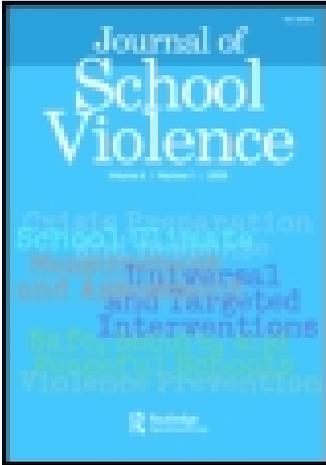


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A Latent Class Analysis of Victimization Among Middle and High School Students in California

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School victimization is associated with negative social-emotional outcomes and risky behaviors. Most studies have provided definitions and measures of victimization, depicting a limited characterization of victimization in schools. More nuanced analyses of school victimization are needed to assess the heterogeneous pattern of victimization in schools. The current study explored distinct victimization configurations in a diverse sample of 418,483 middle and high school students in California, utilizing latent class analyses to account for type and frequency of victimization. The results uncover four classes of victimization, including frequent verbal, physical, and sexual victimization; occasional verbal and physical victimization; verbal and sexual victimization; and no victimization. Older age was associated with a lower likelihood of frequent verbal, sexual, and physical victimization and African American youth were more likely to be classified in this class. Females were more likely to be in the verbal and sexual victimization class than males.

KEYWORDS *latent class analyses, verbal victimization, physical victimization, sexual victimization, school violence*

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BACKGROUND

Researchers have studied victimization in various international contexts (Chen & Astor, 2012; Khoury-Kassabri, Astor, & Benbenishty, 2009; Murray-Harvey & Slee, 2010; Robers, Zhang, & Truman, 2012). Victimization is associated with adverse effects on numerous student outcomes, including academic achievement and mental health (Espelage, Hong, Rao, & Low, 2013; Nabuzoka, Rønning, & Handegård, 2009), and is related to substance use and criminal behavior (Bender & Lösel, 2011; Esbensen & Carson, 2009). Victimization is also associated with feeling unsafe within a school (Benbenishty & Astor, 2005).

Defining and Measuring Victimization

To date, most studies have defined and measured student victimization separately by type (Schreck, Miller, & Gibson, 2003) or frequency of victimization (Glew, Fan, Katon, & Rivara, 2008; Nansel et al., 2001). The types of victimization have widely varied and have included physical, verbal, relational/social, and sexual victimization. *Physical victimization* includes hitting, kicking, pushing, pinching, and beating (Pellegrini, 2001). *Verbal victimization* includes repeated derogatory remarks, name-calling, intimidation, verbal threats, and teasing (Owens, Shute, & Slee, 2000). *Relational/social victimization* refers to more subtle behaviors that are intended to significantly damage peer relationships and reduce the feeling of inclusion in the peer group (Crick et al., 2001). Examples of relational/social victimization include social exclusion, withdrawal of friendship or acceptance in order to hurt or control someone, and spreading mean rumors. Physical victimization is usually considered to be a direct form of victimization as it involves face-to-face confrontation, while relational or social refers to an indirect form of victimization, as it usually occurs via a third party (Owens et al., 2000; Rivers & Smith, 1994; Wang, Iannotti, & Luk, 2012). *Sexual victimization* has been defined as any deliberate and repeated physical or verbal sexual behaviors that are not welcomed by and are deleterious to the victim (American Association of University Women, 2001). Sexual harassment behaviors can range in severity from name-calling and teasing to physical sexual assault (Zeira, Astor, & Benbenishty, 2002). Sexual harassing behaviors among teens include behaviors such as unwanted sexual jokes, gestures, name-calling, antigay putdowns, pinching or grabbing, texting or e-mailing sexual pictures, spreading sexual rumors, and unwanted sexual touching (AAUW, 2001).

An additional indicator of school victimization is students' feelings of insecurity and fear at school. Previous research found that student fear at school due to violence was directly related to experiences of personal victimization by students and school staff (Astor, Benbenishty, Zeira, & Vinokour, 2002; May & Dunaway, 2000).

Patterns of Victimization in Schools

Teachers, school leaders, and other school professionals acknowledge that students experience multiple types of victimization in varying frequencies.

Based on previous research demonstrating high correlations between victimization to different types of violence acts, Nylund, Bellmore, Nishina, and Graham (2007) concluded that children who experience one type of victimization are more likely to experience other types of victimization. Therefore, for instance, in a school, there may be a group of students who are frequently victimized both verbally and physically; another group of students may be occasional targets of verbal and sexual victimization, whereas another group of students may experience no victimization.

Previous research has utilized latent class analysis (LCA) to generate classes of victimization among adolescent-age students and, furthermore, have examined associations between victimization and students' demographic characteristics. In a sample of 2,000 urban middle school students in the Los Angeles area, research by Nylund et al. (2007) uncovered three classes of students: victimized, sometimes victimized, and nonvictimized. However, the study was limited to a local sample of students from one metropolitan area, did not address frequency of victimization, and gender was the only demographic variable measured. In a U.S. national sample of 7,475 students in Grades 6–10, Wang, Iannotti, Luk, and Nansel (2010) generated three classes of victimization, including an all-types victim class, a verbal/relational victim class, and a no-victim class. Similarly, in a sample of middle and high school youth in Maryland, Bradshaw, Waasdorp, and O'Brennan (2013) conducted a LCA of victimization and found four distinct victimization patterns: verbal and physical; verbal and relational; high verbal, physical, and relational; and low victimization/normative. The limitation of these two studies was that they dichotomized responses into "yes this happened" or "no it did not" and, therefore, the researchers were unable to capture variability in frequency of victimization within and across classes. Additional studies have examined latent classes of both victimization and perpetration among adolescents (e.g., Giang & Graham, 2008; Williford, Brisson, Bender, Jenson, & Forrest-Bank, 2011); thus, these studies were less indicative of heterogeneous patterns of victimization.

Overall, the studies seeking to uncover classes of victimization have usually suggested a *normative* nonvictimized class of students who did not display substantial victimization. However, previous findings with regards to the total number of victimization classes and the typology of classes are inconsistent.

Victimization and Demographics

Research on victimization suggests that the frequency and type of victimization varies by gender, race/ethnicity, and age. Some research found that boys are more likely to report frequent victimization than girls (Nansel et al., 2001; Spriggs, Iannotti, Nansel, & Haynie, 2007). Yet, other research indicated no significant differences between boys and girls in victimization prevalence (O'Brennan, Bradshaw, & Sawyer, 2009). Gendered discrepancies in victimization prevalence may be explained in light of the different ways that boys and girls tend to be victimized. Research has consistently suggested that female students are more likely to experience relational and indirect victimization while male students are more likely to experience direct forms of physical victimization (Hartung, Little, Allen, & Page, 2011; Murray-Close et al., 2007; Peskin, Tortolero, & Markham, 2006; Van Der Wal, De Wit, & Hirasing, 2003; Wolke, Woods, Bloomfield, & Karstadt, 2000). Girls are also more likely to experience sexual harassment more frequently than boys (Gruber & Fineran, 2007; Pepler et al., 2006). Some research suggested gender differences for verbal and relational victimization (Owens et al., 2000), and other studies indicated no significant differences between male and female students in verbal victimization (Perry, Hodges, & Egan, 2001; Scheithauer, Hayer, Peterman, & Jugert, 2006).

With regards to students' ages or grade levels, some studies indicated that students in primary schools are more often victimized compared with middle school adolescents (Boulton & Underwood, 1992; Whitney & Smith, 1993). However, the type of violence used is different between younger and older students. With age, students use more verbal, indirect, socially manipulative, and complex types of violence and perform less physical aggression (Björkqvist, Österman, & Kaukiainen, 1992; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007). In addition, sexual harassment increases with age (Craig, Pepler, Connolly, & Henderson, 2001; Gruber & Fineran, 2007).

Unlike the extensive research conducted on victimization and its relation with gender or age, research has not yet systematically examined associations between race/ethnicity and victimization type and frequency. Some studies have found a significantly lower rate of school victimization among African-American students when compared with White students and students from Hispanic backgrounds (Spriggs et al., 2007; Wang et al., 2010). Contrarily, a different study found that Black students were more likely to be victimized than students from Hispanic backgrounds (Peskin et al., 2006). Others have indicated no significant differences in victimization rates among students by race (Seals & Young, 2002; Snyder & Sickmund, 2006). Findings from the current study could help in developing more profound knowledge with regards to student victimization and the relations with race or ethnicity.

Study Aims

Only few studies examined how students cluster in distinguished classes of victimization. To address this gap, we utilized a LCA to examine classes of victimization, incorporating type and frequency, and associations between victimization and students' gender, grade level, and race. LCA is one of the best methodological tools available to understand patterns and configurations of risk and risk behaviors (Sullivan, Childs, & O'Connell, 2010). This type of knowledge could help researchers and practitioners develop more effective school violence intervention programs targeted to specific groups of students. The current study contributes to the emerging need among educational researchers and school professionals for a deeper understanding of the complex patterns of victimization experienced by middle and high school students across the state of California. Additionally, it provides a snapshot of the frequency of events, not just whether youth experienced them or not.

This study could also help to explain some inconsistencies in findings on gender and race/ethnicity differences of types and frequency of victimization.

Drawing from a large statewide sample of California middle and high school students, the study aims to identify distinct classes of students who are victims of school violence and to characterize victimization by the type and frequency of victimization they have experienced. Further, the study assesses associations between victimization class and student gender, race/ethnicity, and grade level.

METHOD

The data used in this study were gathered from the California Healthy Kids Survey (CHKS), conducted by WestEd in collaboration with the California Department of Education. The CHKS consists of a core survey module that gathers demographic background data and asks students about their health-related behaviors and school safety.

The CHKS was required to be administered biennially by all schools that received Title IV funding under the federal Safe and Drug Free Schools and Communities Act or the State's Tobacco Use Prevention Education program (~85% of districts statewide). Under such mandates, schools must survey a representative district-wide, grade-level sample of students in the fifth, seventh, ninth, and eleventh grades according to standards set forth by the California Department of Education (CDE). The CDE sampling procedure includes the following requirements: (a) 100% of all district schools participate, or 100% of all selected schools from an approved sampling plan; (b) an appropriate class subject or class period was identified and used; (c) 100% of selected classrooms participated; and (d) the number of completed, usable

answer forms obtained per grade was 60% or more of the selected sample or (e) if active parental consent is used, 70% or more parents within each grade's selected sample returned signed permission forms, either consenting or not consenting to their child's participation. Additional details of the recommended sampling procedure is described in detail elsewhere (Austin & Duerr, 2004). District-level consent procedures were followed, and the present study has appropriate IRB approval from the University of Southern California.

Sample

CHKS data collected for the 2005–2007 academic school years from students who self-reported as Hispanic, African American, or White were used in the present study ($N = 418,483$). Since the study design was centered on district-representative sampling, a weighting procedure was used to adjust the total of grade-level respondents to represent the total district enrollment for the particular grade levels of interest. Thus, this weight and district level clustering was also controlled for in the model. Over half of the sample reported being female (52.1%). Approximately 36% were in the seventh grade followed by ninth (35%) and eleventh (29%). The majority of the participants reported being of Hispanic ethnicity (52.5%), whereas 40.5% were White and 7% reported being Black/African American.

Measures

The demographic covariates included race/ethnicity (White, Black/African American, and Hispanic), gender, and grade (seventh, ninth, and eleventh).

VICTIMIZATION

Students were asked to respond to seven items measuring their experience of victimization to physical, verbal, and sexual violence and feeling of insecurity at school: During the past 12 months, how many times on school property have you . . . [physical victimization] been pushed, shoved, slapped, hit, or kicked by someone who wasn't just kidding around; been in a physical fight; had your property stolen or deliberately damaged, such as your car, clothing, or books; been threatened or injured with a weapon (gun, knife, club, etc.); [verbal victimization] had mean rumors or lies spread about you; been made fun of because of your looks or the way you talk; [sexual victimization] had sexual jokes, comments, or gestures made to you; [feeling of insecurity at school] or been afraid of being beaten up. Each question had response values of *none*, *one time*, *two to three times*, and *four or more times*.

Analysis Plan

LCA was conducted using Mplus 6.1 (Lubke & Muthén, 2005). LCA is used to identify homogeneous subgroups within a heterogeneous population (Lanza, Collins, Lemmon, & Schafer, 2007; Magidson & Vermunt, 2002). Multinomial logistic regression (MLR) analyses were completed simultaneously with class estimation to account for measurement error related to class assignment. Gender, race/ethnicity, and grade level were included as demographic covariates in the MLR regression.

A series of models were run to determine the appropriate number of classes for victimization. We started with a one-class model followed by a series of models with specifying increased number of classes (e.g., two class, three class, etc.), each representing different patterns of victimization. Our first consideration in selecting the optimal model was based on significant Lo-Mendell-Rubin likelihood ratio test (LMR LRT) score, an index that gives a significance test as to whether an additional class is warranted compared to $k-1$ classes. In addition to considering the LMR LRT, decreases in the adjusted Bayesian information criterion (BIC) were also gauged. As increasing number of classes are identified, it is important to assess the classes for interpretability (Nylund, Asparouhov, & Muthén, 2007). The five- and six-class solutions provided two classes of similar undistinguishable profiles; thus, these solutions were considered inappropriate. Finally, an entropy score, representing the percentage of the sample accurately classified using a given class model, was calculated for each model to determine the classification accuracy (Bradshaw et al., 2013; Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Once the appropriate number of classes was identified, a final model including the demographic variables as predictors of class membership was run.

RESULTS

In the current analysis, the LRM LRT never reached nonsignificance; however, the interpretation of the various classes became unclear. A four-class model provided the best overall fit to the data for victimization. The results uncover four classes of victimization: frequent verbal, physical, and sexual victimization; occasional verbal and physical victimization; verbal and sexual victimization; and no victimization. This model was selected based on a reduction in adjusted BIC and substantive interpretation. The LMR LRT indicated that additional classes were available; however, there was little substantive differentiation between the additional classes. For example, in the five-class solution, there were two frequent victimization classes, which had very small differences in the probability of being in a physical fight (Table 1).

Conditional probabilities for victimization are summarized in Table 2. Figure 1 further demonstrates conditional items probability of victimization

TABLE 1 Fit Statistic Comparisons of Latent Class Analysis Models of School Victimization in California

Model	Description	Victimization in California		
		Adjusted BIC	LMR LRT <i>p</i> value	Entropy
1	One class (no covariates)	8180146.022	—	—
2	Two class	4855872.593	.0000	0.724
3	Three class	4787458.892	.0000	0.685
4	Four class	4751154.994	.0000	0.658
5	Five class	4734122.149	.0021	0.643

Note. BIC = Bayesian information criterion; LMR LRT = Lo-Mendell-Rubin likelihood ratio test *p*-value for (K-1)-classes. A significant *p* value indicates that the (K-1)-class model should be rejected in favor of a model with at least K-classes. Best fitting models identified in bold.

two or more times according to victimization class membership. The frequent verbal, sexual, and physical victimization class is the smallest class of the sample (comprising 11.9% of the sample). The members of this class reported a high likelihood of ever being shoved, kicked, or slapped (43.4%), ever having been the subject of sexual jokes or comments (64.2%), ever having had mean rumors or lies spread about them (52.6%), and being made fun of because of looks (55.7%) four or more times. Members of this class had the highest chance of being threatened with a weapon (33.7%). Students experiencing occasional verbal and physical victimization accounted for 19.9% of the sample. Respondents in this category were likely to report experiencing some verbal or physical victimization one to three times in the past year. They had at least a 40% chance of reporting being shoved, kicked, or slapped or afraid of being beaten up. The verbal and sexual victimization class accounted for 21.6% of the sample, and these respondents had at least a 25% chance of reporting verbal or sexual victimization two or more times in the past year. Finally, approximately 47% of students were in the no victimization class and had little or no chance of experiencing victimization in the past year (see Table 2 and Figure 1).

MLR analyses indicated that demographic factors were related to class membership (Table 3). Being in a lower grade was associated with membership in frequent verbal, sexual, and physical victimization ($OR = 0.84$; 95% CI [0.82, 0.85]) and occasional verbal and physical victimization ($OR = 0.72$; 95% CI [0.70, 0.72]) compared to the no victimization class. Being in a higher grade, however, was associated with membership in the verbal and sexual victimization class ($OR = 1.20$; 95% CI [1.17, 1.23]) compared to the no victimization class.

Compared to males, females were less likely to report frequent verbal, sexual, and physical victimization ($OR = 0.94$; 95% CI [0.90, 0.99]) and to report occasional verbal and physical victimization ($OR = 0.58$; 95% CI [0.50, 0.68]). However, females were almost six times more likely to belong to the verbal and sexual victimization class compared to males ($OR = 5.85$; 95% CI [5.46, 6.26]).

TABLE 2 Conditional Probabilities for LCA Model of School Victimization

	Frequent verbal, sexual, and physical victimization	Occasional verbal and physical victimization	Verbal and sexual victimization	Not victimized
Class prevalence	11.9%	19.9%	21.6%	46.6%
In the past 12 months have you:				
Ever been shoved, kicked, or slapped				
0 times	.16	.28	.78	.89
1 time	.16	.35	.14	.07
2-3 times	.24	.24	.06	.02
4 or more times	.43	.13	.03	.02
Ever been afraid of being beaten up				
0 times	.39	.59	.80	.96
1 time	.22	.29	.16	.04
2-3 times	.18	.09	.04	.00
4 or more times	.22	.03	.01	.00
Ever had your property stolen or damaged				
0 times	.33	.59	.76	.91
1 time	.23	.27	.18	.07
2-3 times	.22	.11	.06	.02
4 times	.22	.03	.01	.00
Ever been threatened with a weapon (knife, gun, etc.)				
0 times	.66	.82	.97	.97
1 time	.15	.13	.03	.01
2-3 times	.09	.04	.01	.01
4 or more times	.10	.02	.00	.01
Ever had mean rumors or lies spread about you				
0 times	.12	.40	.30	.89
1 time	.12	.36	.32	.09
2-3 times	.24	.18	.25	.01
4 or more times	.53	.06	.13	.01
Ever had sexual jokes or comments made to you				
0 times	.10	.48	.18	.86
1 time	.08	.27	.22	.06
2-3 times	.18	.15	.26	.03
4 or more times	.64	.11	.34	.05
Ever been made fun of because of your looks				
0 times	.16	.43	.49	.90
1 time	.12	.31	.22	.06
2-3 times	.17	.15	.16	.02
4 or more times	.56	.11	.13	.02

Note. LCA = latent class analysis.

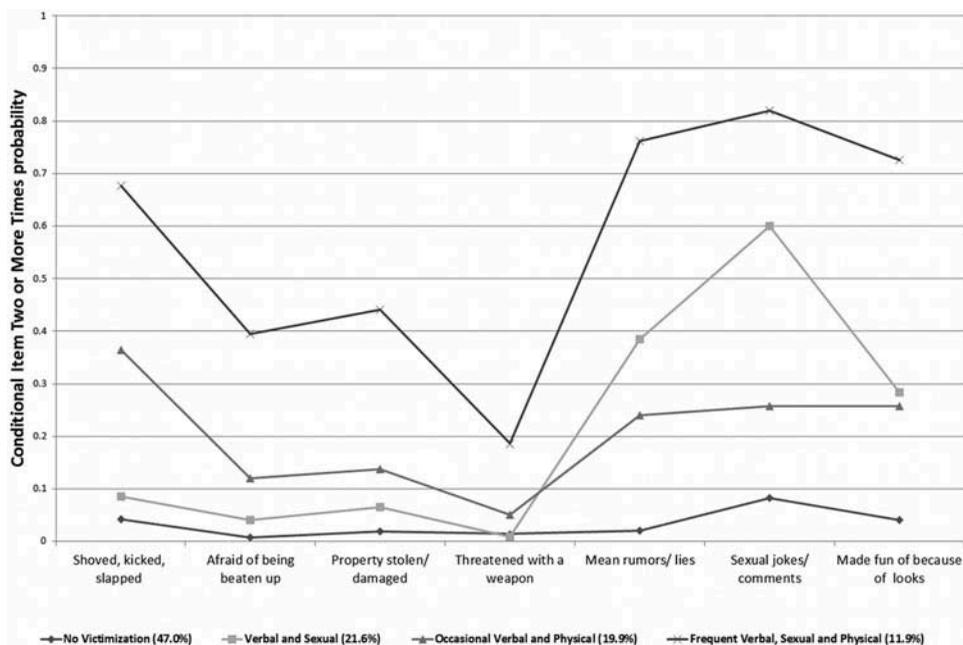


FIGURE 1 Conditional items probability of victimization according to victimization class membership. Plot indicates probability of being victimized two or more times during the past 12 months.

Compared to White students, African-American students were significantly more likely to be members of the frequent verbal sexual and physical victimization class ($OR = 1.27$; 95% CI [1.13, 1.44]). Students from Hispanic backgrounds were more likely than White students to be members of the occasional verbal and physical victimization class ($OR = 1.37$; 95% CI [1.20, 1.57]) but were significantly less likely to be members of the frequent verbal, sexual, and physical victimization class ($OR = 0.82$; 95% CI [0.76–0.90]) and verbal and sexual victimization class ($OR = 0.67$, 95% CI [0.63, 0.71]).

DISCUSSION

This study sought to describe classes of type and frequency of victimization in a large statewide sample of California middle and high school students. The four classes of victimization were frequent verbal, physical, and sexual victimization; occasional verbal and physical victimization; verbal and sexual victimization; and no victimization. Males were more likely to be in the frequent verbal physical and sexual victimization class than females. These findings support previous studies that report a higher prevalence of frequent victimization among male students (e.g., Nansel et al., 2001; Seals

TABLE 3 Multinomial Logistic Regression Results of Victimization in California

Covariates	Frequent verbal and physical victimization vs. not victimized		Occasional verbal and physical victimization vs. not victimized		Verbal sexual victimization vs. not victimized	
	OR	95% CI	OR	95% CI	OR	95% CI
Grade	0.84***	0.82, 0.85	0.72***	0.70, 0.74	1.20***	1.17, 1.23
Female	0.94**	0.90, 0.99	0.58***	0.50, 0.68	5.85***	5.46, 6.26
White	1.00		1.00		1.00	
African American	1.27***	1.13, 1.44	1.11	0.97, 1.27	1.08	0.94, 1.25
Latino/a	0.82***	0.76, 0.90	1.37***	1.20, 1.57	0.67***	0.63, 0.71

*** $p < .01$. ** $p < .001$.

& Young, 2002). Females were more likely to be in the verbal and sexual victimization class. These findings mirror previous research indicating greater sexual victimization among female students (e.g., Gruber & Fineran, 2007).

The victimization patterns in this study are similar to the victimization classes found in the Bradshaw and colleagues' (2013) study of Maryland middle and high school students. Both studies indicate a normative/low victimization group, which comprised the largest proportion of the sample and displayed a low probability of endorsing any of the victimization indicators. Both studies also indicate a high victimization class and an occasional verbal and physical victimization class of students, who were pushed, called names, and teased yet had a lower probability of reporting rumors. Finally, both the verbal and sexual victimization class in the current study and the verbal and relational victimization class revealed by Bradshaw et al. (2013) had a lower probability of physical victimization and a fair to high probability of reporting rumors.

Revealing the frequent verbal, physical, and sexual victimization class mirrors previous research findings, which indicate that most students are either not victimized or exposed to lower levels of victimization, whereas only a small group of students tend to face multiple forms of victimization frequently, including physical, verbal, and sexual (e.g., Attar-Schwartz & Khoury-Kassabri, 2008; Benbenishty & Astor, 2005). Surprisingly, this class did not report a high rate of being threatened with a weapon. This may reflect the relatively smaller extent of younger children being involved in weapon violence than older students (Roberts et al., 2012).

Our findings may further indicate that this small group of students who report frequent victimization experience the verbal forms of sexual victimization, such as hurtful names of sexual character. To better understand nuanced patterns of sexual victimization, future studies could examine a wider range of verbal–sexual and physical–sexual types of victimization, including relational and covert forms of sexual victimization, such as spreading sexual rumors.

The current study provides more information about associations between victimization classes and student demographics. Students in the verbal and sexual victimization class were more likely to be girls and in the higher grades. Researchers have posited that as female students reach puberty and develop sexual awareness, they become more vulnerable to sexual victimization (Craig et al., 2001). Early or late sexual maturation, changes in physical appearance, romantic relationships, choice of romantic partners, and sexual orientation may trigger sexual victimization (Craig et al., 2001). Schools could support the sexual identity development and well-being of female students in the higher grades. The lion's share of all sexual violence is perpetrated against youths under 18 years old; however, most of those incidents are never reported, and schools are the most common location

of peer sexual victimization (Young, Grey, & Boyd, 2009). Thus, the current findings can help in portraying the profile of students at high risk of sexual victimization to support school staff in identifying and reaching out to these vulnerable youths. Nevertheless, prevention and intervention efforts should not only focus on specific groups of youth but, rather, on improving the school's climate. According to Stein (1999), sexual harassment among adolescents most often takes the form of hostile environment harassment in which ongoing physical, verbal, or nonverbal behaviors of sexual nature creates a school climate that is offensive and intimidating.

Previous theories have posited that racial and ethnic minority youth growing up in low-income, high-poverty communities are exposed to violence at exceptionally high rates (Fitzpatrick, Dulin, & Piko, 2010). Our analysis, however, indicates that the relations between ethnicity and victimization are much more nuanced. African-American students were more likely than their White peers to belong to the frequent verbal, physical, and sexual victimization class, whereas Hispanic students were less likely to be members of this class than their White peers. These findings suggest that race and ethnicity may be related to a configuration of victimization types, rather than to one type of victimization (e.g., Snyder & Sickmund, 2006; Wang et al., 2010). Educators are encouraged, therefore, to develop methods to identify classes of students who are frequently victimized to multiple types of perpetrations and to formulate differential school safety interventions based on the specific configuration of victimization experienced by this vulnerable class of students. Moreover, further research is needed to better understand why different classes of ethnic minorities tend to be victimized to a specific configuration of violence acts.

In all, this study promotes a more nuanced understanding of victimization, which can help researchers and educators develop effective school safety and bullying prevention programs. Intervention programs can respond more effectively to different patterns of victimization in schools, as well as support particular groups of students vulnerable to different patterns of victimization.

The results of the current study, while informative, are also limited in certain respects. First, this study did not examine additional outcomes that may be related to victimization at school. Future research could, therefore, further examine behavioral, psychological, or academic outcomes associated with each class to better inform school practitioners about vulnerable groups of students and to help modify interventions to answer the specific needs of victimized students. Second, some types of victimization, such as cyber or electronic victimization, were not examined in the current study. With the increasing usage of social media platforms and cell phones among adolescents, the cyberspace has become a central sphere for violent interactions. Future research should, therefore, include cyber victimization to better examine classes of student victimization. Finally, the reliance on self-reports may

have limited the current results because it is possible that some of the findings may be attributed to differences in reporting styles among gender, age, and ethnic groups. A multi-informant approach of data collecting in future research, such as peer nomination of victimization, could provide a more substantial picture of the classes of victimized students.

COMPETING INTERESTS

There were no competing interests

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