Suicidology Online 2017; **8**: 89-103.

Suicidology Online
open access journal
www.suicidology-online.com

ISSN 2078-5488

Original research

Trends in Attempted Suicide Among Ten Demographic Groups Of U.S. High School Students, 1991-2013

Robert M. Fernquist, Ph.D[1,✉]

[1] University of Central Missouri

Submitted to SOL: January, 15th, 2016; accepted: February 11th, 2017; published: March 23rd, 2017

***Abstract*:** Our knowledge of factors that predict suicide attempts among high school students of different gender/race/ethnic categories is still limited. Methods: This research examines how factors such as binge drinking and being forced to have sex impact attempted suicide among high school students in the U.S. during 1991-2013. Results: The average age of the students was 16.2 and there were 773 Native American females, 20,696 Hispanic females. 3,005 Asian females, 17,847 Black females, 33,027 White females, 915 Native American males, 19,374 Hispanic males, 3,122 Asian males, 15,044 Black males, and 33,377 White males. Regression and difference of means analyses find that factors such as that binge drinking and being forced to have sex, as well as a combination of factors, significantly increase the risk of attempting suicide. Discussion: Results of this research may benefit teachers, school nurses, high school counselors, and peer-support groups as they counsel with high school students who may be suicidal.

Keywords: Attempted Suicide, Race, Ethnicity, Gender, High School Students

One of the many strengths of sociological research on the topic of youth suicide over the years has been the ability to identify factors that impact suicidal risk. For example, researchers have identified factors that increase suicide risk for Native American youth (Tingey, Cwick, Goklish, Larzelere-Hinton, Lee, Suttle, Walkup, and Barlow, 2014), Black youth (Hooper, Tomek, Bolland, Church II, Wilcox, and Bolland, 2015), samples of mostly White youth (Klomek, Kleinman, Altschuler, Marrocco, Amakawa, and Gould 2013), and male and female youth (Mueller, James, Abrutyn, and Levin (2015). However, research on large samples of youth according to race/ethnicity and sex in one dataset is lacking.

Further, whereas risk factors such as bullying (Klomek and Gould 2014), substance use (Ballard, Musci, Tingey, Goklish, Larzelere-Hinton, Barlow, and Cwik 2015), sadness (Fiegelman, Joiner, Rosen, Silva, and Mueller 2016), academic performance (Whaley and Noel 2013), body image (Brausch and Muehlenkamp 2007), and rape (Tomasula, Anderson, Littleton, and Riley-Tillman 2012) are known to increase suicide risk among youth, it is still unclear how these factors impact specific groups of youth according to sex and race/ethnicity. In order to learn more about the manner in which these factors impact suicidal

✉ Robert Fernquist is a Sociology professor at the University of Central Missouri. He received his Bachelors and Masters degrees in Sociology from Brigham Young University and he received his Ph.D. in Sociology from Indiana University. His research interests focus on the role that social factors play in suicidal behaviors. Email: fernquist@ucmo.edu

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

behaviors among youth, a statistical analysis is performed to examine attempted suicide among 10 different demographic groups of public high school students in the United States from 1991-2013. It is hoped that individuals who have significant influence in the lives of high school students, such as school nurses, teachers, school counselors, and peer support groups can benefit from this research as they are in a position to guide teenagers through their high school years.

Literature Review

When we read published research on the topic of youth suicide, the introductory remarks on this topic often center around one of two issues: Suicide is one of the leading causes of death among teenagers, and suicidal behavior among teenagers is a serious problem. Since this research focuses on the latter issue, studies relevant to suicidal behaviors, not completed suicide, will be the focus of this literature review. Researchers have made important strides in identifying the prevalence of suicidal behavior among adolescents. For example, McKinnon, Gariepy, Sentenac, and Elgar (2016) report that suicide accounts for about 6% of all deaths worldwide for young people; Tomek, Hooper Church II, Bolland, Bolland, and Wilcox (2015) find that suicide is the third leading cause of death for teenagers in America; and Brausch and Gutierrez (2009) argue that suicidal ideation and behavior pose very serious problems among adolescents. Researchers have also done well in identifying effective preventative measures of adolescent suicide (Berman, Jobes, & Silverman, 2006; Gutierrez, 2006). While there is excellent research on identifying factors that increase suicide risk among specific male and female youth ethnic/racial groups (Tomek, Hooper, Church, Bolland, Bolland, and Wilcox, 2015; Wexler, Chandler, Gone, Cwik, Kirmayer, LaFramboise, Brockie, O'Keefe, Walkup, and Allen, 2015; Whaley and Noel, 2013), a review of the literature on adolescent suicidal behaviors reveals a small amount of information on suicidal behavior among adolescents according to sex AND race/ethnicity simultaneously. Knowing what factors impact suicidal behaviors for different groups of adolescents can greatly aid individuals in more effectively counseling suicidal youth. While sexual orientation is a strong predictor of suicidal behavior among adolescents (Jiang, Perry, & Hesser, 2010; Mueller, James, Abrutyn, and Levin, 2015), data on sexual orientation were not available in the current data set. This research examines attempted suicide among male and female White, Black, Asian, Hispanic, and Native American high school students from 1991-2013 in relation to the following variables: depression, academic performance, rape, being bullied, binge drinking, and body image.

Depression

Depression (and similar mental states) is regularly found to be linked with suicidal behaviors. Kuo, Tran, Shah, and Matorin (2015) explain that depressed persons often consider taking their own lives because they feel so worthless and hopeless. Wong, Zhou, Goebert, and Hishinuma (2013) find that depression consistently has the strongest impact on suicidality among high school students relative to any other variable they examined. Similar findings are reported elsewhere (Dearden, De La Cruz, Crookston, Novilla, and Clark, 2005; Roberts & Chen, 1995; Sofronoff, Dalgliesh, & Kosky, 2004), although Jiang et al. (2010) find this to be more true for females than males. McManama O'Brien, Becker, Spirito, Simon, and Prinstein (2014) conclude that the combination of depression and alcohol consumption is likely to result in a suicide attempt. Such a statement suggests the need to examine predictors of suicidal behavior in combination with each other, not just individually.

Academic Performance

Whaley and Noel (2013) report that poor academic performance increases the risk of suicide for both Asian-American and African-American students, although the effect is stronger for Asian-American students. Dearden et al. (2005) show that poor academic performance strongly increases the risk of suicidal behavior among female, but not male, high school students. Specifically, they find that females who do not do well in school are much more likely than females who are doing well to have attempted suicide. Whetstone, Morrissey, & Cummings (2007) find similar results, whereas Richardson, Bergen, Martin, Roeger, and Allison (2005) find that both male and female adolescents are at an increased risk of attempting suicide when they do not do well in school. However, Jiang et al.'s (2010) research shows that students with poor grades were not significantly more likely to attempt suicide than were students with good grades.

Rape

Jiang et al. (2010) explain that both male and female high school students who were forced to have sexual intercourse were more likely to have made a suicide attempt versus those who were not forced to have sex. Similarly, Borges, Benjet, Medina-Mora, Orozco, Molnar, and Nock (2008) explain that being raped increased the risk of

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

attempting suicide among adolescents four-fold while Tomasula et al. (2012) find it increases the risk of suicidal attempts by about 10 times for males and five times for females. Ackard and Neumark-Sztainer (2002) report that, controlling for age and race, both male and female adolescents who have experienced date rape are about four times more likely to have attempted suicide compared to adolescents who have not experienced date rape or dating violence. However, Olshen, McVeigh, Wunsch-Hitzig, and Rickert (2007) find that a lifetime history of sexual assault is related to an increased risk of suicide attempts for male, but not female, urban teenagers.

Being Bullied

Klomek, Sourander, and Elonheimo (2015) report that youth who are bullied are at an increased risk for suicidality. Klomek, Marrocco, and Kleinman (2008) further explain that victimization at the hands of high school peers, including physical abuse and being teased, increases the risk of both depression and thinking about committing suicide for both male and female high school students. Klomek Sourander, Niemela, Kumpulainen, Piha, Tamminen, Almqvist, and Gould (2009) report that boys and girls who were frequently bullied at age eight were significantly more likely to exhibit suicidal behavior later in life (either attempts or completions) compared to youth who were not bullied. Overall, the literature clearly indicates that bullying is commonly found to increase suicide risk in both male and female adolescents (Bhatta, Shakya, & Jefferis, 2014; Cooper, Clements, & Holt, 2012; Kim, Leventhal, Koh, and Boyce, 2009).

Alcohol Use

Alcohol use increases the risk of suicide (Spencer-Thomas, 2011) because alcohol use not only impairs cognitive ability, but it may also be the 'courage pill' that an individual needs to go through with the act of attempting suicide (Brent, Perper, & Allman, 1987). Cwik, Barlow, Tingey, Goklish, Lazelere-Hinton, Craig, and Walkup (2015) show that 91% of American Indian youth who recently attempted suicide had a high lifetime use of alcohol. Barlow, Tingey, Cwik, Goklish, Lazelere-Hinton, Lee, Suttle, Mullany, and Walkup (2012) report that about 2/3 of American Indian youth they surveyed were drunk (or high) during their suicide attempts. Tomek et al. (2015) also find that frequent alcohol use increases suicide attempts among Black American adolescents. In short, alcohol use is commonly found to increase suicide risk in adolescents (Dearden et al., 2005; Nishimura, Goebert, Ramisetty-Mikler, and Caetano, 2005; Pompili, Serafini, Innamorati, Biondi, Siracusano, Giannantonio, Giupponi, Amore, Lester, Girardi, and Moller-Leimkuhler, 2012; Wong et al., 2013), although Dunn, Givens, and Austin (2008) report that alcohol use increases the risk of suicide attempts in female, but not male, students.

Body Image

Brausch and Muehlenkamp (2007) assert that a poor body image significantly increases suicidal ideation in both male and female adolescents. Other research also finds that perceptions of being overweight increase the risk of suicide attempts in adolescents (Swahn, Reynolds, Tice, Miranda-Pierangeli, Jones, and Jones, 2009; Whetstone et al., 2007). Brausch and Muehlenkamp (2007) further argue that because youth are less invested in their bodies they are more likely to consider harming their bodies. However, Braush and Decker (2014) report that body satisfaction has no significant impact in any of their analyses on suicidal ideation in adolescents. Brausch and Gutierrez (2009) hypothesize that a poor body image has both direct and indirect effects on suicidal ideation. In their examination of high school students, they find that a negative body image increased the risk of being depressed, which in turn increased suicidal ideation. They did not find, however, a direct association between body image and suicidal ideation. Jiang et al. (2010) conclude that high school students who perceive themselves as overweight were no more likely to have attempted suicide compared to students with no such body image.

Race/Ethnicity

Cwik et al. (2015), Tingey et al. (2014), and Gidner (2006) report that the suicide rate among Native American teens and young adults is over two times greater than the nationwide rate. One proposed theory for the higher incidence of suicidal ideation among Native Americans is that they have a higher rate of poverty and alcoholism than the general population and this yields a much higher rate of hopelessness in the Native American population (Echohawk, 1997).

Frank and Lester (2001) find that, compared to both White and Black youth, Hispanic/Latino youth are more likely to have attempted suicide. This is true for both males and females. Gutierrez, Muehlenkamp, Konick, and Osman (2005) report that depressive symptoms increase suicidal ideation for both White and Black adolescents, although White adolescents reported higher levels of suicidal ideation than Black adolescents. Conversely, Kim, Moon, and Kim (2011), Waldrop,

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

Hanson, Resnick, Kilpatrick, Naugle, and Saunders (2007), and Muehlenkamp and Gutierrez (2004) find no significant differences in suicidal behaviors across race/ethnicity among adolescents. Gutierrez and Osman (2008), in their review of suicidality among minority youth, report that Hispanic youth are more likely to think about and attempt suicide relative to African-American and Asian-American youth. Conversely, African-American youth tend to be less likely to attempt suicide than other racial/ethnic groups.

Gender

One of the most consistent findings about suicidal behavior among adolescents, aside from the strong influence depression has on suicidal behaviors, is that females attempt suicide more than males (Brausch & Gutierrez, 2009; Hooper et al., 2015; Kim et al., 2011; Frank & Lester, 2001; Lobach, 2008; Martin, Richardson, Bergen, Roeger, and Allison, 2005; Muehlenkamp & Gutierrez, 2004; Waldrop et al., 2007; Whetstone et al., 2007) although there are exceptions which find no significant gender differences (Roberts & Chen, 1995).

While many of the articles cited above include gender and/or race as independent variables in statistical analyses, rarely do we see separate, distinct groups of adolescents studied according to race and gender combined (e.g., Asian-American males versus Native American females). One goal of this research is to increase knowledge on how risk factors impact suicidal behaviors among specific groups of adolescents, which is important to know because there have not been many studies that have compared Whites to minorities regarding risk factors of suicidal behaviors (Gutierrez et al. 2005). This research aims to determine how risk factors for attempted suicide differ by demographic group so that those persons who are likely to encounter depressed adolescents, including school nurses, teachers, school counselors, and peer support groups can provide appropriate guidance and support for suicidal high school students. In order more fully understand how risk factors impact suicidality for adolescents, the independent variables in this analysis will be studied (1) individually and (2) in combinations with each other because it is common for suicidal adolescents to be beset by a combination of problems (Berman et al., 2006; Klomek, Sourander, and Elonheimo, 2015).

Data analyses will examine how academic performance, rape, bullying, alcohol use, sadness, and perceived body image impact attempted suicide among high school students.

Method

All data are from the Youth Risk Behavior Surveillance System (YRBSS), a data set that was established by the Centers for Disease Control and Prevention (http://www.cdc.gov/HealthyYouth/yrbs/index.htm). This survey has been given every two years to a random sample of public high school students beginning in 1991. Students in most of the 50 states, including Washington, DC have been included in this survey. The time period for this analysis is 1991-2013 (12 different survey periods) and the overall response rate for the 1991-2013 period is 67% (Centers for Disease Control and Prevention, 2013, 2014a). For each survey, the overall response rate was calculated as follows, using 2007 as an example: 157 out of 195 sampled schools participated in the survey (81%) and 14,103 out of 16,662 sampled students submitted questionnaires (84%), yielding an overall response rate of 68% (81% * 84%). Research finds that the data collected in these surveys are valid (Centers for Disease Control and Prevention, 2013; Perez, 2005).

Because suicidal behaviors are not common events, researchers would need time series data of youth over a period of many years to properly analyze and better understand attempted suicide among youth (Gutierrez 2006). Since the current data cover 22 years, they allow a detailed analysis of attempted suicide among youth (sample sizes are presented in the Results section). Analyses of attempted suicide are broken down by race/ethnicity and sex. There are five racial/ethnic groups: (1) White (classified as White, non-Hispanic from 1991-1997 and White from 1999-2013); (2) Black (classified as Black from 1991-1997 and Black or African American from 1999-2013 [both Whites and Blacks, notwithstanding the categorical name change, are still White and Black non-Hispanics for the entire 1991-2013 period]); (3) Hispanic or Latino (classified as Hispanic or Latino from 1991-2013); (4) Asian or Pacific Islander (classified as Asian or Pacific Islander from 1991-1997 and both [a] Asian and [b] Native Hawaiian and Other Pacific Islander from 1999-2013); (5) American Indian and Alaska Native (classified as Native American or Alaska Native from 1991-1997 and American Indian and Alaska Native from 1999-2013). There are 10 different groups being examined (five racial/ethnic groups for males and female separately).

Dependent Variable

Attempting suicide was measured by asking, "During the past 12 months, how many times did

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

you actually attempt suicide?" Response categories are listed as follows: '0', '1', '2-3', '4-5', and '6 or more times'. This variable was measured for the entire 1991-2013 time period.

Independent Variables

Sadness is measured by the following question: "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" This question was asked from 1999-2013. Students who said yes were coded as 1 and students who said no were coded as 0.

Being forced to have sex was measured from 1999-2013 and the questions asked students were, 'Have you ever been forced to have sexual intercourse when you did not want to?' (1999) and 'Have you ever been physically forced to have sexual intercourse when you did not want to?' (2001-2013). Students who said yes were coded as 1 and students who said no were coded as 0.

Academic performance was measured for 2001, 2003, and 2009. Although there were questions asked in 1991 and 1993 regarding academic performance, the response categories ('one of the best students', 'far above the middle', etc.) were qualitatively different from the response categories used for 2001, 2003, and 2009 and were, therefore, omitted. In 2001, 2003, and 2009, students were asked, "During the past 12 months, how would you describe your grades in school?" Response categories ranged from 'mostly A's' (coded as 1) to 'mostly F's' (coded as 5).

Bullying was measured from 2009-2013 and the question students were asked was, 'During the past 12 months, have you ever been bullied on school property?' Students who answered yes were coded as 1 and those who answered no were coded as 0.

Alcohol consumption was measured during the entire 1991-2013 time period and the question which students answered was, 'During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?'. Response categories are '0 days', '1 day', '2 days', '3 to 5 days', '6 to 9 days', '10-19 days', and '20 more days'. Because this question measures binge drinking, this variable is labeled as binge drinking in this analysis.

Perceived body image was also measured throughout the entire 1991-2013 time period and the questions to which students responded were, 'Which of the following are you trying to do?' (1991-1993) and 'Which of the following are you trying go to about your weight?' (1995-2013). Students who said they were trying to lose weight were coded as 1 and students who said they were either trying to gain weight or stay the same weight were coded as 0. Although losing weight is not necessarily an indicator of dissatisfaction with body image, it is the only question on body image that was asked in the questionnaire.

This analysis of adolescent suicidal behaviors employs 12 different datasets (the 1991 dataset, the 1993 dataset, etc., up to and including the 2013 dataset); proper procedures about combining these datasets (Centers for Disease Control and Prevention, 2014b) were strictly followed. Detailed information on the study procedure is provided by the Centers for Disease Control and Prevention (2013). Since the study procedure is explained in detail by the Centers for Disease Control and Prevention, it is not repeated here.

Because of the different variables and years involved herein, sample sizes differ for various data analyses. For example, while there are 33,377 white males students who responded to survey questions from 1991-2013 (see table 2), there are 21,508 white males included in regression analysis (see table 3a) because not all of these 33,377 students answered questions related to being forced to have sex, binge drinking, sadness, and attempted suicide. Further, sample sizes for each group differ for the difference of means analysis (see table 4) because each panel in the table examines a different combination of variables.

When regression analysis was performed for each of the 10 demographic groups, results revealed a very weak association between losing weight and attempted suicide (table not shown). To test if losing weight truly needed to be in the regression model, notwithstanding results from previous research, regressions were run both with and without losing weight and the resultant F-Test changes in each of the 10 R^2 values were examined (see table 1). In half of the models, no significant increase in explained variance is obtained by including losing weight (for Native American females, R^2 was actually higher by .001 without losing weight in the model). For four of the five other models, including losing weight in the regression model only increased R^2 by .001. In the model for Native American males, R^2 increased by .004. Even though statistical analyses reveal these are significant changes in explained variance, they are substantively miniscule changes. Losing weight, therefore, will not be included in regression analyses herein.

Suicidology Online 2017; **8**: 89-103.
Suicidology Online open access journal www.suicidology-online.com
ISSN 2078-5488

Table 1
Impact of Losing Weight on Explained Variance in Regression Models

	Adjusted R^2 With Losing Weight	Adjusted R^2 Without Losing Weight	F-Test Change in R^2
Asian/Pacific Islander Males	.220	.220	.235
Asian/Pacific Islander Females	.163	.163	.703
Black Males	.138	.138	.130
Black Females	.096	.095	.029
Hispanic Males	.144	.144	.340
Hispanic Females	.139	.138	.000
White Males	.150	.149	.000
White Females	.124	.123	.000
Native American Males	.271	.267	.025
Native American Females	.112	.113	.994

After discussing descriptive results of the data, analysis will turn to Ordinary Least Squares (OLS) regression. Instead of running one OLS model with dummy variables for sex and race/ethnicity, models for each demographic group separately are examined as this method yields information for each group separately, an aspect missing from most sociological analyses of youth suicide. When bullying and academic performance are included in data analysis, only 2009 data are used because that is the only year where data are available for all five independent variables. Therefore, regression analyses will include (1) three independent variables (e.g., binge drinking, sadness, and forced sex) for the time period 1999-2013 (data on sadness are only available since 1999) and (2) all five independent variables for 2009 only.

To check for harmful collinearity, a common problem in regression analysis, Allison's (1999) guidance that any Variance Inflation Factor (VIF) 2.5 or over indicates problematic collinearity among the predictors was employed. There were no indications of harmful collinearity in any of the models for the periods 1999-2013 and 2009. All VIFs in tables 3a and 3b are below 2.2, suggesting that collinearity will not bias regression results. In regression analyses dealing with data over time, attention must be paid to autocorrelated error terms. If these error terms exhibit significant correlations, regression results will not be accurate. In each regression model shown in table 3a, all the Durbin-Watson test statistics show that there is no problematic autocorrelation as all values are close to 2.0 (Durbin & Watson, 1951). Because table 3b only examines 2009, Durbin-Watson statistics were not examined.

Interaction terms of independent variables are calculated by adding one variable to another. For example, the interaction between forced sex and binge drinking is obtained by adding the values of forced sex and binge drinking together. Difference of means tests were employed to analyze interaction effects.

Only the three independent variables used in table 3a will be used in the difference of means analysis because if all five independent variables are used (e.g., only 2009 data), the number of cases significantly declines. For example, in 2009 there are only a total of 17 males and 18 females across all racial and ethnic groups who reported being forced to have sex and binge drink and being sad and having bad grades and being bullied. Using Levene's test (1960) to determine equality of variances between the two groups being compared in the difference of means tests, all difference of means results in table 4 indicate that equality of variances can be assumed.

Results

Table 2 shows the percentages and frequencies of students who attempted suicide at least once during 1991-2013. There are noticeable differences between the demographic groups; for example, whereas about one in five Native American females reported attempting suicide at least once, only about five percent of White and Black males reported that they did. Further, with the exception of Native American males, females consistently reported attempting suicide more than males. Chi-square test statistics reveal a significant difference in the distribution of suicide attempts in table 2 (Pearson chi-square = 684.443, df=4, p =.000).

Suicidology Online 2017; **8**: 89-103.

Suicidology Online
open access journal
www.suicidology-online.com

ISSN 2078-5488

Table 2
Percentage of High School Students Who Have Attempted Suicide at Least Once, 1991-2013

	Percent with at Least One Attempt
Native American Females	19.5% (151 students out of 773 students)
Hispanic Females	14.9% (3093 students out of 20696 students)
Native American Males	14.1% (129 students out of 915 students)
Asian & Pacific Islander Females	11.9% (357 students out of 3005 students)
Black Females	9.8% (1754 students out of 17847 students)
White Females	9.5% (3154 students out of 33027 students)
Asian & Pacific Islander Males	6.9% (216 students out of 3122 students)
Hispanic Males	6.8% (1313 students out of 19374 students)
Black Males	5.4% (814 students out of 15044 students)
White Males	4.5% (1490 students out of 33377 students)

Tables 3a and 3b present ordinary least square results for two models. Table 3a displays results from regression analysis of adolescent attempted suicide from 1999-2013 and table 3b displays results for 2009. In order to reduce repetition in explaining results, I will not repeat the phrase 'holding constant all other independent variables' when explaining regression results, although it is implied. In table 3a, we see that being forced to have sex, binge drinking, and sadness significantly increase suicide attempts for all groups of youth. There is some variance, however, in which variables exert the strongest impact on attempted suicide. For example, the standardized coefficients in table 3a show that being forced to have sex is the strongest predictor for Asian and White males. Binge drinking is the strongest predictor for Black males, while sadness is the strongest predictor for the seven remaining groups of youth. Explained variance is fairly low in all of the models, with the models for Native American males (.267) and Asian males (.220) having the highest adjusted R^2.

Table 3a
Ordinary Least Square Standardized Regression Coefficients for Attempted Suicide Among American High School Students, 1999-2013

Independent Variable	Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native Amer. Males	Native Amer. Females
Forced Sex	.269*	.190*	.173*	.128*	.208*	.190*	.242*	.157*	.200*	.187*
Binge Drinking	.233*	.191*	.227*	.134*	.158*	.126*	.111*	.064*	.185*	.112*
Sadness	.172*	.217*	.159*	.204*	.214*	.230*	.221*	.262*	.358*	.201*
Durbin-Watson	1.989	1.967	1.977	1.974	1.999	1.908	1.990	1.942	2.108	1.948
Adjusted R^2	.220	.163	.138	.095	.144	.138	.149	.123	.267	.113
N	2085	2039	8347	9780	12286	13185	21508	22009	624	538

*p<.05

When bullying and academic performance are introduced into the regression analyses, we see that poor academic performance significantly increases suicide attempts for Hispanic males, White males and females, and Native American males. Also, being bullied increases suicide attempts for all groups except Black males and Native American males and females. Further, we see that sadness and being forced to have sex significantly increase suicide attempts for all youth groups except Native American females. In fact, none of the predictors significantly impacts attempted suicide for Native American females. This is likely an artifact of sample size, with only 42 cases being analyzed. Binge drinking significantly increases suicide attempts for all groups except White females and Native American males and females. Again we see some variance in the strength of association between the independent variables and attempted suicide. Being forced to have sex has the strongest impact on attempted suicide for Asian males and Hispanic females. Binge drinking has the strongest impact for Black males, while poor academic performance has the strongest impact for Native American males. Sadness has the strongest impact on attempted suicide for the remaining six groups (being raped

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

and sadness both had the strongest effect on White males). Explained variance is again fairly low in the regression models, with Native American males (.405) and Asian males (.382) having the highest adjusted R^2.

Table 3b
Ordinary Least Square Standardized Regression Coefficients for Attempted Suicide Among American High School Students, 2009

Independent Variable	Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native American Males	Native American Females
Forced Sex	.339*	.117*	.228*	.149*	.176*	.207*	.210*	.163*	.262*	.055
Binge Drinking	.195*	.216*	.272*	.095*	.145*	.140*	.185*	.020	.006	.174
Sadness	.233*	.236*	.095*	.221*	.198*	.174*	.210*	.206*	.312*	.319
Grades	.070	-.039	-.063	-.042	.057*	.033	.054*	.084*	.357*	-.109
Bullied	.105*	.104*	.035	.074*	.071*	.124*	.106*	.082*	.030	.120
Adjusted R^2	.382	.156	.185	.114	.129	.165	.192	.122	.405	.122
N	301	348	743	833	1508	1618	2923	2930	59	42

*p<.05

The difference of means analysis is presented in table 4. This table is broken down into four parts, one for each possible combination of the three independent variables (forced to have sex, binge drinking, and sadness). Comparisons are between those who are experiencing a combination of problems (e.g., being forced to have sex and binge drinking) versus those who are not experiencing this same combination of problems. Based on the review of the literature, those who are experiencing each combination of problems will be labeled 'at risk' of suicide. In all 40 comparisons shown in table 4, experiencing some combination of problems significantly increases suicide attempts. For example, the mean number of suicide attempts for Hispanic males who have been forced to have sex and feel sad is 2.18, while it is 1.10 for Hispanic males who are not in the category 'forced to have sex and feel sad'. In other words, Hispanic males in the at risk group are about twice as likely to attempt suicide compared to those not in the at risk group. The average ratio for all 40 comparisons in table 4 is 1.83 (# at risk suicide attempts/# not at-risk suicide attempts). In other words, individuals who reported some combination of problems have, on average, close to double the suicide attempts than individuals who are not experiencing the same combination of problems. For youth in table 4 who have been forced to have sex and feel sad, Asian males, White males, and Native American males are over two times more likely to attempt suicide compared to other Asian, White, and Native American males. Hispanic males who have been forced to have sex and feel sad are almost (2.18/1.10=1.98) twice as likely as other Hispanic males to attempt suicide. For youth who have been forced to have sex and binge drink, Asian males and Native American males were over twice as likely to attempt suicide compared to other Asian and Native American males. Differences in suicide attempts between youth who binge drink alcohol and feel sad versus youth not in this category are the smallest in table 4, with the largest difference being for Native American males who binge drink and feel sad (1.9 times more likely). Conversely, the largest differences for each of the 10 groups are found when comparing youth who were forced to have sex and binge drink and feel sad compared to those not in this category. All males who are in this at risk category are more than twice as likely as males who are not in this category to have attempted suicide. For Asian males, this difference is almost three times greater (3.30/1.11=2.97). Asian females who are in this category are also more than twice as likely to attempt suicide than Asian females not in this category.

Discussion

Data from the Youth Behavior Risk Surveillance System from 1991-2013 show much variation in the frequency of attempted suicide among high school youth. For example, about one in five Native American females and almost 15% of Hispanic females attempted suicide at least once. On the other end of the spectrum, just over 5% of Black males and just under 5% of White males attempted suicide at least once. While these differences could be due to the fact that some groups of youth are less likely to admit to attempting suicide, these are nonetheless striking differences.

Regression and difference of means analyses of suicide attempts among high school students in the United States revealed both similarities and

Suicidology Online 2017; **8**: 89-103.

Suicidology Online
open access journal
www.suicidology-online.com

ISSN 2078-5488

Table 4
Difference of Means Tests for Attempted Suicide Among Self-Identified Depressed American High School Students, 1999-2013: Interaction Effects

Mean Number of Suicide Attempts For Students Who Have Been Forced to Have Sex AND Feel Sad Vs. Mean Number of Suicide Attempts For Students Not in the Category 'Have Been Forced to Have Sex and Feel Sad'									
Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native American Males	Native American Females
2.84 (n=56) Vs. 1.10 (n=2158)	1.94 (n=109) Vs. 1.15 (n=2015)	1.91 (n=258) Vs. 1.08 (n=9040)	1.57 (n=745) Vs. 1.12 (n=9818)	2.18 (n=342) Vs. 1.10 (n=12643)	1.95 (n=1026) Vs. 1.18 (n=12701)	2.37 (n=358) Vs. 1.06 (n=22119)	1.73 (n=1452) Vs. 1.10 (n=21301)	2.45 (n=40) Vs. 1.16 (n=635)	1.86 (n=64) Vs. 1.22 (n=501)
Mean Number of Suicide Attempts For Students Who Have Been Forced to Have Sex AND Binge Drink Vs. Mean Number of Suicide Attempts For Students Not in the Category 'Have Been Forced to Have Sex and Binge Drink'									
Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native American Males	Native American Females
2.54 (n=50) Vs. 1.10 (n=2894)	2.23 (n=60) Vs. 1.17 (n=2841)	1.99 (n=224) Vs. 1.07 (n=13273)	1.72 (n=229) Vs. 1.14 (n=16608)	2.07 (n=339) Vs. 1.09 (n=16296)	1.96 (n=667) Vs. 1.20 (n=18052)	2.01 (n=442) Vs. 1.06 (n=28445)	1.62 (n=1069) Vs. 1.12 (n=28590)	2.41 (n=29) Vs. 1.16 (n=775)	2.08 (n=39) Vs. 1.26 (n=666)
Mean Number of Suicide Attempts For Students Who Binge Drink AND Feel Sad Vs. Mean Number of Suicide Attempts For Students Not in the Category 'Binge Drink and Feel Sad'									
Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native American Males	Native American Females
1.92 (n=119) Vs. 1.09 (n=2822)	1.79 (n=135) Vs. 1.16 (n=2764)	1.63 (n=425) Vs. 1.07 (n=13132)	1.55 (n=587) Vs. 1.13 (n=16267)	1.53 (n=1239) Vs. 1.07 (n=15346)	1.64 (n=1932) Vs. 1.18 (n=16715	1.48 (n=1799) Vs. 1.05 (n=27183)	1.48 (n=2863) Vs. 1.10 (n=26852)	2.15 (n=67) Vs. 1.13 (n=732)	1.75 (n=71) Vs. 1.26 (n=632)
Mean Number of Suicide Attempts For Students Who Have Been Forced to Have Sex AND Binge Drink AND Feel Sad Vs. Mean Number of Suicide Attempts For Students Not in Category 'Have Been Forced to Have Sex and Binge Drink and Feel Sad'									
Asian Males	Asian Females	Black Males	Black Females	Hispanic Males	Hispanic Females	White Males	White Females	Native American Males	Native American Females
3.30 (n=30) Vs. 1.11 (n=2925)	2.53 (n=38) Vs. 1.18 (n=2868)	2.39 (n=102) Vs. 1.08 (n=13505)	1.92 (n=153) Vs. 1.14 (n=16728)	2.58 (n=186) Vs. 1.09 (n=16516)	2.18 (n=491) Vs. 1.20 (n=18262)	2.59 (n=237) Vs. 1.06 (n=28813)	1.88 (n=709) Vs. 1.12 (n=29043)	2.95 (n=20) Vs. 1.17 (n=788)	2.11 (n=27) Vs. 1.27 (n=678)

differences among 10 different demographic groups. Regression results during 1999-2013 reveal that sadness is a common and relatively powerful predictor of suicide attempts. In fact, it significantly increases attempted suicides among all 10 groups of youth. Further, being forced to have sex and binge drinking also have a significant impact on attempted suicide for all 10 groups of youth. When academic difficulties and being bullied were added to the regression model, each exerted some significant effects on attempted suicide. For example, poor academic performance was the strongest predictor of attempted suicide for Native American males, while bullying increased suicide risk for seven of the 10 groups of youth. A more detailed discussion of both regression and difference of means results is interpreted against the background of existing literature below.

Regression results on the impact of binge drinking, especially those among Black males, support previous research. For example, Tomek et al. (2015) find that frequent alcohol consumption among Black adolescents significantly increases suicide attempts. While binge drinking significantly increased suicide attempts among all high school students in the present study, only for Black males did binge drinking have the strongest impact of

ISSN 2078-5488

independent variables examined in table 3a. All in all, this gives further support to the statement by Tomek et al. that professionals should pay close attention to alcohol use in high school youth. However, binge drinking had the weakest impact of the three independent variables for Native American males and females. It did increase the risk of suicide attempts, but not as much as forced sex and sadness. Alcohol use is often found to be a strong predictor of suicide among Native American youth (Ballard et al. 2015; Barlow et al. 2012). These results suggest that binge drinking may not be as powerful of a predictor of suicide attempts for Native Americans as sadness and being forced to have sex.

In their discussion of the inferior minority assumption, Whaley and Noel (2013) report that poor academic performance is associated with an increased likelihood of suicidality for both Asian-Ameicans and Blacks. However, the current study finds that poor academic performance most strongly applies to Native American males and, to a weaker degree, to Hispanic males, White males, and White females. In Whaley and Noel's discussion of the inferior minority assumption, they explain that there are minority groups whose negative attitudes toward school result in a poor academic performance. These results agree with Whaley and Noel, especially for Native American males, in that poor academic performance increases feelings of inferiority and, possibly, hopelessness.

While sadness significantly increased suicide attempts in all 10 models in table 3a, it had a relatively strong impact for White females and Native American males (based on the relatively large Beta coefficients). Presuming that prolonged sadness can result in depression, teens who are depressed need to be assessed for how they respond to stressful situations, regardless of the teen's sex and race/ethnicity (Kroning, 2016). Kroning goes on to explain that depressed adolescents need attention from those around them to help them feel valued, important, and accepted.

Results from the difference of means analysis reveal that the combination of being forced to have sex and binge drinking alcohol and being sad resulted in the most significant outcomes for attempted suicide. Compared to students who have not been forced to have sex and do not binge drink alcohol and are not sad, those who are in this at risk category tend to have, on average, one more suicide attempt. The most noticeable difference is for Asian males, where those in this at risk group have, on average, 3.3 suicide attempts compared to 1.11 attempts for those not in this category. Just why this at risk category increases suicide attempts more for Asian males than for other groups remains to be discovered. These are striking results and could certainly help guide individuals who counsel suicidal youth, including teachers, school counselors, and peers.

Regardless of the combination of variables examined in table 4, high school students who were in an 'at risk category' were significantly more likely to attempt suicide than students of the same sex and racial/ethnic background who were not in an at risk group. The panel which compared those who have been forced to have sex and who binge drink and who feel sad to those not in this category shows that each group of males in this at risk group is over two times more likely to attempt suicide. Asian females are also over two times more likely to attempt suicide compared to Asian females not in this at risk group. Since attempted suicide is often the result of a combination of problems in adolescents' lives (Klomek et al. 2015), one direction future research could focus on is examining combinations of risk factors. Further, two groups that emerged as being particularly vulnerable to attempted suicide in table 4 are Asian males and Native American males. In three of the four comparisons in table 4, Asian males had the largest differences in attempted suicide. For example, in the panel comparing those who have been forced to have sex and who feel sad to students who have not been forced to have sex and are not sad, Asian males in the at risk group were 2.58 times more likely to attempt suicide (2.84/1.10). Native American males in the at risk groups also exhibited striking differences compared to their counterparts who are not in the at risk groups. For example, those who binge drink and feel sad are 1.9 times more likely to attempt suicide than Native American males not in this category. This is the largest difference in this panel. Perhaps Asian American males and Native American males are foremost among minority groups who receive minimal mental health care services (Holden, Satcher, McGregor, Thandi, Fresh, Sheats, Belton, and Mattox, 2014) and, as a result, do not get needed help when they become suicidal.

Although bullying was not included in the difference of means analysis, a discussion of bullying is needed, given information presented by Klomek and Gould (2014) and Klomek et al. (2015). For example, Klomek et al. explain that other factors work in conjunction with bullying in creating long-term negative outcomes. Although there are not enough cases to examine bullying for each of the 10 groups individually (since bullying data are only available for 2009), a difference of

ISSN 2078-5488

means test was performed for all youth combined for all predictors in table 3b (table not shown). There were 31 students who reported being forced to have sex and were binge drinkers and were sad and had poor academic performance and were bullied. Compared to other students, these 31 students were 3.31 times more likely to attempt suicide (3.74 attempts on average versus 1.13 attempts on average; this difference is statistically significant, $p < .001$). Clearly, bullying must be examined in conjunction with a combination of other factors when trying to help male and female suicidal youth of various racial and ethnic groups.

Orbach (2009) related the following quote from a teenager's suicide note: "My life is going down the drain and I feel as if there is nothing else left to do. What do I do to make the pain go away? I want to help everyone else but I can't. I want the pain to go away." Orbach further explained that an important point to be made here is that self-hate and mental pain often go hand in hand; self-hate is a result of mental pain, especially if we feel we can't control the pain. If the self-hate won't go away, the person often ends up committing suicide. Conversely, if the pain is removed, the person is much less likely to take his or her own life. The best way to help a suicidal person is to immediately reduce his pain. How can we do this? Orbach argues that one way is to empathize with the person—to see things and understand things from his/her viewpoint. This reduces the person's loneliness because the person now sees that s/he is no longer alone in these feelings. Further, we can use 'us' or 'we' words (e.g., "that's not fun when this type of things happen to us") since such words help the person feel like s/he is not alone with these struggles.

While efforts to reduce hopelessness and depression have been proven effective in reducing suicidal behaviors among youth, strategies that focus on improving well-being may also be effective in reducing suicidal behavior. For example, encouraging youth to (1) develop (or continue to develop) emotional bonds with friends and family and (2) setting, and working towards attaining, achievable goals could help individuals reduce suicidal behaviors (Hirsch, Visser, Chang, and Jeglic, 2012). Further, since most suicidal youth confide in peers and prefer peer support over parental support, programs that help train teens and young adults to know how to help suicidal peers are needed (Bernik, 2011). Finally, suicide prevention efforts may be most effective when done in a culture-specific context since culture often influences the meaning behind one's motives to commit or consider suicide (Hirsch et al., 2012).

Muehlenkamp and Gutierrez (2004) stress that early identification could help adolescents receive treatment services that could help them develop healthy coping behaviors. Those who work in high schools should be ready to intervene if they notice warning signs that indicate youth may engage in self-injury. Martin et al. (2005) further argue that one of the major problems related to accurately identifying adolescent suicide risk is that those who have the most consistent contact with teenagers are often not trained to assess risk and are not sure how to proceed to help youth receive the help they need. Martin et al. identify teachers, counselors and administrators as educational professionals who could, if properly trained, help adolescents obtain needed help to reduce the risk of suicidal behaviors.

There are, however, several limitations to this study that need to be addressed. First, this analysis covers a broad range of time (1991-2013) and it is possible that social changes in recent years that have more strongly stigmatized mental illness and suicide (Holmes and Almendrala, 2016) could have made students less willing in recent years to admit to suicidal behaviors. Second, factors that have been found to be significant predictors of suicidal behavior among youth, including age, suicidal ideation, and sexual orientation (Hooper et al., 2015; Tomek et al., 2015) were not included in analyses. Third, while sadness was found to increase the likelihood of attempted suicide, both alone and in combination with other factors, one aspect of sadness that should be examined is how it impacts attempted suicide once family and community factors are considered (Cwik et al. 2015). For example, issues that are external to the adolescent, such as drug problems among other family members and having available community support and counseling services, are just as important as internal factors, such as their own depression. Fourth, students may under-reported the occurrence of undesirable behaviors such as binge-drinking (Barlow et al., 2012).

It is hoped that the research conducted herein will be of use in training programs for educational professionals to help identify and guide suicidal adolescents, especially given increased emphasis on recognizing and appropriately responding to warning signs of youth suicidal behaviors (Substance Abuse and Mental Health Services Administration, 2015) and the success of school-based suicide prevention programs such as the Youth Aware of Mental Health (Wasserman et al., 2015). What type of information from the present study might be used in such training? One glaring result from this analysis is the powerful and sweeping manner in which being forced to have

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

sex increases the risk of attempting suicide across gender and racial groups. Another result is that some groups are adversely impacted by bullying and alcohol use while others are not. But perhaps the most striking results are those that reveal the impact that combinations of risk factors have on attempted suicide. Understanding the combination of risk factors that greatly increase the risk of suicide attempts will arm educational professionals and peer groups with needed knowledge to guide troubled youth to receive the help they need to avoid suicidal behavior.

References

Ackard, D.M., & Neumark-Sztainer, D. (2002). "Date violence and date rape among adolescents: Associations with disordered eating behaviors and psychological health." *Child Abuse and Neglect,* 26, 455-473.

Allison, P.D. (1999). *Multiple regression: A primer.* Thousand Oaks, CA: Pine Forge Press.

Ballard, E.D., Musci, R.J., Tingey, L., Goklish, N., Larzelere-Hinton, F., Barlow, A., and Cwik, M. (2015). Latent class analysis of substance use and aggressive behavior in reservation-based American Indian youth who attempted suicide. *American Indian and Alaska Native Mental Health Research, 22*, 77-94

Barlow, A., Tingey, L., Cwik, M., Goklish, N. Larzelere-Hinton, F., Lee, A., Suttle, R., Mullany, B., and Walkup, J.T. (2012). Understanding the relationship between substance ue and self-injury in American Indian youth. *The American Journal of Drug and Alcohol Abuse, 38*, 403-408.

Berman, A.L., Jobes, D.A., & Silverman, M.M. (2006). *Adolescent suicide: Assessment and intervention*. Washington, DC : American Psychological Association.

Bernik, L.S. (2011). "Youth suicide prevention: Challenges and opportunities." Annual meetings of the American Association of Suicidology. April 15, 2011.

Bhatta, M.P., Shakya, S., & Jefferis, E. (2014). "Association of being bullied in school with suicide ideation and planning among rural middle school adolescents." *Journal of School Health,* 84, 731-738.

Borges, G., Benjet, C., Medina-Mora, M.E., Orozco, R., Molnar, B.E., & Nock, M.K. (2008). "Traumatic events and suicide-related outcomes among Mexico City adolescents." *Journal of Child Psychology and Psychiatry,* 49, 654-666.

Brausch, A.M., & Decker, K.M. (2014). "Self-esteem and social support as moderators of depression, body image, and disordered eating for suicidal ideation in adolescents." *Journal of Abnormal Child Psychology,* 42, 779-789.

Brausch, A.M., & Gutierrez, P.M. (2009). "The role of body image and disordered eating as risk factors for depression and suicidal ideation in adolescents." *Suicide and Life-Threatening Behavior,* 39, 58-71.

Brausch, A.M., & Muehlenkamp, J.J. (2007). "Body image and suicidal ideation in adolescents." *Body Image,* 4, 207-212.

Brent, D.A., Perper, J.A., & Allman, C.J. (1987). "Alcohol, firearms, and suicide among youth. Temporal trends in Allegheny County, Pennsylvania, 1960 to 1983." *The Journal of The American Medical Association, 25,* 3369-72.

Centers for Disease Control and Prevention. (2013). "Methodology of the youth risk behavior surveillance system." *Morbidity and Mortality Weekly Report: Recommendations and Reports*, 62(1).

Centers for Disease Control and Prevention. (2014a). 2013 YRBS data user's guide. Atlanta: Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2014b). Combining YRBS data across years and sites. Atlanta: Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. "Youth risk behavior surveillance system". Retrieved between September 17, 2009 and April 22, 2015 (http://www.cdc.gov/HealthyYouth/yrbs/index.htm.)

Cooper, G.D., Clements, P.T., & Holt, K.E. (2012). "Examining childhood bullying and adolescent suicide: Implications for school nurses." *The Journal of School Nursing,* 28, 275-283.

Cwik, M., Barlow, A., Tingey, L., Goklish, N., Larzelere-Hinton, F., Craig, M., and Walkup, J.T. (2015). Exploring risk and protective factors with a community sample of American Indian adolescents who attempted suicide. *Archives of Suicide Research, 19*, 172-189.

Dearden, K.A., De La Cruz, N.G., Crookston, B.T., Novilla, L.B., & Clark, M. (2005). "Adolescents at risk: Depression, low academic performance,

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

violence, and alcohol increase Bolivian teenagers' risk of attempted suicide." *The International Electronic Journal of Health Education,* 8, 104-119.

Dunn, M.S., Goodrow, B., Givens, C., & Austin, S. (2008). "Substance use behavior and suicide indicators among rural middle school students." *Journal of School Health*, 78, 26-31.

Durbin, J., & Watson, G.S. (1951). "Testing for serial correlation in least squares regression." *Biometrika,* 38, 159-177.

Echohawk, M. (1997). "Suicide: The scourge of Native American people." *Suicide and Life-Threatening Behavior,* 27, 60-67.

Fiegelman, W, Joiner, T., Rosen, Z., Silva, C., and Mueller, A.S. (2016). Contrasts between young males dying by suicide, those dying from other causes and those still living: Observations from the national longitudinal survey of adolescent to adult health. *Archives of Suicide Research, 20*, 389-401.

Frank, M.L., & Lester, D. (2001). "Risky behaviors in Hispanic youth." *Hispanic Journal of Behavioral Sciences,* 23, 498-504.

Gidner, J. (2006). "Native American teens are at greater risk for suicide" in Heidi Williams (ed.) *Teen Suicide*. Detroit: Greenhaven Press.

Gutierrez, P.M., Muehlenkamp, J.J., Konick, L.C., & Osman, A. (2005). "What role does race play in adolescent suicidal ideation?" *Archives of Suicide Research,* 9, 177-192.

Gutierrez, P.M. (2006). "Integratively assessing risk and protective factors for adolescent suicide." *Suicide and Life-Threatening Behavior,* 36, 129-135.

Gutierrez, P.M., & Osman, A. (2008). *Adolescent suicide: An integrated approach to the assessment of risk and protective factors*. Dekalb, IL: Northern Illinois University Press.

Hirsch, J.K., Visser, P.L., Chang, E.C., & Jeglic, E.L. (2012). "Race and ethnic differences in hope and hopelessness as moderators of the association between depressive symptoms and suicidal sehavior." *Journal of American College Health,* 60, 115-125.

Holden, K., Satcher, D., McGregor, B., Thandi, P., Fresh, E., Sheats, K., Belton, A., and Mattox, G. (2014).

Toward Culturally Centered Integrative Care for Addressing Mental Health Disparities Among Ethnic Minorities. Psychological Services, 11, 357-368.

Holmes, L. & Almendrala, A. (2016). "There's been a startling rise in suicide rates in the U.S." Huffington Post, April 22.

Hooper, L.M., Tomek, S., Bolland, K.A., Church II, W.T., Wilcox, K., and Boland, J.M. (2015). The impact of

previous suicide ideations, traumatic stress, and gender on future suicide ideation among Black American adolescents: A longitudinal investigation. *Journal of Loss and Trauma, 20*, 354-373.

Jiang, Y., Perry, D.K., & Hesser, J.E. (2010). "Adolescent suicide and health risk behaviors." *American Journal of Preventative Medicine,* 38, 551-555.

Kim, Y.J., Moon, S.S., & Kim, M.J. (2011). "Physical and psycho-social predictors of adolescents' suicide behaviors." *Child and Adolescent Social Work Journal,* 28, 421-438.

Kim, Y.S., Leventhal, B.L., Koh, Y.J., & Boyce, W.T. (2009). "Bullying increased suicide risk: Prospective study of Korean adolescents." *Archives of Suicide Research,* 13, 15-30.

Klomek, A.B., Marrocco, F., and Kleinman, M. (2008). "Peer victimization, depression, and suicidality in adolescents." *Suicide and Life-Threatening Behavior,* 38:166-180.

Klomek, A.B., Sourander, A., Niemela, S., Kumpulainen, K., Piha, J., Tamminen, T., Almqvist, F., Gould, M.S. (2009). "Childhood bullying behaviors as a risk for suicide attempts and completed suicides: A population-based birth cohort study." *Journal of the American Academy of Child and Adolescent Psychiatry,* 48, 254-261.

Klomek, A.B., Kleinman, M., Altschuler, E., Marrocco, F., Amakawa, L., and Gould, M.S. (2013). Suicidal adolescents' experiences with bullying perpetration and victimization during high school as risk factors for later depression and suicidality. *Journal of Adolescent Health, 53*, 537-S42.

Klomek, A.B. & Gould M.S. (2014). "Bullying and suicidality in youth", pp. 166-172 in S.H. Koslow, P. Ruiz, and C.B. Nemeroff (eds.) A Concise Guide To Understanding Suicide. Cambridge: Cambridge University Press.

Klomek, A.B., Sourander, S., and Elonheimo, H. (2015). Bullying by peers in childhood and

effects on psychopathology, suicidality, and criminality in adulthood. *Lancet Psychiatry, 2*, 930-941.

Kroning, M. (2016). Teen depression and suicide: A silent crisis. *Journal of Christian Nursing, 33*, 78-86.

Kuo, D.C., Tran, M., Shah, A.A., and Matorin, A. (2015). Depression and the suicidal patient. *Emergency Medicine Clinics of North America, 33*, 765-778.

Levene, H. (1960). "Intrablock and interblock estimates", in Ingram Olkin (ed.) *Contributions to probability and statistics: Essays in honor of Harold Hotelling*. Stanford University Press.

Lobach, K.S. (2008). "Child and adolescent health." *Journal of Urban Health: Bulletin of the New York Academy of Medicine,* 85, 807-811.

Martin, G., Richardson, A.S., Bergen, H.A., Roeger, L., & Allison, S. (2005). "Perceived academic performance, self-esteem and locus of control as indicators of need for assessment of adolescent suicide risk: Implications for teachers." *Journal of Adolescence,* 28, 75-87.

McKinnon, B., Gariepy, G., Sentenac, M., and Elgar, F.J. (2016). "Adolescent suicidal behaviours in 32 low- and middle-income countries." *Bulletin of the World Health Organization*, 340-350, May, 2016.

McManama O'Brien, K.H., Becker, S.J., Spirito, A., Simon, V., & Prinstein, M.J. (2014). "Differentiating adolescent suicide attempters from ideators: Examining the interaction between depression severity and alcohol use." *Suicide and Life-Threatening Behavior,* 44, 23-33.

Muehlenkamp, J.J., & Gutierrez, P.M. (2004). "An investigation of differences between self-injurious behavior and suicide attempts in a sample of adolescents." *Suicide and Life-Threatening Behavior,* 34, 12-23.

Mueller, A.S., James, W., Abrutyn, S., and Levin, M.L. (2015). Suicide ideation and bullying among US adolescents: Examiing the intersections of sexual orientation, gender, and race/ethnicity. *American Journal of Public Health, 105*, 980-985.

Nishimura, S.T., Goebert, D.A., Ramisetty-Mikler, S., & Caetano, R. (2005). "Adolescent alcohol use and suicide indicators among adolescents in Hawaii." *Cultural Diversity and Ethnic Minority Psychology,* 11, 309-320.

Olshen, E., McVeigh, K.H., Wunsch-Hitzig, R.A., & Rickert, V.I. (2007). "Dating violence, sexual assault, and suicide attempts among urban teenagers." *Archives of Pediatric and Adolescent Medicine,* 161, 539-545.

Orbach, I. (2009). "Mentalizing, helf-hate, and suicide." Aeschi Conference, March 5, 2009.

Perez, V.W. (2005). "The relationship between seriously considering, planning, and attempting suicide in the youth risk behavior survey." *Suicide and Life-Threatening Behavior*, 35, 35-49.

Pompili, M., Serafini, G., Innamorati, M., Biondi, M., Siracusano, A., Di Giannantonio, M., Giupponi, G., Amore, M., Lester, D., Girardi, P., & Moller-Leimkuhler, A.M. (2012). "Substance abuse and suicide risk among adolescents." *European Archives of Psychiatry and Clinical Neuroscience* 262, 469-485.

Richardson, A.S., Bergen, H.A., Martin, G., Roeger, L., and Allison, S. (2005). "Perceived academic performance as an indicator of risk of attempted suicide in young adolescents. *Archives of Suicide Research, 9*, 163-176.

Roberts, R.E., & Chen, Y.W. (1995). "Depressive symptoms and suicidal ideation among Mexican-origin and Anglo adolescents." *Journal of the American Academy of Child and Adolescent Psychiatry,* 34, 81-90.

Sofronoff, K., Dalgliesh, L., & Kosky, R. (2004). *Out of options: A cognitive model of adolescent suicide and risk-taking*. Cambridge, U.K.: Cambridge University Press.

Spencer-Thomas, S. (2011). "The suicidal student." Annual meetings of the American Association of Suicidology. April 12, 2011.

Substance Abuse and Mental Health Services Administration. 2015. "Warning signs of youth suicide." Retrieved September 10, 2015 (http://www.youthsuicidewarningsigns.org/).

Swahn, M.H., Reynolds, M.R., Tice, M., Miranda-Pierangeli, M.C., Jones, C.R., & Jones, I.R. (2009). "Perceived overweight. BMI, and risk for suicide attempts: Findings from the 2007 youth risk behavior survey." *Journal of Adolescent Health,* 45, 292-295.

Tingey, L., Cwik, M.F., Goklish, N., Larzelere-Hinton, F., Lee, A., Suttle, R., Walkup, J.T., and Barlow, A. (2014). Risk pathways for suicide among Native American Adolescents. *Qualitative Health Research, 24*, 1518-1526.

Suicidology Online
open access journal
www.suicidology-online.com
ISSN 2078-5488

Tomasula, J.L., Anderson, L.M., Littleton, H.L., & Riley-Tillman, T.C. (2012). "The association between sexual assault and suicidal activity in a national sample." *School Psychology Quarterly,* 27, 109-119.

Tomek, S., Hooper, L.M., Church II, W.T., Bolland, K.A., Bolland, J.M., and Wilcox, K. (2015). "Relations among suicidality, recent/frequent alcohol use, and gender in a black American adolescent sample: A longitudinal investigation." *Journal of Clinical Psychology*, 71, 544-560.

Waldrop, A.E., Hanson, R.F., Resnick, H.S., Kilpatrick, D.G., Naugle, A.E., & Saunders, B.E. (2007). "Risk factors for suicidal behavior among a national sample of adolescents: Implications for prevention." *Journal of Traumatic Stress,* 20, 869-879.

Wasserman, D., Hoven, C.W., Wasserman, C., Wall, M., Eisenberg, R., Hadlaczky, G., Kelleher, I., Sarchiapone, M., Apter, A., Balazs, J., Bobes, J., Brunner, R., Corcoran, P., Cosman, D., Guillemin, F., Haring, C., Iosue, M., Kaess, M., Kahn, J.P., Keeley, H., Musa, G.J., Nemes, B., Postuvan, V., Saiz, P., Reiter-Theil, S., Varnik, A., Varnik, P., and Carli, V. (2015). School-based suicide prevention programmes: the SEYLE cluster-randomised, controlled trial. *Lancet, 385,*1536-1544.

Wexler, L., Chandler, M., Gone, J.P., Cwik, M., Kirmayer, L.J., LaFramboise, T., Brockie, T., O'Keefe, V., Walkup, j., and Allen J. (2015). Advancing suicide prevention research with rural American Indian and Alaska Native populations. *American Journal of Public Health, 105*, 891-899.

Whaley, A.L., & Noel, L.T. (2013). "Academic achievement and behavioral health among Asian American and African American adolescents: Testing the model minority and inferior minority assumptions." *Social Psychology of Education,* 16, 23-43.

Whetstone, L.M., Morrissey, S.L., & Cummings, D.M. (2007). "Children at risk: The association between perceived weight status and suicidal thoughts and attempts in middle school youth." *Journal of School Health,* 77, 59-66.

Wong, S.S, Zhou, B., Goebert, D., & Hishinuma, E.S. (2013). "The risk of adolescent suicide across patterns of drug use: A nationally representative study of high school students in the United States from 1999 to 2009." *Social Psychiatry and Psychiatric Epidemiology,* 48, 1611-162ck, A. C. (2005). Working with missing values. Journal of Marriage and Family, 67(4), 1012-1028.