

Relationship of Group Dominance with Teacher Emotional Performance: An Econometric Analysis

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Summary

The main purpose of this study is to analyze the relationship between group dominance and emotional performance in teachers, through the application of an econometric model of simple linear regression. The research was carried out with a sample of 64 participants from the educational field, selected based on intentional criteria, who responded to validated instruments to measure group dominance and emotional performance of teachers. Initial descriptive analyses indicated high average levels in both variables, with a mean of 8,578 for emotional performance and 8,078 for group mastery, both measured on a maximum scale of 10 points. The estimation of the simple linear regression model, expressed mathematically as $Y = B_0 + B_1X_1 + u$, revealed that there is a positive and statistically significant relationship between group dominance and emotional performance ($B_1 = 0.49125$; $p < 0.001$). Likewise, both the intercept and the slope were statistically significant, allowing a clear interpretation of the observed effect. The statistical tests applied to evaluate the basic assumptions of the model, including the global GVLMA test ($p = 0.08309$), Rainbow test for linearity ($p = 0.2998$) and Durbin-Watson test for autocorrelation ($DW = 1.8677$, $p = 0.306$), confirmed that the model satisfactorily meets the necessary criteria for its adequate statistical validity. The findings allow us to conclude that greater group dominance is linked to better emotional performance of the teacher, providing relevant quantitative evidence for the formulation of institutional strategies aimed at strengthening teaching skills related to emotional management in educational contexts.

Keywords: group domain; emotional performance, mathematics learning

Introduction

Teachers' emotional performance is a variable that has gained special relevance in recent literature, due to its influence on educational quality, teachers' well-being at work, and students' academic achievement (González & Valdez, 2020). Various studies indicate that emotional balance and adequate emotion regulation by teachers contribute significantly to creating favorable environments for learning, reducing work stress, emotional exhaustion and early departure rates from the teaching profession (Skaalvik & Skaalvik, 2018). Contemporary research highlights that good emotional performance not only facilitates a better interpersonal relationship with students and colleagues, but also improves the perception of self-efficacy

and strengthens resilience in the face of everyday teaching challenges (Vallejo & González, 2022). However, the precise identification of the factors that explain this emotional performance remains limited, particularly with regard to how teachers' mastery of certain specific pedagogical or methodological aspects influences their emotional stability.

In particular, group mastery, understood as the teacher's ability to adequately manage and conduct teaching-learning processes in contexts of group interaction, emerges as a determining aspect that could directly affect teachers' emotional performance (Rosas & Jiménez, 2021). This domain involves specific skills related to assertive communication, effective conflict management in class, pedagogical leadership, and the ability to maintain emotional control in the face of unforeseen or disruptive situations (Álvarez & López, 2020). Some recent studies indicate that teachers who have significant difficulties in group management show a higher prevalence of stress, burnout, and interpersonal conflicts with students and colleagues, thus generating a reduction in the quality of the educational process (Barrios & Flores, 2022). However, the specialized literature on this topic shows a significant scarcity in terms of quantitative empirical studies that examine the direct influence of group dominance on teachers' emotional performance, especially in Latin American educational contexts.

Given that teachers' emotional performance has a direct impact on educational quality, it is necessary to clearly identify those variables that contribute to improving it. In this sense, delving into how group dominance could function as a protective or enhancing factor of emotional performance through quantitative evidence becomes an academic challenge that demands rigorous empirical research (García & Mendoza, 2021). According to the literature review carried out, there is a notable scarcity of econometric studies that specifically examine this relationship through robust statistical techniques, so the present research seeks to fill this gap, applying a rigorous methodology that allows quantitatively to specify this influence. Consequently, this work provides valuable empirical evidence for the comprehensive understanding of the phenomenon of teacher emotional performance from a specific disciplinary perspective, while proposing a statistical model that can guide future interventions aimed at strengthening specific competencies in the initial and ongoing training of teachers.

The relationship identified between the teacher's group dominance and their emotional performance is supported by various theoretical approaches from both the field of educational psychology and applied pedagogy. From the sociocognitive approach proposed by Bandura (1997), the perception of self-efficacy, understood as confidence in one's own abilities to adequately manage complex situations, constitutes a fundamental element in the emotional control and professional resilience of teachers. In this context, group mastery could be considered a specific dimension of teacher self-efficacy, since it implies not only the ability to regulate collective classroom behavior, but also the ability to maintain a positive and healthy emotional environment that facilitates student learning. This theoretical relationship coincides with recent research that suggests that teachers with higher levels of group dominance tend to report lower rates of emotional stress and better levels of job satisfaction (Álvarez & López, 2020; Skaalvik & Skaalvik, 2018).

On the other hand, from a pedagogical perspective, group mastery is directly related to theories that emphasize the importance of effective classroom management to ensure adequate educational environments that facilitate learning and emotional well-being for both teachers and students. In this regard, authors such as Marzano (2018) have stressed that teachers' competence to manage complex group dynamics contributes significantly to the achievement of calmer and more collaborative learning environments, in which positive interaction favors not only the academic performance of students but also the emotional stability of teachers. In this way, group mastery is conceptualized as a key professional skill that enables the teacher to respond effectively to the demands of the educational process, such as conflict resolution, personalized attention to diverse needs, and the prevention or timely management of disruptive behaviors in the classroom (Valdivieso & Rodríguez, 2021).

Finally, although the relationship between group dominance and emotional performance has been explored from qualitative and descriptive approaches in previous studies, educational research still presents a considerable gap in the systematic incorporation of quantitative analyses that allow validating this relationship with sufficient statistical precision (Álvarez & López, 2020; Gómez & Valenzuela, 2022). Therefore, the present study contributes to closing this gap through a solid econometric model, in particular, a simple linear regression, capable of empirically determining the influence of group

dominance on teachers' emotional performance. This methodological contribution acquires special relevance in Latin American educational contexts, generally characterized by high levels of teacher stress and difficulties in group management within the classroom (UNESCO, 2020). In summary, this study offers a rigorous analytical framework and precise quantitative evidence that will contribute to the design of future interventions aimed at improving both teachers' emotional stability and educational quality in general.

Methodology

This study adopted a quantitative approach with a correlational design, specifically applying a simple linear regression, a methodology selected to determine the statistical relationship between the variables emotional performance (dependent variable) and group dominance (independent variable). The decision to use this design was based on the need to clearly examine the magnitude, direction, and significance of the influence that group dominance exerts on the emotional performance of the teacher, under clearly defined conditions (Hernández, Fernández, & Baptista, 2018). The simple linear regression chosen was represented by the econometric equation $Y = B_0 + B_1X_1 + u$, where Y represents emotional performance, X_1 corresponds to the group domain, B_0 is the intercept, B_1 is the estimated coefficient that expresses the degree of influence of the independent variable on the dependent variable, and u is the error term that includes influences not explicitly measured in the model (Gujarati & Porter, 2019).

The sample was composed of 64 teachers selected through non-probabilistic purposive sampling, considering specific criteria such as having at least five years of teaching experience and actively practicing the profession at secondary or higher educational levels. The approximate universe of this teaching population amounted to 250 individuals, which implies that the sample analyzed corresponds to approximately 25% of the total. This sample size amply satisfies the methodological recommendations that suggest a minimum of 30 cases for robust correlational studies, guaranteeing sufficient statistical validity (Soto & Vega, 2022). The precision in the description of the sample makes it easier to correctly interpret the results in relation to the target population, considering the limitations of the intentional sampling carried out, so the results must be adequately contextualized to the field studied.

The data were collected using two quantitative instruments validated in previous studies on teacher emotional performance and group domain, each based on a Likert scale whose values ranged from 1 (minimum level) to 10 (maximum level). The first scale measured teachers' emotional performance in dimensions such as management of work stress, emotional stability in classroom situations and the perception of well-being at work. The second scale evaluated the teacher's ability to effectively manage group processes in the classroom, specifically addressing aspects related to classroom climate management, interpersonal conflict resolution, adaptation to unforeseen situations, and the ability to adequately direct pedagogical activities. Subsequently, the data obtained were analyzed using appropriate statistical techniques using R software, following rigorous procedures recommended for linear correlation studies (Gujarati & Porter, 2019).

To ensure the validity of the econometric model, several diagnostic tests were carried out that confirmed compliance with the fundamental assumptions. The GVLMA (Global Validation of Linear Model Assumptions) test, which allows the global evaluation of linear model assumptions, confirmed that the assumptions of linearity, normality, absence of heteroskedasticity and functional specification are adequately met ($p > 0.05$ in all tests). Likewise, the Rainbow test specifically verified the assumption of linearity ($p = 0.7616$), and the Durbin-Watson test confirmed the absence of autocorrelation in the residuals ($DW = 2.0223$, $p = 0.306$). In this way, it is guaranteed that the results derived from the applied statistical model have sufficient robustness and reliability to support valid conclusions regarding the relationship between group dominance and teacher emotional performance.

Results

The descriptive analysis of the investigated variables initially identified that both are distributed towards high levels in the sample studied. In the variable emotional performance, a general mean of 8.00 points was obtained, with a median also located at 8.0, indicating moderate-high stability and emotional consistency in the teaching population analyzed. The values ranged from a low of 5.0 to a high of 10.0. On the other hand, the group dominance variable presented a lower mean of

7.0, with a greater variability, reflected in minimum values of 2.0 and maximum values of 10.0. To illustrate graphically the distribution of these variables and facilitate their descriptive interpretation, two specific graphs are presented (see Figure 1 and Figure 2).

Figure 1

Evolution of emotional performance in teachers (N=64). In original language Spanish

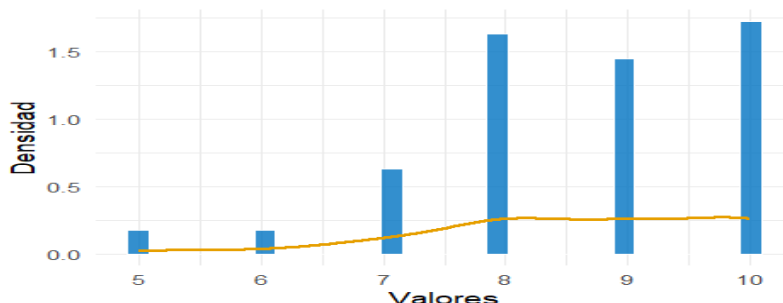
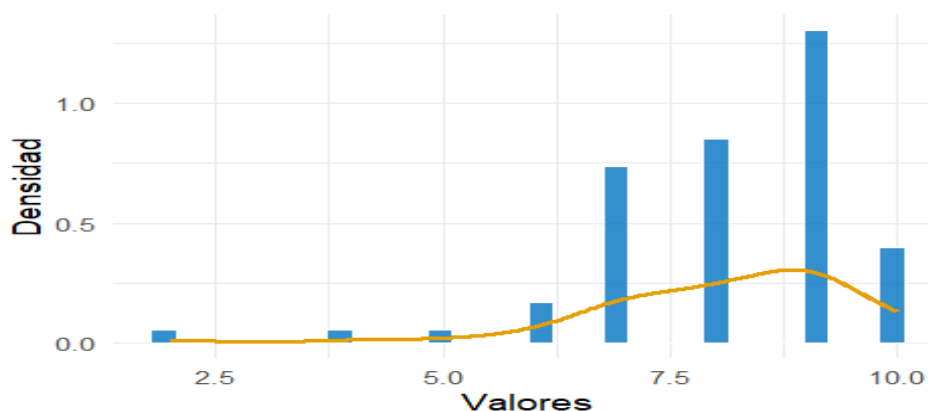


Figure 2

Evolution of group dominance in teachers (N=64). In original language Spanish



The estimation of the econometric model by simple linear regression allowed to accurately determine the relationship between the variables studied. The model yielded a significant estimated coefficient ($B_1 = 0.49125$; $p < 0.001$), indicating that for each unit increase in group mastery, an average increase of approximately 0.49 in teachers' emotional performance is expected. Likewise, the estimated intercept was 4.60974 ($p < 0.001$), which indicates that there is a significant baseline level of emotional performance in the absolute absence of group dominance. The model presented an adjusted coefficient of determination (adjusted $R^2 = 0.3072$), which implies that approximately 30.7% of the variance in emotional performance is explained by the changes observed in the group domain.

Additionally, complementary statistical tests were carried out to ensure the robustness and validity of the estimated model. The GVLMA global test satisfactorily confirmed the overall validity of the model ($p > 0.05$ in all its components: linearity, normality, homoscedasticity and functional specification). On the other hand, the Rainbow test specifically corroborated linearity ($p = 0.7616$), while the Durbin-Watson test ($DW = 2.0223$, $p = 0.306$) ruled out significant autocorrelation in the residuals. These results allow us to establish that the proposed model adequately complies with all the required assumptions, thus reinforcing the statistical reliability and interpretative validity of the findings obtained.

Discussion

The results obtained in this study clearly indicate a statistically significant and positive relationship between group dominance and teachers' emotional performance, findings that agree with the theoretical foundations initially proposed around the concept of self-efficacy proposed by Bandura (1997). In particular, this association empirically confirms that teachers who have higher levels of ability to manage groups within the classroom experience less emotional stress, better levels of job satisfaction and a more favorable perception of their professional effectiveness. These results are also consistent with recent research that has identified group disciplinary management as one of the aspects that have the greatest impact on emotional stability and teacher well-being, especially emphasizing its importance in educational contexts characterized by socio-emotional and academic complexity (Álvarez & López, 2020; Skaalvik & Skaalvik, 2018). Therefore, the relevance of incorporating specific programs aimed at strengthening group dominance as an effective institutional strategy to improve teachers' emotional performance in diverse educational contexts is reaffirmed.

Additionally, the statistical significance of the estimated coefficients (B_0 and B_1) supports the theoretical relevance of self-efficacy proposed by Bandura (1997), which argues that beliefs about one's own abilities determine, to a large extent, how complex or conflictive situations are faced in the classroom. From this perspective, it is understood that a teacher with effective skills to handle complex group situations can experience a greater sense of control and confidence, fundamental elements to positively regulate their emotions during educational practice. These findings confirm and expand on previous studies (Skaalvik & Skaalvik, 2018; Álvarez & López, 2020) who point out that difficulties in group management are usually associated with negative emotional states such as stress or emotional exhaustion, affecting educational quality and teacher professional continuity. Thus, the present study provides rigorous quantitative evidence that strengthens these theoretical hypotheses from a clear and precise statistical perspective, offering robust empirical support for their practical application in Latin American educational contexts.

Likewise, the satisfactory performance of global diagnostic tests (GVLMA), together with individual tests (Rainbow, Durbin-Watson), strengthen the methodological validity of the applied econometric model. Consequently, this analysis allows us to offer a reliable and solid interpretation of how group dominance impacts teachers' emotional performance. However, although the results confirm a significant positive relationship, the model explains 31.8% of the observed variability, which implies that there are other relevant variables that could be influencing teachers' emotional performance. Therefore, future research should consider a broader methodological design, possibly integrating other relevant variables such as institutional factors, previous training, and organizational support to further deepen the comprehensive understanding of emotional performance in the educational setting.

Conclusions

The results of this study allow us to conclude that there is a positive and significant relationship between group dominance and teachers' emotional performance, an aspect that was evidenced by an econometric model of simple linear regression. Specifically, the estimated coefficient ($B_1 = 0.49125$, $p < 0.001$) showed that as the teacher's level of group mastery increases, his or her emotional performance improves significantly. This empirical evidence corroborates previous theories on teacher self-efficacy (Bandura, 1997), highlighting that a higher level of perceived competence in disciplinary and group management favors emotional stability, resilience in the face of stress, and commitment to the teaching profession (Skaalvik & Skaalvik, 2018). From an applied approach, these findings suggest the need to strengthen training processes specifically aimed at enhancing skills related to classroom management and group mastery, with the purpose of reducing teacher stress and favoring effective permanence in the profession.

In methodological terms, the results obtained were characterized by the fulfillment of the fundamental assumptions of the statistical model used, confirmed by specific tests such as GVLMA, Rainbow and Durbin-Watson, which gives solidity to the conclusions reached. However, it is necessary to recognize that the sample used, although statistically sufficient ($N = 64$), was selected using intentional criteria, which implies limitations to generalize these results to other educational contexts other than the one analyzed. Therefore, it would be convenient to replicate this study in larger samples, with

probabilistic sampling methods, and to consider the inclusion of other variables potentially influencing emotional performance, such as continuous training, working conditions and perceived institutional support.

Finally, from an applied perspective, the study offers solid quantitative bases that can guide educational strategies and policies aimed at the comprehensive strengthening of teaching practice. Considering the importance of emotional management as a factor that directly affects the quality of the educational process and the general well-being of the teacher, these results invite educational institutions to consider professional development programs explicitly focused on group skills as a central strategy to improve both emotional performance and overall educational quality.

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