



Published in final edited form as:

J Interpers Violence. 2026 February ; 41(3-4): 497–517. doi:10.1177/08862605241311615.

Associations Between Age-for-Grade, Sex, and Interpersonal Violence Among U.S. High School Students

Lindsey Webb^{a,*}, Ming Ma^b, Laura K. Clary^a, Ashley Brooks-Russell^b, Renee M. Johnson^a

^aDepartment of Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

^bDepartment of Community & Behavioral Health, Colorado School of Public Health, Denver, CO, United States

Abstract

The current study examines how atypical age-for-grade (i.e., being old- or young-for-grade) is associated with various types of interpersonal violence (e.g., physical fighting, school-based and electronic bullying victimization, and being threatened or injured with a weapon at school) among a nationally representative sample of U.S. high school students and explores these associations by sex. Data were from 21,892 students in 9th-11th grades in the 2017 and 2019 national Youth Risk Behavior Survey. Weighted logistic regression models examined associations between age-for-grade categories and various types of interpersonal violence with peers, with stratified models exploring differences by sex. Results showed that, compared to their age-normative peers, students who were young-for-grade were more likely to report physical fighting, being threatened or injured with a weapon at school, and school-based and electronic bullying victimization. Students who were old-for-grade were more likely to report physical fighting than their age-normative peers. These associations differed for boys and girls, where being young-for-grade was more strongly associated with interpersonal violence for boys than for girls. Old-for-grade girls were more likely to report physical fighting than their age-normative peers, whereas young-for-grade girls were more likely to report being threatened or injured with a weapon at school. Findings from the current study may be explained by differences in physical, social, and emotional development in youth who are young-for-grade or old-for-grade compared to their age normative peers. Results can inform school-level policies when identifying youth for grade retention or acceleration and may have implications for school-based interventions to prevent interpersonal violence between peers.

Much is known about individual characteristics and behaviors that are associated with increased risk of experiencing interpersonal violence with peers in middle and high school. Among these factors are: physical attributes, such as obesity and disability (Martínez-Cao et al., 2021; van Geel et al., 2014); social-demographic characteristics, such as race/ethnicity and sexual minority status (Webb et al., 2020); and social behaviors, such as dating violence

*Corresponding Author: Lindsey Webb, Ph.D., M.S., 111 Market Place, Room 8558, Baltimore, MD 21202, Lwebb7@jhmi.edu.

Conflicts of Interest

The authors have no conflicts of interest to report.

and low social competence (Espelage et al., 2022; Zych et al., 2019). In the present study we investigate an additional factor that may be associated with interpersonal violence with peers, age-for-grade (i.e., being younger or older than same-grade peers).

For high school students in the United States (U.S.), normative age ranges for each grade are: 14-15 years old for ninth graders ages, 15-16 years old for tenth graders ages, 16-17 years old for 11th graders, and 17-18 years old for 12th graders (U.S. Department of Education, 2013). However, within a grade there are wider ranges of ages due to normal variability of birthdates and state policies on age of entering kindergarten (Education Commission of the States, 2018). There are also policies on grade acceleration (“skipping” a grade) and grade retention (being “held back”) that serve to align children’s grade level with their learning and academic needs. Thus, there is a broad range of physical and socio-emotional development of youth within a grade, and students who are older or younger than their age-normative peers within their grade can represent the boundaries of this range.

There are drawbacks associated with being either young or old for one’s grade. For instance, students who experience grade retention have lower academic achievement and social adjustment, and are at a greater risk of truancy and dropping out than their peers (Shores et al., 2020). A study of German primary school students showed that accelerated students had more negative peer relationships than their peers who were not accelerated (Kretschmann et al., 2016). Research has also shown that there may be benefits to being old or young for one’s grade. Given their more advanced cognitive and physical development, and prior experience with classroom routines and expectations, students who have been retained may have higher self-perceived competence than their age normative peers (Klapproth et al., 2016; Plummer & Graziano, 1987). Additionally, several studies have found that grade acceleration for students with high academic achievement is associated with positive emotional, social, and academic outcomes (Dare et al., 2016, 2019; Steenbergen-Hu et al., 2016)

There is limited research examining how a student’s age in relation to their peers (i.e., age-for-grade) is related to interpersonal violence with their peers (e.g., experiencing bullying victimization or engaging in physical fighting). One study has assessed this association among students who were old for their grade with a focus on bullying; that study showed that old-for-grade students were more likely to be involved in teacher-reported bullying and bullying victimization compared with age-normative peers (Crothers et al., 2010). That study had notable limitations, including a small, non-representative sample (i.e., 276 students from 16 schools), a broad range of grades (i.e., kindergarten through 12th grade), and a focus on old-for-grade students rather than on all students who were not of a normative age for their grade. There is a lack of clarity about students’ age relative to peers (both younger and older) and interpersonal violence victimization or perpetration. It is possible that differences exist among youth who are old or young for their grade, due to potential differences in physical and social-emotional development.

Physical Development and Interpersonal Violence

Students who are young or old for their grade could be at increased risk of experiencing interpersonal violence if their physicality is not as developed, or is more developed, relative to their peers. Moreover, risk of violence victimization or perpetration among young- or old-for-grade students may differ by sex. Although there are no studies that directly test this, there is some literature that indicate that pubertal timing and/or physical development (i.e., height, weight, secondary sex characteristics) may be related to interpersonal violence with peers. Early pubertal timing has been associated with higher levels of victimization and offending at age 13, which dissipated over time, or as development leveled out among peers (Skoog & Kapetanovic, 2021). Similarly, another study found that early maturation among boys was associated with bullying perpetration, and late maturation was associated with exclusion from their peer group; these effects did not persist two years later (Jormanainen et al., 2014). In a multi-national sample, early menarche among girls was associated with both bullying victimization and perpetration (Su et al., 2018). Thus, preliminary evidence suggests that old-for-grade girls and young-for-grade boys may be at increased risk interpersonal violence.

Finally, a recent study using a nationally representative data set, the National Longitudinal Study of Adolescent Health (Add Health), found that (1) youth who experienced early pubertal development were at higher risk for several negative mental, physical, and behavioral outcomes, and (2) these affects were also seen for those who were *perceived* to have experienced puberty early compared to peers. Moreover, these effects were seen among both girls and boys (Hoyt et al., 2020). Altogether, this literature suggests that potential physical differences among students in the same grade may place those adolescents at greater risk of experiencing multiple negative outcomes, including interpersonal violence.

Social/Emotional Development and Interpersonal Violence

Children's social and emotional development has been frequently identified as protective factors to interpersonal violence with peers. A recent systematic review of meta-analyses examined individual social-emotional characteristics as potential protective factors against interpersonal violence, specifically bullying victimization and perpetration (Zych et al., 2019). Prosociality, high emotional management, and social competence were protective against in-person and electronic bullying victimization, while emotion management, social competence and high empathy were protective against bullying perpetration (Zych et al., 2019). Given this, research has shown that interpersonal violence with peers tend to decrease with age among high school students (Pontes et al., 2018).

A breadth of evidence exists showing sex differences in social/emotional development. Studies have shown that girls tend to have higher levels of empathy, and that empathic concern among boys is associated with lower peer acceptance (Portt et al., 2020). Additionally, studies have found that girls are generally a couple of years ahead of boys in social-emotional development, and that there are sex differences in the trajectories of prosocial behavior development across adolescence (Van der Graaff et al., 2018). These previously established sex differences in social and emotional development help to explain

sex differences seen in interpersonal violence with peers and show the potential effects that grade retention and acceleration may have on these experiences.

Demographic Differences in Interpersonal Violence, Grade Retention, and Acceleration

Nationally representative studies of high school students have found differences in violence by sex, race/ethnicity, and sexual orientation. Girls are more likely than boys to experience bullying victimization (Basile et al., 2020; Webb et al., 2020); however, boys are more likely to report physical fighting in schools than girls (Chacon & Raj, 2022). When examining race and ethnicity differences, White students are more likely than Black and Hispanic/Latinx students to report bullying victimization (Webb et al., 2020). Regarding physical fighting, Hispanic youth are more likely to report fighting at school compared to White youth, while Black youth are less likely to report physical fighting (Chacon & Raj, 2022). Finally, youth who identify as gay/lesbian or bisexual are more likely to experience both school-based and electronic bullying victimization than their heterosexual peers (Webb et al., 2020).

Disparities in grade retention and acceleration within U.S. schools are well-documented. Patterns of grade retention from 1995-2010 show that retention rates are higher among boys, particularly in the transition from middle school to high school (Warren et al., 2014). Moreover, Black students are 1.5 times more likely than White students to have to repeat a grade (Musu-Gillette et al., 2017), and Black and Hispanic students are less likely to accelerate a grade than their White peers (Wells et al., 2009). The literature on this disparity highlights that structural and social factors, including school characteristics, parental education, and exposure to poverty, shape the risk for grade retention, acceleration, and subsequently being old or young for grade (Shores et al., 2020). Little knowledge exists on differences in grade retention or acceleration by student sexual orientation. Overall, the body of literature on victimization as well as grade retention and acceleration show disparities across key demographic characteristics that call for further examination. These demographics should be considered to gain an accurate understanding and estimation of the association between variations of age within grade and interpersonal violence victimization and perpetration.

Current Study

The purpose of this study was to examine the association between atypical age-for-grade (i.e., being old-for-grade or young-for-grade) and experiencing interpersonal violence with their peers within a nationally representative high school sample. We hypothesize the following: (1) young-for-grade students will be more likely to experience interpersonal violence than their age-normative peers, and a stronger association will exist for boys than for girls, and (2) old-for-grade students will have lower odds of experiencing interpersonal violence than their age-normative peers. We will examine sex differences related to being old-for-grade, but as this is a novel question, these relationships will be exploratory. Findings from the current study may help to identify youth who are at an increased risk of experiencing interpersonal violence with peers, thus informing school-based intervention work.

Methods

Data Source

Data from the 2017 and 2019 National Youth Risk Behavior Survey (YRBS) were combined and analyzed to examine associations between age-for-grade and interpersonal violence variables. The National YRBS is self-report survey administered on a biennial basis by the Centers for Disease Control and Prevention to a nationally representative sample of high school students in 9th through 12th grades (Kann et al., 2018). The survey uses a three-stage cluster sampling method, and states with at least 60% response rates are included in the national dataset (Underwood et al., 2020). After collecting parent permission following local guidelines (Underwood et al., 2020), students completed a self-administered survey during one class period. The dataset includes weights calculated based on student race/ethnicity, grade, and sex, and adjusts for student nonresponse and oversampling of Black and Hispanic/Latinx students (Kann et al., 2018). The Johns Hopkins Bloomberg School of Public Health Institutional Review Board determined that the current study was exempt from review.

Measures

Age-for-grade. Age and grade level are assessed using two questions on the National YRBS. Age was reported along seven categories: 12 years old or younger, 13 years old, 14 years old, 15 years old, 16 years old, 17 years old, or 18 years old or older. Grade was reported along five categories: 9th grade, 10th grade, 11th grade, 12th grade, or ungraded or other grade. Old-for-grade and young-for-grade indicators were created based on the U.S. Department of Education recommendations that ninth graders ages 14-15 years old, tenth graders ages 15-16 years old, and eleventh graders ages 16-17 years old are age normative for their grade (U.S. Department of Education, 2013). Table 1 outlines the age ranges for old-for-grade, age-normative, and young-for-grade students in each grade level. Age-for-grade could not be calculated for 12th grade students as the highest response option for the age item on the survey was “18 years old or older”, so 12th graders were not included in the sample for the current study. A 3-category age-for-grade variable was calculated, including age-normative, old-for-grade and young-for-grade students.

Demographic characteristics. In addition to age-for-grade, additional demographic factors were included in the current study, including sex (male/female), race/ethnicity and sexual orientation. Race/ethnicity included four categories: non-Hispanic White, non-Hispanic Black/African American, Hispanic/Latinx, and non-Hispanic All Other Races (which includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, and Multiracial students). Sexual orientation was assessed with the item, “Which of the following best describes you?”. Response options for the item included heterosexual (straight), gay or lesbian, bisexual, and not sure.

Interpersonal violence with peers. For the current study, interpersonal violence variables focused on violence experienced with peers who were not romantic partners. Four variables of interpersonal violence within the past 12 months were analyzed, including

physical fighting, being threatened or injured at school with a weapon, school-based bullying victimization, and electronic bullying victimization.

Physical fighting. Physical fighting was assessed using the following item: “*During the past 12 months, how many times were you in a physical fight?*” Responses were rated on an 8-point scale ranging from 0 times to 12 or more times. The item was recoded as a binary variable indicating any physical fighting in the past 12 months.

Threatened or injured with a weapon at school. The frequency of being threatened or injured at school with a weapon was assessed with the following item, “*During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?*” Closed-ended response options ranged from 0 times to 12 or more times. Responses were recoded to a binary variable assessing any experience of being threatened with a weapon at school in the past 12 months.

School-based and electronic bullying victimization: The YRBS also assess school-based and electronic bullying victimization through two binary (yes/no) items. School-based bullying victimization was assessed with the following item, “*During the past 12 months, have you ever been bullied on school property?*” Students were also asked, “*During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media).*”

Statistical Analyses

Demographic characteristics, including grade, sex, race/ethnicity, and sexual orientation were examined across age-for-grade status using the Rao-Scott Chi-Square test, which takes into account the complex sampling design. For all four interpersonal violence variables – i.e., physical fighting, being threatened or injured with a weapon at school, school-based bullying victimization, and electronic bullying victimization – prevalence was calculated and compared across age-for-grade status and demographic characteristics using Rao-Scott Chi-Square tests. Weighted logistic regressions were conducted assessing the: (1) unadjusted association between age-for-grade status and interpersonal violence variables, (2) association between age-for-grade status and interpersonal violence variables adjusted for sex and race/ethnicity, and (3) the association between age-for-grade and interpersonal violence variables adjusting for sex, race/ethnicity, and sexual orientation. Given sex differences in interpersonal violence and age-for-grade status, we also conducted logistic regression models that were stratified by sex. All analyses were conducted using survey data analysis procedure in SAS 9.4 (SAS Institute Inc., 2016).

Results

Of the 21,892 9th-11th grade students in the sample, 1% were young-for-grade and 4.5% were old-for-grade. Table 2 displays the demographic characteristics of each of the age-for-grade categories. Significant differences were seen across age-for-grade status in sex ($p < .001$), race/ethnicity ($p < .001$), and sexual orientation ($p = .01$). Boys were more likely than girls to be either old-for-grade or young-for-grade, and Black students were more likely to be young-for-grade than any other racial/ethnic group. Additionally, White students

were less likely to be old-for-grade or young-for-grade than any other racial/ethnic group. Regarding sexual orientation, gay and lesbian students were more likely to be young-for-grade and bisexual students were more likely to be age-normative (i.e., less likely to be either young or old per grade). There were no statistically significant differences in grade level by age-for-grade status.

Prevalence of Interpersonal Violence

There were statistically significant differences across age-for-grade status in reporting being threatened or injured with a weapon at school, physical fighting, and electronic bullying victimization (Table 3). Students who were young-for-grade were more likely to report having been threatened or injured with a weapon at school ($p < .001$), physical fighting ($p < .001$), and electronic bullying victimization ($p = .01$) than either their age-normative or old-for-grade peers.

Table 3 also presents significant differences in all interpersonal violence variables across grade, sex, and sexual orientation. Ninth graders reported higher prevalence of all interpersonal violence measures. Boys reported higher prevalence of being threatened or injured with a weapon at school ($p < .001$) and physical fighting ($p < .001$), whereas girls had a higher prevalence of both school-based ($p < .001$) and electronic ($p < .001$) bullying victimization. Students who identified as gay/lesbian, bisexual, or unsure had a higher prevalence of three of the four interpersonal violence measures compared to their heterosexual peers. The exception was physical fighting, which was only found to be higher among bisexual students compared to heterosexual students. Significant differences were observed in physical fighting ($p < .001$), school-based bullying victimization ($p < .001$), and electronic bullying victimization ($p < .001$) by race/ethnicity. Black students had the highest prevalence of physical fighting, and White students had the highest prevalence of school-based and electronic bullying victimization. There was no statistically significant difference in being threatened or injured with a weapon at school by race/ethnicity.

Interpersonal Violence by Age-for-Grade Status

Regression models conducted in the overall sample showed significant differences in violence experienced by high school students across age-for-grade status (see Table 4). After adjusting for sex, race/ethnicity, and sexual orientation, both students who were young-for-grade (OR = 2.6, 95% CI: 1.3, 5.4) and old-for-grade (OR = 1.4, 95% CI: 1.1, 1.7) had higher odds of physical fighting than their age-normative peers. Students who were young-for-grade had significantly greater odds of being threatened or injured with a weapon at school (OR = 4.1, 95% CI: 2.3, 7.2) than their age-normative peers. However, students who were old-for-grade did not differ significantly than their age-normative peers. Regarding bullying victimization, students who were old-for-grade did not differ significantly from their age-normative peers. However, students who were young-for-grade had higher odds of reporting school-based bullying victimization (OR = 2.0, 95% CI: 1.1, 3.5) and electronic bullying victimization (OR = 3.3, 95% CI: 1.0, 5.8) than their age-normative peers.

Regression models stratified by sex showed some differences in the association between age-for-grade status and interpersonal violence between boys and girls. After accounting

for race/ethnicity and sexual orientation, girls who were old-for-grade had 1.5 (95% CI: 1.1, 2.1) times the odds as age-normative girls of reporting physical fighting; however, this difference was not seen in old-for-grade boys. Rather, boys who were young-for-grade had 3.5 (95% CI: 1.3, 9.1) times the odds of physical fighting at school compared to age-normative boys. Girls who were young-for-grade had 2.8 (95% CI: 1.2, 6.8) times the odds as age-normative girls of being threatened or injured with a weapon at school, while boys who were young-for-grade were 4.7 (95% CI: 2.2, 10.4) times the odds of being threatened or injured with a weapon at school than age-normative boys. Boys who were young-for-grade also had 2.4 (95% CI: 1.3, 4.7) times the odds of reporting school-based bullying victimization and 5.0 (95% CI: 2.3, 10.8) times the odds of reporting electronic bullying victimization than age-normative boys. No age-for-grade differences in either school-based or electronic bullying victimization were found for girls.

Discussion

The aim of this study was to examine the associations between atypical age for grade (i.e., being old-for-grade or young-for-grade) and experiencing interpersonal violence with peers using a nationally representative sample of U.S. high school students. Moreover, we explored how these associations may differ by student sex. Being young-for-grade was associated with a higher prevalence of interpersonal violence victimization, including being threatened or injured with a weapon at school, and school-based and electronic bullying victimization. This level of violence victimization was not seen among youth who were old-for-grade; however, students who were old-for-grade were more likely to have been in a physical fight than their age normative peers. Findings from this study fill an important gap in the literature and show that there may be important social and emotional detriments associated with being young-for-grade regarding interpersonal violence victimization, more so than being old-for-grade.

Interpersonal Violence Experienced by Young-for-Grade Boys

Consistent with our hypothesis, boys who were young-for-grade were at greater risk of experiencing interpersonal violence victimization and perpetration than girls who were young-for-grade. Specifically, boys who were young-for-grade had higher odds of being threatened or injured with a weapon at school, bullied at school, bullied online, and having a physical fight within the last year. Our findings align with prior research showing that boys who are physically smaller than their peers are at greater risk of experiencing interpersonal violence with peers (Rosen & Nofziger, 2019). Boys who are earlier in their physical maturation may be seen by other students (particularly other boys) as being weak or easier targets. A lack of development in social/emotional skills may also account for these differences, as age-normative peers of young-for-grade boys might see them as irritating or immature, making them a target of violence. Further research is needed to adequately explain differences seen among boys, particularly around their risk for interpersonal violence when younger than their same-grade peers.

Interpersonal Violence Experienced by Girls

The experiences of interpersonal violence among girls were a bit more nuanced than for boys, as different associations were seen with being both young-for-grade and old-for-grade. Girls who were young-for-grade were more likely to be threatened or injured with a weapon at school than their age-normative peers. While data from the YRBS does not illuminate who was the perpetrator of these threats, it is possible that our findings around young-for-grade girls is related to dating violence, as about 1 in 10 girls in the 2019 YRBS reported experiencing physical dating violence in the past year (Centers for Disease Control and Prevention, 2023; Development Services Group, 2022). In our study, girls who were old-for-grade were more likely than their age-normative peers to be involved in a physical fight. This is consistent with the literature suggesting that early pubertal timing, and thus being potentially more advanced in physical development than peers, is associated with violence victimization and perpetration (Skoog & Kapetanovic, 2021; Su et al., 2018). It is possible that pre-existing externalizing symptoms or behavioral issues may have been the cause for grade retention, or perhaps that grade retention led to the development of aggression; however, given limitations in the current data, it is not currently possible to determine the cause of grade retention or establish causal relationships. Future studies should further examine the links between grade retention and fighting among high school girls.

Limitations

Findings from the current study should be considered in light of their limitations. Students in the 12th grade were not included in the study sample, as age-for-grade could not be calculated due to limitations in the measurement of students' age. Moreover, the YRBS does not collect data on grade retention or acceleration, or reasons for acceleration or retention, limiting inferences that can be drawn about the impacts of these practices on interpersonal violence experiences of youth. Though items from the YRBS measured several types of interpersonal violence experiences with peers, the survey did not gather information on details of specific experiences, such as whether the aggressor or other student involved in the fight was older or younger than them, thus limiting the ability to determine whether they might have been targeted due to an age difference. Additionally, the current sample had a low prevalence of students who were young-for-grade, limiting further testing of associations between demographic variables like race/ethnicity and sexual orientation and interpersonal violence. Moreover, there was a large proportion of missing data in the physical fight variable (approximately 20%), thus findings with this variable should be interpreted with caution. Race/ethnicity and sexual orientation were treated as control variables without being able to further explore how they interact with age-for-grade in assessing odds of interpersonal violence. Finally, while we postulate that the reasons for differences seen in interpersonal violence with peers across age-for-grade are differences in pubertal timing or social-emotional development, the survey did not collect data on these factors. Thus, we cannot fully determine the cause of these differences seen among young-for-grade and old-for-grade students.

Implications and Future Directions

Findings from the current study have implications for school policies and interventions. Our analyses demonstrated the potentially deleterious effects of grade retention and acceleration, indicating careful consideration on the part of school administration and staff is warranted when making decisions about students' movement through grade levels. It may be important for the physical, social, and emotional development of the student to be considered in these decisions in addition to their academic performance. For students who are retained or for those who are young-for-grade (either through early kindergarten entry or grade acceleration), additional supports should be provided by school counselors and teachers. Moreover, violence prevention and anti-bullying programs may be able to expand their general programming to address the needs of students who are old- or young-for-grade. For example, programs could integrate student mentoring programs for youth who are young-for-grade with older peers or adult mentors to establish social connections and peer support (DuBois et al., 2011; Kuperminc et al., 2020). Further, programming could incorporate further messaging about standing up for youth who are younger or may need defending. Social and emotional learning programs for high school students could also be beneficial, to help students in their development of social competencies and empathy, thus preventing interpersonal violence with peers (Divecha & Brackett, 2020; Paolini, 2022).

Acknowledgements

We thank Jennifer Greif Green, PhD, as well as the national YRBS team and all study respondents for their time and for their contribution to the science.

Funding

The corresponding author was supported by a training grant during the development of the current manuscript: the Drug Dependence and Epidemiology Training Program (NIDA, 5T32 DA007292, PI: Dr. Renee Johnson). Dr. Ma and Dr. Brooks-Russell were supported by funding from the Colorado Department of Community & Behavioral Health while working on this manuscript. Dr. Johnson's work was supported by the CDC Prevention Research Center funding to the Johns Hopkins Center for Adolescent Health (CAH). The CAH is a Prevention Research Center supported by the CDC under the cooperative agreement #U48DP006384 (PI: Tamar Mendelson, PhD).

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Table 1.

Age-for-grade variable coding

	Age in Years		
	Young-for-grade	Age-normative	Old-for-grade
9th grade	< 14	14-15	> 15
10th grade	< 15	15-16	> 16
11th grade	< 16	16-17	> 17

Table 2.

Age-for-grade status by demographic factors

	Total Sample (n = 21,892)	Young-for-grade (n = 221)	Age-normative (n = 20,694)	Old-for-grade (n = 977)	p
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	
Overall Sample	--	0.7 (0.5, 1.0)	94.6 (93.8, 95.4)	4.7 (3.9, 5.5)	
Grade					.16
9 th	35.2 (34.1, 36.3)	0.7 (0.3, 1.1)	94.2 (93.1, 95.4)	5.0 (4.0, 6.1)	
10 th	33.4 (32.6, 34.2)	0.7 (0.4, 1.0)	94.2 (93.2, 95.3)	5.1 (4.1, 6.1)	
11 th	31.4 (30.6, 32.2)	0.8 (0.5, 1.1)	95.3 (94.4, 96.2)	3.9 (3.1, 4.7)	
Sex					<.001
Female	49.9 (48.4, 51.4)	0.6 (0.3, 0.8)	96.0 (95.2, 96.8)	3.4 (2.7, 4.2)	
Male	50.1 (48.6, 51.6)	0.9 (0.5, 1.2)	93.3 (92.3, 94.3)	5.9 (4.9, 6.8)	
Race/Ethnicity					<.001
White	51.9 (48.1, 55.6)	0.2 (0.1, 0.3)	96.3 (95.4, 97.2)	3.6 (2.7, 4.4)	
Black/African American	13.0 (11.3, 14.8)	1.8 (1.0, 2.5)	90.1 (88.3, 92.0)	8.1 (6.2, 9.9)	
Hispanic/Latinx	24.8 (21.6, 28.0)	1.1 (0.6, 1.6)	93.5 (92.3, 94.8)	5.4 (4.2, 6.5)	
Other	10.3 (8.6, 12.0)	1.0 (0.3, 1.7)	94.9 (93.4, 96.3)	4.1 (2.9, 5.4)	
Sexual Orientation					.01
Heterosexual	84.8 (84.0, 85.7)	0.6 (0.4, 0.8)	95.0 (94.3, 95.8)	4.4 (3.7, 5.1)	
Gay/Lesbian	2.4 (2.0, 2.7)	4.0 (0.8, 7.1)	90.9 (87.3, 94.5)	5.1 (2.8, 7.5)	
Bisexual	8.4 (7.7, 9.0)	0.8 (0.3, 1.3)	96.1 (95.0, 97.3)	3.0 (2.0, 4.1)	
Not sure	4.4 (4.0, 4.9)	1.7 (0.5, 2.9)	90.5 (87.8, 93.3)	7.8 (5.3, 10.3)	

Note: All percentages are weighted. All percentages are row percentages, except in the Total Sample column, which are column percentages. P-values are for Rao-Scott Chi-Square tests.

Table 3.

Weighted prevalence estimates (95% confidence intervals) of interpersonal violence in overall sample, by age-for-grade status, and demographic characteristics

	Physical fighting		Threatened/injured w/a weapon at school		School-based bullying victimization		Electronic bullying victimization	
	% (95% CI)	p	% (95% CI)	p	% (95% CI)	p	% (95% CI)	p
Overall Sample	24.2 (22.9, 25.4)		7.0 (6.3, 7.6)		20.4 (19.5, 21.4)		15.5 (14.7, 16.3)	
Age for grade status		< .001		< .001		.13		.01
Young-for-grade	48.8 (32.8, 64.7)		30.9 (19.8, 42.0)		29.6 (19.0, 40.3)		32.0 (21.5, 42.6)	
Age-normative	23.6 (22.4, 24.9)		6.7 (6.1, 7.3)		20.4 (19.5, 21.4)		15.5 (14.7, 16.3)	
Old-for-grade	31.6 (27.1, 36.1)		8.7 (6.3, 11.1)		18.4 (14.8, 22.0)		13.1 (9.9, 16.2)	
Grade		< .001		.04		< .001		.03
9 th	27.1 (25.0, 29.2)		7.4 (6.6, 8.3)		22.5 (21.1, 24.0)		16.6 (15.5, 17.7)	
10 th	24.8 (23.2, 26.5)		7.3 (6.4, 8.3)		20.8 (19.3, 22.2)		15.4 (14.2, 16.6)	
11 th	20.1 (18.8, 21.4)		6.0 (5.1, 7.0)		17.6 (16.1, 19.2)		14.3 (12.8, 15.8)	
Sex		< .001		< .001		< .001		< .001
Female	17.8 (16.3, 19.2)		5.5 (4.7, 6.2)		24.3 (22.8, 25.8)		20.8 (19.3, 22.2)	
Male	30.6 (28.9, 32.2)		8.3 (7.6, 9.1)		16.4 (15.4, 17.4)		10.1 (9.3, 10.9)	
Race/Ethnicity		< .001		.22		< .001		< .001
White	21.7 (20.3, 23.1)		6.6 (5.7, 7.4)		23.6 (22.4, 24.8)		18.5 (17.4, 19.7)	
Black/African American	33.4 (30.2, 36.6)		8.1 (6.8, 9.3)		14.8 (13.1, 16.6)		9.5 (8.1, 10.9)	
Hispanic/Latinx	25.6 (23.2, 28.0)		6.7 (5.8, 7.7)		16.5 (15.1, 18.0)		12.6 (11.6, 13.6)	
All Other Races	22.1 (19.1, 25.1)		7.3 (5.7, 9.0)		20.0 (17.4, 22.5)		14.1 (11.8, 16.4)	
Sexual Orientation		.003		< .001		< .001		< .001
Heterosexual	23.7 (22.3, 25.1)		6.1 (5.6, 6.7)		18.1 (17.2, 19.1)		13.7 (12.9, 14.6)	
Gay/Lesbian	23.4 (17.8, 28.9)		13.3 (8.9, 17.8)		34.7 (29.2, 40.3)		24.8 (19.6, 29.8)	
Bisexual	29.1 (25.6, 32.6)		10.1 (7.8, 12.3)		34.4 (30.7, 38.2)		28.8 (25.2, 32.4)	
Not sure	20.9 (16.7, 25.1)		12.0 (8.9, 15.0)		27.4 (23.4, 31.4)		21.6 (17.8, 25.4)	

* Note: P-values are for Rao-Scott Chi-Square tests

Table 4. Association between age-for-grade status and interpersonal violence after adjusting for sex, race/ethnicity, and sexual orientation.

	Unadjusted model ^a		Adjusted model ^b		Adjusted model ^c		
	OR	p	OR	p	OR	p	
Physical fighting	Young-for grade	3.1 (1.5, 6.2)	.002	2.7 (1.3, 5.3)	.01	2.6 (1.3, 5.4)	.01
	Old-for-grade	1.6 (1.2, 1.9)	<.001	1.3 (1.1, 1.7)	.01	1.4 (1.1, 1.7)	.01
Threatened/injured w/ a weapon at school	Young-for grade	5.1 (2.8, 9.4)	<.001	4.7 (2.6, 8.6)	<.001	4.1 (2.3, 7.2)	<.001
	Old-for-grade	1.2 (0.9, 1.7)	.26	1.1 (0.8, 1.6)	.48	1.1 (0.8, 1.5)	.59
School-based bullying victimization	Young-for grade	1.7 (1.0, 2.9)	.06	2.2 (1.3, 3.8)	.01	2.0 (1.1, 3.5)	.02
	Old-for-grade	0.8 (0.6, 1.1)	.16	1.0 (0.7, 1.2)	.74	0.9 (0.7, 1.2)	.68
Electronic bullying victimization	Young-for grade	2.4 (1.4, 4.0)	.002	3.5 (2.0, 6.2)	<.001	3.3 (1.9, 5.8)	<.001
	Old-for-grade	0.8 (0.6, 1.0)	.05	0.9 (0.7, 1.3)	.69	0.9 (0.7, 1.2)	.63

^a: Age-normative is the reference group.

^b: Age-normative is the reference group. Adjusting for sex and race/ethnicity.

^c: Age-normative is the reference group. Adjusting for sex, race/ethnicity, and sexual orientation.

Table 5. Association between age-for-grade status and interpersonal violence by sex after adjusting for race/ethnicity and sexual orientation.

	Unadjusted model ^a			Adjusted model ^b			Adjusted model ^c						
	Female		Male	Female		Male	Female		Male				
	OR	p	OR	OR	p	OR	OR	p	OR				
Physical fighting	Young-for grade	1.9 (0.6, 5.4)	.24	4.0 (1.5, 10.8)	.01	1.8 (0.6, 5.2)	.30	3.5 (1.3, 9.1)	.01	1.7 (0.6, 5.1)	.35	3.5 (1.3, 9.1)	.01
	Old-for-grade	1.5 (1.1, 2.1)	.01	1.4 (1.0, 1.8)	.03	1.5 (1.1, 2.1)	.01	1.3 (1.0, 1.7)	.10	1.5 (1.1, 2.1)	.01	1.3 (1.0, 1.7)	.07
Threatened/injured w/ a weapon at school	Young-for grade	3.2 (1.4, 7.5)	.01	5.7 (2.6, 12.8)	<.001	3.2 (1.4, 7.5)	.01	5.4 (2.4, 12.3)	<.001	2.8 (1.2, 6.8)	.02	4.7 (2.2, 10.4)	<.001
	Old-for-grade	1.2 (0.7, 2.3)	.51	1.1 (0.7, 1.7)	.62	1.2 (0.7, 2.3)	.53	1.1 (0.7, 1.6)	.68	1.2 (0.6, 2.3)	.60	1.1 (0.7, 1.6)	.78
School-based bullying victimization	Young-for grade	1.3 (0.6, 3.1)	.51	2.2 (1.1, 4.2)	.02	1.6 (0.7, 3.6)	.27	2.8 (1.5, 5.3)	.002	1.5 (0.6, 3.5)	.39	2.4 (1.3, 4.7)	.01
	Old-for-grade	0.9 (0.6, 1.4)	.79	0.8 (0.6, 1.2)	.37	1.0 (0.7, 1.5)	.99	0.9 (0.6, 1.3)	.68	1.0 (0.6, 1.5)	.92	0.9 (0.6, 1.3)	.65
Electronic bullying victimization	Young-for grade	1.6 (0.7, 3.7)	.23	4.0 (1.9, 8.7)	<.001	2.0 (0.9, 4.5)	.09	5.5 (2.4, 12.3)	<.001	1.9 (0.8, 4.5)	.14	5.0 (2.3, 10.8)	<.001
	Old-for-grade	0.8 (0.6, 1.2)	.27	0.9 (0.6, 1.4)	.75	0.9 (0.6, 1.3)	.45	1.0 (0.7, 1.6)	.86	0.8 (0.6, 1.2)	.40	1.0 (0.7, 1.6)	.87

^a: Age-normative is the reference group.

^b: Age-normative is the reference group. Adjusting for race/ethnicity.

^c: Age-normative is the reference group. Adjusting for race/ethnicity and sexual orientation.