, the model was initially developed to accommodate predictor and dependent variables measured on a continuous scale, and therefore to use the ordinary least squares (OLS) regression model (Hayes, 2013). An analysis involving categorical predictor and dependent variables, as was the case for this study, can be more complicated as the OLS regression may not be applied to such variables. Instead, a logistic regression model designed to accommodate categorical variables had to be applied.

Kenny (2016) described procedures to transform the logit regression coefficients of categorical predictor and dependent variables into OLS comparable scales. To do this, Kenny created a syntax of codes to run the logistic regression analysis if the mediator and dependent variables are categorical.

A spreadsheet with pre-set formulas to compute comparable logit model coefficients was also created (Kenny, 2016). The syntax file was used to run the mediation analyses, and the spreadsheet to compute the comparable model coefficients.

3. **Results**

To assess participants' demographics, a chi-square test of proportions was conducted to examine if there was a significant difference in proportions of male and female students reporting various forms of bullying (i.e., *bullied*, *forced sex*, and *threatened at school*), and *suicidal ideation*. The results from the analysis are shown in Table 1. The analysis showed significant differences in proportions between male and female students with regards to having been bullied(χ^2= 6.35, *df* = 1, p < .05), *forced sex* (χ^2= 58.5, *df* = 1, p < .001), *threatened at school* (χ^2= 33.9, *df* = 1, p < .001), *sad/hopeless* (χ^2= 137.4, *df* = 1, p < .001), and *suicidal ideation* ($\chi^{2=}$ 127.7, *df* = 1, p < .001). Except for *threatened at school*, there was a significantly higher proportion of females experiencing all forms of bullying, hopelessness, and suicidal ideation relative to females.

Table 1. Demographic Analysis

Variable	Male N (%)	Female N (%)
Bullied		
Yes	469 (40.6%) a	686 (59.4%) b
No	1419 (44.9%) a	1741 (55.1%) b
Forced to have sex		
Yes	187 (29.6%) a	445 (70.4%) b
No	1731 (49.4%) a	2019 (54.1%) b
Sad/Hopeless		
Yes	721 (34.2%) a	1385 (65.8%) b
No	1259 (51.5%) a	1185 (48.5%) b
Suicidal Ideation		
Yes	826 (35.4%) a	1506 (64.6%) b
No	1157 (52.0%) a	1067 (48.0%) b
Threatened at School		
Yes	297 (55.2%) a	241 (44.8%) b
No	1686 (42%) a	2332 (58%) b

Note: subscripts marked *a* in the column for males and *b* in the column for females show significant differences in proportions across the 5 variables

3.1. Logistic Mediation Analysis

Using procedures described by Kenny (2016), separate mediation analyses were conducted to examine the mediation effect of *hopelessness* on the relationship between each of the predictor variables (i.e., *bullied, forced sex,* and *threatened at school*) and *suicidal ideation*. Logistic regression coefficients were calculated using the spreadsheet formulas created by Kenny (2016). The results for the separate mediation analyses are described below.

3.1.1. Bullied

The results from the mediation logistic regression analysis showed a significant effect of *bullied* on *hopelessness* [*b* = .240, *Exp. (B)* = 2.763, *p* < .001]. There was also a significant effect of *bullied* on *suicidal ideation* [*b* = .253, *Exp. (B)* = 2.913, *p* < .001], *hopelessness* on *suicidal ideation* [*b* = .468, *Exp. (B)* = 8.615, *p* < .001], and *bullied* on *suicidal ideation* when *hopelessness* was included [*b* = .144, *Exp. (B)* = 2.112, *p* < .001]. All the three conditions required for *mediation* to occur were met. The significant *p*-value of the effect of *bullied* on *suicidal ideation* when *hopelessness* was included showed that *hopelessness* partially mediated the relationship between *bullied* and *suicidal ideation*. Students that reported having been bullied had odds for suicidal ideation that were 2.11 times higher than students that were not bullied.

3.1.2. Forced sex

The results from the mediation logistic regression analysis of *forced sex* showed a significant effect of *forced sex* on *suicidal ideation* [*b* = .262, *Exp. (B)* = 4.042, *p* < .001]. There was also a significant effect of *forced sex* on *hopelessness* [*b* = .250, *Exp. (B)* = .3774, *p* < .001], *hopelessness* on *suicidal ideation*, [*b* = .218, *Exp. (B)* = 8.437, *p* < .001], and *forced sex* on *suicidal ideation* when *hopelessness* was included, [*b* = .336, *Exp. (B)* = 2.656, *p* < .001]. The first three conditions support existence of mediation since all three coefficients were significant.

The results of the analysis suggest the existence of partial mediation given that the indirect effect (*c'*) remained significant after controlling for *hopelessness*. Students that were forced to have sex had odds for considering suicidal ideation that were 2.66 times higher compared to students that were not forced to have sex.

3.1.3. Threatened at school

The results from the mediation logistic regression analysis of *threatened at school* showed a significant effect of *threatened at school* on *suicidal ideation* [b = -1.153, *Exp. (B)* = .316, p < .001]. There was also a significant effect of *threatened at school* on *hopelessness* [b = -1.105, *Exp. (B)* = .363, p< .001], *hopelessness* on *suicidal ideation* [b = 2.164, Exp. (*B*) = 8.709, p < .001], and *threatened at school* on *suicidal ideation* when *hopelessness* was included [b = -.120, *Exp. (B)* = .432, p < .001]. Again, the results showed partial mediation effect of *hopelessness* given the significant effect of *threatened at school* after controlling for *hopelessness*. The results from mediation analysis of *hopelessness* on the relationship between *threatened at school* and *suicide ideation* showed that *hopelessness* mediated the relationship between the two variables. Someone that reported having been *threatened at school* was at odds to consider suicide that were 2 times higher compared to someone that was not threatened at school.

3.2 Moderation Analysis

Using the procedures described by Field (2013), separate moderation analyses were conducted to assess if *sex* moderated the relationship between each of the three independent variables and the dependent variable. The results of the moderation analyses are described in the following section.

3.2.1. Bullied and suicidal ideation

The moderation analysis to assess whether sex moderated the relationship between *bullied* and *suicidal ideation* resulted in a non-significant interaction effect [b = -.37, 95% CI (-.330, .255), z = -.248, p = .8044]. The relationship between *bullied* and *suicidal ideation* was therefore similar for both groups of students. There was a significant relationship between *bullied* and *suicidal ideation* for both males [b = -.4375, 95% CI (-1.249, -.855), z = -9.897, p = .000] and females [b = -.4375, 95% CI (-1.249, -.855), z = -9.897, p<.001].

3.2.2. Threat at school and suicidal ideation

The moderation analysis to assess whether *sex* moderated the relationship between *threatened at school* and *suicidal ideation* showed an insignificant interaction effect [b = .0881, 95% CI (-.3406, 1.223), z = .4029, p = .69]. The results of the simple slopes showed that when respondent was male, there was a significant relationship between *threatened at school* and *suicide ideation* [b = -.4353, 95% CI (.9156, 1.5894), z = 7.2867, p< .001], and when respondent was female, there was a significant relationship between *threatened at school* and *suicide ideation*, [b = .5647, 95% CI (1.0755, 1.6057), z = 9.911, p< .001].

3.2.3. Forced ex and suicidal ideation

The moderation analysis to assess whether *sex* moderated the relationship between *forced sex* and *suicidal ideation* resulted in an insignificant interaction effect, thereby showing absence of moderation [b = -.2019, 95% CI (-.6204, .2166), z = -.9457, p = .3443]. The results of the simple slopes showed a significant relationship between *forced sex* and *suicidal ideation* when student was male [b = -.4354, 95% CI (-1.4977, -.9994), z = -9.8224, p< .001], or female [b = .5646, 95% CI (-1.7867, -1.1142), z = -8.4553, p< .001].

4. *Discussion and Conclusion*

This study investigated the mediation effect of hopelessness on the relationship between experiences of bullying and suicidal ideation among U.S. high school students. Bullying was operationally defined as specific forms of harassment (i.e., *bullied, forced sex,* and *threatened at school*) that students experienced from other students or individuals at school. The study also assessed whether *sex* moderated the relationship between each of the three predictor variables and *suicidal ideation*.

The chi-square test of proportions showed that females experienced significantly more bullying and forced sex compared to males. On the other hand, males experienced significantly more threats at school compared to females. Although the survey did not include questions targeting electronic forms of bullying (e.g., Facebook**,** Twitter, or through other forms of social media), the questions on bullying included in the survey indicated that females were more vulnerable compared to males. Previous research on bullying shows that generally, females experience more forms of certain types of bullying and victimization (e.g., sexual harassment and emotional aggression) compared to males (U.S. Department of Health and Human Services, 2010). Females experiencing bullying have more often been victims to bullying perpetrated by males relative to females (Munroe, 2004).

In a study examining the relationship between sexual harassment, bullying, and school outcomes, Gruber and Fineran (2007) asserted that males were perpetrators for nearly all the bullying and sexual harassment reported in the survey. The nexus between sex and bullying has often been brought up as a subject warranting investigation to understand "the social construction of masculinity and femininity and how it underlies the nature and extent of bullying behavior in schools" (Munroe, 2004, p. 1).

The lower percentage of males that reported being bullied relative to females may be attributed to the limited likelihood by males to report being bullied due to fear of retaliation or embarrassment from other students (Petrosino et al., 2010). Several studies have shown that several cases of bullying go unreported (e.g., Petrosino et al., 2010). Bradshaw and Waasdorp (2009) postulated the existence of shared beliefs and attitudes that contribute to a culture of bullying in some schools. They posited that students viewed such schools as unsafe and less supportive, thereby contributing to aggressive retaliation and resistance to reporting bullying.

The mediation analyses showed that hopelessness partially mediated the relationship between each of the three predictors and suicidal ideation. This implied that students that experienced the various forms of bullying and considered completing suicide once entered a period of hopelessness, which may have given rise to considerations for completing suicide. This study adds to previous research demonstrating hopelessness as a potential catalytic factor for suicidal ideation in suicidal patients. The finding is also consistent with previous studies that identified hopelessness to be a necessary condition for suicidal ideation to occur (e.g., Bonanno & Hymel, 2010; Klonsky et al., 2016). However, since hopelessness only partly mediated this relationship, and was the only potential mediator included in the analysis, there could be some other factors, such as anxiety, loneliness, low self-esteem, and depression (see Hong., Kral, & Sterzing, 2015) that explain the transition mechanism between experiences of bullying and suicidal ideation.

Research shows increasing cases of bullying in middle and high school, regardless of schools' efforts to put in place measures to prevent bullying from taking place (CDC, 2015). As highlighted earlier, several cases of bullying go unreported due to different reasons, including fear of further victimization from perpetrators (Petrosino et al., 2010). Although schools put in place preventative measures, counselling services explicitly addressing hopelessness are essential to assist students that may be feeling hopeless, as such measures can prevent the degeneration of hopelessness into suicidal behaviors.

The insignificant moderation effect of sex on the relationship between each of the three predictors and suicidal ideation might suggest that both males and females were equally likely to be affected by traditional bullying the same. Based on findings from other studies (e.g., Bauman et al., 2013; Litwiller & Brauch, 2012), we concur that the addition of a measure of cyberbullying as a predictor variable might show different effects for males and females. The effects of electronic or cyberbullying on suicidal ideation could not be ascertained because of the absence of a cyber/electronic bullying variable. Understanding the role of cyber/electronic bullying has become more important than before given the spiraling increase in information technologies and social media. Although previous research shows convincing evidence of the correlation between cyberbullying and suicidal ideation (e.g., Litwiller & Brauch, 2012), there seems to be conflicting findings regarding this relationship between male and female students.

Part of previous research reports higher rates of suicidal behaviors related to cyberbullying amongst females compared to males (e.g., Bauman et al., 2013; Reed, et al, 2019). Other parts of previous research show that males are more likely to cyberbully and be victims of cyberbullying compared to females (e.g., Zsila et al., 2018). Given the conflicting findings in regard to the role of cyberbullying on the behaviors of male and female students, there is need for more research in this area.

5. *Implications of Results*

The results from the analyses show that students that experience bullying in school may end up considering suicidal ideation or engaging in suicidal behaviors as a result of feeling hopeless. If such students do not receive the necessary help, there is a risk that some students may actually end up completing suicide (Hertz et al., 2013). Apart from policies or strategies to prevent bullying from occurring, practitioners may need to put in place systems to help student victims of bullying to combat the negative feelings of experienced bullying, such as counselling services. Previous research has shown that some students may not report bullying from fear of victimization or retaliation (Petrosino et al., 2010). Provision of counselling services can help students to not scare from reporting bullying as well as build hope amongst victims.

It is imperative that schools take a whole-institution approach to suicide awareness and prevention. Schools can intensify training on suicide awareness and prevention on its personnel (i.e., teachers and non-teaching staff) as well as students (Joshiet al., 2017). It has been reported that students may express thoughts of suicide in different ways, e.g., in writing, drawings, or indirect verbal or non-verbal expressions (Piqueraset al., 2019).

However, people that have not received training on suicide awareness may not be able to read cues and tell that suicide ideation or attempt is imminent. Schools can incorporate specific trainings on identifying and understanding signs of suicidal thoughts within their programs. Societal or cultural reactions to students experiencing suicidal ideation and thoughts may exacerbate the suicidal thoughts (Fino et al., 2014). In some cases, people may make distressing statements unknowingly or unintentionally, thinking that they are soothing or encouraging. Schools may consider incorporating training procedures for responding to suicidal crisis so as to equip personnel with ideal knowledge and skills of responding to suicidality. Several programs and resources to facilitate awareness and staff training that schools can incorporate into their own programs have become more publicly available (see Joshi et al., 2017).

6. *Limitations*

The study was not without limitations. Firstly, the categorical nature of predictor and outcome variables complicates analyses and interpretation of results. Kenny (2016) described procedures for conducting mediation analysis when both predictor and outcome variables are categorical. However, the procedures do not include methods for calculating the significance of the indirect effect paths using SPSS software. Secondly, the use of hopelessness as a mediator masks potential of other variables that may also be associated with hopelessness. The YRBSS data provides bullying associated variables that were considered to potentially cause hopelessness in participants. However, there might be plenty of other factors that cause hopelessness among high school students other than those included in the YRBSS data. Future research may consider capturing various other factors that may potentially cause hopelessness among high school students.

Another limitation lies on the limited amount of information provided for the predictor variables. Given the complex and the high-stakes nature of bullying (i.e., its association to suicide ideation) in this study, a more complex and informative level of measurement would have provided a clearer picture of bullying and strengthen the implications of the research results. Also, the absence of information regarding various forms of bullying that can be exhibited or experienced other than on school property limits a more overarching conclusion regarding the effect of other forms of bullying that were not specified in the survey. For instance, traditional bullying (conducted face-to-face) and cyber or electronic bullying have been shown to be different and bear differential effects (Zsila et al., 2018). A variable specifically on cyber bullying could help to further understand and create more knowledge regarding the nature of the effect of cyberbullying as opposed to physical bullying between males and females.

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