HHS Public Access

Author manuscript

Suicide Life Threat Behav. Author manuscript; available in PMC 2019 December 02.

Published in final edited form as:

Suicide Life Threat Behav. 2015 August ; 45(4): 415–430. doi:10.1111/sltb.12139.

The Role of Social Connectedness and Sexual Orientation in the Prevention of Youth Suicide Ideation and Attempts Among Sexually Active Adolescents

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Abstract

The impact of types of social connectedness—family, other adult, and school—on suicide ideation and attempts among *all* youth, the relative impact of each type, and effect modification by sexual orientation was assessed. Data were from the 2007–2009 Milwaukee Youth Risk Behavior Surveys. Multivariable logistic regression analyses calculated the risk of suicide ideation and attempts by sexual orientation, types of social connectedness, and their interaction. Among all youth, each type of connectedness modeled singly conferred protective effects for suicide ideation. Family and other adult connectedness protected against suicide attempts. When modeled simultaneously, family connectedness protected against ideation and attempts. Sexual orientation modified the association between other adult connectedness and suicide ideation. Findings suggest that family connectedness confers the most consistent protection among all youth and sexual orientation does not generally modify the association between connectedness and suicidal behavior.

Suicide is the second leading cause of death among youth aged 10 to 24 (CDC, 2014a). Suicides are just the tip of the iceberg, however. Many more youth consider, plan, and attempt suicide. According to the Youth Risk Behavior Survey (YRBS), in the past 12 months, 17% of high school students seriously considered suicide; 13.6% made a plan; 8%

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The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

attempted suicide; and 2.7% made a suicide attempt requiring medical attention (CDC, 2014b). Substantial research documents factors associated with suicide, including mental illness, social isolation, access to lethal means, and a history of violence (Borowsky, Ireland, & Resnick, 2001; Gould, Greenberg, Velting, & Shaffer, 2003). In the current study we focused on factors fostering resilience (Arrington & Wilson, 2001); specifically, the role of social connectedness in suicide prevention.

Suicidal behavior is thought to result from a combination of genetic, developmental, environmental, physiological, psychological, social, and cultural factors. Connectedness may be thought of as a thread weaving together these many influences. In fact, a primary aim of the first National Strategy for Suicide Prevention was to promote opportunities and settings in which to enhance connectedness among persons, families, and communities (U.S. Public Health Service, 2001). In keeping with the National Strategy and the research evidence (described next), in 2009, the Centers for Disease Control and Prevention (CDC) adopted connectedness as its theme for suicide prevention. The CDC defines *connectedness* across multiple levels of the social ecology as "the degree to which a person or group is socially close, interrelated, or shares resources with other persons or groups" (CDC, 2009, p. 3). This definition links a range of theoretically and empirically supported concepts, such as social support, social cohesion, and social integration. In a review of connectedness, Barber & Schluterman (2008) stated that connectedness frequently represented one or more of the following: a measure of quality of a relationship, the degree of liking an environment or relationship, the quality of performance in an environment or relationship, the possession of feelings or attitude states, and a combination of states and the behaviors that precede them. (Barber & Schluterman, 2008).

Despite variation in measurement of social connectedness and populations studied, the research demonstrating a protective effect on a range of suicidal behaviors remains largely robust (Ackard, Neumark-Sztainer, Story, & Perry, 2006; Borowsky et al., 2001; Brookmeyer, Fanti, & Henrich, 2006; Eisenberg & Resnick, 2006; Henrich, Brookmeyer, & Shahar, 2005; Kaminski et al., 2010; Logan, Crosby, & Hamburger, 2011; McNeely & Falci, 2004; Wilson, 2004). For example, using data from a cross-sectional high-risk sample of adolescents in the northeastern United States, Kaminski et al. (2010) found that family connectedness was a consistent protective factor associated with suicide ideation, plans, and attempts. A large Midwest study of high school students found protective effects of both family and other adult caring on suicidal behavior (Eisenberg & Resnick, 2006). In a case-control study of older adolescents and young adults, engagement in social activities and having people to confide in was protective of medically serious suicide attempts (Donald, Dower, Correa-Velez, & Jones, 2006). Connectedness has also been found protective, longitudinally, particularly as related to family connectedness (Borowsky et al., 2001; McKeown et al., 1998). Some contrast to this has been found related to the association between school or teacher connectedness and suicide ideation and attempts. For example, in a nationally representative sample of youth in grades 7 through 12, researchers found that school belonging did *not* have a protective effect on transitions from suicide ideation at Wave 1 to suicide attempts at Wave 2. however, teacher support was protective in the transition from no ideation at Wave 1 to attempt at Wave 2. (McNeely & Falci, 2004).

Borowsky et al. (2001) found that school connectedness and other adult caring protected some youth, but this protection varied based on race/ethnicity and gender.

To build the evidence base further, in the current study we assessed three distinct domains of connectedness—family, school, and other adult connectedness—on suicide ideation and attempts (termed *suicidal behavior* here) in a representative sample of high school youth in a large, urban, midwestern school district. Sexual orientation is of particular interest because research consistently indicates high rates of suicidal behavior among sexual minority youth (SMY; Almeida, Johnson, Corliss, Molnar, & Azrael, 2009; Bontempo & D'Augelli, 2002; Borowsky et al., 2001; D'Augelli, Hershberger, & Pilkington, 2001; DuRant, Krowchuk, & Sinal, 1998; Eisenberg & Resnick, 2006; Faulkner & Cranston, 1998; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998; Garofalo, Wolf, Wissow, Woods, & Goodman, 1999; Goodenow, Szalacha, & Westheimer, 2006; Gruber & Fineran, 2008; Haas et al., 2010; Needham & Austin, 2010; Remafedi, French, Story, Resnick, & Blum, 1998; Russell & Joyner, 2001; Russell, Ryan, Toomey, Diaz, & Sanchez, 2011; Ryan, Huebner, Diaz, & Sanchez, 2009; Safren & Heimberg, 1999; Silenzio, Pena, Duberstein, Cerel, & Knox, 2007; SPRC, 2008; Stone et al., 2014). In population and community-based surveys of adolescents in the United States, SMY report rates of suicide attempts two to seven times higher than heterosexual peers (Bontempo & D'Augelli, 2002; Eisenberg & Resnick, 2006; Garofalo et al., 1998; Garofalo et al., 1999; Haas et al., 2010; Russell & Joyner, 2001; Safren & Heimberg, 1999; Silenzio et al., 2007; SPRC, 2008; Stone et al., 2014). Fortunately, most youth, regardless of their sexual orientation, do not consider or attempt suicide (King et al., 2008; Stone et al., 2014). And while media reports highlight high rates of suicide among SMY, data on sexual orientation is not included on death certificates, so the rates are largely unknown (Remafedi et al., 1998); furthermore, findings from and studies that do exist, indicate mixed results (Renaud, Berlim, Begolli, McGirr, & Turecki, 2010; Shaffer, Fisher, Hicks, Parides, & Gould, 1995).

Experts understand the increased rate of suicidal behavior among SMY by way of the sexual minority stress theory (Meyer, 2003) and its extension, the psychological mediation framework (Hatzenbuehler, 2009). Together, these theories posit that sexual minorities experience excess stress as compared to heterosexuals, for example, by way of peer victimization (Garofalo et al., 1998; Russell, Russell, Everett, Rosario, & Birkett, 2014; Russell et al., 2011; Williams, Connolly, Pepler, & Craig, 2003), bullying (Berlan, Corliss, Field, Goodman, & Austin, 2010; Gayles & Garofalo, 2012), discrimination (Almeida et al., 2009), hate crimes (Duncan & Hatzenbuehler, 2014), and harassment (D'Augelli, Pilkington, & Hershberger, 2002). This stress may lead to negative health behaviors such as suicide ideation and attempts (Birkett, Espelage, & Koenig, 2009; Russell et al., 2011) through psychological pathways characterized by variations in coping and emotion regulation strategies, social support, and cognitive processing (Bagley & Tremblay, 2000; Birkett et al., 2009; Bontempo & D'Augelli, 2002; D'Augelli et al., 2005; Hatzenbuehler, 2009; Meyer, 2003; Russell et al., 2011).

Whereas stress and a lack of support or poor coping may facilitate negative health behaviors, research suggests that positive supports such as connectedness, in a variety of domains, buffers or protects against these outcomes (Carter, McGee, Taylor, & Williams, 2007;

Kaminski et al., 2010). A small, but still consistent, body of work discusses the protective effect of connectedness among SMY on suicidal behavior. A small qualitative study found that connectedness to families and peers prevented suicidal behavior among sexual minorities ages 14 to 22 (DiFulvio, 2011). In a large nationally representative survey of high school youth, three separate studies found that parental and/or teacher caring were negatively associated with suicidal tendencies [sic] among SMY (Resnick et al., 1997; Russell & Joyner, 2001; Teasdale & Bradley-Engen, 2010). A study among a smaller statewide representative sample of high school youth found that perceived school staff support protected against multiple suicide attempts among SMY, even when controlling for school and individual-level characteristics (Goodenow et al., 2006). Not surprisingly, given excess victimization, bullying, and discrimination, research also indicates that sexual minority youth have less social connectedness to family, peers, and/or school (Eisenberg & Resnick, 2006; Needham & Austin, 2010; Russell & Joyner, 2001; Saewyc et al., 2009; Ueno, 2005). This may suggest that the social connectedness they do have is even *more* critical for SMY in preventing suicidal behaviors.

Most prior work on the subject posits that social connectedness mediates the relationship between sexual orientation and suicidal behavior (Eisenberg & Resnick, 2006; Teasdale & Bradley-Engen, 2010). This may inadvertently suggest that a sexual minority orientation *causes* elevated suicide risk. Because a lack of connectedness is a risk factor for suicide (Durkheim, 1951), we place this squarely as the key variable of interest and then test the moderating effect of sexual orientation on this relationship. In other words, if sexual minorities have more stress and fewer social connections (Meyer, 2003), then protective factors may exert an even greater impact (i.e., effect modification) on their risk of suicidal behavior.

In this study, we sought first to confirm previous findings and to test whether social connectedness across select domains of the social ecology each independently decreases risk of suicidal behavior for all youth. Next, we attempted to identify the relative importance of select social connectedness types on suicidal behavior among all youth. Finally, we examined whether the effect of social connectedness varies by sexual orientation.

METHODS

Sample

The YRBS monitors health risk behaviors that contribute to the leading causes of death and disability in the United States, including suicide ideation and attempts. It includes national, state/territorial/tribal government, and local school-based surveys of high school students. Each uses a cross-sectional two-stage cluster sampling strategy to produce representative samples of students in their respective jurisdictions. Jurisdictions may add optional survey items (for more information on the YRBS, see www.cdc.gov/mmwr/preview/mmwrhtml/rr5312a1.htm). Four local areas inquired about social connectedness and sexual orientation in recent survey administrations. Only one, Milwaukee, included questions on the multiple types of connectedness of interest to this study; thus, the current study pooled data from the 2007 and 2009 Milwaukee YRBS.

Measures

Suicide Ideation.—Suicide ideation was assessed by the single item, “During the past 12 months, did you ever seriously consider attempting suicide?”

Suicide Attempts.—Suicide attempts were measured by the question, “During the past 12 months, how many times did you actually attempt suicide?” Responses corresponding to 0 attempts were coded as “no” and responses corresponding to 1 or more attempts were coded as “yes.” While our previous work suggested the importance of measuring medically serious attempts given its possible indication of greater risk of future suicide (Stone et al., 2014), we were unable to examine this measure here given its insufficient sample size.

Social Connectedness.—Social connectedness is a commonly referenced protective factor in suicide prevention research and yet no standardized definition exists. Prior works suggests that family, school, and other adult connectedness are important components of this larger construct (Kaminski et al., 2010). As such, we use the following variables as proxies of connectedness. *Family connectedness* was measured by the question, “Do you agree or disagree that your family loves you and gives you help and support when you need it?” Response options were measured on a 5-point scale ranging from 1 (*strongly* agree) to 5 (*strongly disagree*). Students who responded “Agree” or “Strongly agree” were coded as having family connectedness. *School connectedness* was measured by the question, “Do you agree or disagree that you feel like you belong at this school?” Again, students responding “Agree” or “Strongly Agree” were coded as having school connectedness. Other *adult connectedness* was measured by the item, “Besides your parents, how many adults would you feel comfortable seeking help from if you had an important question affecting your life?” Youth reporting feeling comfortable seeking help from one or more adults were coded as connected to other adults.

Sexual Orientation.—Sexual orientation is often defined by three questions (i.e., sexual identity, attraction, and behavior). For the purposes of this study and based on limited available data, we measured sexual behavior as a rough proxy of sexual orientation. Sexual behavior, referred to as sexual orientation here, was defined by the cross-tabulation of two questions, “What is your sex?” and “During your life, with whom have you had sexual contact?” Response options to the latter included *females*, *males*, *females and males*, and *I have never had sexual contact*. Given sample size limitations, we pooled data on sexual minority youth so that youth who reported either same-sex or both-sex contacts were defined as sexual minorities. Youth with opposite-sex contacts only were defined as heterosexuals. Youth without any sexual contact were excluded because their sexual orientation was unknown, per our definition.

Demographic and Other Variables.—Measures of student sex, race/ethnicity, and grade were also measured along with year of data collection. Measures of common suicide risk factors such as depression and substance abuse were omitted from analyses as these variables are likely on the causal pathway.

Statistical Analyses

We defined two analytic samples. Sample 1 included complete case data for fully adjusted regression models measuring suicide ideation (n = 2,290). Sample 2 included complete case data for models predicting suicide attempts (n = 1,818). We conducted missing data analysis to determine whether data were missing at random. The distribution of demographic characteristics and connectedness variables stratified by sexual orientation are described in Table 1. The prevalence of suicide ideation and attempts by demographic characteristics and connectedness domains stratified by sexual orientation are examined in Table 2. Group differences were examined via chi-square tests of association. A series of multivariable logistic regression analyses examined the main effect of each social connectedness variable, modeled singly, on suicide ideation (Table 3a, Models 1–3) and attempts (Table 3b, Models 1–3). Next, all types of connectedness were modeled together to assess their relative importance (Table 3a,b, Model 4). A single interaction term [sexual orientation × (social connectedness variable)] was added to models 1–3 (designated Models 1′–3′) to test effect modification. Finally, all types of connectedness and any significant interaction terms were modeled simultaneously (Model 4′). The average marginal probabilities (model-adjusted risk) were then calculated and plotted (Figures 1a,b). These probabilities allow for comparisons of predicted outcomes between sexual minorities and heterosexuals, after controlling for differences in covariate distributions between groups (Bieler, Brown, Williams, & Brogan, 2010).

All logistic regression models controlled for sex (male = reference), race/ethnicity (White = reference), grade (9th grade = reference), and year (2007 = reference). Analyses were conducted on scaled weighted data using SAS v. 9.3 and SUDAAN v. 11.0 (Research Triangle Institute, 2012) to adjust for the complex sampling strategy of the YRBS and student non-response. Each survey year is independent of the other with independently drawn random samples. A prior CDC report (see www.cdc.gov/mmwr/pdf/ss/ss60e0606.pdf) also combined data across years and served as a model. Weights were adjusted when combining data across years per CDC documentation (Centers for Disease Control & Prevention, 2012).

RESULTS

Sample Description

The pooled data from the 2007 and 2009 Milwaukee YRBS included 3,733 youth. Sample 1 and Sample 2 comprised 2,290 and 1,818 youth with complete data, respectively, and 1,106 youth were excluded because of not having had any sexual contact. As shown in Table 1 (columns 1 and 4), girls comprised just under 50% of the samples, distribution of students by grade was roughly equivalent, and the majority of students were of non-Hispanic Black. Sixteen was the mean age across the samples. More than 80% of youth felt connected to families and other adults and about 59% felt connected to their school. In Sample 1, of all youths who were connected with families, 63% were connected with schools, 87.7% were connected with other adults, and 55.8% were connected with both schools and other adults. In Sample 2, of all youths who were connected with families, 63.6% were connected with

schools, 87.5% were connected with other adults, and 56.3% were connected with both schools and other adults.

Sexual minorities comprised about 12% of each sample (columns 3 and 6). In Sample 1, the unweighted numbers (weighted percentages) of youths in the same-sex only and both-sex categories were 114 (4.96%) and 169 (6.67%), respectively. In Sample 2, the unweighted numbers (weighted percentages) of youths in the same-sex only and both-sex categories were 92 (4.88%), and 142 (7.19%), respectively. Among sexual minorities, females comprised about 60% of the sample and about 60% were Black. Fifteen percent were other race/ethnicities. Sexual minorities reported less connectedness to families and schools compared to heterosexuals, as determined by chi-square tests, $p < .01$ (results not shown).

Complete data were available for 87% of youth in Sample 1, the sample examining suicide ideation. The group with missing data had significantly fewer 11th and 12th graders, White students, and less support from adults outside the family ($p < .05$), but significantly greater percentages of males, 10th graders, and SMY ($p < .05$) compared with the complete case data. About 69% of youth in Sample 2, the sample examining suicide attempts, had complete data. The missing group had significantly fewer White students and less support from adults outside the family, but significantly higher percentages of males, Black students, and 10th graders ($p < .05$). The potential impact of these differences is noted in the discussion.

About 15% of youth overall reported suicide ideation (Table 2a); however, more than one third of SMY reported ideation versus about 12% of heterosexuals. About 13% of all youth attempted suicide. SMY had a greater rate of attempts (31.91%) compared with heterosexuals (10.50%). Suicide ideation differed by all demographic characteristics except grade, while suicide attempts did not differ by any demographic characteristics. Suicide ideation was less prevalent among youth connected with family, school, and other adults than those without these connections. Attempts were less prevalent among youth connected to family or other adults (chi-square test results not shown for columns 1 and 4). SMY had greater rates of suicide ideation and attempts than heterosexuals in nearly every demographic group and by each type of connectedness.

Main effect models of social connectedness variables modeled singly (Table 3a, b, Models 1–3) indicated that, with one exception, social connectedness across social domains was associated with a protective effect for suicide ideation and attempts, ranging from OR = 0.68 (0.53, 0.88), $p < .01$, the associated effect of school connectedness on suicide ideation, to OR = 0.29 (0.22, 0.39), $p < .001$, the associated effect of family connectedness on suicide ideation. School connectedness was not a significant protective factor for suicide attempts. When all types of connectedness were modeled simultaneously (Table 3a,b, Model 4), family connectedness was inversely associated with suicide ideation and attempts and other adult connectedness was inversely associated with suicide attempts. Finally, SMY had a significantly associated increased odds of suicide ideation and attempts compared with heterosexuals, ranging from OR = 3.36 to OR = 3.96 ($p < .001$).

When interaction terms were tested in Models 1′–3′, results showed that sexual orientation moderated the relationship between adult connectedness and suicide ideation. Specifically, other adult connectedness was more protective of suicide ideation among heterosexuals than SMY. No other interactions reached statistical significance. This interaction was included in Model 4′ where all types of connectedness were modeled simultaneously. Predicted marginal probabilities associated with Models 1′–4′ indicated that the probability of suicide ideation (Figure 1a) for heterosexual youth with connectedness (Bar 1) ranged between 9–11%. For heterosexuals without connectedness (Bar 2), ideation ranged between 14–25%. In all cases, heterosexuals without connectedness had a significantly greater marginal probability of ideation than heterosexuals with connectedness. Among SMY with connectedness (Bar 3), ideation ranged between 25–33%. Finally, among SMY without connectedness (Bar 4), ideation ranged between 29–53%. The difference between the marginal predicted probabilities for SMY with and without family connectedness was significant. So too was the difference between the marginal probabilities for SMY with and without school connectedness significant. However, the difference between the two differences—the difference between the marginal probabilities for heterosexuals with and without social connectedness minus the difference between the marginal probabilities for SMY with and without social connectedness—was only significant in the case of other adult connectedness (Model 2′, Figure 1). Model 4′, shown on the right side of Figure 1a, depicts the marginal probabilities of family, school, and other adult connectedness and the significant interaction between sexual orientation and other adult connectedness.

The probability of suicide attempts (Figure 1b) for heterosexual youth with connectedness (Bar 1) was between 8–11%. For heterosexuals without connectedness (Bar 2), attempts ranged between 9–23%. Family and other adult connectedness were significantly associated with fewer suicide attempts among heterosexuals. Among SMY with connectedness (Bar 3), attempts ranged from 27–29%. Finally, among SMY without connectedness (Bar 4), attempts ranged between 36–44%. The difference between the marginal predicted probabilities for SMY with and without connectedness was only significant for family connectedness (Model 1′).

DISCUSSION

For the current study we used Minority Stress Theory (Meyer, 2003), the Psychological Mediation Framework (Hatzenbuehler, 2009), and the proxies of the larger social connectedness construct by which to frame our understanding of the association between sexual orientation and negative health outcomes. As such, we sought to first confirm what prior research suggested: that family, other adult, and school connectedness would be inversely related to suicide ideation and behavior. The main study question tested whether sexual orientation moderated this relationship.

The study results indicate that social connectedness was associated with a protective effect against suicide ideation and behavior among all youth. That is, with just one exception, all types of connectedness, when tested singly, were inversely associated with both suicide ideation and attempts among all youth. These findings are consistent with other work (Kaminski et al., 2010; Resnick, Harris, & Blum, 1993). Because connectedness in one area

(e.g., family) may be associated with connectedness in other areas (e.g., school), the relative importance of each was tested simultaneously. Results here suggested that family connectedness was most consistently associated with a protective effect against suicide ideation and attempts. These results are also consistent with prior studies, with or without regard to sexual orientation (Borowsky et al., 2001; Bos & Gartrell, 2010; Bos, Gartrell, Peyser, & van Balen, 2008; Carter et al., 2007; Kaminski et al., 2010). With regard to school connectedness, results were mixed. That is, when modeled singly, school connectedness was inversely associated with suicide ideation among both SMY and heterosexual youth. However, when modeled simultaneously with family and other adult connectedness, the associated effect was attenuated and no longer significant. This suggests that school connectedness is associated with family or other adult connectedness in ways that require additional study. With regard to suicide attempts, when school connectedness was modeled singly or simultaneously, it was not significantly associated. It is possible that protecting against suicide attempts, a more severe outcome than suicide ideation, requires more than a sense of school connectedness as measured. SMY report high rates of victimization and bullying at school (Berlan et al., 2010; Russell et al., 2011), so feelings of safety and trust in adults at school may trump school connectedness, may modify the relationship of school connectedness on suicidal behavior, or may be prerequisites to feeling school connectedness in the first place. Indeed, studies find that school safety (Eisenberg & Resnick, 2006), a positive school climate, (Birkett et al., 2009; Hatzenbuehler, Birkett, Van Wagenen, & Meyer, 2013), or policies of inclusion (Goodenow et al., 2006) are associated with lower risk among SMY and in some cases, all youth, for suicidal behavior.

Effect modification by sexual orientation was found in the association between other adult connectedness and suicide ideation. More specifically, other adult connectedness was more protective among heterosexuals. This does not mean that other adults are not important for SMY; instead, it suggests that other adults play a more important role for heterosexuals. This finding may suggest the central importance of family connectedness for SMY, or that SMY have other unique protective factors that were not explored in the current study, such as connectedness to sexual minority communities (Frost & Meyer, 2012) or level of outness (Kosciw, Palmer, & Kull, 2014) that makes connectedness to other adults less necessary. Further research is needed. Results also point out the consistent associated protective effect of family connectedness on suicide ideation and attempts among sexual minority youth. While we did not find that family was more important for SMY, it is worth highlighting that this was the only type of connectedness that was associated with decreased suicide attempts among SMY. This has important implications for further research and for prevention practice.

The current study has several strengths. First, the large majority of work in suicide prevention focuses solely on risk factor research and emphasizes differences between heterosexual and sexual minority youth. A public health approach requires not only an understanding of unique risk factors but also protective factors that are both unique and shared among sexual orientation groups. Within the protective factor research literature, few studies consider the effect of social connectedness based on sexual orientation. This study examined social connectedness and sexual orientation from a strengths versus deficit perspective that may view sexual minorities as inherently at high risk of suicide ideation and

attempts. In doing so, results support that SMY are more similar to heterosexual youth than they are different with regard to what reduces suicidal behavior. This finding helps to inform prevention strategies in the future and suggests that we may reduce the risk of suicide by enhancing at least one of the pathways noted by Hatzenbuehler 2009—encouraging social connectedness. This may occur through encouragement of youth to seek out support as well as by encouraging adults to make themselves readily available and to be reliable and trustworthy. Further research is needed to understand the other pathways (i.e., cognitive processing and coping skills) put forth by Hatzenbuehler (2009) and whether they differ by sexual orientation and the implications for future prevention research, policy, and practice. Finally, this study adds to the growing body of literature that uses YRBS data to examine the unique experiences of SMY at the population level (Bradford & Mustanski, 2014; Garofalo, 2014).

This study has several weaknesses. First, due to the lack of data availability a limited proxy measure of sexual orientation (based only on sexual contact, not sexual identity or attraction) was used and therefore results cannot be generalized to all SMY (e.g., patterns might vary for non-sexually active SMY or among sexually active SMY with opposite-sex partners only). The extent of under- or over-reporting on sexual contact cannot be determined. Also, limiting the sample to only youth with sexual contact may impact the strength of associations found between connectedness and suicide risks. The level of connection of youth who are not sexually active may hold particular implications for SMY whose onset of sexual activity can be affected by factors related to coming out and sexual minority stress (Savin-Williams & Diamond, 2000). Finally, with regard to measurement, while we note the importance of separating groups of SMY in our prior work (Stone et al., 2014), power limitations did not allow us to independently examine youth with same-sex contacts only and bisexual youth. Second, the items measuring family and other adult support and school belongingness were used, also imperfectly, as proxies of the connectedness construct. A fuller and more nuanced measure of connectedness is recommended in future surveys. Third, it is unknown what percentage of students may have been interviewed both in 2007 and 2009; however, the number of students surveyed is a small fraction of the total high school student population in Milwaukee, so the overlap is likely small. Fourth, with regards to missing data, our estimates of suicide *attempts* may be considered *under*estimates as the analytic sample was comprised of youth with more adult support as compared with the youth with missing data. Other differences between groups were not associated with suicidal behavior in pairwise comparisons. With regard to suicide ideation, the impact of missing data is ambiguous as the analytic sample had more support from other adults outside of the family, fewer SMY, and more females—the former two are associated with less suicide ideation but the latter is associated with more suicide ideation. It is also notable, though not unprecedented (Perez, 2005), that a large number of eligible youth ($n = 481$) skipped the suicide attempt question after having responded “no” to whether they considered suicide. Given potentially systematic missingness—selection bias toward people who did not attempt—estimates of suicide attempts may be inflated. Youth excluded from the study were more likely to have less risk of ideation or attempts thereby leaving current findings overestimated, but they were also more likely to be younger (lower risk), White (higher risk), and female (greater risk), so the impact on the analysis is again ambiguous. Fifth, the

findings apply only to youth who attended public school and therefore are not representative of all persons in this age group. Sexual minority students might represent a disproportionate percentage of high school dropouts and other youths who do not attend school. Finally, these data are cross-sectional, so cause and effect cannot be determined and the measures of suicide ideation and attempts only relate to the past year and are therefore likely underestimates of suicidal ideation and behavior.

Results of this study have implications for adolescent health and well-being and reduced risk of suicide ideation, attempts, and by association, potential death by suicide. Results suggest that interventions designed to foster greater connectedness within families may help prevent youth suicidal behavior for all youth, regardless of sexual orientation. In addition, helping families to better support their sexual minority children may promote positive well-being, buffer any stress experienced at school or in the community, and encourage help-seeking if or when discrimination or victimization is experienced. Additionally, better integrating into community organizations that already exist to promote family connectedness and support for sexual minorities may reduce current risk among vulnerable youth. In conclusion, enhanced family connectedness is an important associated protective factor amenable to change and is at least one pathway among others that can be strengthened to enhance the well-being of all youth.

REFERENCES

Ackard DM, Neumark-Sztainer D, Story M, & Perry C (2006). Parent-child connectedness and behavioral and emotional health among adolescents. American Journal of Preventive Medicine, 30, 59–66. doi:10.1016/j.amepre.2005.09.013 [PubMed: 16414425]

Almeida J, Johnson R, Corliss H, Molnar B, & Azrael D (2009). Emotional distress among LGBT youth: The influence of perceived discrimination based on sexual orientation. Journal of Youth and Adolescence, 38, 1001–1014. doi:10.1007/s10964-009-9397-9 [PubMed: 19636742]

Arrington EG, & Wilson MN (2001). A re-examination of risk and resilience during adolescence: Incorporating culture and diversity. Journal of Child and Family Studies, 9, 221–230.

Bagley C, & Tremblay P (2000). Elevated rates of suicidal behavior in gay, lesbian, and bisexual youth. Crisis, 21, 111–117. [PubMed: 11265836]

Barber BK, & Schluterman JM (2008). Connectedness in the lives of children and adolescents: A call for greater conceptual clarity. Journal of Adolescent Health, 43, 209–216. doi:10.1016/j.jadohealth.2008.01.012 [PubMed: 18710674]

Berlan ED, Corliss HL, Field AE, Goodman E, & Austin SB (2010). Sexual orientation and bullying among adolescents in the growing up today study. Journal of Adolescent Health, 46, 366–371. doi:10.1016/j.jado-health.2009.10.015 [PubMed: 20307826]

Bieler GS, Brown GG, Williams RL, & Brogan DJ (2010). Estimating model-adjusted risks, risk differences, and risk ratios from complex survey data. American Journal of Epidemiology, 171, 618–623. doi:10.1093/aje/kwp440 [PubMed: 20133516]

Birkett M, Espelage DL, & Koenig B (2009). LGB and questioning students in schools: The moderating effects of homophobic bullying and school climate on negative outcomes. Journal of Youth and Adolescence, 38, 989–1000. [PubMed: 19636741]

Bontempo DE, & D'Augelli AR (2002). Effects of at-school victimization and sexual orientation on lesbian, gay, or bisexual youths' health risk behavior. Journal of Adolescent Health, 30, 364–374. [PubMed: 11996785]

Borowsky IW, Ireland M, & Resnick MD (2001). Adolescent suicide attempts: Risks and protectors. Pediatrics, 107, 485–493. doi:10.1542/peds.107.3.485 [PubMed: 11230587]

Bos H, & Gartrell N (2010). Adolescents of the USA National Longitudinal Lesbian Family Study: Can family characteristics counteract the negative effects of stigmatization? Family Process, 49, 559–572. doi:10.1111/j.1545-5300.2010.01340.x [PubMed: 21083555]

Bos HMW, Gartrell NK, Peyser H, & van Balen F (2008). The USA National Longitudinal Lesbian Family Study (NLLFS): Homophobia, psychological adjustment, and protective factors. Journal of Lesbian Studies, 12, 455–471. doi:10.1080/10894160802278630 [PubMed: 19042752]

Bradford J, & Mustanski B (2014). Health disparities among sexual minority youth: The value of population data. American Journal of Public Health, 104, 197. doi:10.2105/ajph.2013.301818 [PubMed: 24328630]

Brookmeyer KA, Fanti KA, & Henrich CC (2006). Schools, parents, and youth violence: A multilevel, ecological analysis. Journal of Clinical Child and Adolescent Psychology, 35, 504–514. doi: 10.1207/s15374424jccp3504_2 [PubMed: 17007596]

Carter M, McGee R, Taylor B, & Williams S (2007). Health outcomes in adolescence: Associations with family, friends and school engagement. Journal of Adolescence, 30, 51–62. doi:10.1016/j.adolescence.2005.04.002 [PubMed: 16808970]

CDC. (2009). Strategic direction for the prevention of suicidal behavior: Promoting individual, family, and community connectedness to prevent suicidal behavior. Atlanta, GA: U.S. Department of Health and Human Services Retrieved from www.cdc.gov/ViolencePrevention/pdf/Suicide_Strategic_Direction_Full_Version-a.pdf.

CDC (2014a). Web-based Injury Statistics Query and Reporting System (WISQARS). Atlanta, GA: U.S. Department of Health and Human Services Retrieved from www.cdc.gov/Injury/wisqars.

CDC (2014b). Youth Risk Behavior Surveillance, United States, 2013. MMWR, 63, 1–168.

CDC. (2012). Variance estimation and other analytic issues, NHIS 2006–2011(Adapted from the 2006–2011 NHIS Survey Description Documents). Atlanta, GA: U.S. Department of Health and Human Services.

D'Augelli AR, Grossman AH, Salter NP, Vasey JJ, Starks MT, & Sinclair KO (2005). Predicting the suicide attempts of lesbian, gay, and bisexual youth. Suicide and Life-Threatening Behavior, 35, 646–660. [PubMed: 16552980]

D'Augelli AR, Hershberger SL, & Pilkington NW (2001). Suicidality patterns and sexual orientation-related factors among lesbian, gay, and bisexual youths. Suicide and Life-Threatening Behavior, 31, 250–264. doi:10.1521/suli.31.3.250.24246 [PubMed: 11577911]

D'Augelli AR, Pilkington NW, & Hershberger SL (2002). Incidence and mental health impact of sexual orientation victimization of lesbian, gay, and bisexual youths in high school. School Psychology Quarterly, 17, 148–167. doi:10.1521/scpq.17.2.148.20854

DiFulvio GT (2011). Sexual minority youth, social connection and resilience: From personal struggle to collective identity. Social Science and Medicine, 72, 1611–1617. doi:10.1016/j.socscimed.2011.02.045 [PubMed: 21497970]

Donald M, Dower J, Correa-Velez I, & Jones M (2006). Risk and protective factors for medically serious suicide attempts: A comparison of hospital-based with population-based samples of young adults. Australian and New Zealand Journal of Psychiatry, 40, 87–96. doi:10.1111/j.1440-1614.2006.01747.x [PubMed: 16403044]

Duncan DT, & Hatzenbuehler ML (2014). Lesbian, gay, bisexual, and transgender hate crimes and suicidality among a population-based sample of sexual-minority adolescents in Boston. American Journal of Public Health, 104, 272–278. doi:10.2105/ajph.2013.301424 [PubMed: 24328619]

DuRant RH, Krowchuk DP, & Sinal SH (1998). Victimization, use of violence, and drug use at school among male adolescents who engage in same-sex sexual behavior. The Journal of Pediatrics, 133, 113–118. [PubMed: 9672522]

Durkheim E (1951). Suicide: A study in sociology. Glencoe, IL: The Free Press.

Eisenberg ME, & Resnick MD (2006). Suicidality among gay, lesbian and bisexual youth: The role of protective factors. Journal of Adolescent Health, 39, 662–668. [PubMed: 17046502]

Faulkner AH, & Cranston K (1998). Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students. American Journal of Public Health, 88, 262–266. [PubMed: 9491018]

Frost DM, & Meyer IH (2012). Measuring community connectedness among diverse sexual minority populations. Journal of Sex Research, 49, 36–49. doi:10.1080/00224499.2011.565427 [PubMed: 21512945]

Garofalo R (2014). A personal reflection on the history of population-based research with sexual minority youths. American Journal of Public Health, 104, 198–200. doi:10.2105/ajph.2013.301534 [PubMed: 24328612]

Garofalo R, Wolf RC, Kessel S, Palfrey J, & DuRant RH (1998). The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. Pediatrics, 101, 895–902. [PubMed: 9565422]

Garofalo R, Wolf RC, Wissow LS, Woods ER, & Goodman E (1999). Sexual orientation and risk of suicide attempts among a representative sample of youth. Archives of Pediatrics and Adolescent Medicine, 153, 487–493. [PubMed: 10323629]

Gayles TA, & Garofalo R (2012). 25. Bullying and school-based violence in LGBT teenage populations. Journal of Adolescent Health, 50(2 Suppl.), S27. doi:10.1016/j.jado-health.2011.10.074

Goodenow C, Szalacha L, & Westheimer K (2006). School support groups, other school factors, and the safety of sexual minority adolescents. Psychology in the Schools, 43, 573–589. doi:10.1002/pits.20173

Gould MS, Greenberg T, Velting DM, & Shaffer D (2003). Youth suicide risk and preventive interventions: A review of the past 10 years. Journal of the American Academy of Child and Adolescent Psychiatry, 42, 386–405. doi:10.1097/01.chi.0000046821.95464.cf [PubMed: 12649626]

Gruber JE, & Fineran S (2008). Comparing the impact of bullying and sexual harassment victimization on the mental and physical health of adolescents. Sex Roles, 59, 1–13.

Haas AP, Eliason M, Mays VM, Mathy RM, Cochran SD, D'Augelli AR, et al. (2010). Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. Journal of Homosexuality, 58, 10–51.

Hatzenbuehler ML (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework Psychological Bulletin, 135, 707–730. doi:10.1037/a0016441 [PubMed: 19702379]

Hatzenbuehler ML, Birkett M, Van Wagenen A, & Meyer IH (2013). Protective school climates and reduced risk for suicide ideation in sexual minority youths. American Journal of Public Health, 104, 279–286. doi:10.2105/AJPH.2013.301508 [PubMed: 24328634]

Henrich CC, Brookmeyer KA, & Shahar G (2005). Weapon violence in adolescence: Parent and school connectedness as protective factors. Journal of Adolescent Health, 37, 306–312. doi:10.1016/j.jadohealth.2005.03.022 [PubMed: 16182141]

Kaminski JW, Puddy RW, Hall DM, Cashman SY, Crosby AE, & Ortega LAG (2010). The relative influence of different domains of social connectedness on self-directed violence in adolescence. Journal of Youth and Adolescence, 39, 460–473. [PubMed: 19898780]

King M, Semlyen J, Tai SS, Killaspy H, Osborn D, Popelyuk D, et al. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. BMC Psychiatry, 8, 70. doi:10.1186/1471-244x-8-70 [PubMed: 18706118]

Kosciw JG, Palmer NA, & Kull RM (2014). Reflecting resiliency: Openness about sexual orientation and/or gender identity and its relationship to well-being and educational outcomes for LGBT students. American Journal of Community Psychology, doi:10.1007/s10464-014-9642-6

Logan J, Crosby A, & Hamburger M (2011). Suicidal ideation, friendships with delinquents, social and parental connectedness, and differential associations by sex. Crisis, 32, 299–309. [PubMed: 21940255]

Mckeown RE, Garrison CZ, Cuffe SP, Waller JL, Jackson KL, & Addy CL (1998). Incidence and predictors of suicidal behaviors in a longitudinal sample of young adolescents. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 612–619. [PubMed: 9628081]

McNeely C, & Falci C (2004). School connectedness and the transition into and out of health-risk behaviour among adolescents: A comparison of social belonging and teacher support. Journal of School Health, 74, 284–292. [PubMed: 15493705]

Meyer IH (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychological Bulletin, 129, 674–697. doi: 10.1037/0033-2909.129.5.674 [PubMed: 12956539]

Needham BL, & Austin EL (2010). Sexual orientation, parental support, and health during the transition to young adulthood. Journal of Youth and Adolescence, 39, 1189–1198. [PubMed: 20383570]

Perez VW (2005). The relationship between seriously considering, planning, and attempting suicide in the Youth Risk Behavior Survey. Suicide and Life-Threatening Behavior, 35, 35–49. doi:10.1521/suli.35.1.35.59267 [PubMed: 15843322]

Remafedi G, French S, Story M, Resnick MD, & Blum R (1998). The relationship between suicide risk and sexual orientation: Results of a population-based study. American Journal of Public Health, 88, 57–60. [PubMed: 9584034]

Renaud J, Berlim MT, Begolli M, McGirr A, & Turecki G (2010). Sexual orientation and gender identity in youth suicide victims: An exploratory study. Canadian Journal of Psychiatry, 55, 29–34. [PubMed: 20113541]

Research Triangle Institute. (2012). Sudaan language manual, release 11.0. Research Triangle Park, NC: Author.

Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. (1997). Protecting adolescents from harm. Journal of the American Medical Association, 278, 823–832. [PubMed: 9293990]

Resnick MD, Harris LJ, & Blum RW (1993). The impact of caring and connectedness on adolescent health and well-being. Journal of Paediatrics and Child Health, 29(Suppl.1), S3–S9. [PubMed: 8268019]

Russell ST, & Joyner K (2001). Adolescent sexual orientation and suicide risk: Evidence from a national study. American Journal of Public Health, 91, 1276–1280. [PubMed: 11499118]

Russell S, Everett B, Rosario M, & Birkett M (2014). Indicators of victimization and sexual orientation among adolescents: Analyses from youth risk behavior surveys. American Journal of Public Health, 104, 255–261. [PubMed: 24328633]

Russell ST, Ryan C, Toomey RB, Diaz RM, & Sanchez J (2011). Lesbian, gay, bisexual, and transgender adolescent school victimization: Implications for young adult health and adjustment. Journal of School Health, 81, 223–230. doi:10.1111/j.1746-1561.2011.00583.x [PubMed: 21517860]

Ryan C, Huebner D, Diaz RM, & Sanchez J (2009). Family rejection as a predictor of negative health outcomes in white and latino lesbian, gay, and bisexual young adults. Pediatrics, 123, 346–352. [PubMed: 19117902]

Saewyc EM, Homma Y, Skay CL, Bearinger LH, Resnick MD, & Reis E (2009). Protective factors in the lives of bisexual adolescents in North America. American Journal of Public Health, 99, 110–117. doi:10.2105/ajph.2007.123109 [PubMed: 19008523]

Safren SA, & Heimberg RG (1999). Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. Journal of Consulting and Clinical Psychology, 67, 859–866. doi:10.1037/0022-006x.67.6.859 [PubMed: 10596508]

Savin-Williams RC, & Diamond LM (2000). Sexual identity trajectories among sexual-minority youths: Gender comparisons. Archives of Sexual Behavior, 29, 607–627. [PubMed: 11100265]

Shaffer D, Fisher P, Hicks RH, Parides M, & Gould M (1995). Sexual orientation in adolescents who commit suicide. Suicide and Life-Threatening Behavior, 25(Suppl.), 64–71. [PubMed: 8553430]

Silenzio VMB, Pena JB, Duberstein PR, Cerel J, & Knox KL (2007). Sexual orientation and risk factors for suicidal ideation and suicide attempts among adolescents and young adults. American Journal of Public Health, 97, 2017–2019. [PubMed: 17901445]

SPRC. (2008). Suicide risk and prevention for lesbian, gay, bisexual, and transgender youth. Newton, MA: Education Development Center, Inc. Retrieved from www.sprc.org/library/SPRC_LGBT_Youth.pdf.

Stone DM, Luo F, Ouyang L, Lippy C, Hertz MF, & Crosby AE (2014). Sexual orientation and suicide ideation, plans, attempts, and medically serious attempts: Evidence from local youth risk behavior

surveys, 2001–2009. American Journal of Public Health, 104, 262–271. doi:10.2105/AJPH.2013.301383 [PubMed: 24328658]

Teasdale B, & Bradley-Engen MS (2010). Adolescent same-sex attraction and mental health: The role of stress and support. Journal of Homosexuality, 57, 287–309. doi:10.1080/00918360903489127 [PubMed: 20390994]

Ueno K (2005). Sexual orientation and psychological distress in adolescence: Examining interpersonal stressors and social support processes. Social Psychology Quarterly, 68, 258–277.

U.S. Public Health Service. (2001). National strategy for suicide prevention: Goals and objectives for action. Washington, DC: Author.

Williams T, Connolly J, Pepler D, & Craig W (2003). Questioning and sexual minority adolescents: High school experiences of bullying, sexual harassment and physical abuse. Canadian Journal of Community Mental Health, 22, 47–58. [PubMed: 15868837]

Wilson D (2004). The interface of school climate and school connectedness and relationships with aggression and victimization. Journal of School Health, 74, 293–299. doi:10.1111/j.1746-1561.2004.tb08286.x [PubMed: 15493706]

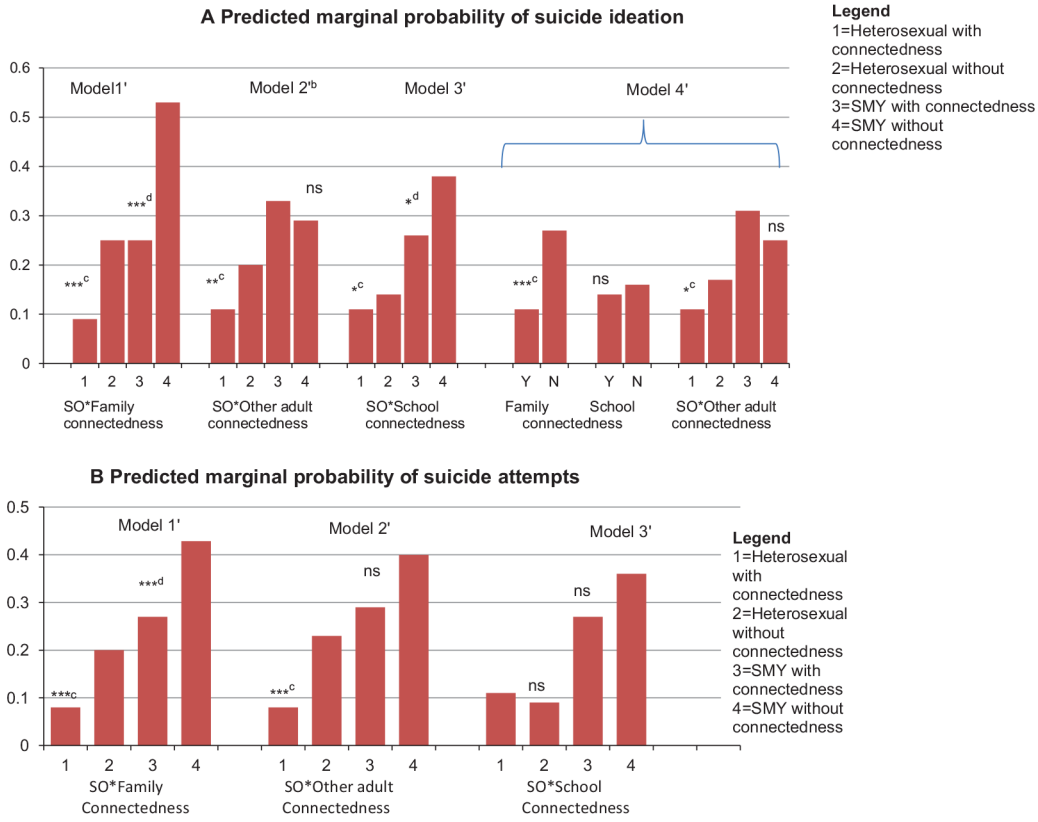

Figure 1.

Predicted marginal probabilities of suicide ideation and attempts by sexual orientation and connectedness type among sexually active milwaukee public school students, 2007–2009[a]. *Note*. SO, sexual orientation; SMY, sexual minority youth; ns, not significant; Y, yes; N, no. All probabilities based on logistic regression models controlling for sex, grade, race/ethnicity, and school year. [a]Each model (M1′–M4′) includes an interaction term between sexual orientation and the social connectedness variable shown. [b]Significant interaction exists such that the difference between bar 1 and bar 2 is greater than the difference between bar 3 and bar 4, $p < .05$. [c]Indicates that difference in marginal probability between bar 1 and bar 2 is significant. [d]Indicates the difference between bar 3 and bar 4 is significant. *$p < .05$; **$p < .01$; ***$p < .001$.

TABLE 1

Sample Distribution by Sexual Orientation Among Sexually Active Milwaukee Public School Students, 2007–2009

	Sample 1[a]			Sample 2[b]		
	1	2	3	4	5	6
	Total	**Heterosexual**	**SMY**	**Total**	**Heterosexual**	**SMY**
***n* (%)**	**2,290 (100.00)**	**2,007 (88.37)**	**283 (11.63)[c]**	**1,818 (100.00)**	**1,584 (87.93)**	**234 (12.07)**
Sex						
Female	1,147 (47.29)	973 (45.78)	174 (58.75)	950 (49.48)	803 (48.02)	147 (60.08)
Male	1,143 (52.71)	1,034 (54.22)	109 (41.25)	868 (50.52)	781 (51.98)	87 (39.92)
Grade						
9	387 (27.51)	334 (27.21)	53 (29.80)	309 (27.43)	265 (27.11)	44 (29.73)
10	620 (22.49)	546 (22.68)	74 (21.07)	491 (21.89)	434 (22.36)	57 (18.54)
11	696 (27.88)	622 (28.33)	74 (24.41)	546 (28.03)	483 (28.33)	63 (25.85)
12	587 (22.12)	505 (21.77)	82 (24.73)	472 (22.65)	402 (22.21)	70 (25.87)
Mean age (se)	16.27 (.07)	16.28 (.08)	16.19 (.10)	16.24 (.08)	16.25 (.08)	16.19 (.11)
Race/Ethnicity						
White	260 (11.85)	225 (11.52)	35 (14.40)	231 (13.51)	198 (13.10)	33 (16.46)
Black	1,280 (67.74)	1,143 (68.57)	137 (61.44)	960 (64.63)	853 (65.35)	107 (59.36)
Hispanic	309 (9.87)	276 (9.97)	33 (9.09)	254 (10.47)	227 (10.63)	27 (9.32)
Other	441 (10.54)	363 (9.94)	78 (15.07)	373 (11.39)	306 (10.91)	67 (14.86)
Year						
2007	1,164 (52.39)	1,011 (52.22)	153 (53.66)	910 (51.62)	780 (51.17)	130 (54.94)
2009	1,126 (47.61)	996 (47.78)	130 (46.34)	908 (48.38)	804 (48.83)	104 (45.06)
Connectedness						
Family						
Yes	1,858 (81.20)	1,651 (82.28)	207 (73.01)	1,473 (81.17)	1,303 (82.27)	170 (73.21)
No	432 (18.80)	356 (17.72)	76 (26.99)	345 (18.83)	281 (17.73)	64 (26.79)
Other adults						
Yes	1,961 (85.06)	1,723 (85.34)	238 (82.88)	1,559 (84.96)	1,362 (85.39)	197 (81.86)
No	329 (14.94)	284 (14.66)	45 (17.12)	259 (15.04)	222 (14.61)	37 (18.14)
School						

	Sample 1[a]			Sample 2[b]		
	1	2	3	4	5	6
	Total	**Heterosexual**	**SMY**	**Total**	**Heterosexual**	**SMY**
***n* (%)**	**2,290 (100.00)**	**2,007 (88.37)**	**283 (11.63)[c]**	**1,818 (100.00)**	**1,584 (87.93)**	**234 (12.07)**
Yes	1,358 (58.72)	1,215 (60.01)	143 (48.86)	1,075 (59.16)	955 (60.49)	120 (49.49)
No	932 (41.29)	792 (39.99)	140 (51.14)	743 (40.84)	629 (39.51)	114 (50.51)

SMY, sexual minority youth.

[a] Sample 1 is comprised of participants with complete information in adjusted analyses predicting suicide ideation (n = 2,290).

[b] Sample 2 is comprised of participants with complete information in adjusted analyses predicting suicide attempts (n = 1,818).

[c] SMY, same-sex only contact, 114 (4.96%) and both-sex contact, 169 (6.67%).

[d] SMY, same-sex only contact, 92 (4.88%) and both-sex contact, 142 (7.19%).

TABLE 2

Prevalence of Suicide Ideation and Attempts by Sexual Orientation Among Sexually Active Milwaukee Public School Students, 2007–2009

	(a) Suicide Ideation				(b) Suicide Attempts			
	1	2	3		4	5	6	
	Total	Hetero	SMY	χ^2 (p)[a]	Total	Hetero	SMY	χ^2 (p)[b]
Total	14.50%	11.91%	34.20%	39.81***	13.08%	10.50%	31.91%	29.65***
Sex								
Female	18.25	14.62	39.71	27.09***	14.55	11.31	33.37	18.18***
Male	11.13	9.61	26.34	11.38***	11.65	9.75	29.71	9.66**
Grade								
9	18.29	15.08	40.56	7.55**	16.70	12.11	47.16	9.02**
10	12.89	10.41	33.16	11.07***	12.01	10.10	28.79	5.88*
11	13.80	10.93	39.12	18.38***	11.71	9.81	26.90	7.53**
12	12.31	10.78	22.55	3.91*	11.44	9.81	21.60	4.07*
Race/Ethnicity								
White	18.37	12.85	51.98	8.73**	11.90	7.06	40.00	6.71**
Black	12.63	10.73	28.66	14.28***	12.18	9.96	29.98	14.35***
Hispanic	17.56	15.68	33.27	2.54	15.49	14.40	24.56	1.00
Other	19.31	15.11	40.34	12.03***	17.41	14.08	35.22	9.10**
Connectedness								
Family								
Yes	10.79	8.98	26.30	20.65***	10.38	8.34	27.09	19.62***
No	30.51	25.49	55.55	16.68***	24.74	20.53	45.05	7.82**
Other adult								
Yes	13.34	10.62	34.72	41.26***	10.86	8.35	29.99	30.52***
No	21.04	19.41	31.66	3.02~	25.62	23.07	40.53	2.76~
School								
Yes	12.14	10.50	27.49	12.16***	12.77	11.17	27.03	9.13**

	(a) Suicide Ideation				(b) Suicide Attempts			
	1	2	3		4	5	6	
	Total	Hetero	SMY	χ^2 (p)[a]	Total	Hetero	SMY	χ^2 (p)[b]
No	17.85	14.02	40.60	29.91***	13.54	9.48	36.69	26.31***

SMY, sexual minority youth.

The suicide ideation sample is comprised of participants with complete information including information for suicide ideation (n = 2,290). The suicide attempts sample is comprised of participants with complete information including information for suicide attempts (n = 1,818).

[a]Chi-square statistic refers to the comparison between heterosexuals and sexual minority youth in columns 2 and 3.

[b]Chi-square statistic refers to the comparison between heterosexuals and sexual minority youth in columns 5 and 6.

~ $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$.

TABLE 3

The Effect of Sexual Orientation and Connectedness Types on Suicide Ideation (n = 2,290) and Attempts (n = 1,818), Among Sexually Active Milwaukee Public School Students, 2007–2009[a]

Model	(a) Suicide Ideation Odds Ratio (95% CI)	(b) Suicide Attempts Odds Ratio (95% CI)
1		
SMY	3.41 (2.39, 4.87)***	3.74 (2.60, 5.38)***
Family	0.29 (0.22, 0.39)***	0.38 (0.28, 0.53)***
2		
SMY	3.54 (2.53, 4.96)***	3.92 (2.69, 5.72)***
Other adult	0.58 (0.39, 0.86)**	0.35 (0.23, 0.53)***
3		
SMY	3.45 (2.48, 4.79)***	3.96 (2.79, 5.64)***
School	0.68 (0.53, 0.88)**	1.04 (0.74, 1.44)
4		
SMY	3.36 (2.35, 4.81)***	3.88 (2.65, 5.69)***
Family	0.32 (0.23, 0.44)***	0.40 (0.29, 0.56)***
Other adult	0.72 (0.48, 1.09)	0.39 (0.26, 0.59)***
School	0.85 (0.65, 1.10)	1.32 (0.93, 1.86)

CI, confidence interval; SMY, sexual minority youth.

[a]All models control for sex, grade, race/ethnicity, and school year.

*$p < .05$;

**$p < .01$;

***$p < .001$.