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Revista ELectrónica de Investigación y EValuación Educativa



e-Journal of Educational Research, Assessment and Evaluation

Association between motivational climate, school adjustment and family functioning in adolescents

Asociación entre clima motivacional, ajuste escolar y funcionalidad familiar en adolescentes

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Abstract

The present study seeks to define and contrast an explanatory model of motivational climate, school adjustment and family functioning, and to analyse the existing associations between the aforementioned variables through structural equation analysis. The sample includes 2,134 adolescents aged 12 to 18 years from the province of Granada. Motivational climate (PMCSO-2), school adjustment (EBAE-10) and family functioning (APGAR) are analysed. A descriptive cross-sectional design is used and the program AMOS 23.0 is employed to construct the multi-group structural equation model. The model showed appropriate fit ($\chi 2 = 241.34$; df = 17; p < .001; CFI = .953; NFI = .950; IFI = .953; RMSEA = .079). The present study revealed that task-oriented motivational climates toward assignments generate higher levels of school adjustment within students. In fact, this same motivational climate is directly associated with family functioning, with these being considered positive variables for determining a good climate in the physical education classroom. On the other hand, an ego-oriented motivational climate was inversely related with school adjustment, without being linked to family functioning. All of this reveals the importance of promoting more self-determined types of motivation in the classroom, which encourage cooperation between group members, effort and personal improvement

Reception Date 2019 March 11

Approval Date 2019 November 14

Publication Date: 2019 November 18

Keywords: motivational climate; family functioning; school adjustment; adolescents Occupational.

Resumen

El presente estudio pretende definir y contrastar un modelo explicativo sobre el clima motivacional, el ajuste escolar y la funcionalidad familiar, y analizar las asociaciones existentes entre las mencionadas variables mediante un análisis de ecuaciones estructurales en una muestra de 2.134 adolescentes de 15 a 18 años de la provincia de Granada, analizando el clima motivacional (PMCSQ-2), el ajuste escolar (EBAE-10) y la funcionalidad familiar (APGAR). Se utiliza un diseño de tipo descriptivo y corte transversal, empleando AMOS 23.0 para realizar un modelo de ecuaciones estructurales multigrupo que se ajustó de forma correcta ($\chi 2 = 241,34$; gl = 17; p < ,001; CFI = ,953; NFI = .950; IFI = .953; RMSEA = .079). Este estudio revela como los climas motivacionales orientados hacia la tarea generan mayores niveles de ajuste escolar en el alumnado. De hecho, este mismo clima motivacional se asocia directamente con la funcionalidad familiar, considerándose variables positivas para el buen clima en el aula de educación física. Por otro lado, el clima motivacional orientado al ego estuvo inversamente relacionado con el ajuste escolar, sin vincularse con la funcionalidad familiar. Todo ello revela la importancia de promover motivaciones más autodeterminadas en las aulas, que fomenten la cooperación entre los miembros del grupo, el esfuerzo y la superación personal.

Fecha de recepción 2019 Marzo 11

Fecha de aprobación 2019 Noviembre 14

Fecha de publicación 2019 November 18

Palabras clave: clima motivacional; funcionalidad familiar; ajuste escolar; adolescentes.

The capacity of adolescents to adapt and their level of satisfaction in the educational context has been an object of study over recent years (Gutiérrez & López, 2012; Herrera, Souza & Soares de Quadros, 2018; Kim & Kim, 2011), in both a general context and in the area of Physical Education (Cox & Williams, 2008; García-Vélez, 2018; Moreno-Murcia & Vera, 2011). As a result, various research studies have examined the construct of "School Adjustment", defining it as the degree of integration and adaptation of students in the educational environment determined by their personal satisfaction and social integration (Heras & Navarro, 2012).

In this sense, Moral, Sánchez and Villarreal (2010) have established various indicators of school adjustment. These include the social support received by peers, teachers and family members, self-esteem, academic performance, tasks carried out during Physical Education sessions, and motivation towards proposed goals (Estévez, Musitu & Herrero, 2005; Moreno, Estévez, Murgui & Musitu, 2009). Following this, Gutiérrez and Gonçalves (2013) defined the main characteristics that make up well-adjusted adolescents, characterised by students' ratings of their learning process, positive involvement, good social relations and good behaviour in the classroom (Aldrup, Klusmann, Lüdtke, Göllner & Trautwein, 2018; Caso-Niebla & Hernández-Guzmán, 2007; Moreno et al., 2009; Patel, 2018). In contrast, maladjusted students are those who engage in disruptive behaviours, present poor academic performance, do not abide by social norms and have low academic expectations for the future (Ansong et al., 2018; Heras & Navarro, 2012).

Authors such as Gómez, Gámez and Martínez (2011) indicated in their study an existing relationship between the level of school satisfaction and the nature of practices carried out in the subject of Physical Education. It was found that sessions oriented towards autonomy, enjoyment and cooperation generate positive conducts which translate into greater school adjustment (Casas et al., 2014; Derry, 2002). Along these lines, the motivational climate generated by the teacher in the

classroom is fundamental (Cuevas, García-Calvo & Contreras, 2013) given that it shapes much of the learning-teaching process, such as the adaptation and adjustment experienced by the students (Alonso-Tapia & Fernández-Heredia, 2009; Randall, Shapiro, Smith, Jervis & Logan, 2019).

Based on the Achievement Goal Theory, Cervelló, Moreno, Martínez, Ferríz and Moya (2011) define motivational climate as the interventional environment determined by various agents – teachers, family or peers – through concrete signals, which can be either process-oriented or performance-oriented (Ada, Çetinkalp, Altiparmak & Asci, 2018; Cuevas et al., 2013; Moreno, Martínez & Alonso, 2010). Various authors denominate these orientations as task climate and ego climate, with each one being configured by determined characteristics. A climate that is based on the task is founded on the pursuit of individual improvement through a process in which peer cooperation, high levels of satisfaction and intrinsic motivation are primed Sevil-Serrano, (García-González, Aelterman & Haerens, 2019; Gutiérrez, 2014; Ruíz-Juan, Piéron & Zamarripa, 2014). On the other hand, an ego-based climate is determined by an environment in which individuals pursue greater performance outcomes in comparison to those achieved by others. It is characterised by social comparison and extrinsic motivation based on external rewards (Almagro, Sáenz-López, González-Cutre & Moreno-Murcia, 2011; Bakirtzoglou & Ioannou, 2011; Cervelló al., 2011; Rokka, Kouli, Bebetsos, Goulimaris & Mavridis, 2019).

Studies such as those conducted by Castillo, Duda, Álvarez, Mercé and Balaguer (2011) and Moreno et al. (2010) highlight the work of teachers in the configuration of a motivational climate that enables good school adjustment, with their role regarding the task climate standing out. The justification of this premise falls on the fact that this type of climate permits teamwork and cooperation (Ada et al., 2018; Almagro et al., 2011; Boyce, Steele, Gano-Overway & Whaley, 2014), generating prosocial behaviours. Furthermore, Méndez-Giménez, Fernández-Rio and Cecchini-Estrada

(2013a) add that the task climate shapes adaptive patterns in students, such as an improvement in perceived self-competence and self-concept. In this way, social support and the development of cognitive components are supported. These have been stressed to be indicators of school adjustment by Heras and Navarro (2012), helping the students achieve a better adaptation to Physical Education classes (Blández, Fernández & Sierra, 2007; Milton, Appleton, Bryant & Duda, 2018; Moreno-Murcia & Vera, 2011). On the other hand, an ego climate can diminish the self-esteem and self-concept of those students who do not possess an orientation that leans predominantly towards performance, given that they are exposed to social comparisons (García-González et al., 2019; Moreno et al., 2010; Ruíz-Juan et al., 2014) which give rise to maladaptive motivational patterns (Méndez-Giménez et al., 2013a). In this way, a climate with a predominant ego orientation will generate negative attitudes on behalf of students, not fulfilling their needs and leading to dissatisfaction (Gutiérrez & Gonçalves, 2013; Milton et al., 2018; Zurita et al., 2018).

In recent years there has been a scarcity of studies conducted on adjustment and family functioning in relation to the motivational climate in the area of Physical Education. However, a number of studies have appeared that establish relationships with some of the factors and indicators that pertain to school adjustment or adaptation. These include academic performance (Tejedor-Tejedor & González-González, 2008; Vitaro, Brendgen, Girard, Dionne & Boivin, 2018), disruptive behaviours (Gutiérrez & López, 2012; Phillips, McDaniel & Croft, 2018) and motivation in the classroom (Gómez et al., 2011; Stajkovic, Bandura, Locke, Lee & Sergent, 2018). Along these lines, Hernández-Álvarez, López-Crespo, Martínez-Gorroño, López-Rodríguez and Álvarez-Barrio (2010)examined the relationship between the instructive behaviours of the teacher and the students' satisfaction generated towards Physical Education. They obtained a significant association between both, with special relevance attributed to affective and communicative aspects (Alonso-Tapia &

Fernández-Heredia, 2009; Casas et al., 2014; Valley & Graber, 2014). In fact, Moreno and Hellín (2007) and Polo, León and Gozalo (2013) highlight the importance of bidirectional communication in the construction of an appropriate climate in the classroom, with both sides being crucial for achieving correct school adjustment. On the other hand, both Moreno et al. (2010) and Gutiérrez and López (2014) studied academic achievement as an indicator of the functioning of Physical Education classes. This was expressed through performance and level of satisfaction, amongst other factors (Caso-Niebla & Hernández-Guzmán, 2007; Rasberry et al., 2011), with these representing fundamental indicators of school adjustment.

The relation between disruptive behaviours and motivational climate is one of the other areas of study with regards to Heras adjustment. and Navarro determined the relationship between anti-social behaviours and adaptation level, specifying that those motivational climates that do not favour relationships between peers tend to lead to dissatisfaction and aggressive psychological patterns that are a long way away from good adjustment (Hogue, Fry & Iwasaki, 2019; Simón, Gómez & Alonso-Tapia, 2014; Valdés, Sánchez & Carlos, 2012). In the same way, Estévez and Jiménez (2014) associated aggressive conduct with personal and school adjustment in Spanish adolescents. They highlighted the importance of intervening with implicated pupils through the creation of classroom climates which favour integration and formation of relationships with peers and teachers (Kokkonen, Yli-Piipari, Kokkonen & Quay, 2019; Moral & Ovejero, 2013; Olano & Risco, 2005). This intervention would benefit from a task-oriented or mastery climate (Ada et al., 2018; Almagro et al., 2011; Cervelló et al., 2011; Milton et al., 2018; Musitu, Martínez, & Murgui, 2006).

Bearing in mind the literature analysed that indicates the existence of associations between motivational factors, school adjustment and family functioning, the present study states the following objectives:

- Define and contrast an explanatory model of motivational climate, school adjustment and family functioning in adolescents from Granada.
- Analyse the existing associations between motivational climate, school adjustment and family functioning through structural equation analysis.

Method

Population and Sample

The present research uses a quantitative design that is descriptive and cross-sectional in nature. The research developed a relational study in order to analyse the degree of dependence between the different variables forming the object of study. The sample of this research is composed of a total of 2,134 adolescents aged between 15 and 18 years (M=15.93 years; SD=0.853). Of the composed sample, 1072 were male (49.8%) and 1072 were female (50.2%), and came from 20 centres of compulsory secondary education (CSE) from the province of Granada. This sample is representative with regards to the number of adolescents analysed who were enrolled in compulsory secondary education in province of Granada (n=18,930). A sampling error of 0.02 was assumed and a confidence level of 95%. The conglomerate random sampling technique suggested by Santos, Muñoz, Juez and Cortiñas (2003) was utilised for participant selection, attending to the educational centres and localities. educational centres and students participated voluntarily in the research study.

Instruments

• School adjustment (EBAE-10), of Moral et al. (2010). This instrument is composed of 10 items rated on a Likert-type scale, with a response range of 6 points where 1=Completely Disagree and 6=Completely Agree. The range of the scale runs from 10 to 60 points, with a higher score relating to greater school adjustment. This test was divided between three categories: School Performance (1, 2 and 5), Academic Expectation (3 and 4) and Problems of Adjustment at School (6, 7, 8, 9 and 10).

- Internal consistency (Cronbach alpha) of the instrument obtained a value of $\alpha = .797$ for the overall questionnaire, whilst School Performance obtained a value of $\alpha = .746$, Academic Expectations obtained a value of $\alpha = .860$ and Problems of Adjustment at School obtained $\alpha = .772$.
- Motivational Climate (PMCSQ-2) extracted from the original version developed by Newton, Duda and Yin (2000) and adapted to Spanish by González-Cutre, Sicilia and Moreno (2008). It uses a fivepoint Likert scale that runs from 1= Totally Disagree to 5= Totally Agree, along which 33 items are rated. Likewise, this test produces results corresponding to two categories: Task Climate (Cooperative Learning, Effort/Improvement and Importance of Role) and Ego Climate (Punishment for Mistakes, Unequal Recognition and Rivalry between Members). Internal consistency (Cronbach alpha) of the study obtained a value of $\alpha = .765$ for the overall questionnaire, whilst a value of $\alpha = .851$ was obtained for Task Climate and $\alpha = .867$ for Ego Climate.
- Family Functioning Scale (APGAR) was extracted from the original version "Family APGAR" developed by Smilkstein, Ashworth and Montano (1982) and adapted to Spanish by Bellón, Delgado, Luna and Lardelli (1996). Responses are given based on a three-point Likert scale (0= Almost Never, 1= Sometimes and 2= Almost Always) to rate 5 positively framed items and generate three types of functioning. Final scores between 0 and 3 are categorised as severe dysfunction (SD), scores between 4 and 6 describe moderate dysfunction (MD) and scores > 6 are defined as good family functioning (FF). Internal consistency (Cronbach alpha) of the questionnaire in its original version is α =.750 (Smilkstein et al., 1982). Bellon et al., (1996) obtained a value of $\alpha = .840$ in its adaptation to Spanish and, more recently, Sánchez-Sosa, Villarreal-González and Musitu (2010) report internal consistency of $\alpha = .790$. The present study established a value of $\alpha = .812$.

Data collection procedure

For data collection, the Department of Education was contacted and a collaboration with the Educational Centres was requested. Each one of the centres were informed about the nature of the research and collaboration was requested from both the centres and their students. To this end, a permission sheet was given out that was directed towards students' legal guardians, requesting informed consent for study participation. Anonymity of data was guaranteed to all students, clarifying that information would only be used for scientific means. Interviewers were present throughout data collection to provide information about the correct way to fill out the questionnaire. Informed consent was received in all cases and the safeguarding of confidentiality was respected in agreement with the ethical principles of the Research Ethics Committee and the Declaration of Helsinki 1975.

Data analysis

The statistical software IBM SPSS® was used in its version 22.0 for Windows with the aim of carrying out basic descriptive analyses (means and frequencies). The program IBM AMOS® 23 was employed in order to analyse existing effects and associations between the constructs included in the structural model designed. Model fit was checked with the

purpose of verifying compatibility between the model and the empirical information obtained. Reliability of model fit was examined according to goodness of fit criteria described by Marsh (2007, p.785). In the case of Chianalysis, non-significant associated with p indicate good model fit. Comparative fit index (CFI) values are acceptable when values are higher than .90 and excellent when values are higher than .95. Normalised fit index (NFI) values should be higher than .90. Incremental fit index (IFI) values are acceptable when values are higher than .90 and excellent when values are higher than .95. Finally, the value for root mean square error approximation (RMSEA) is considered excellent when it is lower than .05 and acceptable when it is lower than .08.

A hypothetical structural model was designed from the stated objectives which constitute the present research (Figure 1). We will now introduce the factors composing the model. Factor 1: Task Climate (CT); Factor 2: Ego Climate (CE); Factor 3: Importance of Role (IR); Factor 4: Effort/Improvement (EI); Factor 5: Cooperative Learning (CL); Factor 6: Punishment for Mistakes (PM); Factor 7: Unequal Recognition (UR); Factor 8: Rivalry between Members (MR); Factor 9: School Adjustment and Factor 10: Family Functioning.

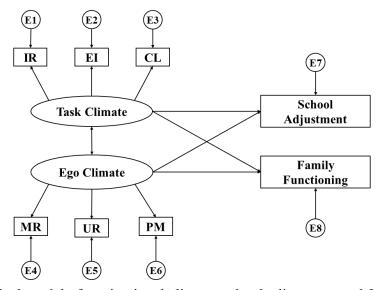


Figure 1. Hypothetical model of motivational climate, school adjustment and family functioning.

Note: CL, Cooperative Learning; EI, Effort/Improvement; IR, Importance of Role; PM, Punishment for Mistakes; UR, Unequal Recognition; MR, Rivalry between Members.

The structural equation model developed was constituted of two latent variables and eight observable variables with the aim of specifying indicators. Causal explications of latent variables are formed according to associations observed between indicators, taking the reliability of instruments into consideration. Task Climate (CT) and Ego Climate (EC) acted as exogenous variables with each one of these being inferred by three endogenous variables. In the case of Task Climate, these variables are Importance of Role (IR), Effort/Improvement (EI) and Cooperative Learning (CL). The variables configuring Ego Climate are Punishment for Mistakes (PM), Unequal Recognition (UR) and Rivalry between Members (MR). The remaining endogenous variables are School Adjustment and Family Functioning (APGAR).

Bi-directional arrows (covariance) associate the exogenous variables, whilst unidirectional arrows reveal effects (direct and indirect) between the employed variables. Likewise, prediction error terms are associated to the endogenous variables, with these receiving the effects of other variables and requiring error variables. The estimation of parameters was conducted using the maximum likelihood method (ML) as this is unbiased, coherent and invariant to scale type.

Results

Evaluation of model fit established good fit for a majority of the indexes. Although a significant chi-squared value was obtained (χ 2 =241.34; df = 17; p < .001), it must be indicated that this statistic, as an index, does not have an upper limit. As a result, it cannot be interpreted in a standardised way, which is an additional

problem alongside its sensitivity to sample size. In this way, other indexes of the standardised fit are presented to be less sensitive to sample size (Jöreskog, 1987; p. 265.) The normalised fit index (NFI) revealed an excellent value of .950. Likewise, the comparative fit index (CFI) and the incremental fit index (IFI) showed a value of .953, this being excellent in both cases. The root mean squared error approximation (RMSEA) reflects an acceptable value of .079.

Estimated values for the parameters included in the theoretical model are shown in Figure 2 and Table 1. The magnitude of these parameters must be sufficient and effects have to be significantly different from zero. Improper estimations must not be obtained.

The data obtained show statistically significant associations at the level of .005 (with a 5% probability of error) between the dimensions of motivational climate (Task Climate and Ego Climate), and between these dimensions and their sub-categories (Task Climate and Effort/Improvement, Task Climate and Importance of Role, Ego Climate and Unequal Recognition, and Ego Climate and Rivalry between Members), with greater regression weights being shown. Statistically significant associations were observed between task climate and school adjustment (p < .005) and family functioning (p < .005), with both of these being positive and direct (r = .320; r =respectively). In the same statistically significant associations were found between Ego Climate and School Adjustment, this being negative or inverse (p < .005; r = -.100), and between Ego Climate and Family Functioning, in this case being positive (p = .022; r = .06).

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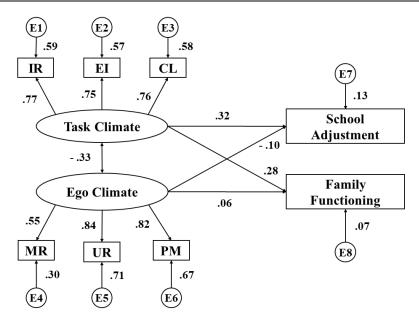


Figure 2. Structural equation model

Note: CL, Cooperative Learning; EI, Effort/Improvement; IR, Importance of Role; PM, Punishment for Mistakes; UR, Unequal Recognition; MR, Rivalry between Members.

Table 1 - Regression weights and standardised regression weights

Associations between variables			RW			SRW	
			Estimations	SE	CR	P	Estimations
IR	←	Task Climate	1.000	-	-	-	.766
EI	←	Task Climate	.875	.029	30.186	***	.753
CL	←	Task Climate	1.046	.034	30.366	***	.762
MR	←	Ego Climate	1.000	-	-	-	.546
UR	←	Ego Climate	1.568	.067	23.259	***	.843
PE	←	Ego Climate	1.427	.061	23.433	***	.820
School Adjustment	\leftarrow	Task Climate	4.282	.338	12.652	***	.322
School Adjustment	←	Ego Climate	-1.669	.410	-4.075	***	100
Family Functioning	←	Ego Climate	.067	.029	2.285	.022	.057
Family Functioning	\leftarrow	Task Climate	.257	.024	10.650	***	.227
Ego Climate	\leftrightarrow	Task Climate	097	.009	-10.775	***	328

¹ RW. Regressions Weights; SRW., Standardised Regression Weights; SE., Standardised Error; CR., Critical Ratio.

Discussion

The present research analysed the relationship of the motivational climate with

family functioning and school adjustment. The model was found to be appropriately adjusted, contributing relevant data to the research field

² TC, Task Climate; EC, Ego Climate; CL, Cooperative Learning; EI, Effort/Improvement; IR, Importance of Role; PM, Punishment for Mistakes; UR, Unequal Recognition; MR, Rivalry between Members.

³ *** Statistically significant association between variables at the level .005.

where few similar studies exist to analyse the relationship between the mentioned variables.

Studies have analysed the relationship between motivational climate and academic variables in the context of physical education. One example is the study conducted by Méndez-Giménez. Fernández-Río and Cecchini (2013b)which studied the relationship between motivation and selfconcept in adolescents. Another example was carried out by González-Cutre et al. (2008) who a cognitive-social presented model motivation in physical education. However, it is in the sporting context in which we find the greatest number of studies about motivational climate. One example is the study of Almagro et al. (2011) which analysed motivational climate and basic psychological needs in relation to the sporting commitment of adolescents. López-Walle, Balaguer, Castillo and Tristán (2011) analysed motivational climate in relation with self-esteem sportspeople. Finally, the study of García-Mas et al. (2015) presented a theoretical model that associated motivation with anxiety levels in sportspeople, amongst other aspects.

From the present study it follows that motivational climate is related with school adjustment, finding that a task climate is positively and directly related with school adjustment, whilst an ego climate is negatively and indirectly associated. This suggests that a task climate leads to better school adjustment, whilst an ego climate is seen reflected in worse school adjustment of students. Thus, when adolescents are orientated towards the task, they develop in a positive way within the school context, improving their marks and relationships with teachers, staff at the educational centre, and their classmates. The opposite situation is seen when students orientate towards the ego. This agrees with data revealed in studies reported by Flores, Salguero and Márquez (2008), Lanos, Cervelló and Tabernero (2008), and Servil, Aibar, Abós and García (2017), which confirmed the positive relationship between a task climate and school adjustment, and the negative relationship between an ego climate and school adjustment. In this way, adolescents who orientate towards

the task develop better inside the classroom due to their tendency towards attempting to resolve problems rather than demonstrating ability. In contrast, adolescents who orientate towards the ego experience problems when developing within the educational centre, aim to purely demonstrate their abilities, rejecting the belief of improvement through learning (Castro-Sánchez et al., 2015; Erturan-Ilker, Yu, Alemdaroğlu & Köklü, 2018; Hortigüela, Fernández-Río & Pérez, 2016; Vilchez & Ruíz, 2016).

In agreement with the results uncovered by the present study, the existence of a correlation between family functioning and task climate was confirmed that was stronger than that found with ego climate. This is intuitive given that adolescents who orientate more towards a task have better family relations than those who orientate towards the ego. Various studies such as those conducted by Moreno-Murcia, Cano. Gonzalez-Cutre, Cervelló and Ruíz (2008) and Sánchez et al., (2009) indicate that the family exerts a strong influence over the personality of adolescents. For this reason, good family functioning leads young people to lean towards the task instead of the ego, with the opposite being found in the case of adolescents from families with poor functioning. This is shown in the present study through the finding that analysed participants inclined towards the ego when this was the case (Garay, 2016; Martín, González, Zagalaz & Chinchilla, 2018; Ortíz, 2015). This research study argues that a taskoriented motivational climate promotes better family relations than an ego-oriented motivational climate. Thus, it can be deduced from the present data that it is necessary to reinforce the task climate with the aim of improving adolescents' relationships with their family.

The present research work presents a number of limitations when it comes to the fact that it is a cross-sectional study which, despite enabling data to be effectively obtained from adolescents, impedes causal relationships from being established. Further, inclusion of a greater number of variables related with the school context could be considered within the theoretical framework. This would provide

more relevant data about the influence of the motivational climate in sport within these individuals. Likewise, as a future research perspective it is considered to be interesting to include variables related with other psychological factors relevant to school functioning and family functioning, such as self-concept and self-esteem. It would also be interesting to broaden this line of research to include other populations, such as other school or university populations. This would have the aim of comparing the presented explanatory model through multi-group analysis.

As main conclusions, taking the model of Newton, Duda and Yin (2000) as a basis, it can be outlined that the theoretical model proposed for motivational climate, school adjustment and family functioning was correctly adjusted, obtaining adequate reliability indices. In this sense, relevant findings were obtained raising the beneficial effects of a task-oriented motivational climate on the promotion of engagement in sport. More self-determined forms of motivation were directly related with school adjustment and family functioning, finding that adolescents oriented towards the task obtained greater regression weights relating to these variables, with these revealing positive associations. By way of summary, the main conclusions obtained in the present study indicate that a task-oriented motivational climate is inversely associated with an egooriented motivational climate. A task-oriented motivational climate is positively related with school adjustment, whilst an ego climate is negatively related. Both motivational climates are positively related with family functioning but the association with a task climate is stronger than with an ego climate. Thus, it is essential that teachers promote collaborative working, create fun activities, use interrogative feedback and motivate their students intrinsically with the aim of improving their academic and family life.

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0000-0003-0937-1089





Revista ELectrónica de Investigación y EValuación Educativa E-Journal of Educational Research, Assessment and Evaluation [ISSN: 1134-4032]



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