Are Certain Schools More Prone to Suicide Ideation?

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Abstract

Background and Objectives: This study assessed between-school variation in suicide ideation and estimated the contribution of school-level attributes, student-level characteristics, and cross-level interactions (school by student) to student SI.

Methods: A secondary analysis of the California Healthy Kids Survey in two large and representative samples of California high schools and students: 2009–2011 and 2011–2013. This is a population sample of all public high school students (grades 9 and 11) in California. Analyses were first conducted on surveys administered in the 2011–2013 academic years to 790 schools with 179,457 students and replicated on surveys administered in 2009–2011 to 860 schools with 216,587 students.

Results: School-level SI rates ranged between 4% and 67%, with a median of 19.3% and mean of 20.0% (*SD* = 5.7). Student SI was significantly explained by student-level characteristics (R^2 = .20) and to an even larger extent by school-level attributes (R^2 = .55). Student-level characteristic predictive of SI included, gender, ethnic and racial affiliation, victimization, and perceptions of school climate. In both samples, school size and average level of academic achievement were not associated with rates of school SI. Schools with a larger number of girls and higher levels of victimization had higher rates of SI in both samples. No consistent cross-level interactions were found.

Background and Questions

Schools are an important context for adolescents and directly relevant to their mental health and SI. A positive school climate may provide a sense of safety and security to students in those schools, shielding them from community insecurity, providing adult and peer social support, moderating the effects of mental health difficulties such as depressive symptoms, and providing meaningful protective factors such as engagement and belongingness. The present study focused on **suicide ideation (SI)**. SI may serve as an indicator of other suicide-related behaviors, such as suicide attempts, that are of even more concern.

Despite the importance of school experiences for adolescents, only a few studies have attempted to conceptualize and empirically investigate the relationships between school-level context characteristics and SI.

The present study was based on two large and representative samples of high schools in California, employed a multilevel conceptualization and analysis, and investigated the contribution of three factors to explaining variance in student SI: school-level attributes, student-level characteristics, and cross-level

Sample

Data and Sample

The data for this study came from two sources: the California Healthy Kids Survey (CHKS), conducted by WestEd for the California Department of Education (CDE), and publicly available school-level data from the CDE.

The CHKS is a survey administered biannually by WestEd to 5th-, 7th-, 9th-, and 11th-grade students. The survey is conducted as **a census** among all public school districts, schools, and students in the relevant grades.

The present analyses focused on high school students (grades 9 and 11). Analyses were conducted on one survey year and then **replicated** in another year:

1. 2011–2013 academic years to 790 schools with 179,457 (52.0%) 9th graders and 165,746 (48.0%) 11th graders,
2. Replicated in 2009–2011 academic years to 860 schools with 216,587 (46.7%) 9th graders and 189,726 (53.3%) 11th graders

Methods

Dependent Variable

Similar to other studies (e.g., YRBS), students were asked: "During the past 12 months, did you ever seriously consider suicide?" Positive answers were coded as 1 and negative as 0.

Student-Level Independent Variables

We used student-level data as they were reported by students in the surveys.

Demographics included gender (1 = *male*, 0 = *female*), grade (1 = *9th grade*, 0 = *11th grade*), and race and ethnicity (1 = *African American or black, Asian, Hispanic, or other*, 0 = *white*).

School climate was assessed with two constructs: School belongingness and Adult support.

Victimization and involvement in violence was assessed by the following five indexes:

(a) moderate victimization
(b) severe victimization
(c) discrimination-based bullying
(d) weapon involvement
(e) gang membership

School-Level Independent Variables

Some school-level attributes were aggregated from student-level data gathered as part of the survey. In addition, ethnicity composition (defined as the proportion of each ethnic and racial group in the school), school enrollment, proportion of students eligible for free or reduced-price lunch, and Academic Performance Index.

Findings

- In school years 2011–2013, school-level SI rates ranged between 4% and 67% (upper quartile = 22%, upper decile = 27%), with a median of 19.3% and mean of 20.0% (*SD* = 5.7).
- ICC(2) was substantial (.68), indicating that proportions of students reporting SI differed considerably across the schools in this large sample. Similar results were obtained for school years 2009–2011
- The results of the multilevel analysis indicate that:
  - Student SI is significantly explained by student-level characteristics (R^2 = .20)
  - SI aggregated to the school level is explained to an even larger extent by school-level attributes (R^2 = .55).
- In both samples, school size and average level of academic achievement were not associated with rates of school SI.
- Several school-level attributes explained between-school variance in both samples.
- Similar to student-level findings, schools with a larger number of girls had higher SI (*b* = -.31) and schools with higher levels of moderate (*b* = .30) and discrimination-based (*b* = .35) victimization had higher rates of SI in 2011–2013.

Discussion

About 20% of California high school students report SI. The findings clearly show, perhaps for the first time, the large variations among schools in their rates of student SI. Rates ranged between 4% and 67% of students in each school. Furthermore, school-level factors explained a large amount of this variability.

These findings support a public health approach to SI such that prevention and intervention efforts may be better directed and prioritized to high-risk schools, rather than trying to focus efforts to identify high-risk students across all schools.

Further, the high levels of moderate, severe, and discrimination-based victimization in these high-risk schools suggest that SI prevention may be more effective if integrated with school-level bullying and discrimination reduction programs.

Our findings indicate that school-level effects are not just a mere aggregation of student-level risk factors. The differences between the student- and school-effects may suggest that some mechanisms leading to SI are related to subjective personal perspective, whereas others are also associated with a social context shared by many other students.

This calls for school-wide efforts to change school climate of safety, in addition to addressing the circumstances of individual students who are bullied by their peers.

Table 1. Random Coefficient Model Predicting Suicide Ideation Based on Student Characteristics

	2011–2013 (*N* = 325,414)			2009–2011 (*N* = 370,389)		
Characteristic	***b***	***SE(b)***	***OR***	***b***	***SE(b)***	***OR***
African American or black	-0.15*	0.03	0.86	-0.07*	0.02	0.93
Asian	0.12*	0.02	1.13	0.06*	0.02	1.06
Hispanic	0.04*	0.01	1.04	0.03	0.01	1.03
Other race or ethnicity	0.18*	0.02	1.20	0.19*	0.02	1.21
Male gender	-0.74*	0.01	0.48	-0.66*	0.01	0.52
Grade 9	0.01	0.01	1.01	0.02	0.01	1.02
School belonging	-0.27*	0.01	0.76	-0.26*	0.01	0.77
School adult support	-0.19*	0.01	0.83	-0.20*	0.01	0.82
Moderate violence victimization	0.75*	0.01	2.12	0.64*	0.01	1.89
Discrimination victimization	0.35*	0.01	1.42	0.40*	0.01	1.48
Severe violence victimization	0.20*	0.01	1.23	0.22*	0.01	1.24
Weapon involvement	0.03	0.01	1.03	0.08*	0.01	1.08
Gang member	0.39*	0.02	1.47	0.43*	0.02	1.54
R^2		.20*			.17*	

* p < .01

Table 2. Random Coefficient Model Predicting Suicide Ideation Based on School Characteristics

	2011–2013 (*N* = 781)			2009–2011 (*N* = 855)		
Characteristic	***b***	***SE(b)***	**β**	***b***	**SE(b)**	**β**
Enrollment	-0.02	0.01	-0.06	0.00	0.01	0.01
African American or black	-0.28	0.16	-0.10	-0.06	0.12	-0.03
Asian	0.21	0.09	0.09	0.05	0.07	0.04
Hispanic	0.23*	0.08	0.25	0.01	0.06	0.02
Other race and ethnicity	0.39*	0.13	0.14	0.20	0.09	0.09
Free and reduced-price meals	0.04	0.08	0.04	0.14*	0.05	0.20
Academic Performance Index	0.03	0.02	0.15	0.02	0.02	0.08
Male gender	-0.92*	0.16	-0.31	-0.79*	0.18	-0.23
Grade 9	-0.28*	0.08	-0.23	0.04	0.06	0.03
School belonging	-0.09	0.08	-0.10	0.12	0.07	0.14
School adult support	0.22	0.10	0.15	-0.29*	0.10	-0.22
Moderate violence victimization	0.64*	0.16	0.30	0.78*	0.14	0.40
Discrimination victimization	1.26*	0.25	0.35	0.65*	0.26	0.16
Severe violence victimization	0.25	0.17	0.19	0.40*	0.15	0.22
Weapon involvement	0.29	0.23	0.17	0.08	0.21	0.03
Gang member	-0.22	0.36	-0.05	0.16	0.38	0.03
R^2		.55*			.50*	

Conclusions

Little and associates identified several gaps in practice, theory, and research. The current study suggests ways to address some of these challenges. First, to overcome some of the difficulties they noted associated with linking individual-level information on suicide attempts, the present study suggests that anonymous student surveys focusing on the proxy of self-report on SI can identify schools that have more vulnerable students and help prioritize prevention efforts among schools.

The study also exemplifies how such school-based surveys and multilevel analyses can contribute to research and theory building. An important issue for future studies is to identify whether certain proportions of students have a particular characteristic (e.g., a traumatic background) that may become a tipping point that influences levels of SI in the school. Future studies should examine whether the availability of staff expertise, counseling services, and other school-level resources may independently contribute to reducing rates of student SI in the school. Future studies should also search for school-level factors that could help lower the risk of SI of the most vulnerable students. Perhaps school resources, such as an experienced support staff, may be more successful in moderating the risks of highly vulnerable students.

SELECTED RFERENCES

Benbenishty R, Astor RA. *School Violence in Context: Culture, Neighborhood, Family, School, and Gender*. New York, NY: Oxford University Press; 2005.

Centers for Disease Control and Prevention. Ten leading causes of death by age group, United States – 2014. https://www.cdc.gov/injury/wisqars/pdf/leading_causes_of_death_by_age_group_2014-a.pdf. Published 2014. Accessed January 5, 2017.

Little TD, Roche KM, Chow SM, Schenck AP, Byam LA. National Institutes of Health Pathways to Prevention Workshop: advancing research to prevent youth suicide. *Ann Intern Med*. 2016;165(11):795-799.

McKinnon B, Gariépy G, Sentenac M, Elgar, FJ. Adolescent suicidal behaviours in 32 low- and middle-income countries. *Bull World Health Organ*. 2016;94:340-350F.

McLoughlin AB, Gould MS, Malone KM. Global trends in teenage suicide: 2003–2014. *QJM*. 2015;108(10):765-780.

World Health Organization. Preventing suicide: a global imperative. Geneva: World Health Organization; 2014.

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