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## The Parents' Role in the Teaching Online Process: A Confirmatory Approach

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### Abstract

This work focused on confirming the 5-factor model proposed by Santana et al. (2023). This model measured through the SEM methodology describes the role of parents in the virtual teaching-learning process during the pandemic derived from Covid-19, which affected the entire world population. In particular, educational systems around the worldwide migrated toward virtually to carry out the teaching process at all educational levels and degrees. 253 parents participated who supported their respective children in the teaching process carried out online. To obtain the data, the test developed by Valdés et al., (2009) was used. The indicators of the best-adjusted model are; RMSEA = 0.022; CMIN/DF = 1.124; RMR = .052; GFI = .937; AGFI = .916; PGFI = .701; TLI = .989; CFI = .991; and the parsimony between the values 5 and 7: PRATIO = .826; PNFI = .763; PCFI = .819). Based on these results, we can describe the theoretical and practical implications that the study provides: firstly, a model with the best fit that explains the role of parents in the virtual teaching-learning process that children experienced during confinement derived from Covid-19, as well, a structure with indicators that allow design didactical strategies.

**Keywords:** SEM methodology, online learning, parents role, virtual learning.

### 1. Introduction

The arrival of COVID-19 triggered the crisis in the entire population, which was declared a Public Health Emergency of International Importance (ESPII by its acronym in Spanish) since January 30, 2020 by the World Health Organization. Therefore, the institutions Educational

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institutions had to respond to the challenge of continuing to promote education in the face of the uncertainty scenario that was suddenly approaching in society and that led all school-age students to take refuge in their homes. Given this event, each country assumed the responsibility to take the necessary sanitary measures to keep its population as little exposed to the growing wave of infections of said virus.

In Mexico, La Secretaría de Educación Pública announces the suspension of classes at all levels of the National Education System, based on the agreement 03/02/20, published in the Official Gazette of the Federation (DOF by its acronym in Spanish). In the agreement, it expose an unprecedented fact: distance education through electronic media as an emerging measure to solve the 33.6 million students who do not attend face-to-face classes (INEGI, 2021).

It should be noted that distance learning is not a newly created topic since it is directly related to the development of technology, which means that from the appearance of correspondence this phenomenon saw the light, continued to develop and transform. to the present day through the internet; the foregoing, considering that distance education refers to the synchronous or asynchronous educational process where the teacher is separated from the student, but united through technology as a formal bridge of the teaching-learning process (Merisotis, Phipps, 1999).

In this sense, one of the main concerns that arose as part of the SARS-CoV-2 pandemic was how to attend to the entire population that had to abide by the regulations by staying at home without necessarily interrupting their training process. In this way, the challenges imposed by distance education around the world required the adaptation of the contents for the use of platforms as learning environments (Günbas, Gözükcüç, 2020; Demir, Gologlu, 2021; Zhu et al., 2022) and of course, the interaction of the teacher with the student as explained by said remote teaching process.

## **2. Literature review**

Since the teacher is the main mediator between knowledge and the student in the classroom, even with its limitations, digital learning also transfers this role of the teacher to virtual environments (Law et al., 2019; Onyema et al., 2019; Alsubaie, 2022). Therefore, for the level of basic education, fundamental pieces for the conformation of the care strategy was to consider the particular needs of each of the students' homes by the respective school authorities, as well as to involve not only the teacher in the teaching-learning process, but also to the father of the family as direct support of his children.

The role of the parent or guardian was made up of the role of provider and guide. Its role as provider should include the possibility of providing the student with the necessary tools to take their classes remotely, such as computer equipment or some electronic device that allows the connection, the availability of the Internet connection itself and, therefore, of the electric light service; In addition to being able to afford various school materials to carry out assignments, attend to the child's diet, provide an adequate space for learning with respect to lighting and the elimination of distractions (noise).

On the contrary, as a guide, the parent had to have the ability to support them with the use of the tools to take their class, supervise connection times, support them with their tasks and monitor their submissions. Likewise, as the main promoter of promoting their child's education, the parent or guardian had to participate in school activities such as the meetings to which they were summoned and maintain an open channel of communication with the teacher in charge of their child, in such a way that he was informed of their study needs. Finally yet importantly, the parents also had to encourage motivation and communication with their son.

All of the above alludes to four rights of the child embodied by the National Human Rights Commission (2023), also known by its acronym in Spanish, CNDH; which seek to consider the minor as the most important thing for his parents, who are in charge of safeguarding him as a priority, allowing him a full life through the development of his physical, mental and emotional capacities, educating him and allowing him access to technologies to maintain communication with their environment.

In this sense, the role of parents as supervisors of their children is learning process is considered of vital importance (Ewing, Cooper, 2021). Several studies agree with the influence that these have on their children's learning due to the degree of involvement, their participation being crucial to achieve adequate performance in online classes. So that the motivation that they exercise

in them can promote a healthier conformation of their relationship with their children; by being more involved with their learning, they show interest in them, which also reflects a positive result in participation within their classes (Borup et al., 2014; Apriyanti, 2020; Jafarzadeh et al., 2022).

Some parents motivated and monitored their children in ways that encouraged their consistent participation in remote classes; in Turkey, for example, the only mitigating factors for this motivation were connection problems and isolation in their homes (Demir, Gologlu, 2021). However, other parents expressed that their children had problems connecting due to connection failures and that they lacked motivation to join remote classes (Günbas, Gözükcü, 2020).

In Australia, some tutors considered the efforts of some teachers to be deficient, pointing out that their lack of specialization in the use of remote technological means had a negative impact on their cooperation to join efforts with them in favor of their children's learning (Ewing, Cooper, 2021).

While, in China, students shared feeling uncomfortable due to technical difficulties and lack of communication with their teachers and peers, added to the constant supervision of their tutors (Zhu et al., 2022). Although teachers did assimilate the commitment to fostering student interaction as the primary activity, several students underestimated the importance of their participation in their learning process. This led some tutors to attribute their children's learning poverty to a lack of individualized attention from the teacher (Günbas, Gözükcü, 2020).

On the other hand, the parents recognized that learning within the home is a challenge due to the role models of their children who view their home as a place of rest and leisure, for which they observed that it was necessary to organize the activities of the children to create an adequate environment of study considering that a specific schedule is covered at school (Novianti, Garzia, 2020).

Likewise, during this period of health emergency, students reported having effects on their physical and mental health; in China, for example, more than 50 % reported spending more time remotely compared to their face-to-face studies and what made it more strenuous was the long time spent sitting (Zhu et al., 2022); while in Turkey the guardians attributed the fact of staying at home as the reason why their children showed indiscipline (Günbas, Gözükcü, 2020).

The negative effects of socio-emotional skills increased during the pandemic because students were more susceptible to stress and anxiety by not having control over their emotions (Alsubaie, 2022). Added to the physical and emotional stress that the students experienced during their remote classes, there was a lack of concentration due to the pressure they put on their families, the lack of time to cover their household chores and, in turn, the mutual irritation generated by social distancing, the inability to go out to meetings, increased work and the need to spend more time on their electronic devices to fulfil their assignments (Gupta et al., 2021).

Conversely, this new active role of tutors as co-mediators of their learning implied a challenge in time management, therefore, the stress and tiredness reported was not only in students; In China, for example, tutors shared feeling pressured by the time required to be co-mediators of their children's educational process, denoting feelings such as frustration and fatigue (Zhu et al., 2022).

While in India, they reported greater stress when perceiving the overload of work during and after their children's online classes, as they required assistance (Gupta et al., 2021). In addition to the above, there was the problem of the lack of infrastructure in the homes to attend to the distance education strategy, the indifference on the part of some tutors to assume the role of direct support of the student at home, added to the inequity in attention to the special needs of students (Apriyanti, 2020; Güvercin et al., 2022).

In general, the role of parents in the learning process and motivation for students stands out as essential, since this support promoted the interest of children towards their lessons and attention to moments of connection, so that the only mitigating factors of this motivation were being isolated from their friends and technical problems (Demir, Gologlu, 2021). However, to the latter one can also add the lack of education of the tutor himself to guide his son during the development of the lessons, which caused them difficulties in caring for their children (Novianti, Garzia, 2020; Algraini, Alasim, 2021; Alsubaie, 2018; Alsubaie, 2022).

However, by being more involved in mediating their children's learning and, despite the fact that distance education does not replace face-to-face education, around the world the work of teachers to continue the training of students was recognized and appreciated the effort to stay online during the transit of the pandemic to protect the health of their families (Günbas, Gözükcü, 2020; Demir, Gologlu, 2021; Gupta et al., 2021).

Although they all conclude that, the best form of learning is face-to-face (Alqraini, Alasim, 2021; Gupta et al., 2021; Demir, Gologlu, 2021; Zhu et al., 2022). The advantages of the distance strategy allowed continuity in their studies, safeguarding them safely and allowing them to accompany them in this process (Günbas, Gözükcü, 2020). This stage, from March 23, 2020, to July 28, 2022, referred to the skills and commitment of the tutors to the education of children at home. The sudden implementation of such a strategy, as well as creating challenges, also raised practical implications applicable to the post-pandemic.

**Research question and purpose**

For all of the above, the big question that seek to answer: What is the model resulting from confirming the five-factor model of the role of parents in the virtual education of their children? Therefore, the purpose of the study is to validate the five-factor model using confirmatory analysis.

**Methodology and research design**

The study design is non-experimental and cross-sectional. For data analysis is descriptive, correlational and confirmatory using SEM methodology.

**Participants**

253 parents of elementary school students were surveyed. The only request from the parents was the anonymity.

**Instrument**

The reduced scale developed by Valdés et al. (2009), which consists of 23 items on a Likert scale whose range is from 0 = never to 4 = always, as well as questions about the profile of the respondents, was used.

**Procedure for data analysis**

The reliability and internal consistency of the scale, as well, the normality of the data are assessed. Afterward, an exploratory factorial analysis (EFA) with orthogonal Varimax rotation is develop in order to obtain the components matrix rotated (Muthén, Kaplan, 1992; Richaud, 2005; Ogasawara, 2011; Timmerman, Lorenzo-Seva, 2011). Subsequently, to evaluate the model proposed by Santana et al. (2023), about the role parents in the teaching-learning process of their children, confirmatory analysis (CA) is used to validate the factorial solution, using the SEM methodology. To confirm the factorial solution, several goodness of fit indicators, can be used. Some of these indicators are the normed fit index (NFI), the non-regulated fit index (NNFI), also known as TLI, the index incremental fit index (IFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA), among others, (Mac-Callum et al., 1996; Hair et al., 1999; Hu, Bentler, 1999). In this work, the CMIN/DF index, RMSEA, RMR, GFI, AGFI, CFI and TLI to evaluate the model, as well as, PRATIO, PNFI and PCFI to evaluate parsimony, were used.

**3. Data analysis and discussion**

The total explained variance matrix is obtained (Table 1) and the rotated component matrix (Table 2).

**Table 1.** Total variance explained

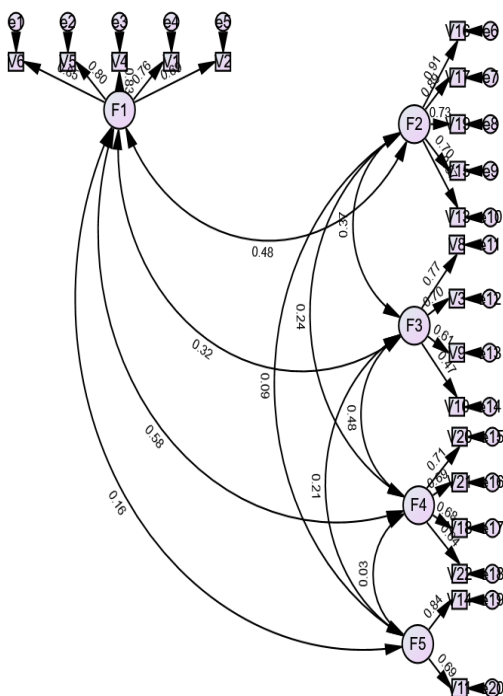
Component	Extraction sums of squared loadings		
	Eigenvalues	% of variance	cumulative, %
1	6.835	29.717	29.717
2	2.349	10.215	39.932
3	2.072	9.010	48.942
4	1.683	7.316	56.258
5	1.111	4.829	61.087

**Table 2.** Rotated component matrix<sup>a</sup>

Indicators	F1	F2	F3	F4	F5
6. Talk with the teacher about your child's performance and behavior	.838				
5. Talk with the teacher about your child's homework	.805				
4. Talk with the teacher about how the child performs tasks and participates in class	.785				

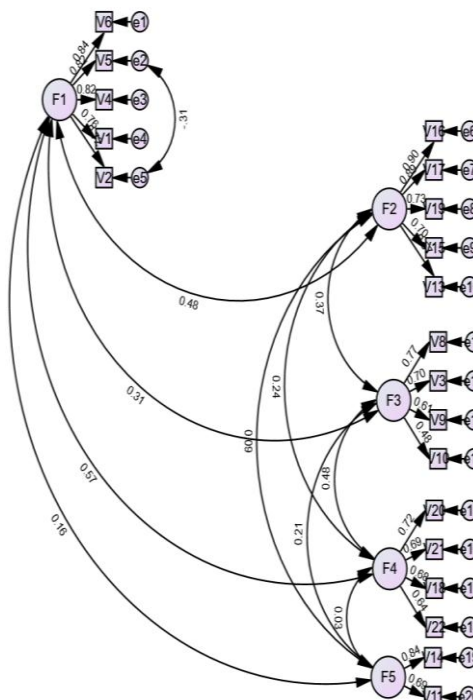
Indicators	F1	F2	F3	F4	F5
1. Talk with the teacher about your child's learning	.756				
2. Talk with the teacher about any concerns expressed by your child	.713				
Have a good relationship with your child's teacher					
16. Talk with your child about what s/he did at school		.848			
17. Talk with your child about what s/he did in the different classes		.843			
19. Talk with your child about the relationship s/he has with their teacher		.779			
15. Talk to your child about their classmates		.757			
13. Supervise the doing of homework		.627			
Praise child when s/he completes schoolwork					
Participate in raffles organized for the improvement of the school					
8. Attend when required by the school			.784		
3. Attend school meetings			.778		
9. Attend expert talks organized by the school			.681		
10. Pick up your child from school			.546		
20. Know the evaluation system of the school				.775	
21. Know the school regulations				.736	
18. Know about the support services provided by the school				.682	
22. Know the training and experience of the child's teachers				.596	
14. Have a different opinion regarding what affects academic performance					.873
11. Have a different opinion regarding what affects your child's behavior					.871
Extraction method: principal component analysis. Rotation method: Varimax with Kaiser <sup>a</sup> normalization. The rotation has converged in 7 iterations.					

Notes: \*Three items of the 23 original items of the scale, are not within the indicated levels, therefore they are discarded.



Initial model 1.(Chi-square = 209.351; Degrees of freedom = 160 and Probability level = .005)

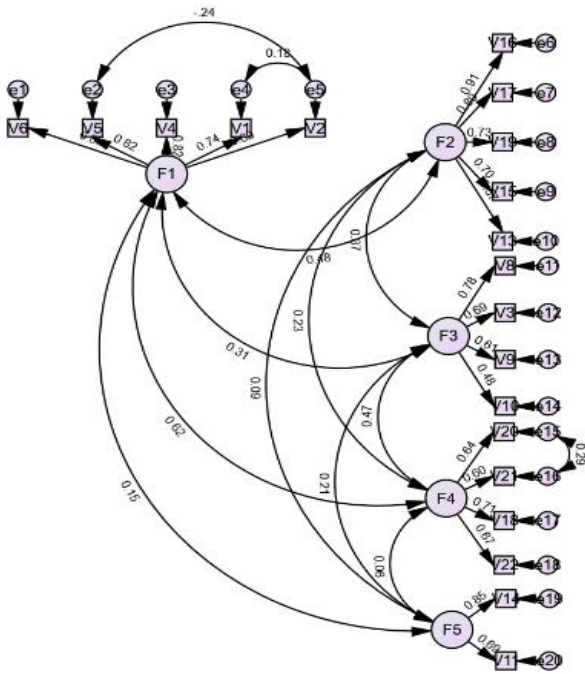
**Fig. 1.** Parent's role in virtual learning model 1



(Chi-square = 194.906; Degrees of freedom = 159; Probability level = .028

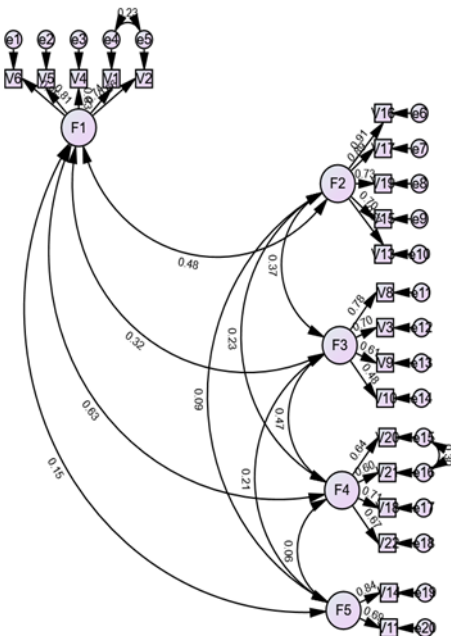
**Fig. 2.** Parent's role in virtual learning model 2

Now, we proceed to corroborate the factorial solution, for this, we use the CA to obtain a greater contrast of the specified hypotheses. In this analysis, the covariance matrix is evaluated instead of the correlation matrix, which helps to establish whether the indicators are equivalent. Figure 1 shows the initial model of the factorial solution (Tables 1 and 2). Figures 2, 3 and 4 show the modified models, to identify the best fit of the model according the Chi-square likelihood ratio.



(Chi-square = 185.611; Degrees of freedom = 158; Probability level = .066)

**Fig. 3.** Parent's role in virtual learning model 3



**Fig. 4.** Parent's role in virtual learning model 4

(Chi-square = 176.508; Degrees of freedom = 157; Probability level = .137)

Table 3 shows the summary of the fit indices obtained from the four models resulting from the confirmatory analysis. The model that shows the best fit is the model in figure 4, where the

following estimation errors are correlated: In factor 1, e2 versus e5, e4 versus e5 and in factor 4, e20 and e21.

**Table 3.** Models obtained

	RMSE A	CMIN/DF	RMR	GFI	AGFI	PGFI	TLI	CFI	PRATIO	PNFI	PCFI
Model 1	.035	1.308	.058	.925	.902	.705	.969	.974	.830	.758	.809
Model 2	.039	1.226	.058	.930	.908	.704	.980	.983	.830	.758	.809
Model 3	.026	1.175	.053	.934	.913	.703	.984	.987	.832	.765	.821
Model 4	.022	1.124	.052	.937	.916	.701	.989	.991	.826	.763	.819

To discuss the result, we focus on three fundamental aspects on which this methodology is based: evaluating the absolute fit, structural fit and parsimony. In this order, the results are discussed below

#### Absolute goodness of fit

To determine the degree that the general model predicts the correlation matrix, the only statistical measure used for the SEM methodology is the Chi-square likelihood ratio statistic (Kline, 2005). Furthermore, if the Chi-square/df values are in the range of 1 and 3 then an acceptable fit is obtained (Hair et al., 1999). For its part, the RMR measures the variances and covariances and verifies whether they differ from the estimates obtained. If its value is close to zero, it is indicative of an almost perfect fit (Byrne, 2001; Arbuckle, 2003). The Goodness of Fit values for models 1, 2, 3 and 4 are:

**Table 4.** Absolute fit

Model	Chi-square	df	p	CMIN/DF	RMSEA	RMR
1	209.351	160	.005	1.308	.035	.058
2	194.906	159	.028	1.226	.039	.058
3	185.611	158	.066	1.175	.026	.053
4	176.508	157	.137	1.124	.022	.052

#### Incremental fit measures

In relation to the incremental fit indices, allows evaluating the improvement of the proposed model with the base model, also called the null model. The CFI (Comparative fit index), GFI (Goodness of fit index) and as an extension of the GFI, the adjusted goodness of fit index (AGFI) allows adjusting the degrees of freedom between the models, as well as the TLI index (Tucker-Lewis-Index) are some of the indices suggested for this purpose by McNish et al. (2017). Values greater than 0.90 are those that show a better fit of the model.

**Table 5.** Incremental fit

Model	Chi-square	df	p	GFI	AGFI	TLI	CFI
1	209.351	160	.005	.925	.902	.969	.974
2	94.906	159	.028	.930	.908	.980	.983
3	185.611	158	.066	.934	.913	.984	.987
4	176.508	157	.137	.937	.916	.989	.991

#### Parsimony fit measures

To obtain the level of fit of the model, the quality of the required estimated coefficients was taken into account with the quality of fit of the model. Depending on the value, these can be low, acceptable or excessively high and range between 0 and 1. Mulaik et al., (1989) propose the Parsimony Goodness-of-Fit Index (PGFI) which represents a modification of the GFI and considers the degrees of freedom available to test the model. The proposed ranges are 0.5 to 0.7 and The Parsimony Normed Fit Index (PNFI) relates the constructs to the theory that supports them. Values close to 1 denote a higher relationship.

**Table 6.** Parsimony fit measures

Model	Chi-square	df	p	PGFI	PRATIO	PNFI	PCFI
1	209.351	160	.005	.705	.830	.758	.809
2	94.906	159	.028	.704	.830	.758	.809
3	185.611	158	.066	.703	.832	.765	.821
4	176.508	157	.137	.701	.826	.763	.819

#### 4. Conclusion

Finally, we can say that the role played by parents in the educational process carried out online, was fundamental. The exploratory model reported by Santana et al. (2023) was confirmed, since the five factors showed excellent values in the standardized estimators, as well as showing positive correlations between the factors. The structure of the five factors is interesting, which denotes the degree of importance in which these indicators behave: firstly, the communication of the parents with the teacher (factor 1), the communication with the children (factor 2), addressing school issues (factor 3), involvement in school dynamics (factor 4) and the own opinion that parents have regarding the performance and behavior of their children (factor 5), all this explains the role of Parents in the online teaching process of their children.

In factor 1, the importance that parents give to communication with the teacher is evident, since this allows them to be informed about the behavior and performance of their children, their homework and how they are carried out, and the student's participation in class. Advances in learning and everything that is consistent with the learning of children. For its part, factor 2 shows the importance of communication with children, about what they do at school, in the different classes that they carry out in their studies, in the relationship that children have with teachers, with their classmates, as well as supervising what they do for homework.

Addressing school-related issues is a fundamental task for parents, since they get involved when required by the school, at meetings for children's issues, when the school organizes talks with experts and, very importantly, parents family pick up the children at school.

In addition, parents are involved in the school dynamics, considering it a fundamental task, since they seek to know the school's evaluation system, as well as the school regulations. In the same way, they are interested in learning about the support services that the school offers to students. And very importantly, parents get involved to know about the training and experience of the teachers who are training their children.

On the other hand, parents have a different opinion regarding the academic performance of their children, which affects their behavior. This data is interesting if we take into account that it is from these opinions that it becomes an element for a greater involvement of parents, to be in communication with teachers and school authorities more frequently. This can advance in the process of training children and the dynamics of school institutions.

In this way, the purpose of the study is fulfilled, since it was possible to validate the model reported by Santana et al. (2023) in similar terms, except for the indicators  $X_7$ ,  $X_{12}$  and  $X_{23}$  which did not show factorial scores  $> 0.5$ , therefore both were excluded.

As a suggestion, it is advisable to replicate this scale in Latin countries, and for the particular case of Mexico, expand the study to other regions, municipalities, institutions with the purpose of continuing to find similarities or differences in terms of the extracted factors that explain the role of parents in the teaching-learning process of their children (students).

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## Appendix

Test on the role of parents in the virtual education of primary education students during the covid-19 pandemic

Dear Parent, we request your kind collaboration in answering this questionnaire. The purpose is to identify the educational activities in which you have participated with your child in this stage of virtual teaching that is carried out due to the health contingency caused by COVID-19. The information provided will be handled with absolute confidentiality and anonymity, since the work has strictly academic purposes and its results will help design some strategies that can improve the process of teaching children.

Thank you for your cooperation

### Section A. Sociodemographic data

Sex	Age	How many people live in your household?
a) Male	a) Under 20	a) 1
b) Female	b) 20 to 30	b) 2
	c) 31 to 40	

	d) 41 t 051	c) 3 or more
What is your civil status? a) Single parent b) Married c) Widowed	Parents' level of schooling a) Elementary b) Middle School c) High School d) College e) Graduate studies	Number of children a) 1 d) 2 e) 3 or more
Father's occupation a) Unemployed b) Manual laborer c) Technician d) Merchant e) Professional	Mother's occupation a) Unemployed b) Manual laborer c) Technician d) Merchant e) Professional	Child's school grade a) 1st b) 2nd c) 3rd d) 4th

**Section B.** Consists of 23 items on a Likert-type scale, which has as response options: 1 = Never, 2 = Almost never, 3 = Sometimes, 4 = Almost always and 5 = Always.

Item	Item	Response
1	Talk with the teacher about your child's learning	
2	Talk with the teacher about any concerns expressed by your child	
3	Attend school meetings	
4	Talk with the teacher about how the child performs tasks and participates in class	
5	Talk with the teacher about your child's homework	
6	Talk with the teacher about your child's performance and behavior	
7	Have a good relationship with your child's teacher	
8	Attend when required by the school	
9	Attend expert talks organized by the school	
10	Pick up your child from school	
11	Have a different opinion regarding what affects your child's behavior	
12	Participate in raffles organized for the improvement of the school	
13	Supervise the doing of homework	
14	Have a different opinion regarding what affects academic performance	
15	Talk to your child about their classmates	
16	Talk with your child about what s/he did at school	
17	Talk with your child about what s/he did in the different classes	
18	Know about the support services provided by the school	
19	Talk with your child about the relationship s/he has with their teacher	
20	Know the evaluation system of the school	
21	Know the school regulations	
22	Know the training and experience of the child's teachers	
23	Praise child when s/he completes schoolwork	