Universidad de Vigo

Revista de Investigación en Educación, 2024, 22(3), 406-423
DOI: https://doi.org/10.35869/reined.v22i3.5756
https://revistas.webs.uvigo.es/index.php/reined
ISSN 1697-5200 | e-ISSN 2172-3427

Moderating Effect of Parental and Teacher Variables on the Resilience-Academic Performance Relationship in Spanish Adolescents

Efecto moderador de variables parentales y docentes en el binomio resiliencia-rendimiento académico de estudiantes de 15 años de edad

Valentín Redondo-Blasco[1], Fernando Martínez-Abad[2], Rosario Cabello[3]

[1] Universidad de Salamanca *valentinrb4@usal.es*
[2] Universidad de Salamanca *fma@usal.es*
[3] Universidad de Málaga *rcabello@uma.es*

Recibido: 29/9/2023
Aceptado: 29/10/2024

Dirección de contacto:
Fernando Martínez Abad
Facultad de Educación
Universidad de Salamanca
Paseo de Canalejas, 169
37008 Salamanca

Resumen

Existen múltiples factores que influyen en el rendimiento académico del alumnado. La evaluación y control de estos factores incide directamente en la mejora de la calidad educativa y, por ende, en los procesos de enseñanza-aprendizaje. En este sentido, además de las capacidades del alumnado, los contextos familiar y docente son factores clave asociados al rendimiento académico. Otros factores que conforman la personalidad del alumnado, como la resiliencia, influyen significativamente sobre las capacidades del estudiante a la hora de afrontar, manejar y solucionar problemas personales o sociales, lo que, a su vez, también ejerce un efecto directo sobre el rendimiento académico. En este trabajo, se estudia el efecto moderador que ejercen las variables apoyo emocional parental y relaciones positivas establecidas por el profesorado en el aula sobre la relación entre la resiliencia y el rendimiento académico matemático en la población de estudiantes españoles de 15 años de edad. A través de un diseño no experimental con análisis de datos secundarios de la base de datos del año 2018 del Programa para la Evaluación Internacional de Alumnos, se aplican análisis de carácter descriptivo, correlacional y multivariante. Los resultados muestran que tanto el apoyo parental como las relaciones positivas fomentadas por el profesorado tienen un efecto moderador significativo sobre la relación entre la resiliencia y el rendimiento académico del estudiante. Mientras que el apoyo parental muestra un efecto moderador inverso, que mitiga la relación entre resiliencia y rendimiento en niveles de apoyo elevados, las relaciones positivas establecidas por el profesorado en el aula ejercen un efecto directo, es decir, que en niveles elevados impulsa la relación entre resiliencia y rendimiento. Se concluye analizando las implicaciones de estos resultados.

Palabras clave

Apoyo Emocional Parental, Evaluaciones a Gran Escala, Modelos de Moderación, Profesorado, Rendimiento Académico Matemático, Resiliencia

Abstract

Multiple factors influence the academic performance of students. The evaluation and control of these factors directly impact the improvement of educational quality and, therefore, on teaching-learning processes. In addition to student's abilities, the family and teaching contexts are key factors associated with academic performance. Furthermore, various aspects of a student's personality, such as resilience, play a crucial role in their capacity to confront, navigate, and resolve personal or social challenges; these competencies have a direct effect on their academic performance. This paper studies the moderating effects of the variables of parental support and positive classroom relationships established by teachers on the relationship between resilience and academic performance in mathematics in a population of 15-year-old Spanish students. Descriptive, correlational, and multivariate analyses were conducted through a non-experimental design using secondary data from the 2018 database of the Program for International Student Assessment. Results show that both parental emotional support and positive relationships fostered by teachers play a significant role in moderating the connection between resilience and academic performance in mathematics. Notably, parental support exhibits an inverse moderating effect, diminishing the strength of the relationship between resilience and performance when support levels are high, positive relationships established by teachers in the classroom have a direct effect, i.e., high levels of support strengthen the relationship between resilience and performance. The implications of these results are discussed in the conclusion.

Key Words

Parental Emotional Support, Large-Scale Assessments, Moderation Models, Teachers, Academic Performance in Mathematics, Resilience

1. INTRODUCTION AND THEORETICAL FRAMEWORK

The Organization for Economic Cooperation and Development (OECD) contributes to assessing academic performance to improve educational quality. Its Program for International Student Assessment (PISA) test analyses the level of competence of Spanish adolescents in the basic areas of mathematics, reading, and science. The results of the 2018 mathematics assessment in Spain indicated a decline in scores relative to the previous evaluation conducted in 2015, positioning Spain beneath the OECD average (OECD, 2019a). The PISA report (OECD, 2019a) revealed that Spanish students exhibited subpar performance in the 2018 PISA assessment, not only in mathematics but also in science. This will lead to a genuine handicap for Spanish students when accessing technical professions with a foreseeable increase in demand and specialization in the future, such as STEM-related fields (Science, Technology, Engineering, and Mathematics).

Resilience, one of the most influential personality factors in student academic performance, has been shown to critically influence academic results with a significant positive relationship between both variables. Understanding resilience as the ability to successfully cope with and adapt to challenges that threaten the function or later development (Masten & Barnes, 2018), multiple studies suggest that high levels of resilience are associated with equally high levels of academic performance (Agusmanto-Hutauruk & Priatna, 2017; Deb & Arora, 2012; Santiago-Carrillo et al., 2020). On the other hand, extrinsic factors related to teaching and family directly impact the student's

academic performance. A significant variable examined within the classroom setting is the cultivation of positive relationships fostered by the teacher. These positive relationships are characterized by empathy, collaboration, and a commitment to the welfare of others (Lacunza & Contini, 2016). Previous studies have found evidence of teachers' management of positive relationships in the classroom directly influences the academic performance of students (Basto-Ramayo, 2017; Bester & Kuyper, 2020; Lacunza & Contini, 2016; Macsuga-Gage et al., 2012).

Focusing on the family context, a prevalent variable identified in the literature is the emotional support that families extend to their children concerning academic endeavors. According to Losada (2015), family functions encompass internal goals aimed at the psychosocial safeguarding of their members, as well as external goals associated with cultural adaptation and the transmission of cultural values to members through educational processes, wherein support for academic activities plays a crucial role. Previous studies in this area also show a direct relationship between parental support oriented toward children's academic performance and their levels of academic performance (Antonio-Aguirre et al., 2019; Chaparro et al., 2016; Fernández et al., 2019).

Considering this, and by examining the PISA results of Spanish students in the 2018 mathematics test, this research studied how the key figures of external influence, family members, and teachers mediate the relationship between resilience and the academic performance of students. Thus, three fundamental research questions were proposed:

RQ1. How do resilience and socio-emotional support from parents and teachers influence students' academic performance in mathematics?

RQ2. To what extent does parental emotional support of students' academic activities affect the relationship between resilience and academic performance in mathematics?

RQ3. Does the role of the teacher in fostering positive relationships in the classroom have a moderating effect on the relationship between resilience and academic performance in mathematics?

2. LITERATURE REVIEW: FACTORS ASSOCIATED WITH ACADEMIC PERFORMANCE AND PISA

Teaching-learning process quality determines the student's academic performance, and in turn affects the quality of the educational institution where the students are placed (Quintero et al., 2013).

Today, PISA is recognized as the foremost international assessment tool that measures the effectiveness of the teaching and learning process. It assists governments in reformulating, adapting, or reassessing their educational policies to enhance student outcomes. A growing body of scientific literature is dedicated to examining the factors linked to academic performance, drawing insights from results produced by large-scale evaluations like PISA (Cordero-Ferrera et al., 2013; Cordero-Ferrera & Gil-Izquierdo, 2018; Odell et al., 2020).

According to Schleicher (2019), factors associated with performance can be categorized according to the most relevant educational agents: students, teachers, and families. The literature review below focuses on these three factors associated with academic performance.

2.1. Student factors

The literature review shows that various elements of the student's factors emerge as key factors associated with student performance. Resilience has been widely studied through different databases that offer information on this variable in students. Comparing databases with adolescent students from Trends in International Mathematics and Science Study (TIMSS) and PISA, Chirkina et al., (2020), highlighted how student personality factors, such as attitude and expectations in the area of mathematics, have the power to increase their resilience. Agasisti et al. (2018) studied changes in resilience by examining the PISA databases from 2006 to 2015, emphasizing the importance of resources and the educational environment in reducing the risk of poor academic performance. In addition, this study found that positive relationships created by the teacher in the classroom through different methodologies and policies established in the center have a direct positive impact on the academic performance of students.

Research focusing on the performance of secondary students in mathematics examines various factors that contribute to resilience, including persistence in learning, self-assurance regarding the task, and the resolve to persist despite challenges. The findings indicate that elevated scores in each of these areas have a substantial direct impact on academic achievement (Agusmanto-Hutauruk & Priatna, 2017).

Deb & Arora (2012) compared academic performance by dividing their sample of adolescents into two groups: those with high resilience and those with low levels of resilience. These authors found that the chances of academic success in the high resilience group were 120% higher than in the low resilience group. This incidence was also observed in other aspects of the individual's personality in Santiago-Carrillo et al. (2020), who found in a sample of adolescents that the resilience capacities of students help them to develop their formal and creative thinking, be more tolerant and better understand their developmental context, leading to higher academic performance, as well as influencing their quality of life.

2.2. Teacher factors

In the context of education, the teacher serves as a fundamental pillar of interaction and connection that significantly impacts adolescent development. Consequently, the relationship between teaching functions and student performance has been examined through the lens of the attitudes of the teaching staff, the pedagogical styles and strategies employed, and the essential skills and competencies that define the teacher's role. In his literature review, Basto-Ramayo (2017) concluded that the affective and personal components of the role of the teacher had the greatest impact on general student academic performance in the stages from primary school to university. According to the Macsuga-Gage et al. (2012) bibliographic review, effective teaching is based on positive relationships in the classroom environment; the teacher manages these relationships with students and families by making the teaching model attractive, providing effective resources, and incorporating strategies that integrate these practices into the teaching-learning.

On the other hand, Bester & Kuyper (2020) studied how educational support improved resilience and academic performance in two groups of adolescent students, where one group lived in poverty and the other one was middle class. Educational support proved to

be the most influential variable in terms of student academic performance, followed by student resilience; these results were more pronounced for the group in circumstances of poverty. Along similar lines, Ros Morente et al., (2017) performed a study on a sample of primary education students. In this case, the significant impact of training in emotional competencies (defined by Ros-Morente et al., (2017) as teaching skills related to emotional awareness, emotional control, emotional independence, social competence, and life competencies for well-being) is relevant to the academic performance of the students.

2.3. Family factors

Analyzing literature on parental influence on students' academic performance, mostly focus on the four parenting styles, particularly the democratic style, and its positive impact on individual factors, such as academic performance, personality, or social development of students (Waters et al., 2019). The so-called permissive, democratic, authoritarian, and uninvolved styles have also been shown to vary in terms of students' performance depending on whether the same style was used by both parents (positive influence) or not (De la Luz Ortiz-Zavaleta & Moreno-Almazán, 2016); how they affect the students' own physical and mental health has also been studied, showing an improvement in both when the democratic style was used (Martínez-González et al., 2017).

Several studies conducted on adolescent students indicate how a high cultural and socioeconomic level generates significant improvements in academic performance (Agasisti et al. 2021; Córdoba-Caro et al., 2011; Lizasoain et al., 2007). Along the same lines, Chaparro et al., (2016) analyzed factors associated with academic performance in a large sample of secondary school students. The analysis revealed two distinct groups: the first group comprised students exhibiting high academic achievement, characterized by elevated socioeconomic status and substantial parental support; conversely, the second group consisted of students demonstrating lower academic performance, who were associated with reduced socioeconomic status and minimal family involvement in academic performance.

However, some authors have found that negative family factors such as divorce or parental separation have a direct significant influence on the relationship between resilience and academic performance in adolescents since the students increase their levels in both constructs to face this adversity (Clavel et al. 2021; Villalta-Páucar, 2010). In a study involving a large sample of adolescents, Sakiz & Aftab (2019) examined whether levels of academic performance and resilience changed according to students' sociodemographic variables, such as the income level of their parents. Research indicated that increased parental income was statistically linked to elevated levels of resilience among students, which subsequently led to improved academic outcomes. However, students who cultivated strengths enabling them to manage adverse experiences were less susceptible to the detrimental effects of socioeconomic and educational deficiencies within the classroom environment. Furthermore, students exhibiting superior academic performance were also identified as being more resilient and better equipped to confront the negative perceptions associated with failure.

In their samples of adolescents, García-Zavala & Díez-Canseco (2019) specified that parental structure and functioning explain 18.1% of their children's resilience. Within this

structure and functioning, they indicated that children showed a greater capacity for resilience if they belonged to families with democratic parenting styles. The work and transmission of values through the different lines of action that make up the democratic parenting style, such as parental support, autonomy, control of emotions, or relational warmth, have proven to be useful in the development of different facets of the personality related to these aspects, in addition to academic performance (Miklikowska & Hurme, 2011; Weiss & Schwarz, 1996).

2.4. Family and teacher influence on the relationship between resilience and academic performance

From what has been gathered up to this point, it is evident that the student's academic performance does not depend only on their characteristics, but is also significantly impacted by the main educational agents close to the students, such as their families and teachers. The development of positive emotions towards academic issues among these external agents has proven to be of great importance.

Consequently, studies that assessed the incidence of different predictor variables on academic performance have been considered. It is evident how higher levels of resilience contribute to better academic performance (Agusmanto-Hutauruk & Priatna, 2017; Deb & Arora, 2012; Santiago-Carrillo et al., 2020). Likewise, working on positive relationships with teachers has been observed to impact academic performance levels (Basto-Ramayo, 2017; Bester & Kuyper, 2020; Lacunza & Contini, 2016; Macsuga-Gage et al., 2012). Finally, studies have found a direct positive influence of greater parental emotional support on students' academic performance (Antonio-Aguirre et al., 2019; Chaparro et al., 2016; Fernández et al. al., 2019).

Some studies have also attempted to analyze multivariate relationships among these variables by using models of mediation, moderation, or moderated mediation, studying the degree of influence of the factors of interest on the relationship between the two main variables of the study (which in this study will be resilience and academic performance). This is the case of Escalante Mateos et al. (2020), who studied the mediating role of greater resilience capacity in adolescent students and the positive impact between a positive classroom environment and the expected academic performance of the students. Likewise, Sakiz & Aftab (2019) and Villalta-Páucar (2010) investigated the connection between resilience and academic performance among students, considering the mediating effects of sociodemographic factors. They found that a higher socioeconomic status enhanced the positive relationship between resilience and academic performance, while negative family stressors also contributed to strengthening this relationship.

However, no studies have been found that examined the moderation effects of parental emotional support and positive relationships with teachers and how these affect the relationship between students' resilience and academic performance.

3. RESEARCH METHODOLOGY

Based on the state of play, this study posed the following hypotheses:

- H1. A positive relationship is expected between the variables of resilience and academic performance in 15-year-old Spanish students in the area of mathematics.

- H2. A direct relationship is expected between the variable of management of positive teacher relationships and academic performance in 15-year-old Spanish students in the area of mathematics.
- H3. A direct relationship is expected between the parental support variable and academic performance in 15-year-old Spanish students in the area of mathematics.
- H4. The variable of positive teacher relationships is expected to have a moderating effect on the relationship between resilience and academic performance in 15-year-old Spanish students in the area of mathematics.
- H5. A moderating effect of the parental support variable is expected on the relationship between resilience and academic performance in 15-year-old Spanish students in the area of mathematics.

3.1. Research design

The research consisted of a secondary analysis of the databases provided by the OECD, specifically the results of the PISA 2018 assessment in Spain. Based on this analysis, a moderation model was proposed to analyze the influence of some parental and teacher factors on the binomial of resilience-educational performance of the students in question. Specifically, a non-experimental-cross-sectional research design was applied, of an ex-post-facto nature (Kerlinger & Lee, 1999), since the sample was evaluated in its natural context without direct intervention by the researcher.

3.2. Sample

The target population of this study was a group of Spanish students enrolled in Compulsory Secondary Education aged 15 at the time of the PISA 2018 assessments. Along with this main population, their teachers were included in the study, since PISA 2018 includes a database of teachers who complete a context questionnaire. The sample obtained in this study was specifically made up of 35.943 students and 21.621 Spanish teachers who participated in the PISA 2018 assessment.

3.3. Instruments and variables

Based on the extensive information provided by PISA in its evaluations, the following variables related to academic factors of the student, teachers, and families were selected:

- Students: Resilience (named RESILIENCE in the PISA database, predictor variable); Family socioeconomic level (ESCS, covariate); Academic performance in mathematics as a criterion variable and derived from the first plausible value obtained from the PISA questionnaire assessments for students.
- Teachers: Positive relationships established by the teacher in the classroom (named SEFFREL in the PISA database, moderating predictor variable).
- Families: Parental emotional support perceived by the student from their family regarding academic activities (named EMOSUPS in the PISA database, moderating predictor variable).

The PISA assessment incorporates these variables as composite factors, estimated using Item Response Theory techniques, from a set of diverse scale items included in the applied questionnaires (OECD, 2019b).

3.4. Procedure and data analysis

As can be seen in Figure 1, this study verified a moderation model with 2 moderating variables (parental emotional support and positive relationships with teachers), which corresponds to model 2 established by Hayes in the process package for IBM SPSS (Hayes, 2018). Thus, it was possible to verify both the first-order interaction between resilience and each moderator, as well as the second-order interaction involving both moderators.

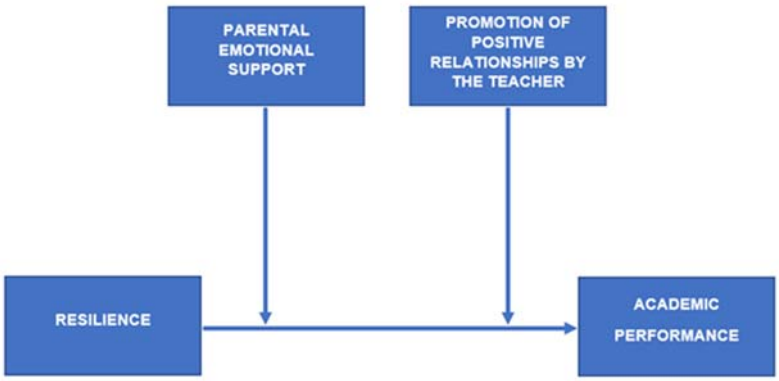

Figure 1. Moderation model of the study

Given its significant relevance in the study of factors associated with performance, the family socioeconomic level (ESCS) variable was included as a covariate in all applied analyses to control its effects. IBM SPSS v.25 software was used to carry out the descriptive, correlational, and regression analyses, and the process package was used for the implementation of the moderation models (Hayes, 2018).

The influence of parental and teacher variables on the relationship between student resilience and academic performance is analyzed. Consequently, the study investigates how these moderating variables affect the overall model and their role in shaping the connection between resilience and academic performance in mathematics.

4. RESULTS

4.1. Descriptive exploration of the study variables

First, Table 1 shows the descriptive statistics of the variables used in the study (mean, standard deviation, minimum, maximum, and quartiles). In the academic performance variable, the results show that Spanish students score below the OECD average, with a higher degree of homogeneity. Regarding the criterion variable of the study, resilience, the average value was found to be significantly above the OECD average, with slightly lower levels of homogeneity. The moderating variables of the study reach similar averages, very close to 0, although slightly above. The low variability of the parental emotional support variable stands out, as the Spanish sample is very homogeneous in this regard. Finally, regarding socioeconomic level, the average was slightly lower than the

OECD average, with levels of heterogeneity that were very close to the international standard.

	Median	D.T.	Min	Max	P_{25}	P_{50}	P_{75}
Maths academic performance	490,69	87,33	116,93	801,94	431,57	494,79	553,19
Resilience	0,170	0,986	-3,167	2,369	-0,518	-0,061	0,787
Parental emotional support	0,082	1,008	-2,447	1,035	-0,658	0,366	1,035
Positive relationships fostered by teachers	0,021	0,359	-1,558	1,496	-0,211	0,012	0,258
Socioeconomic level	-0,043	1,029	-6,073	3,717	-0,727	0,044	0,784

Table 1. Main descriptive statistics of the study variables

Regarding correlation among the study variables (Table 2), academic performance in mathematics, as a criterion variable, showed direct and highly significant relationships with all the other variables and covariates, with low-moderate effects.

	r_{xy}	p
Maths academic performance - Resilience	,118	<,001
Maths academic performance - Parental emotional support	,093	<,001
Maths academic performance - Positive relationships fostered by teachers	,109	<,001
Maths academic performance - Socioeconomic level	,352	<,001
Resilience - Parental emotional support	,256	<,001
Resilience - Positive relationships fostered by teachers	,022	<,001
Resilience - Socioeconomic level	,123	<,001
Parental emotional support - Positive relationships fostered by teachers	,050	<,001
Parental emotional support - Socioeconomic level	,144	<,001
Positive relationships fostered by teachers - Socioeconomic level	,167	<,001

Table 2. Correlation among the study variables

4.2. Multiple regression model

Table 3 shows the parameters of the multiple regression model applied. According to Cohen (1969), a coefficient of determination of R2 = 0,126 points to a medium-high level of explanation-precision of the model. According to the correlations obtained previously, all variables have a highly significant parameter.

	β	t	p
Intercept	487,24	971,90	<,001
Resilience	6,57	13,04	<,001
Parental emotional support	2,00	3,97	<,001
Positive relationships fostered by teachers	14,46	10,46	<,001
Socioeconomic level	26,83	54,53	<,001

Table 3. Parameters of the multiple regression model

Equation 1 (Figure 2) illustrates the predictive model derived from the multiple regression analysis. In every instance, there is a direct (positive) influence, underscoring the significant role of socioeconomic status within the model. The equation thus illustrates the model data and the extent to which the variables employed in the analysis of the moderation model influence the outcomes.

Maths Academic Performance = 487,24 + 6,57*Resilience + 2,00*Parental emotional support + 14,46* Positive relationships fostered by teacher + 26,83*Socioeconomic level

Figure 2. Equation 1. Multiple linear regression model

4.3. Moderation model

The comprehensive statistical analysis of the moderation model is presented in Table 4. The overall R2 value stands at 12,8%, with the interaction between the moderating variables and resilience contributing minimally: 0,18% for parental support and 0,03% for positive relationships fostered by the teacher.

	Coeficient	t	p – value	Low lim t	Upp lim t
Intercept	494,83	975,82	<,001	493,83	495,82
Resilience	6,59	12,90	<,001	5,60	7,59
Parental emotional support	2,24	4,45	<,001	1,25	3,23
Positive relationships fostered by teachers	11,65	8,35	<,001	8,92	14,38
Parental emotional support * Resilience	-3,40	-7,49	<,001	-4,29	-2,51
Positive relationships fostered by teacher * Resilience	4,42	3,29	<,001	1,79	7,05
ESCS (covariate)	27,02	55,10	<,001	26,06	27,99

Table 4. Moderation model (model 2)

Conversely, as illustrated in Figure 2, the variable of parental emotional support (EMOSUPS) inversely moderates the relationship between resilience and academic performance. Figure 3 demonstrates that the variable of positive relationships fostered by teachers (SEFFREL) directly moderates the relationship between resilience and students' academic performance.

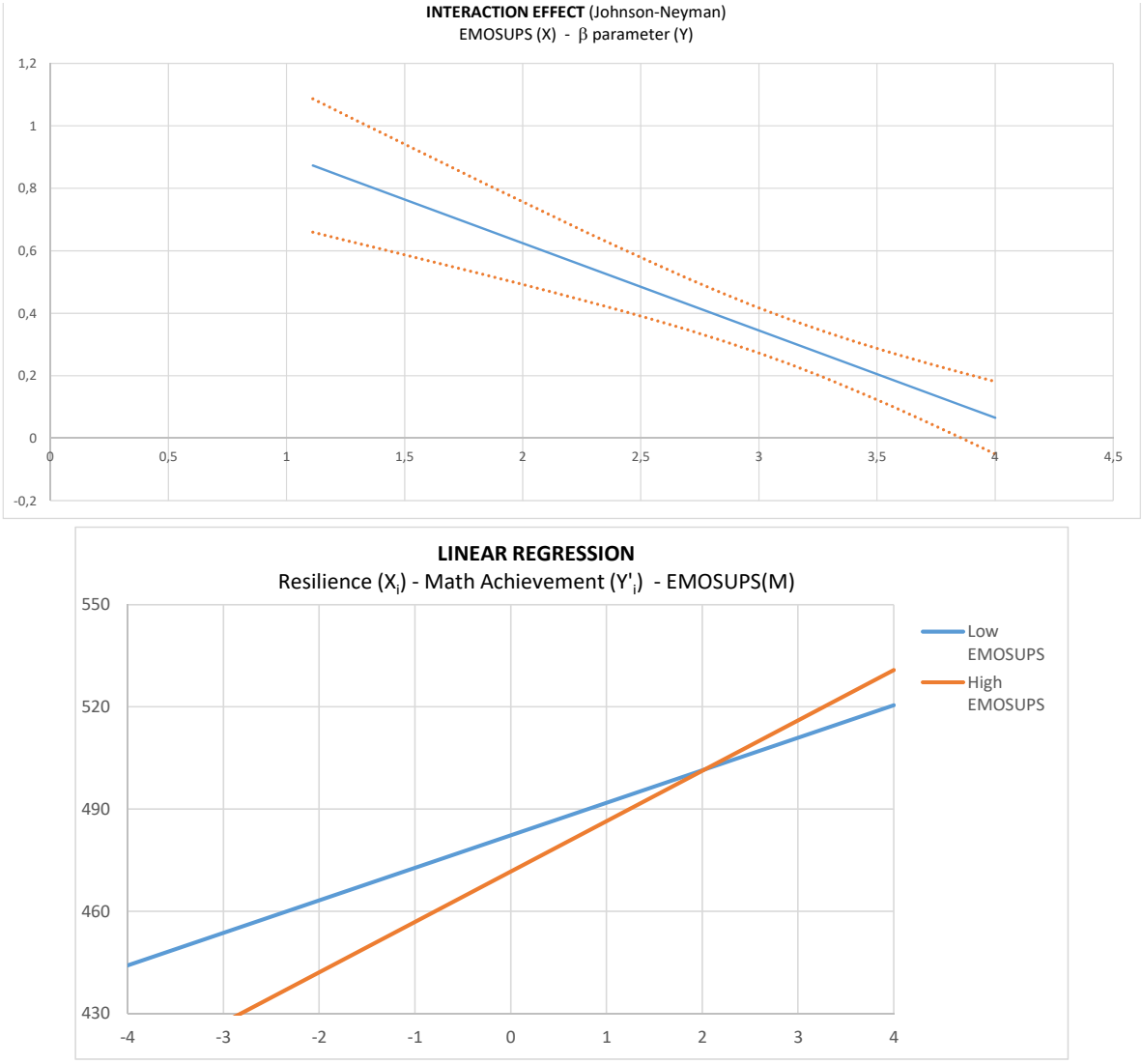

Figure 2. Moderator effect of variable parental emotional support

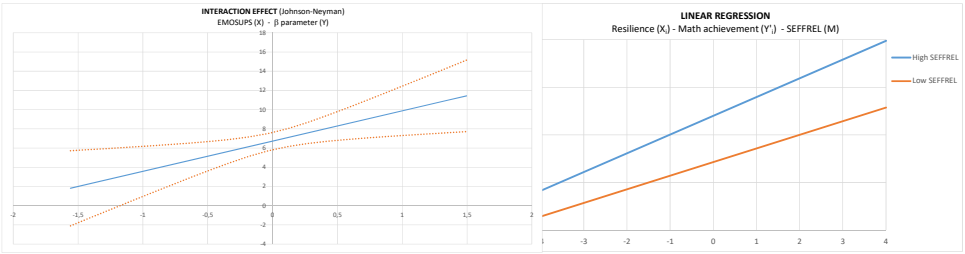

Figure 3. Moderator effect of variable variable positive relationships fostered by teachers

5. DISCUSSION AND LIMITATIONS

5.1. Discussion

This study examined the direct impact of resilience, identified as the predictor variable, on the academic performance, designated as the criterion variable, of Spanish adolescents

in the field of mathematics, as assessed by the PISA 2018 evaluations. Additionally, the study considered the roles of teachers, through positive relationships, and families, via parental support, as moderating variables in this relationship.

First, the results confirm H1, i.e., the positive relationship between resilience and academic performance, as a significant positive relationship was found between both variables. In other words, higher scores in resilience were also associated with better performance of Spanish adolescents in mathematics, which is in line with studies included in the state of play (Agusmanto-Hutauruk & Priatna, 2017; Deb & Arora, 2012; Santiago-Carrillo et al., 2020).

Both H2 and H3 were also confirmed: a direct relationship was found between academic performance in mathematics and external variables, with positive relationships fostered by teachers, and parental support. In this sense, the results obtained are similar to those found in the literature review, both in terms of the positive relationships promoted by the teacher in the classroom (Basto-Ramayo, 2017; Bester & Kuyper, 2020; Lacunza & Contini, 2016; Macsuga-Gage et al., 2012) and the emotional support that the student perceives from their family about academic activities (Antonio-Aguirre et al., 2019; Chaparro et al., 2016; Fernández et al., 2019).

Finally, the results obtained also confirm H4 and H5, but in different ways. The evidence obtained corroborates that the variables of positive relationships fostered by teachers and parental support exert a significant moderating effect on the relationship between resilience and performance. However, it is essential to emphasize that the moderating effects of the two variables were contrary. Specifically, the findings indicate that increased positive relationships within the classroom resulted in a more robust correlation between resilience and students' academic performance in mathematics. Conversely, the models derived suggest that greater levels of parental support diminished the correlation between students' resilience and their academic performance.

Regarding H4 and H5, no studies were found in the literature review that assessed mediation or moderation models that contemplate the research variables studied. However, some other papers do study the moderation or mediation relationships resulting from similar variables (e.g., Clavel et al., 2021; Escalante Mateos et al., 2020; Sakiz & Aftab, 2019; Villalta Pácuar, 2010).

Regarding H4, it should be noted that the intensity of the correlation obtained in this study between positive relationships fostered by teachers and resilience is very low, reaching very low effect sizes, according to the criteria established by Cohen (1969). Thus, even though this correlation is significant, its intensity suggests that it is not strong enough to confirm the existence of this positive relationship. The contribution of the interaction effect of the moderating variable of positive relationships in the model also obtained an effect of very low intensity again, with a value of 0.03%. Despite what results may suggest, these findings could be in line with similar mediation studies, such as Escalante Mateos et al. (2020), who examined the mediating role of resilience in the positive classroom environment-academic performance binomial. The researchers discovered that students who viewed their peer relationships favourably exhibited greater resilience, which in turn contributed to enhanced learning outcomes and improved academic performance. Additionally, a direct positive correlation was identified between teacher expectations and students' academic achievements. Therefore, the findings suggest, though not definitively, that school settings that promote healthy interpersonal relationships within the classroom strengthen the beneficial influence of resilience on

academic performance. Conversely, this effect diminishes in environments where teachers overlook the importance of classroom relationships.

Regarding H5, other studies such as Sakiz and Aftab (2019) found that sociodemographic variables such as socioeconomic level had a positive influence on the relationship between resilience and student academic performance. In line with the results of this study, which indicated an inverse moderating effect of the parental support variable in the relationship between resilience-academic performance, Clavel et al. (2021) and Villalta Páucar (2010), found similar results when they analyzed the mediation of negative family stressors, which mediated and reinforced the relationship between resilience and academic performance. This could explain our results in the sense that, upon receiving less parental support or encountering difficult situations in their family context, students need to increase their levels of resilience to face the situation.

In summary, consistent with earlier research, the findings of this study indicate that factors related to parental support and the positive relationships fostered by teachers within the classroom significantly influence the connection between resilience and the academic performance of Spanish secondary school students. Our analysis reveals that the teacher-related variable has a direct effect, whereas parental support exhibits an inverse interaction effect. Nevertheless, both variables play a significant moderating role in the relationship between resilience and academic performance.

As we have seen, other studies assessed the relationship between the variables resilience and academic performance, and some even included a third moderating variable in their research. This paper attempted to further study the joint analysis of these variables through multivariate moderation models, considering the incidence of variables of the main educational agents that intervene in the development of the student's academic performance: the students themselves, their families, and their teacher. Additionally, the socioeconomic level control covariate was included and the large sample was available thanks to the PISA assessment. With this, we can conclude that our research makes a significant contribution to the state of play, establishing how some external variables affecting students (related to teachers and families) can moderate the internal student factor-academic performance relationship.

5.2. Limitations and prospects

An important limitation that must be considered is the definition of academic achievement utilized in this study, as it relies solely on the scores achieved by our Spanish sample in the PISA assessment. Nevertheless, while these students may demonstrate a level of academic knowledge, their experiences in the classroom are also influenced by emotional and social factors stemming from their interactions within the school environment with previous teachers and peers, as well as in their broader social context involving friends, parents, and media, among others. That is why the context affects the personal and social development of the person and therefore their performance (Koshal et al., 2004).

Therefore, understanding academic performance through a numerical grade is an incomplete concept. One of the last critical reviews about the term academic performance (Martín Sanz & Rodrigo, 2017) identifies several aspects that should be included in the conception of performance as such. Among them, direct reference is made to aspects related to IQ level, emotional intelligence, personality, and even some others less

commonly referred to, such as the sense of identity or the establishment of life goals. Thus, performance is a multidimensional variable that includes both quantitative and qualitative issues, based on the development of skills and attitudes (Edel Navarro, 2003).

Another limitation of our research lies in the methodology used by PISA when collecting data from students. Critical reviews of the context questionnaires included in PISA (e.g., González-Such et al., 2016; Jornet Meliá, 2016) have discussed the process used to design the scales in the context questionnaires and their validity. Since the scales are self-reported (except for the evaluation of academic performance), they are slightly biased. In addition, they could be affected by social desirability.

PISA is a major assessment project that is of great social and political significance. However, there are sometimes large differences between the evaluation formats established in the PISA assessments and those established in each educational system. Jornet Meliá (2016) aims to improve the quality of PISA waves, through the collaboration of the OECD member countries, combining the characteristics of PISA with the peculiarities of the evaluation systems of each country studied.

Future research endeavors should concentrate on examining the influence of various agents within the educational environment on the interplay between students' internal factors and their academic performance. Additionally, it is essential for studies to be validated through performance assessments. Furthermore, other significant personal variables, including motivation, empathy, and social skills, should be evaluated using objective and reliable measurement scales to ensure a thorough investigation of each construct.

6. CONCLUSIONS

Firstly, this study evaluated and compared the different studies in the state of play and the results of those studies were then compared to our objectives. Our analysis indicates that the teacher's focus on fostering positive emotions, along with the support provided by parents, contributes to enhanced educational performance. Consequently, the resilience of students enhances the overall quality of the teaching and learning process.

In recent years, research has studied how training in positive social relationships and resilience skills has a positive impact on coping with stressful situations (Salanova, 2020). This training can be extrapolated to the academic context, leading to greater skills in conflict resolution or in managing one's own emotions, for example, as UNICEF (2017) contemplates in one of its latest compendia on adolescents and their way of dealing with stress.

It is essential to recognize the significance of resilience and the pivotal role that educators play in ensuring educational quality. This leads us to a critical inquiry: if educational policies promote enhancements in educational quality while simultaneously disregarding the teaching sector—an area demonstrated in this study to influence education—what are our true objectives?

In the case of families, educational quality is affected by parental involvement in the socio-emotional dimensions of students' lives, such as learning motivation to achieve the desired performance results in new contexts like the COVID-19 pandemic (Garbe et al., 2020).

In summary, research of this nature is crucial and ought to be integral to the process of educational restructuring, including policies and methodologies. Nevertheless, as highlighted by Vilches-Peña & Gil-Pérez (2010), the findings from PISA and the insights drawn from them are rarely factored into discussions surrounding educational reform.

It is essential to consider the data analyzed in PISA when formulating policies aimed at enhancing educational quality within educational systems. Additionally, the unique characteristics of each educational stakeholder involved in academic performance must be considered. By examining the moderating effects of various impact variables on the relationship between resilience and academic performance, we can make significant contributions to the enhancement of teaching and learning processes.

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