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Family functioning and school connectivity in Mexican high school adolescents

Funcionamento familiar e conectividade escolar em adolescentes mexicanos do Ensino Médio

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Abstract

Family functionality has shown its relevance in the comprehensive development of adolescents, with school connectivity being a very important aspect. To determine the association between family functioning and school connectivity in Mexican high school adolescents, an analytical cross-sectional study was carried out in a census of 396 adolescents in a public

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high school in Mexico. The self-report of family functioning and the school connectedness scale were used, both with $\alpha > 0.84$. X^2 and ANOVA were applied. The results show significant differences in conflict with shift (morning $X^2 = 42.47$ vs. evening $X^2 = 40.35$, $F = 4.57$, $p = 0.033$), and leadership with degree (1st $X^2 = 8.14$, 2nd $X^2 = 8.97$, 3rd $X^2 = 8.90$, $F = 3.52$, $p = 0.030$). Connectivity associated with school variables ($p < 0.05$). There are no differences or association between sex, age or qualifications with connectivity. Family functioning was associated in affective expression with school ($X^2 = 3.77$, $p = 0.055$) and in leadership with students ($X^2 = 2.92$, $p = 0.05$). It is concluded that the leadership of the parents and the affective expression of the family favors school connectivity between students and with their school.

Keywords: Adolescence; Family; School.

Resumo

A funcionalidade familiar tem mostrado sua relevância no desenvolvimento integral dos adolescentes, sendo a conectividade escolar um aspecto muito importante. Para determinar a associação entre funcionamento familiar e conectividade escolar em adolescentes mexicanos do Ensino Médio, foi realizado um estudo transversal analítico em um censo de 396 adolescentes em uma escola pública no México. Foram utilizados o autorrelato de funcionamento familiar e a escala de conectividade escolar, ambos com $\alpha > 0,84$. X^2 e ANOVA foram aplicados. Os resultados mostram diferenças significativas no conflito com turno (X^2 da manhã = 42,47 vs. X^2 da noite = 40,35, F = 4,57, p = 0,033) e liderança com grau (1° X^2 = 8,14, 2° X^2 = 8,97, 3° X^2 = 8,90, F = 3,52, p = 0,030). Conectividade associada a variáveis escolares (p < 0,05). Não há diferenças ou associação entre sexo, idade ou qualificações com conectividade. O funcionamento familiar foi associado na expressão afetiva com a escola (X^2 = 3,77, p = 0,055) e na liderança com os alunos (X^2 = 2,92, p = 0,05). Conclui-se que a liderança dos pais e a expressão afetiva da família favorece a conectividade escolar entre os alunos e com sua escola.

***Palabras clave**: Adolescência; Família; Escola.*

The family and the school are complementary and differentiated child development contexts (Menéndez et al., 2009), both being essential in the development of adolescents, who due to their maturational stage of development, are in a transition that requires them processes of separation and individuation, to achieve their independence. By being integrated into their families, adolescents are highly influenced by their environment, which has repercussions at school (Présiga-Rodríguez et al., 2016).

Vargas-Clavijo (2016), defines family functioning as the interactive and systemic dynamics that occurs between the members of a family; this relationship can be evaluated through several indicators, such as harmony (correspondence between individual interests and needs with family members, in a positive emotional balance), family cohesion, communicative role, affection, permeability (family capacity to offer and receive experiences from other families and institutions), and adaptability (ability of the family to change the power structure, the relationship between roles and rules, in a situation that requires it).

From a systemic position, family and school constitute subsystems deeply linked to the education of children. Several authors have shown interest in investigating the link between family and school and its effect on the adolescent's socialization processes and the acquisition of life skills (Morales & Mesa, 2009; Vallejo & Mazadiego, 2006). Likewise, Mexican educational plans and programs for basic education establish the development of socio-emotional skills, with which children can integrate socially (Gómez-Collado, 2017).

School is one of the environments in which adolescents are present most of their time, being subject to important social demands. The school environment is a space where the individual remains connected with his or her peers, becoming an important place that provides elements that will significantly influence the adolescent's psychological development (Wang & Dishion, 2012; Way et al., 2007).

On the other hand, school commitment implies elements such as the connectivity or link that the student establishes with the school, the academic aspects and the people with whom he interacts within this environment (Bradshaw et al., 2014). In this way, the quality of the connection that the student has with the

school constitutes an important factor associated with adolescent development. Characteristics such as the student-teacher and student-student relationship have been found to be predictors of internalization disorders in Chinese high school students, where the quality of support and interaction with teachers and peers are important factors that influence the degree of psychological adjustment of the student (Jia et al., 2009).

School is an important environment for adolescents, not only for academic reasons, but also because it is the space where they interact with their peers. Thus, the interactions and the degree of connection that the student has with the school and the people who are in it, as well as with the functioning of his or her family, are aspects that can affect the psychological development of the adolescent, but have been little studied in the Mexican population in high schools.

Particularly in the school context, there are factors related to school commitment, which are related to family functionality, such is the case of connectivity, that is, the student's interaction with teachers and with their peers.

Hemingway (as cited in Baumeister & Leary, 1995) has proposed theoretical foundations for the study of connectivity, which is based on the need for belonging and relationships that characterizes adolescents, as well as the feeling of self-understanding and their interpretations of the connection with their social and family environment through their history (Nakkula & Selman, 1991). It should be noted that Hemingway created the possibility of evaluating the connection in different ecological domains with temporality as a dimension (Karcher, 2003).

Beavers (1988) proposed a model of family functioning, which defines family competence as the ability of the family to cope with stressful daily situations and that through its functions, allow its members the autonomy of their children and effective communication, coupled with this, the perceived style of family functioning is an element that complements the Beavers model (Cortés-Funes et al., 2012).

According to Anrango-Santillán and Rosales-Rivadeneira (2017), the family environment encourages communication, affection, motivation, and the management of authority, which in turn will allow a better school performance in adolescents. This is the importance of the family establishing an environment in which communication and understanding are part of the student's teaching-learning process (López et al., 2015).

On the other hand, an environment of disputes, complaints, and recriminations, such as in the context of students from dysfunctional families, will negatively affect the academic performance of students (Anrango-Santillán & Rosales-Rivadeneira, 2017). This was demonstrated in a study carried out in Colombia, where students from dysfunctional families had a higher prevalence in terms of absenteeism (62.8%) and school failure (40%) (Gonzalez & Peñate, 2017).

Likewise, the approach of Bronfenbrenner (1979) highlights the importance of the environment in people's interactions; in his theoretical approaches, he points out that natural environments are the main source of influence on human behavior, thus the ecological environment is configured in a succession of serial structures, conceiving systems as interconnections influencing the psychological development of people (Bronfenbrenner, 1979). This author points out that this succession is manifested by the relationship between systems, which he calls microsystem, mesosystem, and exosystem. The family constitutes the adolescent's microsystem, since they represent the adolescent's closest interaction context, followed by the mesosystem, where the school participates, and the exosystem, where there are aspects such as society and culture. Starting from this premise, the family system influences the school system and vice versa, and both are influenced by society and culture.

The school connection has been found to be one of the most important factors in predicting adolescent health and risk behaviors (Resnick et al., 1997). In contrast, for adolescents from different cultural backgrounds, connectivity is an important protective factor (McWhirter & McWhirter, 2011). Other authors have investigated

the connection and commitment to the family, identifying this association as an important protector of risk behaviors in Chilean adolescents, particularly about destructive behaviors such as drug use, alcohol consumption, and risky sexual behavior (Magaña & Meschi, 2002). Esteinou (2015), in an empirical study with a descriptive design, applied a survey to 450 indigenous adolescents from the southern region of Mexico to study parenting style and connectivity, finding that the parenting style most frequently applied by parents is the authoritarian, and this seems to be related to the development of a type of disconnected autonomy.

On the other hand, in a population study in Chile, significant negative correlations were found between the perception of violence and some parental attitudes such as emotional support given, concern for school and other aspects of life, in children from public elementary schools (Vásquez et al., 2018).

In Iran, as a result of an investigation carried out with 237 female high school students, it was found that the occupation of mothers was significantly associated with academic performance, since young women whose mothers were dedicated to the home lived more with them and therefore, their mental and emotional needs were better cared for, which led to better academic performance (Rezaei-Dehaghani et al., 2018).

The link between family functioning and school in the adolescent development process is undeniable. In this process, school connectivity stands out, which can be affected by the type of family functioning, however, in Mexico little research has been done in this regard; given its importance and significance, we set out to analyze the association of family functioning and school connectivity in Mexican high school adolescents.

Method

Due to the advantages offered by the quantitative approach, from the positivist paradigm, which allows to measure the elements that students report through standardized instruments in a more objective way we opted for a quantitative, cross-sectional design (Álvarez-Hernández, 2015).

Participants

Through the census, 396 adolescents from a public high school in the metropolitan area of the city of Guadalajara, Mexico, were included, who joined into the sample through consecutive cases. The inclusion criteria of the participants consisted of being registered in the official school registry, providing their written consent to answer the questionnaires and being present and in a position to participate at the time of data collection. Census sampling was used due to the importance of gathering data from the entire population, in addition to the ease of accessing high school students. The high school where the study was carried out belongs to the Ministry of Education of Jalisco, in Mexico. The research was carried out in the first semester of 2018. It is worth mentioning that the study presented here is part of the research line of the main author of the manuscript, which focuses on psychosocial aspects in the educational field.

Instruments

To collect the data, three instruments were used: general data card, specially designed for this study, as well as the standardized instruments SFI and the Connectivity scale, which are described below.

For family functioning, we used the SFI, prepared by Beavers et al. (1990), based on a systemic approach, identifying two family functioning dimensions: family competence and family style. It contains 36 items,

distributed in five scales: Health/competence, cohesion, conflict, emotional expressiveness, and leadership. It is a Likert-type scale with 5 response options ranging from "Yes: It fits very well with our family" to "No: It does not fit with our family", a lower score is related to better family functioning. The instrument is validated for Spanish speakers and has an internal consistency measured by a Cronbach's alpha coefficient of 0.84.

For school connectivity, we used the "school commitment" scale of the MDS3 School Climate Survey, in its version adapted for the Mexican population by Orozco-Solis (2017). The original instrument was designed by a team of researchers at the Johns Hopkins University Youth Violence Prevention Center, in collaboration with state partners in the state of Maryland, United States of America. Its initial development was carried out in order to test the statistical validity of the United States Department of Education (USDOE) multicomponent school climate model (Bradshaw et al., 2014). As a result, a questionnaire composed of 56 central questions was obtained, which provides a comprehensive evaluation of the school climate and statistically verifies the validity of the USDOE model, to evaluate the construct of the school climate and independently evaluates elements of the school climate such as school commitment, connectivity, safety, and school environment. The instrument is based on the ecological model of Bronfenbrenner (1997). It is a 4-point Likert-type scale. It has an internal consistency measured by Cronbach's alpha coefficient of 0.88. The school engagement scale has 15 items distributed in the following connectivity dimensions:

Connection with teachers at school (6 items). It comprises six questions that evaluate the students' perceptions of teacher behaviors, as well as the student-teacher relationship, including questions such as *My teachers listen to me when I have something to say* and *My teachers care about me*. It presents a 4-point response scale that goes from "Totally agree" to "Totally disagree", being the same for the rest of the dimensions that make up this scale.

Student connection includes 5 questions where the perception that the student maintains about the interaction with his or her peers is analyzed, also studying the general sense of belonging to the school. It includes questions like *In this school, I feel like I fit in (I belong)* and *In this school, students trust each other*.

School connectivity, a dimension comprised of 4 items, focused on evaluating the general perception that the student maintains about the school. It includes questions like *I like this school* and *I enjoy learning at this school*.

Procedures

The application of the instruments was carried out by previously trained personnel. In groups, the questionnaires were individually answered by the participants, during class hours. Authorization was requested from the school administrators and parents, stating the objectives of the study, and indicating the confidentiality of the data and the voluntary participation in the study, without any consequences. The adolescents also agreed to participate. The research project was evaluated and authorized by an Institutional Research Ethics Committee and was granted the registration code R-CEI-ENSJ-2018-02.

Data Analysis

The SPSS 21.0 statistical software was used. Descriptive analysis was performed using simple frequencies, mean, standard deviation, and percentages. To compare numerical variables, the ANOVA test was applied and to determine the association between variables and dimensions, the χ^2 test was applied, with a significance value of $p < 0.05$.

Results

A sample of 396 adolescent students from a public high school were studied, whose mean age was 13.6 (*SD* = 1.2) years. Of these, 51% (203) were boys and 49% (193) were girls. Regarding their school grades, 35.6% (141) were in the first grade, 30.2% (119) in the second grade, and 34.2% (135) in the third year. The students' school shift was distributed as 51.8% (206) of the sample in the morning and 48.2% (190) in the afternoon.

Regarding the students' Grade Point Average (GPA), we a total of 47 (11.9%) students in the sample have the highest GPA (10); 111 of them (28%) have a GPA of 9; 151 (38.1%) have a GPA of 8; 70 (17.7%) present a GPA of 7; and 16 (4%) have a GPA of 6, which is the minimum passing grade.

A total of 299 (75.5%) students had moderate family functionality scores, followed by 70 students with (17.7%) high family functionality levels, and 27 (6.8%) with low family functionality levels. This shows that more than 75% of the students can improve their family functioning and 27 of them require specialized and close attention from professionals, within and outside the school context. The qualification scores assigned to connectivity were grouped and distributed by levels, with the medium level being the most frequent one, in the reports of 193 students (48.7%), followed by the high level with 171 (43.2%), and, finally, the low level with 32 students (8.1%). These results suggest a high percentage of school connectivity, but they also point to the need for school actions with greater emphasis at the medium and low levels (Table 1).

When comparing family functionality and grade and school shift variables, we found that, in both variables, functionality showed statistical differences, in the subscales of conflict with school shift and leadership with school grade ($p < 0.05$), however, the rest of the subscales, did not show any differences (Table 2). On the other hand, when comparing by sex and age, no differences were found in family functionality in any of its subscales, nor in the global score, family functionality, between men and women, nor by age group ($p > 0.05$). Likewise, family functionality did not show statistical associations with any of the sociodemographic and school variables ($p > 0.05$).

Regarding connectivity, we found that, when comparing grade and shift school variables with school connectivity scores, there are statistically significant differences between the types of connectivity referred to by adolescents, with school connectivity having a greater difference ($F = 6.21$, $p = 0.002$), followed by student connectivity ($F = 4.28$, $p = 0.014$), and teacher connectivity ($F = 3.23$, $p = 0.040$). It is striking that first graders report better means of school connectivity, unlike third and second graders, with the latter seeming less connected (Table 3). It should be noted that, when comparing connectivity by sex and age, we did not find any statistically significant differences neither in the global mean for school connectivity, nor in dimensions ($p > 0.05$)

Likewise, the analysis between the grade and shift school variables with school connectivity reflected a statistically significant association, except for Student/Shift connectivity, which did not show statistical association (Table 4). It should be noted that sex and age were not statistically associated with connectivity ($p > 0.05$).

Table 1

Levels of family functioning and school connectivity

Study variables	Low	Moderate	High
Family functioning	6.8% (27)	75.5% (299)	17.7 % (70)
School connectivity	8.1% (32)	48.7% (193)	43.2 % (171)

Note: N: 396.

Table 2

Comparison of family functionality by grade and shift

Subscale	Grade			F¥	*p*	Shift		F¥	*p*
	1st	2nd	3rd			Mo.	A		
	N = 141	*N* = 119	*N* = 136			*N* = 206	*N* = 190		
Health/competence	*M* = 43.53	*M* = 41.26	*M* = 42.49	1.70	0.180	*M* = 42.40	*M* = 42.62	0.044	0.834
	SD = 11.36	*SD* = 8.37	*SD* = 9.69			*SD* = 9.28	*SD* = 10.71		
Conflict	*M* = 37.06	*M* = 38.59	*M* = 38.27	1.06	0.347	*M* = 38.78	*M* = 37.03	3.70	0.055*
	SD = 9.56	*SD* = 8.66	*SD* = 8.91			*SD* = 8.59			
Cohesion	*M* = 12.69	*M* = 12.33	*M* = 12.01	1.39	0.249	*M* = 12.13	*M* = 12.58	1.80	0.180
	SD = 3.75	*SD* = 2.85	*SD* = 3.30			*SD* = 3.30	*SD* = 3.40		
Leadership	*M* = 8.14	*M* = 8.97	*M* = 8.90	3.52	0.030*	*M* = 8.69	*M* = 8.61	0.076	0.782
	SD = 2.93	*SD* = 2.71	*SD* = 2.81			*SD* = 2.76	*SD* = 2.94		
Affective expression	*M* = 11.51	*M* = 11.55	*M* = 11.45	0.20	0.980	*M* = 11.61	*M* = 11.39	0.288	0.592
	SD = 4.40	*SD* = 4.16	*SD* = 3.78			*SD* = 3.95	*SD* = 4.29		

Note: ¥ANOVA *$p < 0.05$; A: Afternoon; N: Frequency; Mo.: Morning.

Table 3

Comparison of school connectivity by grade and shift

Connectivity	Grade			F¥	*p*	Shift		F¥	*p*
	1st	2nd	3rd			Mo.	A		
	N = 141	*N* = 119	*N* = 136			*N* = 206	*N* = 190		
Teachers	*M* = 10.15	*M* = 11.18	*M* = 10.99	3.23*	0.040	*M* = 8.49	*M* = 9.71	15.25	0.000**
	SD = 3.47	*SD* = 3.55	*SD* = 3.60			*SD* = 2.82	*SD* = 3.34		
Students	*M* = 10.18	*M* = 11.36	*M* = 10.63	4.28**	0.014	*M* = 10.78	*M* = 11.06	0.722	0.396
	SD = 3.27	*SD* = 3.35	*SD* = 3.11			*SD* = 3.47	*SD* = 3.09		
School	*M* = 6.47	*M* = 7.36	*M* = 7.32	6.21**	0.002	*M* = 6.74	*M* = 7.57	11.16	0.001**
	SD = 1.93	*SD* = 2.38	*SD* = 2.69			*SD* = 2.38	*SD* = 2.53		

Note: ¥ANOVA. *$p < 0.05$; **$p < 0.01$. A: Afternoon; Mo.: Morning; N: Frequency.

Table 4

Association between connectivity and grade and shift school variables

Connectivity	Yes	No	χ^2	*p*
School/shift				
Morning	131	75	7.80**	0.005
Afternoon	94	96		
Teachers/shift				
Morning	108	98	3.99*	0.046
Afternoon	81	109		
Students/shift				
Morning	102	104	0.233+	0.630
Afternoon	89	101		
Teachers/Grade				
1st	77	64		
2nd	46	73	6.67*	0.036
3rd	66	69		

Table 4

Association between connectivity and grade and shift school variables

Connectivity	Yes	No	χ^2	*p*
Students/Grade				
1st	82	59		
2nd	45	74	10.86**	0.004
3rd	63	72		
School/Grade				
1st	99	42		
2nd	55	64	17.10**	0.000
3rd	70	66		

Note: + Not significant. *$p < 0.05$; **$p < 0.001$.

Table 5

Association between family functionality and connectivity by dimensions

Functionality	Below and above average	School		χ^2 and *p*-value	Students		χ^2 and *p*-value	Teachers		χ^2 and *p*-value
		<X	*>X*		*<X*	*>X*		*<X*	*>X*	
Health/comp.	*<X*	122	101	$\chi^2 = 0.092$	129	94	$\chi^2 = 0.662$	125	98	$\chi^2 = 1.57$
	>X	92	81	$p = 0.839$	93	80	$p = 0.475$	86	87	$p = 0.124$
Conflict	*<X*	97	96	$\chi^2 = 2{,}16$	108	85	$\chi^2 = 0.002$	100	93	$\chi^2 = 0.327$
	>X	117	86	$p = 0.158$	114	89	$p = 0.524$	111	92	$p = 0.615$
Cohesion	*<X*	112	93	$\chi^2 = 0.060$	121	84	$\chi^2 = 1.51$	112	93	$\chi^2 = 0.312$
	>X	102	89	$p = 0.840$	101	90	$p = 0.226$	99	92	$p = 0.615$
Leadership	*<X*	133	111	$\chi^2 = 0.056$	145	99	$\chi^2 = 2.92$*	128	116	$\chi^2 = 0.173$
	>X	81	71	$p = 0.836$	77	75	$p = 0.054$	83	69	$p = 0.680$
Affective Exp.	*<X*	129	92	$\chi^2 = 3.77$*	128	93	$\chi^2 = 0.701$	123	98	$\chi^2 = 1.13$
	>X	85	90	$p = 0.055$	94	81	$p = 0.416$	88	87	$p = 0.311$

Note: *$p < 0.05$. < X: Lower than the mean. > *X*: Greater than the mean.

Regarding the analysis carried out in the family functionality and school connectivity dimensions, we found that there was only one statistical association between parental leadership and student connectivity ($\chi^2 = 2.92$, $p = 0.054$), as well as between affective expression in family and school connectivity ($\chi^2 = 3.77$. $p = 0.055$) (Table 5).

Finally, when performing the analysis between the global results of family functioning and school connectivity, we found that these showed a significant association ($\chi^2 = 3823.77$, $p = 0.002$).

Discussion

The main purpose of this study was to determine the association between family functioning and school connectivity in Mexican high school adolescents. To do this, we started from the hypothesis that in this population, we would find family functioning, associated with the students' school connectivity, which we were able to corroborate, although partially, by finding an association between these variables at the level of global results ($p = 0.002$). This makes sense from the point of view of the ecological theory of Bronfenbrenner and Ceci (1994), which indicates that the connection between the family and school microsystems is fundamental for the quality of the functioning of the mesosystem that consolidates the interaction between them.

This study agrees with others (Bradshaw et al., 2014; Orozco-Solis, 2017) in the results regarding the sociodemographic characteristics of the population, where a little more than half of the population corresponds to girls, aged 13 years. Two out of 10 students have low grades.

Family functionality was mostly moderate (75.5%), followed by with high levels (17.7%), and, finally, low levels (6.8%). This shows a great need to work in the improvement of family relationships, at least in one in ten students, from a systemic approach and confirms the importance of addressing the family aspects of school and social success, as in the case of the study by Stubbs and Maynard (2016) who, in their findings, refer that providing more support for the value of family and school participation can promote positive results in the development of young people. In the same sense, Verdugo et al. (2014), found in Mexican adolescents that family cohesion maintains a stronger relationship with the social adaptation variable in terms of sex (Men $r = 0.71$ vs Women $r = 0.56$). The above is explained by the family role in the formation of children and sex education (Verdugo et al., 2014). The latter, we were not able to confirm, because our results did not show an association or statistical differences between the family functionality variables for men and women.

In contrast to the above, Palomino et al. (2009), point out that families with unhealthy family functioning and with a tendency to dysfunction, where the opinion of the adolescent is not taken into account, could be reflected, among other things, in their academic performance and in the appearance of risky behaviors, inside and outside of school.

Likewise, the results of this study show that, except for conflicts with school shift and leadership with school grade, where there was a significant difference ($p < 0.05$) that suggests a greater conflict in the afternoon shift students and better parental leadership in first graders; there are no statistical differences between family functionality and grade and shift school variables, this agrees with what was reported by López et al. (2017), who did not find a significant association between family types and school behaviors ($\chi^2 = 38.45$, $p > 0.05$), or with family functioning levels ($\chi^2 = 2.59$, $p > 0.05$). They only found an association between types and family functioning levels and the psychological aggression dimension ($\chi^2 = 46.9$, $p < 0.05$); ($\chi^2 = 9.72$, $p < 0.05$) (López et al., 2017). On the other hand, the association between family functioning and school connectivity stands out in the parental leadership dimensions and student connectivity, and the affective expression in family and school connectivity ($p < 0.05$), which suggests, on the one hand, that these associations had an important role in the global association of the family functioning and school connectivity variables ($p = 0.002$), and on the other one, they highlight the importance of the role of parents and positive affectivity in the family, on the education of children and their development in the different microsystems they are inserted.

In this regard, López et al. (2016), mention that families in which there is communication between parents and children, about the expectations of academic performance, the evaluation of education and the discussion about learning strategies, generate a supporting structure that increases the academic performance of students, which is also reflected in school connectivity. Other authors (Foster et al., 2017) are emphatic in pointing out that parents' school involvement should be based on their participation in administrative school activities, for example, activities in the parents' association, organizing fundraising actions, in addition to involvement at home, in activities ranging from providing children with an appropriate environment for study (materials, books, workspace, etc.), to monitoring and reviewing homework at home.

The above can be interpreted from the approaches of the ecological theory of Bronfenbrenner and Ceci (1994), stating that the different environmental microsystems (family and school) interact and influence each other, which means that, when parents are involved with the their children's school, the adolescents perceive a greater connection between their family and the school, which is also reflected in a better family functioning, finding common goals among its members; Likewise, some authors (Foster et al., 2017), affirm that young people who feel connected with people and institutions in their communities can be protected

from other risk factors in their lives, which is why they have recommended increasing the connection as a strategy for the prevention of risk behaviors. For Fredricks et al. (2004), school commitment may represent a possible antidote to combat decreased motivation and poor academic performance.

In the same sense, Rezaei-Dehaghani et al. (2015), found a positive correlation between family aspirations and self-esteem ($r = 0.636$, $p < 0.01$), and a negative correlation between lack of independence and the self-esteem family subscale, concluding that the self-esteem of adolescents is highly correlated with the performance of their family, for which family-centered empowerment programs should be designed and applied. Given these contrasts, it is convenient to rescue the suggestion of Rico and Parada (2017), in the sense of studying other social determinants involved in the academic performance of adolescents (Rico & Parada, 2017). The foregoing coincides with what was pointed out by Bronfenbrenner and Ceci (1994), who points out that the operation of microsystems and mesosystems cannot be exempt from the influence of systems of greater scope. Therefore, it is necessary to consider those factors derived from social and political systems that could influence this problem.

Regarding school connectivity results, it is striking that the medium level is the most frequent one (48.7%), remarkably close to which is the high level (43.2%), with a low-level minority (8.1%), which translates into favorable levels of school connection, expecting for an adequate development of the students, as found by Smith et al. (2019) in a study with basic education students, in their transition through school grades, where the researchers found a better level of adjustment and positive adaptation to new school environments in children with adequate school connectivity. However, in our results, it should not be ignored that at least one in ten students requires attention because they have low connectivity, in addition to five out of ten whose school connectivity levels can be improved.

The association between school shift and grade variables with almost all connectivity dimensions, except for one, reflected a statistical association ($p < 0.05$), suggesting better connectivity in first grade students, followed by third and second graders, as well as students who attend school in the morning, had better connectivity scores; This, interpreted from the ecological model (Bronfenbrenner & Ceci, 1994), refers to the chronosystem in terms of timing of school attendance per shift, reflecting a clear difference between those who attend school in the morning or in the afternoon, agreeing with our findings that the morning shift is more favorable to school connectivity. From the same theoretical references, our results suggest interpreting the school grade variable, from the ontosystem, that is, considering the degree of maturational development of adolescents, which influences their behavior in the microsystems they are inserted. It is striking that sex and age did not reflect any differences, no statistical association, both in family functioning and in school connectivity, which suggests a similar behavior in the population, beyond these variables.

Despite what has been stated so far, we do not want to put aside the socioeconomic problems that, theoretically, correspond to the macrosystem, which force parents to spend more time outside home working, causing family relationships to easily break, this can favor the presence of transcendent emotional and mental problems, negatively influencing the academic performance of adolescents (Pinto et al., 2004), negatively affecting an optimal school connection, with consequences on its development. This deficient connection with the school and family microsystem, limits the adolescent's possibilities to successfully connect with other environments of the mesosystem, such as broader social environments.

On the other hand, in terms of the macrosystem referred to in the ecological theory of Bronfenbrenner and Ceci (1994), we cannot fail to recognize that, at present, the Mexican educational system is trying to provide training for adolescents and, in general, basic education students in life competences, which includes the education of socio-emotional skills, that is, the school has to pay attention to the development of the socio-cognitive dimension of students, as well as to the impulse of their emotions, considering the well-being of the student as a key to learning (Secretaría de Educación Pública, 2017), this well-being must be linked

to their family environment. Notwithstanding the foregoing, the results of this training, due to the recent nature of the proposal, have not yet reflected in socio-affective problems that affect adolescents and that could impact on the reduction of risk indicators for the integral development of young girls and boys, and adolescents.

It should be noted that, due to the characteristics of connectivity, this approach could be considered from a positive mental health model, according to what some authors suggest (Vázquez-Colunga et al., 2017), which has also been defined as positive education or discipline by others (Bradshaw et al., 2012; Nelsen & Lott, 2003), this suggests the need to postulate a fifth pillar of education, which is related to knowing how to enjoy life, which would translate into an appropriate model for Mexican children and basic education adolescents, which includes the school and family microsystems, with a high interaction, where teachers, families, and society are in clear and congruent interaction, from a systemic approach.

Additionally and in congruence with the epistemological position that we defend in this study, the trend towards positive education has been reinforced in Mexico, by legal instances that protect children and adolescents from violence in the family and school microsystems with the recently approved "Anti-Child Abuse Law", prohibiting physical and psychological violence in the family and school environments by parents, guardians, or teachers; This would correspond in the ideas of Bronfenbrenner and Ceci (1994) to the sphere of the macrosystem, which is represented by cultural, ideological, and political factors that permeate towards other lower-level subsystems.

Conclusion

According to the results of this study, we conclude that school connectivity is not only linked to school aspects, but also to other components of family functionality such as affective expression in the family and parental leadership, which are associated with the school connectivity of adolescents, mainly that related to students and to the school.

One of the limitations of this study is that it was carried out in a single high school, making it necessary to continue investigating the issue of connectivity and family functioning with larger samples and with different study designs, with the inclusion of student subjectivity. However, the findings are useful for their application in similar school contexts and suggest the need to work on the design of programs that address conflict, affective expression in the family, and the parental leadership, from a systemic approach, to improve the school connectivity of adolescents and thereby enhancing their comprehensive development.

Contribution

M. ÁNGEL-GONZÁLEZ: conception and design, analysis and interpretation of data, preparation of the manuscript, review and approval of the final version of the article. C. COLUNGA-RODRÍGUEZ: conception and design, analysis and interpretation of data, review and approval of the final version of the article. C. L. VÁZQUEZ-JUÁREZ: design, analysis, and interpretation of data, review and approval of the final version of the article. B. A. COLUNGA-RODRÍGUEZ: design, analysis, and interpretation of data, review and approval of the final version of the article. G. DÁVALOS-PICAZO: analysis and interpretation of data, review and approval of the final version of the article. M. G. OROZCO-SOLIS: design, analysis, and interpretation of data, review and approval of the final version of the article. J. C. VÁZQUEZ-COLUNGA: conception and design, analysis and interpretation of data, review and approval of the final version of the article.

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