

## Determinantes de la violencia entre pares en escuelas secundarias del Estado de México: calidad de relaciones con maestros y familiares

*Determinants of violence among peers in secondary schools of the State of Mexico: quality of relationships with teachers and family*

*Determinantes da violência entre pares nas escolas secundárias no Estado do México: qualidade dos relacionamentos com professores e familiares*

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### Resumen

El objetivo de este artículo es analizar, por medio de un Probit ordenado, si las relaciones del alumno con sus maestros y familiares aumentan la probabilidad de que este ejerza violencia contra sus compañeros en las escuelas secundarias del Estado de México. Existen varios tipos de violencia: verbal, física, psicológica, sexual y hacia las pertenencias de otros. La muestra se compuso de 1 217 adolescentes de ambos sexos, y es representativa de los alumnos de secundaria del Estado de México. Los resultados indican que una mejor relación del alumno con su maestro y con sus padres disminuye la probabilidad de que cometa mayores agresiones.

**Palabras clave:** violencia escolar, educación secundaria, convivencia escolar, relación maestro-alumno, relaciones familiares.

## Abstract

The aim of this article is to analyze, using a Probit model, if the student relations with their teachers and family members increase the probability for they to exercise violence against their colleagues in secondary schools of the State of Mexico. There are various types of violence: verbal, physical, psychological, sexual and towards the belongings of others. The sample was composed of 1 217 teenagers from both sexes, and is representative of students in Secondary school in the State of Mexico. The results indicate that a better relationship of the student with his teacher and with their parents decreases the probability of commit major assaults.

**Key words:** school violence, Secondary education, school coexistence, Teacher-Student Relationship, Family Relationships.

## Resumo

O objetivo deste artigo é analisar, através de um probit ordenado se as relações dos alunos com seus professores e familiares aumenta a probabilidade de que este exercício violência contra seus pares nas escolas secundárias no Estado do México. Existem vários tipos de violência: verbais, físicos, psicológicos, sexuais e à propriedade dos outros. A amostra foi composta de 1.217 adolescentes de ambos os sexos, e é representante dos estudantes do ensino médio do Estado do México. Os resultados indicam que um melhor relacionamento com seu aluno professor e seus pais diminui a probabilidade de que grandes ataques cometa.

**Palavras-chave:** violência escolar, a educação escolar, vida escolar, relacionamento relacionamentos familiares professor-aluno.

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## Introduction

In recent years the problem of harassment or bullying among students has been more noticeable. Dan Olweus (1983) was one of the first to look at the subject; then he made other research from various angles (among peers, among women, cyberbullying, institutional, etc.) and perspectives (ecological, peace studies, diagnostics, research for action, etc.).

In Mexico, the majority of the studies made have been to local level, with different methodological approaches and not comparable to each other. Some treat the problem in various regions (Del Tronco, 2013) with mixed methods, but not with a representative sample at national level. There are also localized studies as in Baja California (Caso et al, 2013), Querétaro (Ochoa and Salinas de la Vega, 2015), Mexico City (Unidad Consejo Ciudadano, 2014), but without a representative sample of students. The present study is representative of the State of Mexico, distinguishes several types of violence and is focuses in the relations student with their teacher and family. Also, analyzes the relationship between both variables and the exercise of the violence verbal, physical, psychological, sexual and to belongings of others.

The school is part of the social environment and reflects the socio-economic and cultural characteristics of our country; however, these areas of secondary socialization also may change in modes of relating, and can contribute to the construction of successful humans, facilitating the communication and the mutual respect in harmonic school coexistence (Fernández Itz'iar et al., 2011).

Therefore, if in the school the violence is exercised against those who are different due to their ethnic origin, gender, religion, sexual orientation, etc., it is necessary educate in the culture of peace and democracy, in the respect to human rights and against gender-based violence.

This phenomenon is not easy to identify; usually students know it but remains hidden for adults, i.e., the educators and parents. As a result actions that prevent violence and strengthen the respect should be undertaken.

### **Violence at school**

First of all it is necessary to distinguish bullying school violence. By school violence means the violation of rules and anti-social behavior in and out of schools, conflicts

between students and teachers, vandalism, extortion and sexual harassment (Marin Martinez, 2013, Furlan, 2003, Sanmartín, 2006). The term bullying is used to refer to repeated harassment and aggressive behavior that exerts a student or group against others (Olweus, 1998). Several authors (Olweus, 1998, Atria, Strohmeier and Spiel, 2007; Fandrem, Ertesvåg, and Roland Strohmeier, 2010, etc.) established three criteria for such conduct can be considered bullying. First, aggression and exercised must be repeated against the same student or specific group; secondly, there must be a systematic abuse of power between the victim and the aggressor, and thirdly, there must be intent to harm.

This form of violence can manifest itself in various ways. According to Ortega (2002a), events can be categorized as follows:

- Verbal violence: insults and words of contempt.
- Psychological violence: attacks on the identity of the person, either in the form of threats or blackmail.
- Violence on the property of another, steal, hide and mistreat others' belongings.
- Physical violence: blows.
- Sexual violence: attitudes, perceptions and erotic-sexual behavior.

We have considered each of these types of violence, distinguishing each other from the different factors that can influence the behavior of the offending student. Hereinafter when referring to violence between students is made is included bullying.

On the other hand, it is well known that the family is very important in the formation of the teenager as a factor that protects the (Trunk, 2013) school performance, responsible sexual behavior (Caro, 2014), and so on. also noted the importance of family and school areas for explanation and prevention of violence at school (Olweus, 1998, Gázquez, J. J. et al., 2007); however, they are still few studies empirically analyze the relationship between violence between peers at school and the relationship students have with their parents and teachers (Estevez et al., 2007, Moreno et al., 2009). This article aims to fill that void.

Some studies indicate the relationship between family violence and criminal and antisocial behavior of children. Thus, in Hermosillo, Sonora, Frias et al. (2003) found that both child abuse as witness parental violence produce a range of negative consequences in children, such as anxiety, depression, antisocial behavior (destroy other things, getting into fights, attack or hit others), and so on.

For his part, Martínez-Ferrer et al. (2008) found in a study conducted in Valencia, Spain, with 1,068 adolescents between 11 and 16 years old, from four schools, that support from the father directly influenced the violence that the teenager at school; Similarly, when the student sees the school as an unjust environment and shows indifference towards studies, promotes their involvement in violent acts. Also Estevez et al. (2007) associated negative communication with the parent and violent behavior in adolescence, and that teacher expectations affect the student's attitude towards institutional authority, which in turn is closely linked to violent behavior in the school.

In this sense, Moreno et al. (2009) analyzed the relationship between family environment and school climate perceived by the student. In a study in Valencia, Spain, with a sample of 1,319 secondary school students, found that "the family atmosphere showed a direct relationship with the development of empathy, attitude toward teachers and the school as a figure and institution formal authority, as well as adolescent violent behavior at school "(Moreno et al., 2009, p. 123).

As for the relationship between the teacher and his students (Ochoa and Salinas de la Vega, 2015) in an exploratory study conducted in Queretaro, Mexico with 2,711 primary and secondary schools, it was found that the teacher's role is crucial in the climate of coexistence developed in the classroom. These results were also present at Ballester (2001) and Diaz Aguado (2005).

This study analyzes the effect econometrically the relationship with parents exercised violence in secondary Mexico State, which also compared to the impact of the relationship between students and teachers. In order to analyze family relationships students were asked about the quality of the relationship they have with their parents, if they exercise violence against them and if there is any family member who abuse alcohol. With respect to their teachers, students were asked about whether there is trust, support and quality in their relationship with them.

## **Methodology**

This work was divided into two phases. The first phase of research was conducted from qualitative approach, conducting focus groups with high school students to explore the object of study. The second phase was developed based on the results of the qualitative study and developed a questionnaire that was applied to a representative sample of students from 1st to 3rd secondary Mexico State.

The data obtained in the qualitative study served as the basis for the construction of a questionnaire that measured various aspects of school life. After a random two-stage sampling was performed. The first was cluster sampling, in which a sample of schools was selected. In the second stage students were selected randomly from each school were applied to a survey. The sample size was calculated with a confidence level of 95%, so that the total number of schools was 42 and the number of high school students was 1,217, of whom 606 were men (49.79%) and 611 women (50.25%). This is a representative sample of students attending school in the State of Mexico. The sample was also designed to be representative of students in first, second and third grade, with approximately 410 surveys each level. The gathering of information was conducted from April to June 2015, in schools of the State of Mexico state and federal education system. The application time of the survey was about an hour and for her students selected audiences, laboratories or classrooms met so there were no distractions. The survey was conducted personally and face to face by trained personnel.

## **Results**

### **Peer violence in the State of Mexico**

As already noted, there are several ways of expressing each of the types of violence; for example, teasing, swearing, name calling or shouting, all manifestations of verbal violence. Therefore, to better capture the perpetration of violence he asked students whether they had been the aggressor with various manifestations of violence: verbal, psychological, sexual or other possessions. He was also asked how often he had done: never, once, once or twice a month, every week and every day. In each of the manifestations of violence was considered that the student was a perpetrator of bullying if you answered performing aggression at least once or twice a month, that is, if assaulted someone every day, every week, or one or two times a month. The following table shows the results of the incidence of each of the manifestations of violence perpetrated by students.

Chart 1. Percentage of students indicating being aggressors of each type of violence (at least once or twice a month)

| Violencia verbal                                  | %     |
|---|-------|
| <b>Se burló de alguien</b>                        | 18.98 |
| <b>Le dijo groserías a alguien</b>                | 19.72 |
| <b>Puso apodos</b>                                | 13.56 |
| <b>Le gritó a alguien</b>                         | 11.91 |
| Violencia psicológica                             |       |
| <b>Discriminó</b>                                 | 5.51  |
| <b>Ignoró a alguien</b>                           | 12.24 |
| <b>Amenazó a alguien</b>                          | 2.63  |
| <b>Culpó a alguien sin razón</b>                  | 2.14  |
| Violencia con los objetos de otros                |       |
| <b>Le quitó a alguien sus cosas</b>               | 2.05  |
| <b>Le escondió a alguien sus cosas</b>            | 3.2   |
| <b>Le rompió a alguien sus cosas</b>              | 1.89  |
| <b>Robó</b>                                       | 0.66  |
| Violencia física                                  |       |
| <b>Le pegó a alguien</b>                          | 4.52  |
| <b>Empujó a alguien</b>                           | 5.34  |
| <b>Le jaló el cabello a alguien</b>               | 2.22  |
| Violencia sexual                                  |       |
| <b>Manoseó a alguien</b>                          | 0.9   |
| <b>Le alzó la falda a alguien</b>                 | 0.58  |
| <b>Le bajó el pantalón a alguien</b>              | 0.82  |
| <b>Obligó a alguien a hacer cosas humillantes</b> | 0.66  |

Fuente: elaboración propia.

The type of violence perpetrated students said they most frequently was verbal, especially cussing someone. It also highlights the large percentage of students who said they ignored someone, considered as psychological violence. In other violence there was very low prevalence of perpetration of bullying, ie, less than 10%. The kind of violence that fewer

students reported exercise was sexual violence, which is also considered as the most serious violence.

Students can express every kind of violence in one or more ways. For example, a student may exercise physical violence if hit, pushed or pulled her hair to someone. The more manifestations of violence have a student, the more severe their behavior; for example, if you hit someone and it pushes. Therefore, reference to the different types of violence: verbal, psychological, physical, sexual and to the possessions of others, the number of manifestations of violence by students was calculated, no matter who or who executed. Note that questions for each type of manifestation of violence were made, so each reached a maximum different frequency.

**Chart 2.** Percentage of completion of each type of violence

|  | <b>Ninguna vez</b> | <b>Una</b> | <b>Dos</b> | <b>Tres</b> | <b>Cuatro</b> |
|--|--------------------|------------|------------|-------------|---------------|
| <b>Violencia verbal</b>                      | 68.28              | 13.23      | 8.71       | 5.59        | 4.19          |
| <b>Violencia psicológica</b>                 | 84.14              | 10.68      | 4.11       | 0.66        | 0.41          |
| <b>Violencia con las posesiones de otros</b> | 95.23              | 3.04       | 0.74       | 0.66        | 0.33          |
| <b>Violencia física</b>                      | 92.19              | 4.68       | 1.97       | 1.15        |               |
| <b>Violencia sexual</b>                      | 98.27              | 0.9        | 0.49       | 0.25        | 0.08          |

Fuente: elaboración propia.

The purpose of this article is to statistically analyze the effect of family relationships and the teacher-student violence can exercise a student. To analyze the effect of family environment were built several variables, and to know the quality of the student's relationship with his parents to students to rate from 1 to 10 your relationship with them was asked. Moreover, to recognize the presence of physical violence in the home was asked the student if his father used to push and hit his mother when they were discussing, and vice versa. For this frequency words were never used, rarely, sometimes, often and often. a dummy variable in which he identified himself if his dad beat his mom often or very often or if your mom would beat his dad, often or very often was also created. To

identify physical violence from parents to the student, the student was asked if his father had beaten and if it had been the degree of leave bruises or open wounds: never, rarely, sometimes, often and always. He asked the same with respect to the mother. a dummy variable to identify if dad or mom had stuck and if they had let the degree of bruising or open wounds, either often or very often was also created. Finally, the students were asked if there was someone in your family who abused alcohol and this response from one dummy variable was created. Moreover, in order to assess the quality of the relationship of students with their teacher they were asked to rate from 1 to 10 your relationship with them.

In addition to the variables on the family atmosphere and the relationship of the student with his teacher, which are the variables that interest us to achieve our goal, control variables that explain demographic factors on the socioeconomic status of the student's family and variables they were incorporated that identify self-esteem and use of leisure time.

Including demographic variables are age, sex and whether the student speak an indigenous language. To identify the sex of the student a dummy variable was created whose function is to discern whether the student is a woman. Likewise, a dummy variable was created to recognize those who speak an indigenous language.

In addition to student she wondered if you work and the hours per week dedicated to this activity. He was also asked students how many hours a week dedicated to the care of their siblings or other family members, to wash dishes, cook, clean the house and wash or iron clothes. the total number of hours devoted to each of these activities to create the variable indicating the number of hours a week devoted to homemaking added.

With respect to the variables of self-esteem and free time, he asked the student to qualify from 1 to 10 the phrase "I like the way I am." Finally, he asked how often practicing sports in a typical week outside school hours: once a week, two or three times a week or more than three times a week. a dummy variable for those who practice sport more than three times a week was created.

**Chart 3.** Summary of independent variables

| <b>Variables independientes</b>          |  |
|--|--|
| <b>Variables demográficas</b>            |  |
|  | Edad   |
|  | Sexo   |
|  | Si el alumno habla alguna lengua indígena                          |
| <b>Variables económicas</b>              |  |
|  | Índice de nivel socioeconómico                                     |
|  | Horas a la semana que el estudiante trabaja                        |
|  | Horas a la semana que el estudiante dedica a las labores del hogar |
| <b>Variables relación con la familia</b> |  |
|  | Calificación que da a la relación que tiene con su mamá            |
|  | Si su mamá o su papá le pega seguido o muy seguido                 |
|  | Si su papá le pega a su mamá o su mamá a su papá                   |
|  | Si alguien de su familia abusa del alcohol                         |
| <b>Variables relación con maestro</b>    |  |
|  | Calificación relación con su maestro                               |
| <b>Variables autoestima</b>              |  |
|  | Calificación a “Me gusta como soy”                                 |
|  | Si el estudiante hace deporte más de tres veces a la semana        |

Fuente: elaboración propia.

**Chart 4.** Summary results of independent variables by sex

|   | <b>Masculino</b> | <b>Femenino</b> |
|---|------------------|-----------------|
| <b>Sexo</b>   | 49.79            | 50.21           |
| <b>Indígena</b>   | 2.81             | 1.96            |
| <b>Edad</b>   | 13.59            | 13.50           |
| <b>Estudia y además trabaja*</b>                            | 16.01            | 7.20            |
| <b>Horas de trabajo (de aquellos que trabajan)*</b>         | 8.84             | 10.40           |
| <b>Horas de trabajo (todos los estudiantes)</b>             | 1.40             | 0.72            |
| <b>Su casa tiene luz eléctrica*</b>                         | 99.17            | 99.51           |
| <b>Su casa tiene agua potable*</b>                          | 98.51            | 98.69           |
| <b>Su casa tiene televisión de paga*</b>                    | 62.38            | 59.90           |
| <b>Su casa tiene excusado*</b>                              | 98.02            | 98.69           |
| <b>Su casa tiene computadora*</b>                           | 72.44            | 69.23           |
| <b>Tuvo siempre algo para comer el último mes *</b>         | 96.70            | 98.53           |
| <b>Índice socioeconómico</b>                                | 0.86             | 0.85            |
| <b>Calificación de la relación con sus padres</b>           | 8.73             | 8.43            |
| <b>Porcentaje de los padres que se pegan</b>                | 0.83             | 1.15            |
| <b>Porcentaje de los padres que le pegan al alumno</b>      | 4.95             | 6.06            |
| <b>Familiar que abusa del alcohol</b>                       | 18.81            | 18.33           |
| <b>Calificación de su relación con el maestro</b>           | 8.36             | 8.63            |
| <b>Calificación de “Me gusta como soy”</b>                  | 9.29             | 9.07            |
| <b>Promedio de horas dedicadas a las labores domésticas</b> | 6.83             | 8.81            |
| <b>Porcentaje de alumnos que practican deporte</b>          | 48.02            | 28.64           |

Fuente: elaboración propia.

\* These variables were not included in the regression, but on the table to simplify the exposition.

Table 4 contains a summary of the results of the independent variables. As can be seen, there is a similar ratio between men and women. The old high school students must have on average is thirteen. On the other hand, there was a small proportion of students who speak an indigenous language, even less than 3%.

As for the relationship of students with his family, it was found that students generally get high marks to their relationships with their parents; a low percentage of students indicates suffering physical violence at home: whether their parents are sticking together or sticking their parents to their children. On the other hand, a high proportion of pupils identified as having a family member who abuses alcohol.

Regarding their perception of their relationship with their teachers, giving average rating is also high and very similar to that given to parents. Women give a higher rating to teachers, which is significantly higher than give parents. Meanwhile, men give greater and meaningful grade parents above teachers.

As for the variables of socioeconomic status of the family, it is observed that almost all students have basic utilities such as electricity and drinking water, toilet and what to eat in the last month. A smaller percentage of students had access to a computer and pay television. Since students were satisfactory socioeconomic status, reflected in a high index value.

Despite this socioeconomic level, a large percentage of students almost 1 out of every 10-, have to work besides studying. This shows that although their homes have basic services, the level of household income is not enough to support the family.

Those who work spend more hours in this activity that housework; however, as not all students work, the average number of hours that all students engaged in housework is greater than they spend working outside the home. By sex, we see that a higher percentage of men, almost double that of women, it works. However, women who work on average more hours devoted to this activity than men working. They also spend more hours on average than men to housework. Both activities restrict the time and effort you can devote to study. This coincides with social gender roles that persist in Mexico, where the men have to be the breadwinners and women responsible for caring for family members and household cleaning.

In addition to the work inside and outside the home, there are important differences between men and women. For example, a higher percentage, almost double of boys than girls, do sport at least three times a week. It is also the lowest score that women give to the phrase "I like the way I am", indicating that girls have lower self-esteem than children.

### Econometric model

The purpose of this paper is to analyze the factors that affect the likelihood that a student commits acts of violence among peers, with special emphasis on the relationships you have with teachers and adults. We assume that these factors influence each type of violence differently, and therefore econometrically analyzes the effect of these variables in each of these types of violence.

Our dependent variables indicate the number of times a student manifests (at least once or twice a month) some kind of violence. Therefore, they are ordinal variables. It must be remembered that the manifestations of each type of violence are not equal, for example, two ways of expressing verbal violence are cussing someone or yell at someone. For this reason, it was considered an "ordered probit" in which the effect of each of the variables have on the probability that a student expresses more times each type of violence is calculated. The model is:

$$y^* = x'\beta + \varepsilon$$

Where  $y^*$  It is a latent variable that represents the level of perpetrating violence. The variable  $y^*$  is not observable, but is observed if  $y = 0$ , which implies that the student does not exercise bullying towards his companions; if  $y = 1$  means that the student exercises at least one type of violence; if  $y = 2$  that performs two types of violence, and so on. The more acts of bullying of each type make the student, the higher the level of perpetration of violence. Therefore, in the model

$$y = 0 \text{ si } y^* \leq 0$$

$$y = 1 \text{ si } 0 < y^* \leq \mu_1$$

$$y = 2 \text{ si } \mu_1 < y^* \leq \mu_2$$

$$y = J \text{ si } \mu_{J-1} \leq y^*$$

Parameters  $\mu_j$ 's thresholds represent categorical responses are unknown and to be estimated by the econometric model. The vector of explanatory variables  $x$ , It includes the explanatory variables contained in Table 3. It is assumed that the error  $\varepsilon$  It has a normal

distribution with zero mean and unit variance and its density function is represented by  $\phi$  (.) and cumulative distribution function of (.). Thus, we have the following probabilities:

$$\text{Prob}(y = j|x) = \Phi(\mu_{1j} - x'\beta) - \Phi(\mu_{1(j-1)} - x'\beta) \quad j = 1,2,3, \dots, J$$

This function is estimated by optimizing the function of maximum likelihood. In the ordered probit model, the effect of variables is ambiguous  $x$  for intermediate values  $y$ . For this reason, the calculation of the marginal effects is useful. These are calculated as follows:

$$\partial \text{Prob}(y = j) / \partial x = -\phi(\mu_{1j} - \beta'x) + \phi(\mu_{1(j-1)} - \beta'x)$$

### **Econometric estimation results**

The results of the influence of independent variables on the probability that students exercise violence of every type -at least once or twice a month- shown in Table 5. It is interesting to note that not all variables significantly influence all types of violence. There is only one variable that influences all kinds of violence: the relationship with teachers. The higher the grade the student gives to the relationship with his teacher, the lower the likelihood of committing major assaults of each of the types of violence. This highlights the importance of preparation and dedication of teachers, so that students not only have better academic performance but also a better relationship with their peers.

The family atmosphere the student plays a significant role in this is violent or not. The higher the rating that students give their relationship with their parents, the less likely they exercise more violence verbal, psychological and physical. In addition, if a family member of a student abusing alcohol, it is also a significant factor for this perform the latter two types of violence as well as sexual violence.

The quality of relationships with teachers, parents and the family atmosphere, it is essential for students to achieve a harmonious coexistence. It is important that both actors are well informed and trained to achieve establish a good relationship. Certainly should encourage communication and respect in the family and highlight the importance of the figure of the teacher as guarantor of a healthy coexistence at school.

Chart 5. results regression

|                                       | Violencia verbal |       | Violencia psicológica |       | Violencia con las posesiones de otros |       | Violencia física |       | Violencia sexual |       |
|---------------------------------------|------------------|-------|-----------------------|-------|---------------------------------------|-------|------------------|-------|------------------|-------|
|                                       | Coef.            | Z     | Coef.                 | Z     | Coef.                                 | Z     | Coef.            | Z     | Coef.            | Z     |
| <b>Edad</b>                           | 0.15*            | 4.17  | 0.14*                 | 3.26  | 0.05                                  | 0.86  | 0.01             | 0.24  | 0.08             | 0.81  |
| <b>Mujer</b>                          | -0.51*           | -6.55 | -0.20*                | -2.1  | -0.33*                                | -2.29 | -0.22            | -1.86 | -0.29            | -1.28 |
| <b>Indígena</b>                       | 0.42             | 1.92  | 0.17                  | 0.65  | -0.18                                 | -0.4  | 0.26             | 0.87  | 0.18             | 0.35  |
| <b>Horas trabajo</b>                  | 0.00             | 0.14  | 0.02                  | 1.68  | 0.00                                  | 0.18  | 0.01             | 1.05  | 0.01             | 0.61  |
| <b>Socioeconómico</b>                 | 0.58*            | 2.47  | 0.74*                 | 2.51  | 0.20                                  | 0.49  | 0.75*            | 2.05  | 1.26             | 1.63  |
| <b>Relación con padres</b>            | -0.08*           | -3.02 | -0.10*                | -3.13 | -0.08                                 | -1.93 | -0.07*           | -2.00 | 0.05             | 0.71  |
| <b>Padres se pegan</b>                | -0.09            | -0.23 | -0.20                 | -0.43 | 0.67                                  | 1.48  | 0.38             | 0.84  | -3.28            | -0.01 |
| <b>Padres le pegan</b>                | 0.60*            | 4.07  | 0.24                  | 1.39  | 0.23                                  | 0.99  | 0.56*            | 3.05  | 0.46             | 1.41  |
| <b>Familiar que abusa del alcohol</b> | 0.22*            | 2.38  | 0.13                  | 1.22  | 0.24                                  | 1.58  | 0.32*            | 2.47  | 0.77*            | 3.54  |
| <b>Relación maestro</b>               | -0.15*           | -6.9  | -0.16*                | -6.06 | -0.14*                                | -3.98 | -0.13*           | -4.16 | -0.18*           | -3.50 |
| <b>Se gusta a sí mismo</b>            | -0.04            | -1.61 | -0.05*                | -2.18 | 0.00                                  | 0.07  | -0.02            | -0.62 | 0.10             | 1.40  |
| <b>Horas dedicadas al quehacer</b>    | 0.00             | 0.47  | 0.00                  | 0.39  | -0.01                                 | -1.07 | 0.00             | 0.21  | 0.00             | 0.45  |
| <b>Deporte</b>                        | 0.12             | 1.59  | 0.10                  | 1.1   | -0.07                                 | -0.5  | 0.09             | 0.82  | -0.19            | -0.85 |
| <b>Umbral 1</b>                       | 0.64             | 0.62  | 1.07                  | 0.74  | 0.65                                  | 1.04  | 0.53             | 0.92  | 4.57             | 1.79  |
| <b>Umbral 2</b>                       | 1.12             | 0.62  | 1.77                  | 0.74  | 1.13                                  | 1.04  | 1.03             | 0.92  | 4.89             | 1.79  |
| <b>Umbral 3</b>                       | 1.58             | 0.62  | 2.56                  | 0.75  | 1.40                                  | 1.04  | 1.51             | 0.93  | 5.32             | 1.80  |
| <b>Umbral 4</b>                       | 2.07             | 0.62  | 3.01                  | 0.77  | 1.91                                  | 1.05  |                  |       |                  |       |
| <b>Pseudo R<sup>2</sup></b>           | 0.082            |       | 0.087                 |       | 0.074                                 |       | 0.084            |       | 0.149            |       |

Fuente: elaboración propia.

If the student is a woman reduces the probability of committing a greater amount of verbal, psychological aggression and to the possessions of others.<sup>1</sup> Girls tend to be explicitly associated with less violent than boys. Some authors suggest that girls use more other mechanisms when they conflict with others, such as verbal and indirect violence. Spreading rumors or gossip, make snide comments, etc. (Owens et al, 2004; Saucedo, 1995; Mejia Hernandez and Weiss, 2011). However, even within the mechanisms of verbal and psychological violence, we found that the students put less these two types of violence.

The student's age is also an important factor that increases the verbal and psychological violence. The real cause behind this relationship should be explored as it may be due to factors more social pressure in older ages or psychological factors associated with adolescence.

Moreover, the socioeconomic index positively influences the manifestations of verbal, psychological and physical violence of the student. This is surprising because it indicates that students with higher socioeconomic status who are more likely to be violent are.

We also found that when the student does not like himself commits more psychological aggression. Interestingly, low self-esteem manifests itself only with the exercise of such violence and not the other.

Note that there is a smaller number of variables that significantly influence the incidence of assaults by students to the possessions of others, verbal, physical, psychological and sexual assault. The only two variables that influence this type of violence is the relationship with teachers and sex of the student. In addition, due to the low number of students who reported being perpetrators of sexual violence, the results of this regression estimates should be viewed with caution.

Also, the pseudo R square of the estimation models is low. This indicates that the variation of the independent variables of the model explains little of the variation of the likelihood of violence. There are factors that could not be incorporated into the econometric model and that could influence violence among students. The context of schools, such as programs, activities and strategies to improve student interaction, can not be incorporated into the model, but can positively influence this. The schools themselves can also be located in particularly troubled areas and students receive the influence of gangs.

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<sup>1</sup> La violencia física no es significativa al 0.05, pero sí al 0.10.

### Marginal effects

The marginal effects tell us that both changes the probability that  $y=1, 2, 3...$  (manifestation of violence) if there is an instantaneous change in the independent variable  $x_i$ . In the case of dummy variables, the change is calculated in the probability  $y$  when there is a change  $x = 0$  a  $x = 1$ , while the other variables are evaluated and maintained average.

The A1-A5 tables in the annex show the marginal effects of all independent variables for each type of violence. It is important to note that in this model, each of the variables that significantly influenced the manifestations of violence, increased (or decreased) consistently the probability that a student committed a greater number of subtypes of violence, for each type of violence.

The relationship with teachers is extremely important, as it affects all types of violence. It must be remembered that students gave a rating of 1 to 10 to the relationship with their teachers. By keeping constant the other independent variables in their mean value, an increase of one unit in qualifying students give the teacher increases by 5% the probability that does not incur any kind of verbal violence, decreased by 1.7% probability of exercising a type of verbal violence, 1.7% decreases the probability that incurs two, 1.2% decreases the probability that revealed three and 0.9% decreases in exercising four. The marginal effects of an increase in a unit in the qualifications of teachers are decreasing with increasing severity of violence. An increase in a unit of this rating increases by 3.3% the likelihood that students will not perpetrate any form of psychological violence, decreases by 2.1% the probability of an impact in one, 0.9% two, 0.15% in three and 0.6% four. For physical violence, this variable increased 1.5% increases in the probability of no impact on violence, 0.9% decreases in exercising a, exercising 0.4% 2 0.2% in the three exercising. This demonstrates the great potential that teachers have in reducing violence of their students if they maintain a good relationship with them.

Highlighting the importance of the presence of physical violence at home, we found that if the other independent variables remain in the middle, where the parents to spank students decreased by 22.6% the probability that the student will not be violent verbally increases 4.8% the probability of exercising a kind of verbal violence, 6.4% increase in the probability of two, 5.8% and 5.7% three that make it four. Likewise, 9.8% decreases the

probability that affects any physical violence, 5.3% in exercising a, 2.8% be two, and 2.9% make it three.

The marginal effects that family abuse alcohol on the verbal and physical violence, are less than the effects of a family member I hit the student, but still very important. If the other independent variables keep the value of the average, a family abuse alcohol decreased by 7.8% the probability that the student will not be violent verbally, at 2.3% which expresses a type of verbal violence, 2.3% that revealed two 1.8% which are three and 1.4% make it four.

The rating that students give their relationship with their parents, also impacts heavily on verbal violence, psychological and physical. Doing the same exercise we did for the relationship with teachers, we see that if we maintain the values of the independent variables on average, the marginal increase in grade students give their parents increased by 2.8% the probability that students are not violent verbally, 0.9% decreases the probability that affects a manifestation of verbal violence, 0.8% in having two, at 0.6% in having three and 0.5% in having three. Similarly, it increased by 2.1% the probability of no impact on psychological violence, decreased by 1.3% likely to have a manifestation of violence, 0.6% having two, at 0.09% in three and 0.06% in four. The marginal effect of this variable in physical violence decreases, since only increases by 0.09% probability of not holding this type of violence, 0.05% by having a manifestation of such violence, at 0.02% in need 0.01% two in having three.

## **Discussion**

The aim of the paper is to study the influence of the family environment and the teacher-student relationship with the probability of exercise of peer violence in secondary schools in the State of Mexico. We expected, and according to the literature (León del Barco et al, 2015;.. Cerezo et al, 2015; Moreno et al, 2009;.. Repetti et al, 2002, among others), the relationship with parents out very important, something corroborated. Additionally, in this study the odds of exercise types of violence and its relationship with the family atmosphere are distinguished.

Thus, we find that the higher the grade the students give the relationship with their parents, the lower the probability of exercising violence verbal, psychological and physical. If

parents hit the teen, increases the likelihood of exercising verbal and physical violence, and if a family abuses alcohol likely to have more manifestations of these types of violence and sexual increases. Similar results were found by León del Barco et al. (2015, p. 605), who point out that "rejection, hatred and criticism received by children, especially the father, are a risk factor for aggression." Also Repetti et al. (2002) found a relationship between aggressive parenting styles with aggressive behavioral problems in children.

We also analyzed the teacher-student relationship from the perception of adolescents and found that the higher the grade the student gives to the relationship with his teacher, decreases the likelihood that major comet aggression with each of the types of violence . In Queretaro, Ochoa and Salinas (2015, p. 170) found that "the actions of teacher impact on students creating negative attitudes that affect climate, such as boredom or lack of motivation." This is consistent with our findings, with the characteristic that we study this relationship distinguishing types of violence. is even the only variable that influences the occurrence of all types of violence, and the marginal effects of this rating are higher than the rating that students give their relationship with their parents. Therefore, in addition to other variables, such as family environment, socioeconomic status, etc., teachers can always influence the likelihood that a student whether or not violent with their peers.

Additionally, higher socioeconomic, higher is the probability that a student commits acts of verbal, physical and psychological violence. On the other hand, a higher level of self-esteem, the lower the probability of incurring more acts of psychological violence.

## **Conclusion**

In this article we inquire about the determinants of violence in a school by a quantitative study, representative state-level high school students in the State of Mexico.

We corroborate the association between the presence of violence in the family and exercise of violence by the student, emphasizing the importance of improving family relationships to eradicate violent behavior of young people in school. We also note the important role of teachers as drivers of the dynamics that could improve coexistence in the classroom.

The results need to be corroborated with studies in a longer period of time to analyze the stability of the relationships observed in this document. Also, with the contribution of this work it contributes to a better understanding of the relationship between the family,

teachers and explanation of peer violence. It is recommended that programs to improve school life consider this triad, support more teachers and involve parents to build a less aggressive family atmosphere.

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Anexo

**Cuadro A1. Efectos marginales de variables significativas violencia verbal**

|                                       | (Pr y=0) |       | (Pr y=1) |       | (Pr y=2) |       | (Pr y=3) |       | (Pr y=4) |       |
|---------------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
|                                       | dy/dx    | Z     |
| <b>Edad</b>                           | -0.0523  | -4.17 | 0.0163   | 3.92  | 0.0158   | 3.88  | 0.0116   | 3.79  | 0.009    | 3.74  |
| <b>Mujer</b>                          | 0.1751   | 6.68  | -0.0537  | -5.87 | -0.0524  | -5.77 | -0.0390  | -5.44 | -0.030   | -5.01 |
| <b>Indígena</b>                       | -0.1565  | -1.82 | 0.0375   | 2.54  | 0.0452   | 1.92  | 0.0386   | 1.64  | 0.035    | 1.37  |
| <b>Horas trabajo</b>                  | -0.0005  | -0.14 | 0.0002   | 0.14  | 0.0001   | 0.14  | 0.0001   | 0.14  | 0.000    | 0.14  |
| <b>Socioeconómico</b>                 | -0.1990  | -2.47 | 0.0621   | 2.41  | 0.0601   | 2.41  | 0.0441   | 2.38  | 0.033    | 2.36  |
| <b>Relación con padres</b>            | 0.0277   | 3.03  | -0.0086  | -2.91 | -0.0084  | -2.92 | -0.0061  | -2.89 | -0.005   | -2.83 |
| <b>Padres se pegan</b>                | 0.0293   | 0.23  | -0.0096  | -0.22 | -0.0089  | -0.23 | -0.0063  | -0.24 | -0.005   | -0.25 |
| <b>Padres le pegan</b>                | -0.2263  | -3.91 | 0.0481   | 5.97  | 0.0636   | 4.07  | 0.0577   | 3.28  | 0.057    | 2.64  |
| <b>Familiar que abusa del alcohol</b> | -0.0784  | -2.32 | 0.0226   | 2.47  | 0.0234   | 2.29  | 0.0181   | 2.17  | 0.014    | 2.03  |
| <b>Relación con el maestro</b>        | 0.0532   | 6.88  | -0.0166  | -5.93 | -0.0161  | -5.84 | -0.0118  | -5.48 | -0.009   | -5.24 |
| <b>Se gusta a sí mismo</b>            | 0.0125   | 1.61  | -0.0039  | -1.6  | -0.0038  | -1.59 | -0.0028  | -1.59 | -0.002   | -1.58 |
| <b>Horas dedicadas al quehacer</b>    | -0.0005  | -0.47 | 0.0002   | 0.47  | 0.0002   | 0.47  | 0.0001   | 0.47  | 0.000    | 0.47  |
| <b>Deporte</b>                        | -0.0422  | -1.58 | 0.0130   | 1.59  | 0.0127   | 1.57  | 0.0094   | 1.54  | 0.007    | 1.51  |

**Cuadro A2. Efectos marginales de variables significativas violencia psicológica**

|             | (Pr y=0) |       | (Pr y=1) |      | (Pr y=2) |      | (Pr y=3) |      | (Pr y=4) |      |
|-------------|----------|-------|----------|------|----------|------|----------|------|----------|------|
|             | dy/dx    | Z     | dy/dx    | Z    | dy/dx    | Z    | dy/dx    | Z    | dy/dx    | Z    |
| <b>edad</b> | -0.0311  | -3.28 | 0.0199   | 3.19 | 0.0092   | 3.07 | 0.0014   | 2.15 | 0.0005   | 1.58 |

|                  |         |       |         |       |         |       |         |       |         |       |
|------------------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| <b>mujer*</b>    | 0.0428  | 2.1   | -0.0274 | -2.09 | -0.0127 | -2.04 | -0.0020 | -1.69 | -0.0008 | -1.35 |
| <b>indigena*</b> | -0.0405 | -0.6  | 0.0251  | 0.62  | 0.0125  | 0.57  | 0.0021  | 0.53  | 0.0008  | 0.50  |
| <b>hrstr</b>     | -0.0039 | -1.68 | 0.0025  | 1.67  | 0.0011  | 1.65  | 0.0002  | 1.46  | 0.0001  | 1.24  |
| <b>socioe~n</b>  | -0.1582 | -2.53 | 0.1014  | 2.49  | 0.0468  | 2.43  | 0.0072  | 1.91  | 0.0028  | 1.46  |
| <b>rel_pa~s</b>  | 0.0206  | 3.14  | -0.0132 | -3.07 | -0.0061 | -2.98 | -0.0009 | -2.10 | -0.0004 | -1.53 |
| <b>papas_~n*</b> | 0.0388  | 0.49  | -0.0258 | -0.48 | -0.0109 | -0.52 | -0.0016 | -0.55 | -0.0006 | -0.57 |
| <b>pega_a~m*</b> | -0.0588 | -1.26 | 0.0359  | 1.32  | 0.0185  | 1.18  | 0.0031  | 1.04  | 0.0013  | 0.91  |
| <b>falcohol*</b> | -0.0300 | -1.17 | 0.0189  | 1.19  | 0.0091  | 1.14  | 0.0014  | 1.03  | 0.0006  | 0.93  |
| <b>p47</b>       | 0.0334  | 6.02  | -0.0214 | -5.56 | -0.0099 | -4.93 | -0.0015 | -2.59 | -0.0006 | -1.72 |
| <b>p39h</b>      | 0.0116  | 2.17  | -0.0074 | -2.15 | -0.0034 | -2.12 | -0.0005 | -1.74 | -0.0002 | -1.36 |
| <b>tr_casa2</b>  | -0.0003 | -0.39 | 0.0002  | 0.39  | 0.0001  | 0.39  | 0.0000  | 0.39  | 0.0000  | 0.38  |
| <b>deporte*</b>  | -0.0223 | -1.08 | 0.0143  | 1.09  | 0.0066  | 1.07  | 0.0010  | 1.00  | 0.0004  | 0.90  |

**Cuadro A3. Efectos marginales de variables significativas violencia objetos de otros**

|                               | <b>(Pr y=0)</b> |           | <b>(Pr y=1)</b>  |                | <b>(Pr y=2)</b>  |              | <b>(Pr y=3)</b>  |              |
|-------------------------------|-----------------|-----------|------------------|----------------|------------------|--------------|------------------|--------------|
|                               | dy/dx           | Z         | dy/dx            | Z              | dy/dx            | Z            | dy/dx            | Z            |
| <b>Edad</b>                   | -<br>0.0040     | -<br>0.86 | 0.0026<br>0.0159 | 0.86<br>2.23   | 0.0007<br>0.0044 | 0.83<br>1.89 | 0.0002<br>0.0012 | 0.76<br>1.32 |
| <b>Mujer</b>                  | 0.0253          | 2.3       | -<br>0.0159      | -<br>2.23      | -<br>0.0044      | -<br>1.89    | -<br>0.0012      | -<br>1.32    |
| <b>Indígena</b>               | 0.0120          | 0.48      | -<br>0.0077      | -<br>0.47      | -<br>0.0020      | -<br>0.48    | -<br>0.0005      | -0.5         |
| <b>Horas trabajo</b>          | -<br>0.0002     | -<br>0.18 | 0.0001           | 0.18           | 0.0000           | 0.18         | 0.0000           | 0.18         |
| <b>Socioeconómico</b>         | -<br>0.0154     | -<br>0.49 | 0.0097           | 0.49           | 0.0027           | 0.48         | 0.0007           | 0.47         |
| <b>Relación con padres</b>    | 0.0064          | 1.95      | -<br>0.0041      | -1.9<br>0.0041 | -<br>0.0011      | -<br>1.69    | -<br>0.0003      | -<br>1.24    |
| <b>Padres se pegan</b>        | -<br>0.0911     | -<br>0.98 | 0.0505           | 1.09           | 0.0168           | 0.92         | 0.0070           | 0.67         |
| <b>Padres le pegan</b>        | -<br>0.0212     | -<br>0.84 | 0.0130           | 0.86           | 0.0038           | 0.8          | 0.0011           | 0.68         |
| <b>Familiar que abusa del</b> | -               | -         | 0.0132           | 1.4            | 0.0038           | 1.26         | 0.0011           | 1.03         |

|                                    |             |           |             |           |             |           |             |           |
|------------------------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| <b>alcohol</b>                     | 0.0215      | 1.38      |             |           |             |           |             |           |
| <b>Relación con el maestro</b>     | 0.0105      | 3.91      | -<br>0.0067 | -<br>3.58 | -<br>0.0018 | -<br>2.52 | -<br>0.0005 | -<br>1.51 |
| <b>Se gusta a sí mismo</b>         | -<br>0.0002 | -<br>0.07 | 0.0001      | 0.07      | 0.0000      | 0.07      | 0.0000      | 0.07      |
| <b>Horas dedicadas al quehacer</b> | 0.0006      | 1.08      | -<br>0.0004 | -<br>1.07 | -<br>0.0001 | -<br>1.03 | 0.0000      | -<br>0.91 |
| <b>Deporte</b>                     | 0.0053      | 0.51      | -<br>0.0034 | -0.5      | -<br>0.0009 | -0.5      | -<br>0.0002 | -<br>0.49 |

**Cuadro A4. Efectos marginales de variables significativas violencia física**

|                                       | <b>(Pr y=0)</b> |       | <b>(Pr y=1)</b> |       | <b>(Pr y=2)</b> |       | <b>(Pr y=3)</b> |       |
|---------------------------------------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|
|                                       | dy/dx           | Z     | dy/dx           | Z     | dy/dx           | Z     | dy/dx           | Z     |
| <b>Edad</b>                           | -0.0016         | -0.24 | 0.0009          | 0.23  | 0.0004          | 0.24  | 0.0002          | 0.23  |
| <b>Mujer</b>                          | 0.0265          | 1.86  | -0.0159         | -1.84 | -0.0071         | -1.77 | -0.0036         | -1.65 |
| <b>Indígena</b>                       | -0.0378         | -0.74 | 0.0216          | 0.77  | 0.0104          | 0.72  | 0.0058          | 0.65  |
| <b>Horas trabajo</b>                  | -0.0017         | -1.05 | 0.0010          | 1.05  | 0.0004          | 1.03  | 0.0002          | 1.01  |
| <b>Socioeconómico</b>                 | -0.0905         | -2.07 | 0.0543          | 2.02  | 0.0241          | 1.94  | 0.0122          | 1.82  |
| <b>Relación con padres</b>            | 0.0089          | 2.01  | -0.0053         | -1.97 | -0.0024         | -1.9  | -0.0012         | -1.77 |
| <b>Padres se pegan</b>                | -0.0608         | -0.67 | 0.0337          | 0.72  | 0.0170          | 0.64  | 0.0100          | 0.56  |
| <b>Padres le pegan</b>                | -0.0980         | -2.3  | 0.0525          | 2.47  | 0.0279          | 2.05  | 0.0176          | 1.71  |
| <b>Familiar que abusa del alcohol</b> | -0.0445         | -2.15 | 0.0256          | 2.19  | 0.0122          | 1.97  | 0.0067          | 1.76  |
| <b>Relación con el maestro</b>        | 0.0152          | 4.12  | -0.0091         | -3.8  | -0.0041         | -3.33 | -0.0020         | -2.8  |
| <b>Se gusta a sí mismo</b>            | 0.0024          | 0.62  | -0.0014         | -0.62 | -0.0006         | -0.62 | -0.0003         | -0.61 |
| <b>Horas dedicadas al quehacer</b>    | -0.0001         | -0.21 | 0.0001          | 0.21  | 0.0000          | 0.21  | 0.0000          | 0.21  |
| <b>Deporte</b>                        | -0.0116         | -0.8  | 0.0069          | 0.8   | 0.0031          | 0.79  | 0.0016          | 0.78  |

**Cuadro A5. Efectos marginales de variables significativas violencia sexual**

|  | <b>(Pr y=0)</b> | <b>(Pr y=1)</b> | <b>(Pr y=2)</b> | <b>(Pr y=3)</b> |
|--|-----------------|-----------------|-----------------|-----------------|
|--|-----------------|-----------------|-----------------|-----------------|

|                                       | dy/dx   | Z     | dy/dx   | Z     | dy/dx   | Z     | dy/dx       | Z         |
|---------------------------------------|---------|-------|---------|-------|---------|-------|-------------|-----------|
| <b>Edad</b>                           | -0.0014 | -0.19 | 0.0008  | 0.20  | 0.0004  | 0.17  | 0.0002      | 0.14      |
| <b>Mujer</b>                          | 0.0051  | 0.19  | -0.0030 | -0.21 | -0.0016 | -0.18 | -<br>0.0006 | -<br>0.15 |
| <b>Indígena</b>                       | -0.0038 | -0.16 | 0.0022  | 0.18  | 0.0012  | 0.15  | 0.0005      | 0.13      |
| <b>Horas trabajo</b>                  | -0.0003 | -0.18 | 0.0001  | 0.20  | 0.0001  | 0.17  | 0.0000      | 0.14      |
| <b>Socioeconómico</b>                 | -0.0218 | -0.19 | 0.0126  | 0.21  | 0.0067  | 0.18  | 0.0025      | 0.15      |
| <b>Relación con padres</b>            | -0.0009 | -0.18 | 0.0005  | 0.20  | 0.0003  | 0.17  | 0.0001      | 0.14      |
| <b>Padres se pegan</b>                | 0.0067  | 2.39  | -0.0041 | -2.24 | -0.0019 | -1.77 | -<br>0.0006 | -<br>1.20 |
| <b>Padres le pegan</b>                | -0.0134 | -0.21 | 0.0073  | 0.23  | 0.0043  | 0.19  | 0.0018      | 0.16      |
| <b>Familiar que abusa del alcohol</b> | -0.0264 | -0.22 | 0.0139  | 0.25  | 0.0085  | 0.21  | 0.0039      | 0.17      |
| <b>Relación con el maestro</b>        | 0.0031  | 0.19  | -0.0018 | -0.21 | -0.0009 | -0.18 | -<br>0.0004 | -<br>0.15 |
| <b>Se gusta a sí mismo</b>            | -0.0018 | -0.19 | 0.0011  | 0.21  | 0.0006  | 0.18  | 0.0002      | 0.15      |
| <b>Horas dedicadas al quehacer</b>    | -0.0001 | -0.18 | 0.0000  | 0.19  | 0.0000  | 0.17  | 0.0000      | 0.14      |
| <b>Deporte</b>                        | 0.0031  | 0.19  | -0.0018 | -0.20 | -0.0009 | -0.17 | -<br>0.0003 | -<br>0.14 |