ORIGINAL ARTICLE

# FACTORS ASSOCIATED WITH ATTITUDES TOWARDS VIOLENCE IN SCHOOLCHILDREN FROM MARGINAL URBAN AREAS OF METROPOLITAN LIMA, 2019

Jhon Alex Zeladita-Huaman [1,a,b], Iván Montes-Iturrizaga [2,c],
Gladys Ivonne Moran-Paredes [3,d], Roberto Zegarra-Chapoñan [1,a,e],
Juana Matilde Cuba-Sancho [1,a,f], Juan Pablo Aparco [4,g]

[1] Departamento Académico de Enfermería, Universidad Nacional Mayor de San Marcos, Lima, Perú.
[2] Escuela de Posgrado, Universidad María Auxiliadora, Lima, Perú.
[3] Facultad de Ciencias Empresariales, Universidad María Auxiliadora, Lima, Perú.
[4] Departamento Académico de Nutrición, Universidad Nacional Mayor de San Marcos, Lima, Perú.
[a] Bachelor of Science in Nursing; [b] Master in Health Management; [c] Degree in Psychology, Doctor of Educational Sciences;
[d] Industrial Engineer, Doctor of Business Administration; [e] Master in Public Management; [f] Master in Nursing with mention in Teaching; [g] Bachelor of Science in Nutrition, Master in Public Nutrition.

## ABSTRACT

**Objective**: To identify factors associated with attitudes towards violence (ATV) in schoolchildren from public educational institutions (EI) located in marginal urban areas of Metropolitan Lima in 2019. **Materials and methods**: Observational, descriptive and transversal study. The sample was made up of adolescents from 10 mixed-gender EIs enrolled between the sixth grade of primary school and the third year of secondary school. The questionnaire of attitudes towards violence (CAHV-25) was used. During the bivariate analysis, the Spearman Correlation Coefficient, the Mann-Whitney U test and the Kruskal-Wallis H test with Dunn's post-hoc adjusted by Bonferroni were used. To determine the associated factors, multivariate analysis was performed using negative binomial regression model. **Results**: 45.1% of the schoolchildren were female and 87.3% received information on school bullying. In the bivariate analysis, statistically significant differences were found between the ATV scores and age (p = 0.003), sex (p < 0.001), having a social network account (p = 0.009) and year of study (p < 0.001); however, in the multivariate model, the factors associated with the total ATV scores were age (p = 0.012) and sex (p < 0.001). **Conclusion**: The factors associated with ATV in schoolchildren from public EIs were age and sex, these findings would indicate the need to consider the gender perspective in the analysis of school violence and differentiate interventions according to age.

**Keywords**: Attitude; Bullying; Adolescent; Students (Source: MeSH NLM).

# INTRODUCTION

Bullying is a form of violence and is a social problem that affects adolescents worldwide. The World Health Organization (WHO) reports that 34% of schoolchildren was bullied in the month prior to the survey and that 40% was involved in a fight the previous year; it also notes that schoolchildren are exposed to other forms of violence such as cyberbullying [1]. Likewise, the United Nations Children's Fund (UNICEF) states that 1 out of 3 students between 13 and 15 years old experienced bullying and 3 out of 10 adolescents admitted to bull others at school [2]. Meanwhile, in Latin America and the Caribbean, the prevalence of school bullying is between 20 and 30% and that of cyber-bullying between 2.5 and 42.5% [3,4].

In Peru, Romani *et al.* estimated that the prevalence of high school students who report being victims of school violence was 56.4% [5], and Oriol *et al.* reported that 59.4% of adolescents witnessed violent behavior in the educational institution (EI) and 40.5% were abused or insulted

by their peers [6]. Meanwhile, the Sistema Especializado en Reporte de Casos sobre Violencia Escolar (SíseVe) of the Ministerio de Educación (MINEDU) shows, for the period 2015 to 2019, that the cases in Lima increased four times and almost three times in the entire country [7]. In addition, the longitudinal study Children of the Millennium reported that the main reason why children are not comfortable in school is because they are victims of aggression by their peers [8].

In the education sector, children's attitudes have been reported to be the psychological causes of violent behavior [9,10]. In addition, school violence is associated with attitudes towards violence (ATV) [11,12], as well as the attitude towards teachers and if they are considered or not as important figures for the students. Similarly, the perception of injustice in school, disdain for studying, and negative attitudes toward the EI appear as recurrent elements in violent behaviors [13].

Ruiz *et al.*, based on the premise that attitude guides behavior [14], defined attitude as a predisposition to act spontaneously [15]; and developed a questionnaire that evaluates ATV considering items that explore specific thoughts, feelings and behaviors of peer violence during school. This instrument was applied in several countries and reported that men have higher levels of ATV than women [16].

Scientific literature describes that ATV are related to the perception towards the EI, having a history of victimization [17], competitiveness and self-esteem [18]. Other studies conducted in Spain [19], Turkey [20], and the United States [21] reported contradictory results regarding the association between ATV with sex and the year of study of adolescents. We have not found Peruvian studies that explore the factors associated with ATV, despite the need for this information, for a better understanding and analysis of the social phenomenon. From this perspective, the aim of this study was to identify the factors associated with ATV in children from public schools located in marginal urban areas of Metropolitan Lima in 2019.

## MATERIALS AND METHODS

### Population and sample

An observational, descriptive, and cross-sectional study was conducted to identify factors associated with ATV in regular basic education school children from primary and secondary schools.

The study population consisted of children enrolled at public schools in 2019 and who attended classes between

### KEY MESSAGES

**Motivation for the study:** There are contradictions in previous reports on school violence (SV) depending on adolescents' gender; besides, evidence of factors associated with attitudes towards violence (ATV) in Peru is limited.

**Main findings:** Males are more likely than females to have ATV. Age and sex were factors associated with ATV in adolescents in public educational institutions in marginal urban areas of Lima.

**Implications:** There is an evident need to include the gender perspective in ATV research and to implement public policies to reduce this social.

August and December of the same year. The study was carried out in the marginal urban areas of eight districts of Metropolitan Lima, where twelve public schools were identified. These schools were co-educational (male and female students), had a student population of between 750 and 1,500 students per year (flagship schools) and provided primary and secondary education.

In the first stage of sampling, the selection of EIs was non-probability; the second stage was census-type for each EI, that is, all children from sixth grade in primary school to third grade of secondary school, who met the eligibility criteria, were included. The inclusion criteria were to be a schoolchild between 11 and 16 with regular school attendance, who has given informed consent and whose parents agreed to sign the informed consent. The exclusion criteria were to have a physical or mental disability that makes it difficult to complete the questionnaire.

### Procedure

We invited the 12 EIs that met the inclusion criteria and scheduled the data collection day with each director of the EIs that agreed to participate. One day before data collection, parents were asked to sign the informed consent, and before the implementation of the survey, students signed the informed consent. In addition, students were reminded of the importance of their collaboration through honest and truthful responses regarding their opinion about EI. Then, the questionnaire was given to each student to complete individually in the classroom. This instrument was anonymous in order to reduce any possibility of responses motivated by social desirability.

*Instrument*

We used a self-administered survey with questions about the independent variables and the attitudes towards violence questionnaire (CAHV-25) that was initially developed and validated in Spain [15] and then used in Mexico without any modification [12].

It should be noted that the author of the CAHV-25 reformulated two questions of the questionnaire and added three more. The updated version (CAHV-28) was published in 2020 [16].

The questionnaire was validated by experts (psychologists, health professionals and teachers), who reviewed the clarity, consistency, relevance, and sufficiency of the instrument. A pilot was carried out with 25 students of an EI from an area close to the study's setting in order to evaluate the feasibility of the application, the duration of the survey, and comprehension by the adolescents. No difficulties in understanding were found and the estimated time of the survey was 20 minutes.

We also carried out a reliability analysis of the internal consistency of the CAHV-25 items through a Cronbach's alpha test; the general coefficient (0.890) and by gender (men: 0.904 and women: 0.868) were obtained.

## Study variables

The independent variables of the study were age, sex, level of education, number of siblings, type of family relationship (living with father/mother/father and mother, or not living with parents), having a social network account (Facebook, Twitter, Instagram, etc.) and having received at least one counseling session or having participated in at least one training session on bullying, either in the EI or in a health facility.

The ATV score and its domains were considered as dependent variables and were measured using the CAHV-25 scale, which is composed by 25 items in the Likert format with five-alternative answers ranging from "strongly disagree" to "strongly agree". This instrument assigns scores ranging from 1 to 5 (where the statements express dispositions toward violence) except for items 6 and 24, where the score is assigned inversely (from 5 to 1). Consequently, we calculated the sum of the scores of each of the domains and the total score of the scale, the results obtained meet the following criterion: the higher the score, the higher the ATV. It should be noted that this questionnaire has four domains: "violence as a form of entertainment", with a total score of 35 (seven items); "violence to improve self-esteem", with a total score of 25 (five items); "violence to manage problems and social

relations", with a total score of 30 (six items); and "violence perceived as legitimate", with a total score of 35 (seven items). The total score for the entire scale is 125.

## Statistical analysis

Quantitative variables were described by using mean, standard deviation, median and interquartile range; qualitative variables were expressed in frequencies and proportions.

In addition, we carried out a bivariate analysis between the socio-demographic characteristics and the score of the ATV scale and its domains by applying the Spearman correlation test, the Mann-Whitney U test and Kruskal-Wallis H test with Dunn's post hoc, adjusted by Bonferroni's method.

To determine the factors associated with the ATV scale score and its domains, a multivariate analysis was carried out and since the assumption of equidispersion was not fulfilled, negative binomial regression was applied (crude and adjusted model). The total score of the ATV scale and its domains were considered as dependent variables (in 5 independent models). The absence of collinearity was verified by applying the variance inflation factor test and in each adjusted model all the independent variables were included with a $p < 0.200$ reported in the crude model. For all estimates, the Stata v16.0 statistical package (Stata Corporation, College Station, Texas, USA) was used, as well as a level of significance of $p < 0.05$.

## Ethical aspects

The study was reviewed and approved by the Ethics Committee of the Universidad María Auxiliadora and was registered in the Act No. 01.

# RESULTS

In Figure 1, the selection process of the study participants is shown. Initially, twelve EIs were invited, but only ten accepted. So, the study started with 702 schoolchildren from those ten EIs, and then we observed an acceptance rate of 91.5%, which resulted in 643 students.

The average age of the students was 12.8 years (standard deviation [SD]: 1.3) and the average number of siblings was 2.5 (SD: 1.8); in addition, the highest percentage of school children were in the sixth grade of primary school, lived with both parents, and received counseling on bullying (Table 1).

*Attitudes towards violence*

The highest scores for violence were observed in the domain of "violence perceived as legitimate" with a median of 17 (interquartile range [IQR]: 15-20), while the lowest was in the domain
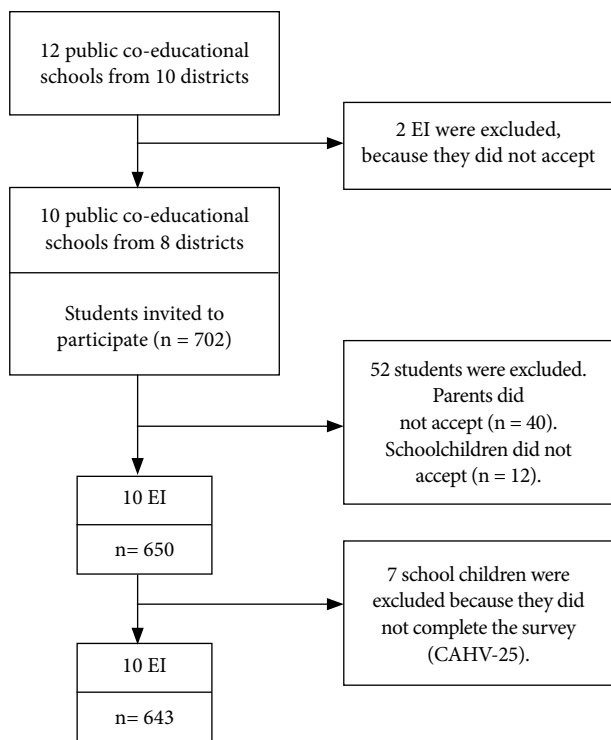
**Figure 1.** Sample selection flowchart

of "violence to improve self-esteem" with a median of 8 (IQR: 6-10) (Table 2).

During the bivariate analysis, we observed that the higher scores in the domains of "violence as a form of entertainment", "violence perceived as legitimate", and the total score of the ATV

**Table 1.** Sociodemographic characteristics of the sample, Lima, 2019

| Characteristics | n (643) | % |
|---|---|---|
| Sex | | |
| Male | 353 | 54.9 |
| Female | 290 | 45.1 |
| Family cohabitation* | | |
| With the father | 32 | 5.0 |
| With the mother | 161 | 25.3 |
| With both parents | 427 | 66.9 |
| Does not live with parents | 18 | 2.8 |
| Has an account in a social network** | | |
| No | 134 | 20.9 |
| Yes | 508 | 79.1 |
| Level of education | | |
| Sixth grade of Primary school | 232 | 36.1 |
| First grade of Secondary school | 170 | 26.4 |
| Second grade of Secondary school | 138 | 21.5 |
| Third grade of Secondary school | 103 | 16.0 |
| Received counseling on bullying ** | | |
| No | 210 | 32.7 |
| Yes | 432 | 67.3 |

* 638 students answered
** 642 students answered

**Table 2.** Description of the scores of the attitudes towards violence scale among school children, Lima, 2019

| Attitudes towards violence scale (n = 643) | Median (IQR) |
|---|---|
| Domains | |
| Violence as a form of entertainment | 13 (10-16) |
| Violence to improve self-esteem | 8 (6-10) |
| Violence to manage problems and social relations | 10 (8-13) |
| Violence perceived as legitimate | 17 (15-20) |
| Total Scale Score | 48 (40-57) |

IQR: interquartile range.

scale were associated with older age, being male, having a social network account, and higher levels of education (Table 3). In addition, the same table shows that higher scores in the domains of "violence to improve self-esteem" and "violence to manage problems and social relations" were only associated with being male and higher levels of education.

Regarding the multivariate analysis without an adjustment for the scores of the ATV scale and its domains in school children, we found significant association between the score of the domain "violence as a form of entertainment and age", sex, having a social network account and level of education; scores for the domains "violence to improve self-esteem" and "violence to manage problems and social relations" were significantly associated with sex and level of education, while scores for the domain "violence perceived as legitimate" and the total ATV scale score were significantly associated with age, sex, and level of education (Table 4).

Table 5 shows the results of the multivariate analysis and we can observe that sex was an associated factor for all domains including the total score of the ATV scale (p < 0.001), showing that being male increased the total score by 0.12. In the domain of "violence as a form of entertainment", it was found that attending the third year of secondary school increased the score by 0.17 (p = 0.006). In addition, age showed a significant association with the domain of "violence perceived as legitimate" and the total score of the ATV scale, showing that for each year the score increased by 0.02 in both cases (p = 0.007 and p = 0.012, respectively).

## DISCUSSION

Our study, carried out in school children of ten public EIs in marginal-urban areas of Metropolitan Lima, determined that sex is associated with all four domains and with the total score of the ATV scale, and that age is associated with one

**Table 3.** Description of the scores of the attitudes towards violence scale among school children, Lima, 2019

| Characteristics | Violence as a form of entertainment | | Violence to improve self-esteem | | Violence to manage problems and social relations | | Violence perceived as legitimate | | Total score of the Attitudes towards violence Scale | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Median (IQR) | p value | Median (IQR) | p value | Median (IQR) | p value | Median (IQR) | p value | Median (IQR) | p value |
| Age | 0.188* | <0.001[†] | 0.059* | 0.132[†] | 0.002* | 0.960[†] | 0.119* | 0.002[†] | 0.116* | 0.003[†] |
|    Number of siblings | 0.070* | 0.077[†] | 0.047* | 0.237[†] | 0.030* | 0.447[†] | 0.007* | 0.859[†] | 0.044* | 0.270[†] |
| Sex | | | | | | | | | | |
|    Male | 14 (11-17) | <0.001[††] | 9 (6-11) | <0.001[††] | 11 (8-14) | <0.001[††] | 18 (16-21) | <0.001[††] | 51 (43-60) | <0.001[††] |
|    Female | 12 (9-15) | | 8 (5-10) | | 10 (7-12) | | 16 (14-18) | | 45 (38-53) | |
| Family cohabitation | | | | | | | | | | |
|    With the father | 14 (11-17) | 0.185[‡] | 9 (7-11) | 0.220[‡] | 11.5 (9-13) | 0.180[‡] | 18.5 (15-21) | 0.258[‡] | 52,5 (44-63) | 0.096[‡] |
|    With the mother | 13 (10-16) | | 8 (6-10) | | 10 (8-13) | | 17 (15-19) | | 49 (42-56) | |
|    With both parents | 13 (10-16) | | 8 (6-10) | | 10 (7-13) | | 17 (14-20) | | 47 (39-57) | |
|    Does not live with parents | 13.5 (12-17) | | 8 (7-11) | | 12 (9-16) | | 17 (16-20) | | 49 (47-62) | |
| Has an account in a social network | | | | | | | | | | |
|    No | 12 (9-15) | 0.011[††] | 8 (6-10) | 0.160[††] | 10 (7-12) | 0.069[††] | 16 (14-19) | 0.035[††] | 45 (39-54) | 0.009[††] |
|    Yes | 13 (10-16) | | 8 (6-10) | | 10 (8-13) | | 17 (15-20) | | 49 (41-58) | |
| Level of education | | | | | | | | | | |
|    Sixth grade of primary school | 12 (9.5-15)[a] | <0.001[‡] | 8 (6-10)[a] | <0.001[‡] | 11 (9-13)[a,b] | <0.001[‡] | 17 (15-19)[a] | <0.001[‡] | 48 (40-56)[a] | <0.001[‡] |
|    First grade of Secondary school | 13 (10-17)[b] | | 7 (5-11)[b] | | 10 (7-12)[a,c] | | 17 (14-20)[b] | | 46.5 (38-58)[b] | |
|    Second grade of Secondary school | 13 (10-16)[c] | | 7 (5-10)[c] | | 9 (7-12)[b,d] | | 17 (14-19)[c] | | 46 (38-54)[c] | |
|    Third grade of Secondary school | 14 (12-17)[a,b,c] | | 9 (7-11)[a,b,c] | | 12 (9-14)[c,d] | | 18 (16-21)[a,b,c] | | 54 (47-61)[a,b,c] | |
| Received counseling on bullying | | | | | | | | | | |
|    No | 13 (10-16) | 0.622[††] | 9 (6-10) | 0.758[††] | 10.5 (7-13) | 0.910[††] | 18 (15-20) | 0.818[††] | 49 (40-58) | 0.983[††] |
|    Yes | 13 (10-16) | | 8 (6-10) | | 10 (8-13) | | 17 (15-20) | | 48 (41-57) | |

\* Expresses Spearman's Rho correlation coefficient
[†] Spearman correlation coefficient test.
[††] Mann-Whitney U test.
[‡] Kruskal-Wallis H test.
Equal superscript letters express statistically significant difference in columns of medians between categories of instruction by Dunn's post hoc test, adjusted by Bonferroni's method.
IQR: interquartile range.

domain and with the total score of the ATV scale. This finding indicates that during the gender identity development and the socialization process, changes in the ATV could be taking place in the educational environment. Furthermore, considering that attitudes are dispositions to act in a certain way and from a gender perspective, it could be said that differences in the predisposition towards violence are derived from the different behaviors between men and women [22].

In accordance with our results, several studies reported the association between sex with ATV and its domains [15,16,23]. Another author also reported the association between sex and ATV and included subscales that assessed attitudes toward gratuitous violence, violence linked to

self-protection, and general violence [24]; in addition, other studies reported association of attitudes toward violence with gender [18,20]. In contrast, a research involving adolescents with externalizing behavior disorder reported that there was no association between the dimensions of ATV and gender [19]. Another study about validation of a scale comprising interpersonal ATV against their peers and other aspects such as corporal punishment, crime and war, reported that there is no association with sex; however, they point out that boys show higher scores compared to girls [21].

It is necessary to point out that the gender variable could partly reflect the historical inequalities and discriminations resulting from power relationships built in the different social

**Table 4.** Multivariate model without adjustment for scores of the Attitudes towards Violence Scale and its domains in school children, Lima, 2019

| Characteristics | Domains | | | | | | | | Total score of the Attitudes towards violence Scale | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Violence as a form of entertainment | | Violence to improve self-esteem | | Violence to manage problems and social relations | | Violence perceived as legitimate | | | |
| | βc (95% CI) | p value | βc (95% CI) | p value | βc (95% CI) | p value | βc (95% CI) | p value | βc (95% CI) | p value |
| Age | 0.05 (0.03 a 0.06) | <0.001 | 0.01 (−0.01 a 0.04) | 0.191 | 0.00 (−0.02 a 0.02) | 0.897 | 0.02 (0.01 a 0.04) | 0.003 | 0.02 (0.01 a 0.04) | 0.004 |
| Number of siblings | 0.01 (−0.00 a 0.03) | 0.161 | 0.01 (−0.01 a 0.03) | 0.257 | 0.01 (−0.01 a 0.02) | 0.388 | 0.01 (-0.01 a 0.02) | 0.424 | 0.01 (-0.00 a 0.02) | 0.219 |
| Sex | | | | | | | | | | |
| Female | Ref. | | Ref. | | Ref. | | Ref. | | Ref. | |
| Male | 0.15 (0.10 a 0.20) | <0.001 | 0.15 (0.09 a −0.20) | <0.001 | 0.12 (0.07 a 0.17) | <0.001 | 0.10 (0.05 a 0.14) | <0.001 | 0.12 (0.08 a 0.17) | <0.001 |
| Family cohabitation | | | | | | | | | | |
| With both parents | Ref. | | Ref. | | Ref. | | Ref. | | Ref. | |
| With the mother | 0.01 (−0.05 a 0.07) | 0.679 | 0.00 (−0.07 a 0.07) | 0.976 | 0.02 (−0.04 a 0.09) | 0.446 | 0.01 (-0.05 a 0.06) | 0.824 | 0.01 (-0.04 a 0.06) | 0.669 |
| With the father | 0.08 (−0.03 a 0.20) | 0.154 | 0.07 (−0.06 a 0.20) | 0.300 | 0.06 (−0.06 a 0.18) | 0.335 | 0.09 (-0.01 a 0.19) | 0.072 | 0.08 (-0.02 a 0.18) | 0.119 |
| Does not live with parents | 0.09 (−0.06 a 0.24) | 0.246 | 0.07 (−0.10 a 0.24) | 0.440 | 0.13 (−0.03 a 0.29) | 0.107 | 0.09 (-0.04 a 0.22) | 0.196 | 0.09 (-0.04 a 0.22) | 0.158 |
| Does not live with parents | | | | | | | | | | |
| No | Ref. | | Ref. | | Ref. | | Ref. | | Ref. | |
| Yes | 0.07 (0.01 a 0.13) | 0.041 | 0.04 (−0.03 a 0.11) | 0.247 | 0.05 (−0.02 a 0.12) | 0.153 | 0.01 (-0.04 a 0.07) | 0.608 | 0.04 (-0.01 a 0.09) | 0.129 |
| Level of education | | | | | | | | | | |
| Sixth grade of Primary school | Ref. | | Ref. | | Ref. | | Ref. | | Ref. | |
| First grade of Secondary school | 0.09 (0.03 a 0.16) | 0.005 | 0.00 (−0.07 a 0.07) | 0.982 | −0.05 (−0.12 a 0.02) | 0.153 | -0.01 (-0.07 a 0.04) | 0.701 | 0.01 (-0.04 a 0.06) | 0.701 |
| Second grade of Secondary school | 0.05 (−0.02 a 0.12) | 0.167 | −0.09 (−0.17 a −0.01) | 0.030 | -0.15 (−0.22 a 0.07) | <0.001 | -0.00 (-0.06 a 0.06) | 0.981 | -0.03 (-0.09 a 0.02) | 0.242 |
| Third grade of Secondary school | 0.22 (0.14 a 0.29) | <0.001 | 0.11 (0.02 a 0.19) | 0.011 | 0.04 (0.04 a 0.12) | 0.286 | 0.13 (0.06 a 0.19) | <0.001 | 0.13 (0.07 a 0.19) | <0.001 |
| Received counseling on bullying | | | | | | | | | | |
| No | Ref. | | Ref. | | Ref. | | Ref. | | Ref. | |
| Yes | 0.00 (−0.05 a 0.06) | 0.880 | −0.00 (−0.07 a 0.06) | 0.884 | 0.01 (−0.05 a 0.07) | 0.689 | 0.03 (-0.01 a 0.08) | 0.167 | 0.01 (-0.03 a 0.06) | 0.555 |

βc: crude beta coefficient of the negative binomial regression.
95% CI: 95% confidence interval.
Number of observations for the adjusted model: violence as a form of entertainment (n = 631); violence to improve self-esteem (n = 643); violence to manage problems and social relations (n = 642); violence perceived as legitimate (n = 642); total score of the Attitude towards Violence Scale (n = 642).

spheres starting from the family itself, which represents a structural factor [25]. These findings and the reports of other researchers indicate that sex is a factor associated with ATV, which shows that males are more predisposed to violence than females, especially when scales are used that mainly evaluate interpersonal relationships with their peers.

Another important finding was the weak but statistically significant positive correlation between age and both, the domain "violence perceived as legitimate" and the total ATV scale score. This result is similar to that reported by research in Colombia, which indicated that younger school children (9 to 11 years old) have lower scores on the ATV domains,

**Table 5.** Adjusted multivariate model for scores on the Attitudes Towards Violence Scale and its domains in school children, Lima, 2019

| Characteristics | Domains | | | | | | | | Total score of the Attitudes towards violence Scale [d] | |
| | Violence as a form of entertainment [a] | | Violence to improve self-esteem [b] | | Violence to manage problems and social relations [c] | | Violence perceived as legitimate [b] | | | |
| | βa (95% CI) | p value | βa (95% CI) | p value | βa (95% CI) | p value | βa (95% CI) | p value | βa (95% CI) | p value |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.01 (−0.02 to 0.04) | 0.555 | 0.01 (−0.01 a 0.03) | 0.228 | -- | -- | 0.02 (0.01 a 0.04) | 0.007 | 0.02 (0.00 a 0.04) | 0.012 |
| Number of siblings | 0.01 (−0.01 to 0.03) | 0.257 | -- | - | -- | -- | -- | -- | -- | -- |
| Sex | | | | | | | | | | |
| Female | | Ref | | Ref | Ref | | Ref | | Ref | |
| Male | 0.15 | <0.001 | 0.15 (0.09 a 0.20) | <0.001 | 0.12 (0.07 a 0.17) | <0.001 | 0.10 (0.05 a 0.14) | <0.001 | 0.12 (0.08 a −0.16) | <0.001 |
| Has an account in any social network | | | | | | | | | | |
| No | | Ref | | -- | Ref | -- | -- | | Ref | |
| Yes | 0.03 (−0.03 a 0.09) | 0.313 | | -- | 0.05 (−0.01 a 0.12) | 0.118 | -- | -- | 0.03 (−0.02 a 0.08) | 0.233 |
| Level of education | | | | | | | | | | |
| Sixth grade of Primary school | | Ref | -- | -- | -- | -- | -- | -- | -- | -- |
| First grade of Secondary school | 0.07 (−0.00 a 0.14) | 0.062 | -- | -- | -- | -- | -- | -- | -- | -- |
| Second grade of Secondary school | 0.02 (−0.07 a 0.12) | 0.616 | -- | -- | -- | -- | -- | -- | -- | -- |
| Third grade of Secondary school | 0.17 (0.05 a 0.29) | 0.006 | -- | -- | -- | -- | -- | -- | -- | -- |
| Constant | 2.28 (1.90 a 2.67) | | 1.90 (1.62 a 2.17) | | 2.26 (2.20 a 2.33) | | 2.42 (2.21 a 2.63) | | 3.54 (3.33 a 3.74) | |

βa: adjusted beta coefficient of the negative binomial regression
95% CI: 95% confidence interval.

Number of observations for the adjusted model: violence as a form of entertainment n = 631; violence to improve self-esteem n = 643; violence to manage problems and social relations n = 642; violence perceived as legitimate n = 642; total score of the Attitudes towards Violence Scale n = 642.
McFadden-adjusted Pseudo R2 for the model of violence as a form of entertainment = 0.013; violence to improve self-esteem = 0.005; violence to manage problems and social relations = 0.003; violence perceived as legitimate = 0.004; total score of the Attitudes Toward Violence Scale = 0.005.

[a] Adjusted for age, sex, has an account in some social network, and level of education.
[b] Adjusted for age and sex.
[c] Adjusted for sex and if he/she has a social network account.
[d] Adjusted by age, sex and if he/she has a social network account.

especially in D1 and D4, compared to older school children (15 to 17 years old) [4]. In another study of secondary school children in Turkey, age was reported to influence trends in violence [18]. Other authors also report the association between age and bullying [23]. These studies confirm that age is a factor associated with ATV.

In this research, we determined that there are differences between the scores of the ATV according to year of studies for only one domain; however, this variable was not a factor associated with ATV. This result is similar to what was reported by studies carried out in Spain, however,

these did not evaluate the effect of collinearity [15,16]. In this regard, a study conducted in a Peruvian region reported that adolescents in the third year of secondary school are 2.2 times more likely to be involved in bullying [23]. This last point leads us, from an evolutionary perspective, to point out that regarding violence, both attitude and behavior reach their highest point in the upper years in the form of progressive increase.

Unlike other scales, the CAHV-25 only considers aspects related to peer violence in students from primary and secondary school, and, in addition, presents high statistical reliability in its

four domains or subscales. Subsequently, Tejedo *et al.* [26] validated the ATV scale, which is used mainly in physical education students. In 2020, Bonilla *et al.* [27] published the validation of a school-based ATV scale (AVE-E) for the secondary level education in Peru, in which they not only evaluate attitudes and emotional responses to violence, but also the perception of violent behavior and social comparison.

Among the possible limitations, the potential for inference of our findings is diminished by the choice of intentional non-probabilistic sampling. However, our initial purpose was to generate systematic knowledge for the empirical-theoretical research instead of approaching it from a prevalence and incidence viewpoint. In addition, we considered mixed EIs with similar characteristics in terms of number of students enrolled and sections per year. On the other hand, we minimized biases and social desirability because data collection guaranteed the anonymity of the informant. Similarly, and thanks to the training of the instrument's applicators, standard conditions were guaranteed in all cases.

In conclusion, we found that for adolescents from public EIs in urban-marginal areas of Lima, sex was a factor associated with ATV and all domains, while age was a factor associated with ATV and only one domain. In this scenario,

adolescent boys have more prone attitudes towards violence compared to adolescent girls and there is a weak positive correlation between age and ATV scores. In addition, there are differences in ATV by level of education. The highest scores were found in the domain of "violence perceived as legitimate".

These findings represent relevant information to suggest that the analysis of school violence should take gender and age into account. Likewise, the emphasis on the gender variable and its relevance can serve as support for the development of predictive models for aggressive behavior [28]. Finally, to implement effective interventions aimed at reducing ATV and its evident manifestations in adolescents, the gender approach must be considered, taking into account that attitudes predispose to action (observable behaviors).

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