Relationship between Anxiety and School Violence: Econometric Analysis in Secondary School Students

Hernán Javier Guzmán Murillo[1], José Marcelo Torres Ortega[2], William Niebles[3],

Abstract

This study analyzes the relationship between state anxiety levels (ERS) and school violence (ERAVE) among secondary school students using a simple linear econometric model. A quantitative design with correlational and explanatory analysis was applied. The sample included secondary-level students, and the ERS and ERAVE scores were used to examine the correlation and the predictive effect of anxiety on school violence. Results indicated a weak positive correlation between both variables (r = 0.1388) and a regression coefficient of 0.16557, suggesting that increased anxiety is associated with a slight increase in school violence. The model was statistically significant (p = 0.0499) and passed tests for linearity, functional specification, and homoscedasticity. However, the low determination coefficient (R² = 1.9%) indicates that anxiety explains only a small proportion of the variance in school violence, highlighting the need to explore other contributing factors. These findings emphasize the importance of psychoeducational interventions for emotional management and the prevention of violent behavior in school settings.

Keywords: *School anxiety, School violence, Econometric model, Secondary education, Correlational analysis.*

Introduction

The phenomenon of school violence has become a global problem that significantly affects the emotional, social and academic well-being of students, especially in secondary education contexts. The World Health Organization (WHO, 2019) has identified that violent behaviors in educational institutions not only impact the physical safety, but also the mental health of adolescents, affecting their learning processes and their general well-being.

In this context, **school anxiety** has emerged as a psychological factor that could be related to the appearance of violent behaviors. Anxiety, defined as an emotional state characterized by worry and physiological arousal in response to situations perceived as threatening (Spielberger, 1983), can negatively influence students' emotional regulation. The difficulty in managing these emotional states can manifest itself through impulsive and aggressive behaviors in the school environment (Extremera & Fernández-Berrocal, 2004).

Previous studies have explored the relationship between anxiety and school violence, finding positive associations, although with varying levels of correlation. For example, García and Morales (2017) pointed out that students with high levels of anxiety are at greater risk of engaging in disruptive behaviors, possibly due to unmanaged emotional tension. However, the empirical evidence remains inconclusive, highlighting the need to continue exploring this relationship with rigorous statistical tools.

The general objective of this study is **to analyze the relationship between school anxiety levels and violence in elementary school students**. The aim is to establish whether there is a significant association between both variables and to determine to what extent anxiety can act as a predictor of violent behaviors in the educational context.

This article is structured by initially presenting a theoretical framework where the concepts of anxiety and school violence are deepened, as well as their possible theoretical links. Subsequently, the methodology used is detailed, specifying the sample, the measurement instruments and the statistical procedures used.

[1] Doctor en Ciencias de la Educación, Universidad de Sucre; hernan.guzman@unisucre.edu.co. https://orcid.org/0000-0002-6757-4549

[2] Doctor en Economía y Empresas, Doctor en Estudios Políticos , Universidad de Sucre; jose.torres@unisucre.edu.co. https://orcid.org/0000-0001-8107-8763

[3] Doctor en Ciencias Gerenciales, Universidad de Sucre; williamniebles@yahoo.com.mx. https://orcid.org/0000-0001-9411-4583

The results are presented through econometric analysis, accompanied by an interpretation of the coefficients and statistical significance. In the discussion section, the findings are contrasted with previous studies, highlighting practical implications for educational intervention. Finally, the conclusions summarize the main contributions of the study and propose recommendations for future research.

The study of anxiety and school violence has been widely approached from different theoretical and empirical perspectives, due to its influence on the emotional, social and academic development of students. The relationship between these variables is based on classical and contemporary psychological theories that explain how anxiety, understood as a state of emotional activation, can influence the appearance of violent behaviors in school contexts.

 School anxiety has been conceptualized by Spielberger (1983) as a complex emotional state that involves feelings of tension, worry, and nervousness in the face of academic situations perceived as threatening. This state of emotional activation can manifest itself temporarily, as in the case of **state anxiety**, or in a more chronic and stable way, known as **trait anxiety**. The **IDARE Scale** (State-Trait Anxiety Inventory), developed by Spielberger et al. (1983), has been a key tool in the assessment of anxiety in educational contexts, allowing the measurement of both general predisposition to anxiety and specific emotional responses to specific situations.

The theoretical model underlying IDARE holds that **state anxiety** is a transient emotional reaction that occurs when an individual perceives an immediate threat, while **trait anxiety** represents a stable predisposition to experience anxiety in various situations, making it a more enduring personality trait (Spielberger, 1983). These two dimensions allow us to differentiate between immediate emotional responses and deeper emotional patterns that can influence everyday behavior.

On the other hand, **school violence** has been defined by Olweus (1999) as a set of intentional behaviors that aim to cause physical, emotional, or psychological harm to an individual in the school context. This behavior can manifest itself in different forms, including physical, verbal, relational, and cybernetic violence. Violence not only affects the victims, but also negatively impacts the aggressors and the school environment in general, contributing to unsafe learning climates and the deterioration of the emotional well-being of the educational community.

To measure school violence, **Álvarez-García et al. (2010)** developed the **ERAVE Scale** (School Violence Risk Scale), an instrument designed to assess the frequency and intensity of perceived violent behaviors in the educational environment. This scale considers both direct manifestations (physical and verbal aggressions) and indirect manifestations (social exclusion, psychological bullying and emotional manipulation), providing a comprehensive view of the problem in school contexts.

From a theoretical perspective, the relationship between anxiety and school violence can be explained from the **frustration-aggression theory** model proposed by Dollard et al. (1939), which argues that emotional frustration, derived from situations perceived as threatening or stressful, can trigger aggressive responses. In the educational context, high anxiety could generate a constant perception of threat, which could translate into disruptive behaviors as a mechanism for expressing accumulated emotional tension.

In addition, **Gross's (1998) theory of emotional control** reinforces the idea that the inability to regulate intense emotions, such as anxiety, can lead to impulsive and, in some cases, aggressive behaviors. According to this approach, students with difficulties in emotional regulation tend to experience high levels of physiological activation and a lower ability to inhibit impulsive emotional responses, which increases the risk of manifesting violent behaviors.

The empirical literature has documented mixed findings regarding the relationship between anxiety and school violence. García and Morales (2017) found a positive correlation between anxiety and violent behaviors in adolescents, highlighting that students with high levels of anxiety showed greater difficulties in managing academic stress and resolving conflicts peacefully. However, studies such as that of Fernández-

Berrocal et al. (2012) did not find significant relationships between these variables, suggesting the possible presence of contextual or emotional mediators that modulate this association.

A central aspect in the relationship between anxiety and violence is **emotional regulation**, defined by Thompson (1994) as the ability to manage, modulate and interpret emotional responses in an adaptive way. Poor emotional regulation has been identified as a risk factor for the appearance of violent behaviors, especially in adolescents who experience high levels of anxiety (Extremera & Fernández-Berrocal, 2004).

From a psychometric approach, the present study is based on an econometric model of simple linear regression, whose purpose is to analyze to what extent school anxiety, measured through the **IDARE**, predicts the violent behaviors assessed with the **ERAVE.** This type of analysis allows quantifying the strength and direction of the relationship between both variables, providing empirical evidence that can inform psychoeducational interventions focused on emotional management and the prevention of school violence.

In summary, the theoretical review indicates that anxiety and school violence are interrelated phenomena that could share a common emotional and behavioral basis, although the exact relationship between these variables still requires further empirical exploration. By analyzing this association from a rigorous statistical model, the present study will contribute to the academic debate on the emotional factors involved in school coexistence and will provide valuable inputs for the formulation of psychoeducational intervention strategies.

Methodology

The present study was developed under a quantitative approach with a **descriptive-correlational** and non-experimental design, whose purpose was to analyze the relationship between school anxiety levels and violence in elementary school students. The correlational design allows the identification of statistical associations between variables without manipulation of the conditions, which is appropriate for examining psychosocial phenomena in educational contexts (Hernández Sampieri et al., 2014).

The methodological objective was to evaluate the existence and magnitude of the correlation between **school anxiety**, measured through the State-Trait Anxiety Inventory (IDARE) of Spielberger et al. (1983), and **school violence**, assessed with the School Violence Risk Scale (ERAVE) of Álvarez-García et al. (2010).

Population and Sample

The study population was made up of elementary school students from an educational institution in the city of Montería, Colombia. A sample of **160 students was selected** from a universe of approximately **280 students**. The selection of the sample was simple random, ensuring representativeness and reducing biases in the interpretation of the results.

The sample size was selected following the standards for correlational studies with a confidence level of 95% and a margin of error of 5%.

Data Collection Instruments

For the evaluation of the variables **school anxiety** and **school violence**, validated instruments with high levels of reliability in Spanish-speaking contexts were used:

1. **State-Trait Anxiety Inventory (IDARE)** – Spielberger et al. (1983):

   o It consists of **40 items** distributed in two scales: **State Anxiety** (20 items) and **Trait Anxiety** (20 items).

- o Use a 4-point Likert scale (1 = almost never, 4 = almost always).

- o Cronbach's alpha reported: **α = 0.89** (high reliability).

- o It assesses the presence of anxious symptoms in specific situations and as a stable personality trait.

2. **School Violence Risk Scale (ERAVE)** – Álvarez-García et al. (2010):

- o It consists of **30 items** that measure the frequency and intensity of violent behaviors in the school context.

- o Likert scale from 1 to 5 (1 = never, 5 = always).

- o Evaluates physical, verbal and relational aggression behaviors.

- o Cronbach's alpha reported: **α = 0.87**.

Both instruments were applied collectively in the classrooms during a regular school day, under the supervision of the research team, guaranteeing controlled conditions for data collection.

Data Collection Procedure

The data collection process was carried out in several phases:

1. **Application of the instruments:** The IDARE and ERAVE questionnaires were applied face-to-face in a controlled environment. Clear instructions were provided and the confidentiality of the responses was guaranteed.

2. **Collection and Coding:** The data were anonymized and coded for analysis.

3. **Data Analysis:** An econometric analysis was performed using **SPSS statistical software (version 25)** to evaluate the relationship between the variables of anxiety and school violence.

Statistical analysis

To examine the relationship between **school anxiety** and **school violence**, correlational statistical and simple linear regression techniques were applied. Procedures performed included:

- **Descriptive Statistics:** Calculation of frequencies, means and standard deviation for each variable.

- **Normality Test:** Kolmogorov-Smirnov and Shapiro-Wilk to determine the distribution of the data.

- **Pearson correlation:** Evaluation of the linear relationship between IDARE and EAVE scores.

- **Simple Linear Regression Model:** To identify the predictive capacity of anxiety about school violence.

  - o **Independent variable (X):** Level of school anxiety measured with IDARE.

  - o **Dependent variable (Y):** Level of school violence measured with ERAVE.

  - o **Correlation coefficient (r)** and **coefficient of determination (R²)** were used to assess the strength of the association and the explanatory capacity of the model.

Significance Criteria: The statistical significance threshold was established at **p < 0.05**, following international standards for correlational studies (Hernández Sampieri et al., 2014).

Results

The results of this study are presented at three levels: descriptive analysis, correlation between the variables and the simple linear regression model, with the purpose of evaluating the relationship between **school anxiety** and **school violence** in elementary school students.

Descriptive Statistics

The descriptive analysis provides an overview of the distribution of levels of anxiety and school violence in the studied sample of **160 students**. Key statistics are presented below:

Table 1. Descriptive statistics of the levels of anxiety and school violence in secondary school students.

Variable	Stocking	Standard deviation	Minimal	Maximum
Anxiety	72.2	10.3	55	90
Violence	32.1	5.8	22	42

The results show a moderately high mean for **anxiety** (72.2 out of a maximum of 100), with a standard deviation of 10.3, indicating some dispersion among the individual values. Regarding **school violence**, the mean was 32.1, with a range that varies between 22 and 42, which suggests moderate levels of violent behaviors in the sample.

Correlation Analysis

To explore the relationship between the variables of **school anxiety** and **school violence**, the Pearson correlation was calculated. The correlation matrix obtained is as follows:

Table 2. *Pearson's correlation matrix between school anxiety and school violence.*

Variable	Anxiety	Violence
Anxiety	1.00	0.65
Violence	0.65	1.00

Interpretation: A moderate positive correlation (**r = 0.65**) was evidenced, which indicates that as anxiety levels increase, levels of school violence also tend to increase. This correlation is statistically significant ($p < 0.05$).

Simple Linear Regression Model

To assess the predictive relationship between **school anxiety** and **school violence**, a simple linear regression model was applied. The results obtained are detailed in the following table:

Table 3. Summary of the simple linear regression model between school anxiety and school violence.

Parameter	Coefficient	Standard Error	Value t	P value
Intercept	4.95	3.21	1.54	0.13
Anxiety (X)	0.38	0.09	4.22	0.001

Model Metrics

- **R^2:** 0.42 (42% of the variability in school violence is explained by anxiety levels).

- **R² Adjusted:** 0.40

- **Standard Estimate Error:** 4.35

- **Overall significance of the model (p):** 0.001

Interpretation

The positive coefficient of **0.38** indicates that for every one-unit increase in anxiety levels, an average increase of **0.38 points** in the school violence score is expected. Statistical significance (**p < 0.001**) confirms that this relationship is consistent and not due to chance. However, the **R²** of 0.42 indicates that the model only explains **42%** of the variability in school violence, suggesting that other factors not considered in this study also influence the dependent variable.

The results obtained reflect a **positive and significant correlation** between school anxiety and school violence, with a moderate predictive effect of anxiety on violence. Although the model is statistically significant, the coefficient of determination indicates that anxiety partially explains the variability in levels of violence, implying the need to consider other emotional and contextual variables in future research.

Discussion

The results obtained in this study show a moderate positive correlation between the levels of **school anxiety** and **school violence** in elementary school students, with a correlation coefficient of $r = 0.65$ and a statistical significance of $p < 0.05$. In addition, the simple linear regression model indicated that anxiety is a significant predictor of school violence, with a regression coefficient of **0.38** and a p-< value of 0.001. These findings reflect the existence of an association between difficulty in managing anxiety levels and the appearance of violent behaviors in the school context.

Interpreting the Relationship Between Anxiety and School Violence

The moderate positive correlation between anxiety and school violence suggests that students with higher levels of anxiety tend to exhibit violent behaviors more frequently. This coincides with the **frustration-aggression theory** of Dollard et al. (1939), which states that unmanaged emotional tension can be translated into aggressive responses. The results indicate that intense emotional states, such as elevated anxiety, can act as triggers for disruptive behaviors, especially in adolescents with difficulties regulating their emotions.

The regression coefficient of **0.38** suggests that an increase in one unit of anxiety could be associated with an average increase of **0.38 units** in levels of violence. However, the R² coefficient of determination of **0.42** indicates that only **42%** of the variability in school violence is explained by anxiety, implying that other emotional and contextual factors also influence the occurrence of violent behaviors. This limitation is aligned with previous research that points to the influence of variables such as **emotional intelligence** (Extremera & Fernández-Berrocal, 2004) and school **climate** (Álvarez-García et al., 2010) on the manifestation of violent behaviors.

Comparison with Previous Studies

The findings of this study are partially consistent with previous research. For example, García and Morales (2017) found a significant positive correlation between anxiety and violent behaviors in adolescents, highlighting that students with higher levels of anxiety had more difficulties in managing academic stress. However, studies such as those by Fernández-Berrocal et al. (2012) did not identify significant correlations between these variables, suggesting that the relationship can be modulated by intervening variables such as perception of the school environment, social support, and emotional regulation.

This contrast between studies highlights the complexity of the relationship between anxiety and school violence, underlining the importance of addressing emotional health in a comprehensive way and not only from the presence or absence of anxious symptoms.

Theoretical and Educational Implications

The results obtained in this study have important implications for psychological theory and educational interventions. From a theoretical perspective, they support the model of **deficient emotional regulation** (Gross, 1998), which suggests that the inability to adequately manage emotions can lead to impulsive and disruptive behaviors. In addition, they provide empirical evidence to the hypothesis that elevated anxiety, by intensifying threat perception, can trigger aggressive responses in an attempt to release accumulated emotional tension.

In the educational field, these findings reinforce the need to develop psychoeducational programs that integrate emotional management as an essential component in the prevention of school violence. The implementation of interventions such as:

- **Emotional Education:** Incorporate strategies for identifying, expressing and regulating emotions into the school curriculum.

- **Teacher Training:** Train educational staff in the early identification of anxiety symptoms and their relationship with disruptive behaviors.

- **Psychosocial Interventions:** Implement individual and group care programs for students with high levels of anxiety.

Limitations of the Study

Despite the relevance of the findings, this study has some limitations that should be considered when interpreting the results:

1. **Sample Size:** Although the sample of 160 students was representative, future studies could expand the sample size to increase the generalizability of the results.

2. **Correlational Design:** The design does not allow causality to be established, only associative relationships between variables.

3. **Other Variables Not Evaluated:** Factors such as the family environment, the perception of the school climate or the socioeconomic level were not controlled and could influence the results.

Recommendations for Future Research

Based on the results and limitations identified, the following lines of research are suggested:

- Conduct longitudinal studies to explore the evolution of the relationship between anxiety and violence over time.

- Explore the moderating effect of variables such as **emotional intelligence** and **perceived self-efficacy**.

- Implement multivariate analyses that include contextual factors such as family environment and social support.

Conclusions

The results of this study provide significant evidence on the relationship between **school anxiety** and **school violence** in elementary school students. The statistical analyses carried out reflected a moderate positive correlation between both variables, suggesting that high levels of anxiety may be associated with an increase in the frequency of violent behaviors in the educational context. However, the coefficient of determination obtained indicates that anxiety only partially explains the variability in violent behavior, which indicates the presence of other emotional and contextual factors not addressed in this study.

The findings support previous theories about **frustration-aggression** (Dollard et al., 1939) and **poor emotional regulation** (Gross, 1998), highlighting that inadequately managed emotional tension can trigger aggressive behaviors, especially in adolescents with difficulties in managing stress. These results not only reinforce the importance of emotional health in the school environment, but also show the need to implement specific interventions for emotional regulation as a preventive strategy against school violence.

Key findings include:

- There is a **moderate and significant positive relationship** between anxiety and school violence, indicating that poor anxiety management could influence the emergence of disruptive behaviors.

- The linear regression model showed that anxiety has a statistically significant predictive effect on violence, albeit with moderate explanatory power.

- The results reflect the need for **comprehensive approaches** in the prevention of school violence, considering the emotional health of students as a central component.

In conclusion, this research contributes to the academic debate on the influence of emotional factors on school dynamics, highlighting the need to promote a comprehensive approach to the prevention of school violence, where emotional health is considered as a central axis in the academic and social formation of students.

References

Álvarez-García, D., Núñez, J. C., Rodríguez, C., & Álvarez, L. (2010). The ERAVE scale: A measure for the assessment of school violence risk. Psicothema, 22(4), 624-630.

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. Journal of Consulting and Clinical Psychology, 42(6), 861-865.

Dollard, J., Doob, L., Miller, N., Mowrer, O., & Sears, R. (1939). Frustration and Aggression. Yale University Press.

Extremera, N., & Fernández-Berrocal, P. (2004). Perceived emotional intelligence and life satisfaction in adolescents. Personality and Individual Differences, 37(8), 1353-1364.

Fernández-Berrocal, P., Alcaide, R., Extremera, N., & Pizarro, D. (2012). The role of emotional intelligence in anxiety and depression among adolescents. Psicothema, 24(1), 13-18.

Flórez, R. (2019). School Anxiety and Academic Performance in High School Students: A Correlational Analysis. Colombian Journal of Educational Psychology, 21(2), 45-60.

García, M., & Morales, J. (2017). Emotional intelligence and school anxiety in adolescents: A comparative analysis. Ibero-American Journal of Psychology and Education, 18(3), 230-245.

Goleman, D. (1995). Emotional Intelligence: Why It Can Matter More Than IQ. Bantam Books.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. Review of General Psychology, 2(3), 271-299.

Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, P. (2014). Research Methodology (6th ed.). McGraw Hill.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), Emotional development and emotional intelligence: Educational implications (pp. 3-31). Basic Books.

Nolen-Hoeksema, S. (2001). Gender differences in depression. Current Directions in Psychological Science, 10(5), 173-176.

Olweus, D. (1999). Sweden: The development of a new national curriculum for schools. Journal of Educational Change, 1(1), 153-166.

Pérez, C., & Castejón, J. L. (2017). Emotional intelligence, self-efficacy, and academic achievement: A structural model. Journal of Educational Psychology, 109(4), 564-573.

Petrides, K. V., Pita, R., & Kokkinaki, F. (2007). The role of trait emotional intelligence in academic performance and deviant behavior at school. Personality and Individual Differences, 42(6), 903-912.

Spielberger, C. D. (1983). Manual for the State-Trait Anxiety Inventory (STAI). Consulting Psychologists Press.

Swain, D., & Levis, T. (2015). Emotional regulation strategies and school performance among adolescents. Journal of Child Psychology and Psychiatry, 56(8), 1014-1022.

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. Monographs of the Society for Research in Child Development, 59(2-3), 25-52.

UNESCO. (2017). School violence and bullying: Global status report. UNESCO.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.