School Victimization and Substance Use among Adolescents in California

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Abstract

Substance use and violence co-occur among adolescents. However, the extant literature focuses on the substance use behaviors of perpetrators of violence and not on victims. This study identifies patterns of school victimization and substance use and how they co-occur. The California Healthy Kids Survey was used to identify latent classes/clusters of school victimization patterns and lifetime and frequency of recent (past month) alcohol, tobacco, and marijuana use (N=419,698). Demographic characteristics (age, gender, and race/ethnicity) were included as predictors of latent class membership. Analyses revealed four latent classes of school victimization: low victimization (44.4 %), moderate victimization (22.3 %), verbal/relational victimization (20.8 %), and high victimization (with physical threats; 12.5 %). There were also four classes of substance use: non-users (58.5 %), alcohol experimenters (some recent alcohol use; 25.8 %), mild poly-substance users (lifetime use of all substances with few days of recent use; 9.1 %), and frequent poly-substance users (used all substances several times in the past month; 6.5 %). Those in the high victimization class were twice as likely to be frequent poly-substance users, and mild poly-substance use was most salient for those in the verbal victimization class. Few studies have explored latent patterns of substance use and violence victimization concurrently. The findings indicate substantial heterogeneity in victimization and substance use among youth in California

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schools with implications for targeted and tailored interventions. Understanding how certain types of victimization are associated with particular patterns of substance use will provide schools with opportunities to screen for concurrent behavioral health problems among youth.

Keywords

Adolescents; Victimization; Substance use

Introduction

Recent headlines have highlighted the potential consequences of school-related victimization and/or bullying. Physical and relational victimization have been found to have deleterious effects on those who experience it. Victimization has been found to be associated with suicidality, poor academic outcomes, truancy, and depression (Gastic 2008; Glew et al. 2008; Klomek et al. 2007). However, victimization in schools encompasses a very wide range of behaviors, including non-physical behaviors such as verbal abuse and social isolation (Swearer et al. 2010). Victimization could include acts that vary in severity and frequency. For example, physical victimization can include pushing, threats, or hitting, but can also include weapon use (Benbenishty and Astor 2005; Borum et al. 2010). Additionally, teasing or other types of relational victimization can occur alone or with physical acts. The empirical literature suggests that the frequency and severity of victimization, as well as the type of victimization (i.e., physical or verbal/relational), matters greatly with regard to health, social and academic outcomes (Astor et al. 2010; Gregory et al. 2010).

Singularly, substance use in adolescence increases the likelihood of numerous negative health and social outcomes (Odgers et al. 2008; Squeglia et al. 2009). Previous research has found that there are large individual and societal costs to youth who use drugs including increased likelihood for substance abuse and the associated costs of treatment, poor academic outcomes, mental health problems, and delinquency (Bui et al. 2000; Dewey 1999; Newcomb et al. 1997). Similar to victimization, it is well established within the substance use empirical literatures that the types of substances, how frequently those substances are used, and the multiple use of substances are also important risk factors to youths' social and emotional outcomes (Connell et al. 2009; Gilreath et al. 2012).

The extant literature indicates that experiences of victimization have been shown to co-occur with substance use in adolescence (Kuntsche and Gmel 2004; Sullivan et al. 2006; Tharp-Taylor et al. 2009; Weiss et al. 2011). However, these studies are limited to conceptualizing both the use of various substances and types of victimization separately with no consideration for multi-dimensional patterns of co-occurrence (Kuntsche and Gmel 2004; Sullivan et al. 2006; Weiss et al. 2011). Only one study looked at the combined effects of experiencing mental and physical victimization simultaneously on separate models of alcohol, tobacco, marijuana, and inhalant use (Tharp-Taylor et al. 2009). Overall, the findings of these studies suggest that there is a strong association between victimization and

substance use in adolescence (Kuntsche and Gmel 2004; Sullivan et al. 2006; Tharp-Taylor et al. 2009; Weiss et al. 2011).

There are several mechanisms by which victimization and substance use might co-occur. Adolescence is a developmental stage defined by transitions in social roles, as well as physiological and psychological changes (Larson and Lampman-Petraitis 1989; Silk et al. 2003). Peer relationships become critical and school victimization emerges as a particularly salient interpersonal stressor (Boulton and Underwood 1992). Increasing numbers of stressful experiences have been found to be associated with increases in numerous behavioral health problems (Hoffman et al. 2000; van Jaarsveld et al. 2009; Grant et al. 2003). Specifically, chronic and acute stress in adolescence has been associated with increases in substance use, abuse and the potential for addiction in emerging adulthood and beyond (Hoffman et al. 2000; Sinha 2008).

Generally, youth who are victimized tend to be different from their peers (e.g., in appearance and/or mannerisms) and may have under-developed social skills (Farrington 1993). Social development models and social control theory postulates that the likelihood of delinquency is associated with persons who have weak bonds to conventional social institutions (Catalano and Hawkins 1996; Gasper et al. 2010; Hirschi 1969). Weak social bonding has been shown to be an underlying factor for substance use and mental health problems in adolescence (Arthur et al. 2002; DePedro et al. 2011). Additionally, both substance use and victimization trajectories can occur simultaneously and are linked through mechanisms within the peer group or social environment (e.g., if your friends are more aggressive and use drugs, both can be increasing simultaneously) (Kuntsche and Gmel 2004; White et al. 1999). Thus, potentially, youth who are bullies/bully-victims and/or engage in substance use may have riskier peer groups in general, which also increases their likelihood of peer victimization. These youth may be more likely to use drugs and be victimized as part of a taxonomy of problem behavior (Jessor and Jessor 1977). Finally, it is possible that substance use proceeds victimization (Tharp-Taylor et al. 2009) or that involvement in substance use creates an environment where youth are victimized more (White et al. 1999).

A conjoint epidemiological examination of the frequency and various types of school victimization as they intersect with frequency of poly-substance use could contribute greatly to researchers' understanding of the empirical and conceptual linkages between substance use and school violence. Thus, to fill a gap in the existing literature, the present study seeks to examine substance use and school victimization patterns with a large-scale sample of secondary school students drawn from almost all secondary schools in the state of California. Latent class analyses assessed severity and frequency patterns of types of school victimization and their association with latent classes of frequency and multiple types of substance use. It was hypothesized that students characterized by high levels of victimization would be at an elevated risk for being in latent classes characterized by high levels of poly-substance use.

Methods

Sample

The data used in this study is from the ongoing large-scale California Healthy Kids Survey (CHKS), conducted by WestEd on behalf of the California Department of Education. The CHKS consists of a core survey module that gathers demographic background data (e.g., grade, sex, and race/ethnicity) and inquires about students' health-related behaviors, tobacco, alcohol and drug use, violence behaviors, and school safety. Items related to substance use and victimization were adapted from the CDC Youth Risk Behavior Survey and the California Student Substance Use Survey. The CHKS is administered to 7th, 9th, and 11th grade youth in districts representing 85 % of schools statewide. The data collected for the 2005–2007 academic school years were used in the present study. Aweighting procedure was used to adjust the total number of grade-level respondents to represent the total district enrollment for the particular grade levels of interest. The sampling procedure is described in detail elsewhere (Austin and Duerr 2004).

Measures

Alcohol, tobacco, and marijuana use were each assessed by one measure, which incorporated frequency and recency of use. Specifically, the response values were: never used; lifetime use; no recent use (past 30 days); use on 1 or 2 days; use on 3 to 9 days, and use on 10 or more days in the past month. As described in the "Introduction", school victimization can entail verbal/relational aggression as well as physical victimization (Benbenishty and Astor 2005; Borum et al. 2010; Swearer et al. 2010), and these types of victimization can occur singularly or concurrently. Seven items in the CHKS ask about school victimization in the past 12 months. Each question had response values of none, one time, two to three times, and four or more times. Regarding physical victimization, respondents were asked the number of times that they experienced being shoved, kicked, or slapped, were afraid of being beaten up, had property stolen or damaged, and if they had been threatened with a weapon. Whether students had rumors or lies spread about them, sexual jokes or comments made to them, or were made fun of because of their looks were used to represent types of verbal/relational victimization. Finally, gender, race/ethnicity (white, African American, and Latino/a), and educational level (7th, 9th, 11th) were included as demographic covariates.

Analysis

Latent class analysis (LCA) was conducted using Mplus 6.1 (Lubke and Muthén 2005; McCutcheon 1987). Multinomial logistic regression analyses were completed simultaneously with class estimation to account for measurement error related to class assignment. A series of models was run to determine the appropriate number of classes for substance use and school victimization separately starting with a one-class (no covariates) model. This was followed by a series of models with covariates specifying an increased number of classes (e.g., two-class, three-class, etc.) representing different patterns of substance use behavior or school victimization experiences. Optimal model selection was based upon recommended indices including low adjusted Bayesian Information Criterion (BIC) relative to other models, significant Lo-Mendell-Rubin Likelihood Ratio Test (LMR-

LRT), and acceptable quality of classification, as assessed by entropy values (Nylund et al. 2007a). Once the appropriate numbers of classes were identified for substance use and school victimization, a combined model was assessed where both were estimated simultaneously. Substance use was regressed on school victimization and both were regressed on the demographic covariates detailed above resulting in odds ratios related to likelihood of class membership. Missing data related to the dependent variables (those utilized to identify the latent classes) were handled using Full Information Maximum Likelihood (FIML) procedures in Mplus. FIML is implemented simultaneously in the analysis using all available data to provide optimal model parameter estimates given the data at hand.

Results

Weighted proportions and unweighted frequencies are provided in Table 1. A majority of the sample reported Hispanic ethnicity (54.7 %). Approximately 47 % of the sample was male. The majority of students were in 7th (~37 %) and 9th (34.1 %) grade.

Results of successive LCA models are presented in Table 2. Four-class models (in italics) provided the best overall fit to the data for substance use behavior and school victimization. The substance use models exhibited an insignificant LMR-LRT p value for K-1-classes (in this case $K=5$). An insignificant p value indicates that the K-class model should be rejected in favor of a model with K-1 classes. Additionally, the four-class solution identified was similar to prior findings from a study of substance use among adolescents nationally (Connell et al. 2009). The LMR-LRT for the victimization model did not reach non-significance. The four-class solution was the last one with distinct and meaningful classes. In the five- and six-class solutions, there were two classes that had such similar profiles we could not practically distinguish between them (they were both occasional victimization classes).

The conditional probabilities for school victimization in the past 12 months are summarized in Table 3. Approximately 44 % of students were in the not-victimized class and had little or no chance of experiencing victimization in the past year. A verbal/relational victimization class accounted for 20.8 % of the sample and these respondents had at least a 25 % chance of reporting verbal/relational victimization two or more times in the past year. Students experiencing occasional verbal and physical victimization accounted for 22.3 % 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. Finally, a group of students reporting frequent verbal and physical victimization accounted for 12.5 % of the sample. Respondents in this class were highly likely to be physically and verbally victimized four or more times in the past year. This class also had the highest likelihood of being threatened with a weapon.

Conditional probabilities for substance use are summarized in Table 4. Non-users accounted for 58.5 % of the sample and were comprised of youth with little or no history of substance use. Alcohol experimenters accounted for 25.8 % of the sample. The members of this class were likely to report high lifetime or ever use of alcohol but with a lower likelihood of

lifetime or ever use of tobacco and marijuana. There was a low probability of recent use of tobacco or marijuana. Moderate poly-substance users accounted for 9.1 % of the sample with at least a 30 % chance of reporting use of tobacco, alcohol, and marijuana on at least 1 day in the past month. The frequent poly-substance users comprised 6.5 % of the sample and had at least a 40 % chance of indicating that they used tobacco, alcohol, and marijuana on three or more days in the past 30. There was over a 40 % chance of respondents in this class reporting the use of marijuana on 10 or more days in the past month.

Multinomial logistic regression analyses examined the influence of demographic covariates on class membership and the association of substance use and school victimization. The unweighted sample size of secondary students for the analysis was 419,698. Model results, expressed as odds ratios, are presented in Table 5. Older age was associated with membership in any substance use class compared to non-users. Females were more likely to be moderate poly-substance users than males (OR=1.24, 95 % CI=1.10–1.40) but less likely to be frequent poly-substance users (OR=0.60, CI=0.57–0.63). African Americans were nearly twice as likely to be alcohol experimenters (OR=1.93, CI=1.27–2.93) compared to whites, but significantly less likely to be either a moderate or frequent poly-substance user. Latino/as were more likely than whites to be alcohol experimenters (OR=2.18, CI=1.90–2.50) and moderate poly-substance users (OR=1.63, CI= 1.38–1.93).

Older age was associated with a higher likelihood of being classified in the verbal/relational victimization class but with a lower likelihood of occasional or frequent verbal and physical violence. Females were nearly six times more likely to be in the verbal victimization class than males (OR=5.92, CI= 5.48–6.41). African Americans were 23 % more likely to be classified as frequently victimized than whites (OR=1.23, CI=1.13–1.35). Latino/as were less likely to be classified in the verbal victimization or frequent victimization classes but more likely to be in the occasional verbal and physical victimization class compared to whites.

Overall, victimization was significantly related to substance use among the respondents. Persons in the frequent victimization class were more likely to be frequent (OR=7.67, CI=6.70–8.78) and moderate (OR=5.32, CI=4.13–6.87) poly-substance users compared to those not victimized. Persons classified as verbally victimized and occasionally verbally and physically victimized were more likely to be occasional poly-substance users compared to those not-victimized.

Table 6 presents the conditional probabilities of membership in a victimization class by substance use. Among those who were classified as frequent poly-substance users, the probability of experiencing frequent verbal and physical victimization was 25.2 %. Moderate poly-substance users were approximately 36 % likely to be verbal/relational victims and non-users had a 51.5 % chance of being not victimized.

Discussion

Approximately 13 % of youth in California were likely to experience frequent relational and physical victimization during the 12 months before taking the survey and 6.5 % were likely

to frequently use multiple substances in the 30 days prior to taking the survey. These epidemiological findings are among the first of their kind using a representative sample of youth in California (Felix et al. 2009). Another key contribution of the present study is the expansion of the school victimization literature by presenting a comprehensive description of patterns of victimization. In a prior latent class analysis of peer victimization, only three classes were identified (Nylund et al. 2007b). These included those who were not victimized, those who experienced a few types of victimization, and those who were likely to experience all seven different types of victimization. The prior study assessed items similar to those considered in the present study (being hit, having property taken, being called bad names, etc.), but it limited responses to the victimization items to yes or no (Nylund et al. 2007b). The present study, however, is not just a consideration of whether a particular type of victimization occurred, but also the frequency of occurrence of each type of victimization.

Specifically, those who are frequently victimized were likely to report experiencing six of the seven indicators of victimization used in the present study. These experiences were also likely to have occurred multiple times within the past year. Those who were classified in the verbal/relational victimization class had a low probability of experiencing any physical victimization compared to their likelihood of being the subject of mean rumors, sexual comments, or teasing because of their looks. These details represent new empirical information on how youth experience victimization in schools. The prior work only found differences by severity of victimization (number of victimizations experienced). Our study provides empirical insight into severity (number of different victimization experiences), frequency, and combinations of types of victimization (physical and relational or verbal/ relational, etc.) experienced by subgroups of youth in this sample.

Multinomial logistic regression (MLR) results indicate that older students were more likely to experience relational victimization only and were less likely to have either low or frequent relational and physical victimization rates. This may be due in part to the fact that as age increases, physical victimization is more likely to lead to serious disciplinary consequences in and out of school. Additionally, relational victimization can be subtle and less likely to draw the attention of adults. This potentially suggests that younger students may need interventions that target both relational and physical victimization, while older students might benefit from interventions that curtail the negative outcomes of relational victimization or engagement in peer mediation programs. MLR also indicated that females were less likely to experience physical victimization. This finding is in line with other research that indicates males are more likely to be violent perpetrators and females are more likely to utilize nonphysical forms, such as verbal assault and social isolation (Benbenishty and Astor 2005, 2012).

The type and frequency of victimization is significantly associated with elevated levels of alcohol experimentation, moderate poly-substance use, and frequent poly-substance use. These findings identify a group of youth who are at high risk for frequent physical and verbal victimization and frequent poly-substance use. The increased likelihood of alcohol experimentation, moderate poly-substance use, and frequent poly-substance use was greatest for those in the frequent verbal and physical victimization class. Additionally, verbal/

relational victimization alone contributed to at least a three-to-four-times higher likelihood of substance use in all categories. The odds of substance use among those who were classified as experiencing occasional verbal and physical victimization ranged from 1.65 to 2.38. These results are interesting and may need to be considered in the context of adolescence as a developmental stage in which peer relationships become critical. There are studies that suggest psychological abuse may be harder to overcome than physical abuse (Chen et al. 2008; O'Leary 1999). Potentially, this may indicate that in this sample of adolescents, the emotional toll associated with high relational victimization could be more salient to behavioral health than occasional levels of physical and verbal victimization. Of the three verbal/relational victimization indicators, the one with the highest probability in the relational/verbal victimization class was whether one had ever been the victim of sexual jokes or comments (~64 % chance to report this type of victimization two or more times in the past year). Another possible explanation might be that being the victim of sexual jokes/comments may be significantly hurtful (particularly if jokes are related to sexual orientation).

Given recent events around violence in schools and victimization, knowledge of these patterns can be used in schools to potentially curtail such behaviors. For example, it may be important for school mental health personnel to be aware of and address the likelihood of increased substance use among youth that are known to be victimized in school. Conversely, adolescents who use substances may be at increased risk for victimization. The findings also further the empirical discussion surrounding the intersections between school safety and substance use in multiple ways. First, they provide an examination of patterns of substance use behaviors and school victimization using a large sample representing secondary schools in the most populous state in the USA (U.S. Census Bureau 2012). In addition to the overall etiologic findings regarding patterns of substance use and school victimization, the present study contributes to our understanding of correlates of youth at risk for substance use and/or victimization. From a practice standpoint, knowing that there is substantial variation in patterns of substance use and school victimization and their co-occurrence suggests opportunities to target interventions and tailor policies to known linkages between victimization and substance use by subgroups. Currently, few school-based interventions address both substance use and school safety and none cater the interventions to different groups based on their levels of victimization and usage (Cornell and Mayer 2010; Mayer and Furlong 2010). Specifically, protocols could be developed to identify youth who are being victimized and provide them with opportunities to learn coping strategies that are more adaptive than using drugs. This may improve outcomes and reduce victimization incidence and substance use prevalence rates, which could also inform national efforts aimed at improving school climate and discipline (Osher et al. 2010). Regardless of causality, it may be useful for prevention and intervention design to use early signs of substance use and/or victimization as impetus for targeting both risks.

This study does have limitations that should be considered. First, these data are cross-sectional and causality cannot be determined. Secondly, the data are self-reported by adolescents. The instrument is limited in asking questions about frequency and recency of other drugs (including illicit and prescription medications). National data show that consideration of other drug use, including prescriptions, is important in understanding

adolescent substance use and identifying targets for intervention (Eaton et al. 2010; Johnston et al. 2006). Additionally, the present study did not include measures of victimization related to cyber bullying or social isolation. It is possible that inclusion of assessments of social isolation and/or cyber bullying may have identified additional classes of verbal/relational victimization. Also, inclusion of additional measures may impact the strength and/or significance of predictors of class membership since there is evidence of significant gender differences in the occurrence of physical, verbal, relational, and cyber victimization (Wang et al. 2009). Related, this study did not explore whether victims were also perpetrators. Studies have shown that bullies may be at increased risk for both victimization and substance use.

Future studies should examine these questions using longitudinal samples so that the direction of causality of the association between victimization and substance use can be more carefully explored. There are important prevention implications in determining whether the association is unidirectional, bidirectional or related to other variables or characteristics. Understanding the "why" behind the patterns outlined by the data surrounding ethnic affiliation, age, gender and other demographic variables would also help expand theory and aid in the development of preventive interventions.

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Table 1

Overall demographic, substance use and victimization characteristics

	Weighted %	Unweighted *n*
Demographic characteristics		
Sex		
Male	46.9	232,474
Female	53.1	259,719
Grade		
7th	36.7	179,769
9th	34.9	173,631
11th	28.4	142,427
Race/Ethnicity		
White	37.4	221,260
Hispanic	54.7	240,872
AA	7.9	33,695
Substance use and victimization		
Alcohol use		
Never used	55.8	273,263
No recent use	20	93,872
1 or 2 days recent use	13.6	64,624
3 to 9 days recent use	6.9	34,286
10 to 30 days recent use	3.7	18,141
Tobacco use		
Never used	71.3	350,082
No recent use	20.3	94,665
1 or 2 days recent use	4.1	20,118
3 to 9 days recent use	7.9	9,818
10 to 30 days recent use	2.3	12,305
Marijuana use		
Never used	77.4	378,958
No recent use	12.0	55,775
1 or 2 days recent use	4.4	20,836
3 to 9 days recent use	2.8	13,189
10 to 30 days recent use	3.5	17,428
In the past 12 months:		
Been pushed, shoved, or hit		
None	64.6	315,408
1	15.3	71,010
2 or 3 times	10.3	47,393
4 or more times	9.8	45,557
Been afraid of being beaten up		
None	77.6	378,002

	Weighted %	Unweighted *n*
1	13.7	62,558
2 or 3 times	5.0	22,239
4 or more times	3.8	17,808
Had your property stolen or damaged		
None	73.4	353,564
1	15.6	74,261
2 or 3 times	7.1	32,817
4 or more times	3.9	18,657
Been threatened or injured with a weapon (gun or knife)		
None	89.9	433,436
1	5.8	26,049
2 or 3 times	2.3	10,368
4 or more times	2.0	8,976
Had mean rumors spread about you		
None	55.3	267,118
1	20.1	95,500
2 or 3 times	13.1	62,857
4 or more times	11.4	53,874
Had sexual jokes or gestures made to you		
None	52.4	253,862
1	13.8	65,869
2 or 3 times	12.9	60,428
4 or more times	21.0	98,495
Been made fun of because of your looks		
None	61.2	296,737
1	15.8	73,101
2 or 3 times	9.7	45,641
4 or more times	13.4	62,600

AA African American

Table 2

Fit statistic comparisons of latent class analysis models of school victimization and substance use models with covariates

Model	Description	School victimization			Substance use		
		Adjusted BIC	LMR-LRT *p* value	Entropy	Adjusted BIC	LMR-LRT *p* value	Entropy
1	One-class (no covariates)	8,180,146.022	–	–	5,323,905.862	0.0000	–
2	Two-class	4,855,872.593	0.0000	0.724	2,055,183.168	0.0008	0.800
4	Three-class	4,787,458.892	0.0000	0.685	2,009,106.900	0.0000	0.756
6	Four-class	*4,751,154.994*	*0.0000*	*0.658*	*2,002,007.651*	*0.0000*	*0.738*
8	Five-class	4,734,122.149	0.0021	0.643	1,992,189.895	0.7602	0.712

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 italics

Table 3

Conditional probabilities for four-class model of school victimization

Class prevalence	Frequent verbal and physical victimization 12.5 %	Occasional verbal and physical victimization 22.3 %	Verbal/relational victimization 20.8 %	Not victimized 44.4 %
In the past 12 months…				
Ever been shoved, kicked, or slapped				
0 times	0.161	0.307	0.793	0.890
1 time	0.162	0.349	0.124	0.068
2–3 times	0.241	0.228	0.054	0.022
4 or more times	0.436	0.116	0.030	0.020
Ever been afraid of being beaten up				
0 times	0.393	0.590	0.821	0.955
1 time	0.217	0.289	0.143	0.038
2–3 times	0.176	0.087	0.031	0.004
4 or more times	0.214	0.034	0.004	0.003
Ever had your property stolen or damaged				
0 times	0.330	0.603	0.765	0.913
1 time	0.230	0.267	0.170	0.068
2–3 times	0.217	0.106	0.054	0.015
4 times	0.222	0.024	0.010	0.004
Ever been threatened with a weapon (knife, gun, etc.)				
0 times	0.651	0.839	0.962	0.974
1 time	0.156	0.118	0.026	0.013
2–3 times	0.089	0.030	0.008	0.005
4 or more times	0.104	0.013	0.003	0.007
Ever had mean rumors or lies spread about you				
0 times	0.123	0.383	0.317	0.889
1 time	0.123	0.366	0.305	0.090
2–3 times	0.234	0.189	0.247	0.014
4 or more times	0.520	0.062	0.132	0.007
Ever had sexual jokes or comments made to you				
0 times	0.100	0.473	0.153	0.873
1 time	0.081	0.270	0.207	0.055
2–3 times	0.177	0.157	0.270	0.028
4 or more times	0.641	0.100	0.371	0.044
Ever been made fun of because of your looks				
0 times	0.171	0.420	0.516	0.892
1 time	0.120	0.314	0.208	0.066
2–3 times	0.166	0.153	0.151	0.020
4 or more times	0.543	0.113	0.126	0.021

Table 4

Conditional probabilities for four class model of substance use

Class prevalence	Frequent poly-substance users 6.5 %	Moderate poly-substance users 9.1 %	Alcohol experimenters 25.8 %	Non-users 58.5 %
Smoke				
Never used	0.107	0.200	0.502	0.953
No recent use	0.239	0.456	0.476	0.042
1 or 2 days recent use	0.155	0.275	0.017	0.004
3 to 9 days recent use	0.182	0.063	0.003	0.000
10 to 30 days recent use	0.317	0.006	0.003	0.001
Alcohol				
Never used	0.028	0.026	0.178	0.867
No recent use	0.084	0.124	0.525	0.081
1 or 2 days recent use	0.159	0.503	0.221	0.041
3 to 9 days recent use	0.361	0.308	0.051	0.006
10 to 30 days recent use	0.368	0.039	0.025	0.004
Marijuana				
Never used	0.083	0.266	0.635	0.994
No recent use	0.180	0.300	0.304	0.002
1 or 2 days recent use	0.133	0.268	0.036	0.002
3 to 9 days recent use	0.178	0.131	0.014	0.001
10 to 30 days recent use	0.426	0.034	0.012	0.001

Table 5

Odds ratio results of latent multinomial logistic regression models (*n* =419,698)

Covariates	School victimization classes[a]			ATOD use classes[b]		
	OR (95 % CI)			OR (95 % CI)		
	Verbal vic	**Occ vic**	**Freq vic**	**Alc Exp**	**Mod poly**	**Freq poly**
Grade	*1.07 (1.04–1.10)*	*0.68 (0.65–0.70)*	*0.68 (0.65–0.70)*	*1.75 (1.72–1.78)*	*1.80 (1.73–1.87)*	*1.90 (1.85–1.96)*
Female	*5.92 (5.48–6.41)*	*0.70 (0.59–0.83)*	1.02 (0.98–1.07)	0.95 (0.90–1.01)	*1.24 (1.10–1.40)*	*0.60 (0.57–0.63)*
African American	1.13 (0.98–1.30)	1.07 (0.95–1.19)	*1.23 (1.13–1.35)*	*1.93 (1.27–2.93)*	*0.60 (0.48–0.77)*	*0.71 (0.61–0.83)*
Hispanic	*0.55 (0.52–0.58)*	*1.26 (1.11–1.42)*	*0.70 (0.65–0.75)*	*2.18 (1.90–2.50)*	*1.63 (1.38–1.93)*	0.93 (0.86–1.01)
Verbal/relational victimization	–	–	–	*3.25 (2.97–3.56)*	*4.67 (4.03–5.41)*	*3.16 (2.45–4.05)*
Occasional verbal and physical victimization	–	–	–	*1.65 (1.55–1.76)*	*2.38 (2.19–2.59)*	*1.74 (1.52–2.00)*
Frequent verbal and physical victimization	–	–	–	*4.03 (3.52–4.62)*	*5.32 (4.13–6.87)*	*7.67 (6.70–8.78)*

Values in italics indicate significant odds ratio

[a]Reference category is not victimized

[b]Reference category is non-user

Table 6

Conditional probabilities of victimization by substance use

	Frequent poly-substance users	Moderate poly-substance users	Alcohol experimenters	Non-users
Frequent verbal and physical victimization	0.252	0.154	0.154	0.093
Occasional verbal and physical victimization	0.162	0.200	0.187	0.249
Verbal/relational victimization	0.246	0.358	0.294	0.143
Not victimized	0.340	0.288	0.364	0.515