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RESEARCH ARTICLE

Family Cohesion, Adaptability and Composition in Adolescents from Callao, Peru

Cohesión, adaptabilidad y composición familiar en adolescentes del Callao, Perú

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Summary

The objective of the study was to analyze if there are significant differences between family cohesion and adaptability according to the type of family composition (nuclear, extended, single parent and non-nuclear). This is a non-experimental and empirical research, in which a non- probabilistic, cross-sectional, selective and associative strategy was employed; 428 male and female teenagers, aged 14 to 18, from a public school in Callao were evaluated. The D. Olson's family cohesion and adaptability evaluation scale (FACES III) and an *ad hoc* questionnaire were used to evaluate family composition. The results show significant differences between adolescents belonging to nuclear families and adolescents belonging to non-nuclear families. Theoretical and practical implications are discussed.

Keywords: Family cohesion; family adaptability; family composition; adolescents; circumplex model, factor analysis.

Resumen

El objetivo del estudio consistió en analizar si existen diferencias significativas entre la cohesión y adaptabilidad familiar según el tipo de composición familiar (nuclear, extensa, monoparental y anuclear). Esta es una investigación no experimental, de tipo empírica, en la que se empleó una estrategia asociativa selectiva no probabilística y transversal; se evaluó a 428 adolescentes varones y mujeres, entre 14 a 18 años, estudiantes en un colegio nacional del Callao. Se utilizó la escala de evaluación de la cohesión y la adaptabilidad familiar de Olson (FACES III) y un cuestionario *ad hoc* para evaluar la composición familiar. Los resultados muestran diferencias significativas entre los adolescentes pertenecientes a familias nucleares y anucleares. Se discuten implicaciones teóricas y prácticas.

Palabras clave: Cohesión familiar, adaptabilidad familiar, composición familiar, adolescentes, modelo circumplejo, análisis factorial.

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Introduction

Educational training has shown the importance of the relationship between school and family for this process to be successful (Martínez, 2010). Particularly, family support is an important protection factor for adolescents (Orcasita & Uribe, 2010). In this regard, studies have described the different representations of adolescents based on the perception they have of the way they relate at home (Scarpati, Pertuz & Silva, 2014). However, the complexity of family dynamics has posed a challenge for researchers in social sciences (López-Montaño & Herrera-Saray, 2014).

The world family map (Child Trends, 2013) proposes indicators that allow the analysis of the complexity of family relationships through the family structure, family socioeconomic status, family processes and family culture. In addition, it has allowed the identification of contemporary variations with respect to the family dynamics in different countries of America. These variations become the new ways the family members find to bind together, establish limits/rules, communicate to each other and to join new family systems or family composition.

The family composition characteristics allow describing using simple terms the structure of the interactions between family members (Suárez et al., 2015). However, there are different types of family composition (for example, nuclear families, single parent families, extended families and non-nuclear families). Some of them can generate a negative social response, especially in conservative contexts such as Latin America (Faúndes, 2012). This is key due to the susceptibility of the adolescents to social criticism, and this significantly affects the level of functionality they perceive in their family (Cervini, Dari & Quiroz, 2016).

In addition, the types of family composition influence the levels of emotional instability; nuclear composition has been associated with a low level of emotional instability, while extended composition or extended family is related to a higher level of emotional instability (Bardales, 2005).

Family functionality is defined as the effectiveness of the family to achieve certain balance, order and unity in view of the demands of the life cycle requirements (Staccini, Tomba, Grandi, & Keitner,2015). Regarding the main dimensions of family functionality, the proposal of Olson et al. (1982), is family cohesion, adaptability, communication and satisfaction (Copez-Lonzoy, Villarreal-Zegarra, & Paz-Jesús, 2016; Olson, 2011). Besides, Olson (2000) proposes that family functionality is mainly governed by the capacity of adaptation and the level of emotional closeness between members.

In this regard, the family composition and functionality represent two variables whose relationship is currently a controversial issue (Scarpati, Pertuz, & Silva, 2014). Although it is true that, from a theoretical perspective, it is not about the type of family and the blood, biological, cultural and community or legal relationship, but the characteristics of relationship between its members (Bermúdez & Brik, 2010), it is still necessary more empirical evidence of this issue.

There are still few research works on the family influence on the psychological development of the adolescent nationwide. However, they are important to understand and delimit responses in several psychosocial problems. For that reason, this study seeks to know the relationship between family composition and functionality in adolescents from the province of Callao (Peru). In addition, it is intended to gather psychometric evidence on FACES III scale.

Method

Design

This is a non-experimental and empirical research that uses a non-probabilistic, cross-sectional, selective and associative strategy (Ato, López & Benavente, 2013). In addition, no manipulated variables are used and it

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seeks to describe a reality in a certain moment, while making comparisons between groups.

Participants

The sample consists of adolescents (*n*=428) boys (*n*=242, 56.5%) and girls (*n*=186, 43.5%) of fifth year of secondary school from a public school in Callao (Peru). Ages vary between 14 and 18; the average age is 16 years and 3 months. Family composition includes nuclear family (*n*=170, 39.7%), single-parent family (*n*=56, 13.1%), extended family (*n*=166, 38.8%) and non-nuclear family (*n*=36, 8.4%).

According to the number of siblings, participants can be only child (*n*=15, 3.5%), with one sibling (*n*= 124, 29%), two siblings (*n*=134, 31.3), three siblings (*n*=93, 22%) or with four or more siblings (*n*=56, 14.2%).

Instruments

Family Cohesion and Adaptability Evaluation Scale of D. Olson - FACES III (1982).

It consists of 20 items. Reliability of the original test is .68, and according to its dimensions, cohesion .77 and adaptability .62. Correcting it entails the sum of odd items for cohesion dimension, and the sum of even items for adaptability dimension according to the translation used by Reusche (1998). This scale has two dimensions and, based on the scores, it allows describing four types of families.

Family Cohesion: This dimension evaluates the level at which the members of the family are separated or connected to each other and they can support each other. It has been defined as the emotional bounding that family members have toward one another. There are four levels of cohesion: Disengaged (D), Separated (S), Connected (C) and Enmeshed (A). One of

the most representative items is "The members of the family feel very close to each other."

Family Adaptability: This dimension analyzes the ability of the marital or family system to change its power structure, roles and rules of relationship in response to a situational or development demand. The levels of adaptability include Rigid (R), Structured (E), Flexible (F), and Chaotic (C) (Olson et al., 1982). One of the most representative items is "Rules change in our family."

Based on the curvilinear correlation of these two dimensions, three levels of family functionality are determined: balanced families, extreme families and midrange families.

Family composition refers to the number of members and blood, legal or affective relationship, they may have. It is classified in *nuclear* family (both biological/legal parents live with their biological/legal children), *extended* family (one or both biological/legal parents live with their biological/legal children and other members such as grandparents, uncles and aunts, cousins, etc.), *single-parent* family (only one of the biological/legal parents lives with their biological/legal children) and non-nuclear family (minors living with their biological/legal parents, and other members such as grandparents, uncles and aunts, cousins, or siblings are those who exercise parental responsibilities).

To classify adolescents according to their family composition, an ad hoc sheet was prepared and it indicates with which family members the minor lives (mother, father, siblings, uncles and aunts, grandparents and cousins). It also records the age, gender, level of education, section, number of siblings, what number child they are in their family, and with whom they currently live.

Procedure

The inventory was provided in the classrooms of the school and in a ventilated and clean environment in order to have favorable conditions for

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the evaluation. Before applying the tests, the purpose of the evaluation was explained, the respective instructions were given and participants' doubts were clarified. It is worth mentioning that eight tests were voided since they were incomplete.

For the data analysis, the following were used: Descriptive statistics (central tendency, dispersion, kurtosis and asymmetry), internal consistency statistics (Cronbach's alpha, ordinal alpha, omega), exploratory and confirmatory factor analysis, statistics to analyze normality with the Shapiro-Wilk's test (1965; Dominguez-Lara, 2016; Ghasemi, & Zahediasl, 2012), for the inferential analysis of differences in means (Kruskal-Wallis *h* test) and for association (Pearson's Chi-Quadrat, contingency tables and Cramer's V).

Outcomes

At a descriptive level, central tendency, dispersion and normality measures were analyzed in the cohesion and adaptability dimensions in order to select the most suitable statistics to the nature of the data.

Table 1.

Central tendency and dispersion measures of family cohesion and adaptability dimensions.

	M	*DE*	*SW*	*As*	*Ks*	*Min*	*Max*
Cohesion	33.95	6.51	.964 (p<.001)	-.714	1.136	12	48
Adaptability	26.90	5.03	.989 (p=.002)	-.006	.227	13	42

Note: Scores for each dimension can range from 10 to 50.

The first findings show that the data are not adjusted to the normal curve (Ghasemi & Zahediasl, 2012). For that reason, non-parametric statistics are used. In addition, frequency and percentage of the types of cohesion, adaptability and functionality were analyzed. The scale for Lima Metropolitana de Toscano (1998) was used, and as a result the types of

cohesion and adaptability were grouped according to the direct score in order to know the prevalence over the types of family dynamics.

Table 2.

Frequency measures and percentage of the types of family cohesion, adaptability and functionality (n=428).

		f	%
Types of cohesion	Disengaged [e]	52	12.1
	Separated [b]	128	29.9
	Connected [b]	190	44.4
	Enmeshed [e]	58	13.6
Types of adaptability	Rigid [e]	118	27.6
	Structured [b]	168	39.3
	Flexible [b]	118	27.6
	Chaotic [e]	24	5.6

Note: [b] = corresponds to balanced types; [e] = corresponds to extreme types

Analysis of the Internal Structure

The sample was divided into two equivalent groups of 214 adolescents each in order to make an exploratory factor analysis (EFA) and the confirmatory factor analysis (CFA). In the analysis prior to the EFA application, the Kaiser- Meyer-Olkin measure of sampling adequacy (KMO) was analyzed, and the measures higher than .80 are considered to be optimal, and the values lower than .70 are considered to be mediocre (Pardo & Ruiz, 2002; Hair, Anderson, Tatham & Black, 1999). Moreover, the Bartlett's test also showed appropriate levels in both cases and indicated enough intercorrelation of the items. For that reason, the use of factor analysis in only the data of the cohesion dimension was coherent. When analyzing the variance explained, only the cohesion dimension showed a value higher than 40%; and it was

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the only one with an appropriate value (Lloret-Segura, Ferreres-Traver, Hernández-Baeza & Tomás-Marco, 2014).

Polychoric matrixes were used according to the nature of the variables (discrete or not continuous) (Domínguez, Villegas & Centeno, 2014) (see Table 2).

Table 3.

Analysis of minimum assumptions to make an exploratory factor analysis.

	Determinant	KMO (CI 95%)	Bartlett's sphericity test	Variance explained
Cohesion	.090	.848 (.822 - .886)	χ^2 (45) = 1018.2; p < .0001	43.6%
Adaptability	.327	.623 (.585 - .694)	χ^2 (45) = 472.4; p < .0001	23.8%

The parallel analysis criterion was used (Timmerman & Lorenzo-Seva, 2011) to extract and determine the most appropriate number of factors, both cases agreed on a one-way solution. The method for estimating unweighted and unrotated least square factors (MLS) was used since it only evidences one factor (Lorenzo-Seva, 1999). The optimal loads higher than .300 are considered (Hair et al., 1999).

Table 4.

Factor loads and commonalities for the family cohesion and adaptability scale.

Cohesion			Adaptability		
Item	F1	h^2	Item	F2	h^2
Item 1	.693	.480	Item 2	.422	.178
Item 3*	.197	.039	Item 4	.424	.180
Item 5	.497	.247	Item 6*	.093	.009
Item 7	.411	.169	Item 8	.631	.398
Item 9	.720	.519	Item 10	.429	.184
Item 11	.754	.568	Item 12*	.193	.037
Item 13	.544	.296	Item 14*	.264	.070
Item 15	.516	.266	Item 16	.587	.344
Item 17	.595	.354	Item 18*	.060	.004
Item 19	.521	.271	Item 20*	.103	.011

*Note: * items eliminated since factor loads are not higher than .300*

In the cohesion dimension, item 3 does not have an appropriate factor load and for that reason, it was eliminated for subsequent analyses. Besides, in the adaptability scale, items 6, 12, 14, 18 and 20 were not higher than .300 and consequently, they were eliminated. The KMO analysis [CI 95%]= .656 [.610 - .717]; χ^2 (10) = 300.4; p < .0001 was performed again, and the upper limit of KMO reaches an acceptable value and the analysis of the dimension of 5 items continued.

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Confirmatory Factor Analysis

The CFA was carried out based on models with all the items and models with items eliminated. The method for estimating *non-weighted least squares* was used since the criterion of multivariate commonality was not met (Lloret-Segura et al., 2014).

To interpret the factor model in an efficient manner, several adjustment indicators were used and a better evaluation was carried out (Arias, 2008; Ferrando & Anguiano-Carrasco, 2010; Hair et al., 1999; Hu & Bentler, 1998; Lloret-Segura et al., 2014; Manzano & Zamora, 2010; Ruíz, Hernández, Mayrén, & Vargas, 2014). The indicators selected were *Chi-quadrant* (X^2), Goodness of Fit Index (*GFI*), Root Mean Square Error of Approximation (*RMSEA*) Index, Root Mean Square Residual (*RMR*) Index, Comparative Fit (*CFI*) Index, Akaike Information Criterion (*AIC*) and the Consistent Akaike Information Criterion (*CAIC*).

X^2 showed an appropriate adjustment as long as there is a level of significance associated higher than.05, accepting the null hypothesis that states that all the errors of the model are null (Ruiz, Pardo & San Martín, 2010). Moreover, X^2/gl, showed a good adjustment since it was lower than three (Ruiz et al., 2010).

The values of *CFI*, *GFI* and *AGFI* showed a good adjustment since they exceeded the value of .95 (Hair et al., 1999; Ferrando & Anguiano-Carrasco, 2010; Manzano & Zamora, 2010; Ruiz et al., 2010; Lloret-Segura et al., 2014). *RMSEA* and *RMR* showed an optimal adjustment with values lower than .05 (Lloret-Segura et al., 2014).

AIC and *CAIC indexes* are used to compare factor solutions and to identify which one of them has a better adjustment based on the possible lower value found (Byrne, 1994) (see Table 4).

Table 5.

Adjustment index of the cohesion and adaptability scales with all items and the items modified.

Models	χ^2	*g.l.*	$X^2/g.l.$	*CFI*	*GFI*	*AGFI*	*RMSEA [CI 95%]*	*RMR*	*AIC*	*CAIC*
Cohesion	72.055*	34	2.12	.955	.982	.970	.054 [.049 - .095]	.069	4.05	-144.38
Cohesion [a]	55.075*	26	2.12	.984	.987	.978	.036 [.045 - .099]	.059	3.07	-110.44
Adaptability	98.241*	34	2.89	.588	.947	.915	.105 [.072 - .116]	.098	*30.24*	-118.20
Adaptability [b]	24.405*	4	6.10	.879	.982	.933	.141 [.099 - .216]	.081	16.40	-1.06

*Note: *p < 0.001; [a] = version of the family cohesion scale with item 3 eliminated; [b] = version of the adaptability scale with item 6, 12, 14, 18 and 20*

Both versions of cohesion show appropriate CFI, GFI, AGFI, RMSEA, RMR. CAIC is much lower in the complete version. Although both models have appropriate levels, the complete cohesion version is analyzed in order not to lose the information provided by the reagent No. 3.

The cohesion scale has the best adjustment with all the items, supported by the EFA outcomes. Besides, the family adaptability scale does not show evidence of an appropriate internal structure, both in the version with all the items and the version with the items eliminated. Consequently, it is decided to make analyses only with the family cohesion scale since it has an appropriate internal structure.

Reliability Analysis

Finally, the reliability of the family cohesion scale with all the items was analyzed through the statistics of Cronbach's α .789 [CI 95% = .758 - .818] and ω = .81. It is considered appropriate in both cases (Dominguez-Lara & Merino, 2015; Koning & Franses, 2003). All the items showed an item-test correlation higher than .20 (DeVellis, 2012).

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Differences between Type of Family

Subsequently, the existence of significant differences between types of family composition (extended, nuclear, single-parent and non-nuclear) and the family cohesion (Table 6) was analyzed. It was found that there are significant differences between cohesion scores in adolescents from non-nuclear families (*n*=36, 8.4%) and extended families (*n*=166, 38.8%), as well as from non-nuclear families (*n*=36, 8.4%) and nuclear families (*n*=170, 39.7%).

Table 6.

Analysis of the four types of family composition according to family cohesion (n=428).

	Group 1	Group 2	*h*	*EE*	*p*
Cohesion	Non-nuclear	Single-parent	55.635	26.382	.035
	Non-nuclear	Extended	85.416	22.705	.000
	Non-nuclear	Nuclear	96.601	22.658	.000
	Single-parent	Extended	-29.781	19.085	.119
	Single-parent	Nuclear	40.966	19.028	.031
	Extended	Nuclear	11.185	13.476	.407

Note: h= value of the statistic h of Kruskal Wallis; EE = standard error

When analyzing the average range of cohesion scores, and comparing them with the types of family composition, there is a significant difference between scores of adolescents from non-nuclear-nuclear families and non-nuclear-extended families, in the cohesion and adaptability dimensions.

Cohesion.

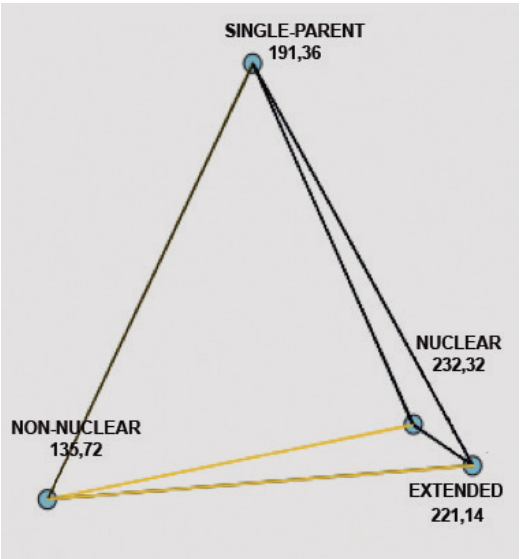

Figure 1. Comparison by pairs of the average range of cohesion scores according to the type of family composition.

Although data show a statistically significant difference, the sample size of the groups is varied (between 36 and 170), and this may be a source of error, since the statistic *h* of Kruskal Wallis uses as an input the size of the groups (Shapiro & Wilk,1965; Ghasemi, & Zahediasl, 2012).Therefore, the groups were homogenized by randomly selecting 36 adolescents of each type of family composition. The analysis of these groups showed that there are still significant differences between nuclear and non-nuclear families only in the family cohesion dimension (Table 7) (Figure 2).

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Table 7.

Analysis of the four types of family composition according to cohesion (n=144).

	Group 1	Group 2	*h*	*p*
Cohesion	Non-nuclear	Single-parent	20.792	.034
	Non-nuclear	Extended	22.931	.019
	Non-nuclear	Nuclear	29.500	.003
	Single-parent	Extended	-2.139	.827
	Single-parent	Nuclear	8.708	.375
	Extended	Nuclear	6.569	.503

Note: h= value of the statistic h of Kruskal Wallis; EE = 9.814

Cohesion

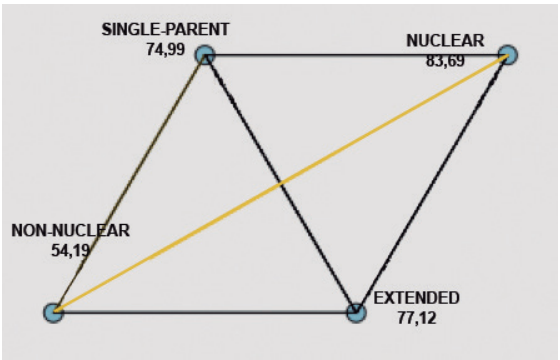

Figure 2. Comparison by pairs of the average range of cohesion scores according to the type of family composition.

Moreover, despite the small size of the sample, there are significant differences between perception of emotional closeness (cohesion) between family members, adolescents from families living with both parents (nuclear) and families whose family representative is not the biological/legal father/

mother, but other member such as an uncle/aunt, oldest sibling or grandfather who exercise parental responsibilities (non-nuclear family).

Discussion

This study sought to determine the existence of differences between family cohesion and family adaptability according to the composition of family members in a group of school adolescents from the constitutional province of Callao. The FACES III scale designed by Olson et al. (1982) and a technical sheet to describe the family typology (non-nuclear, nuclear, single-parent) were used.

The analysis of family relationships according to the type of composition showed that there are significant differences (n = 428) in the emotional closeness of adolescents from nuclear and non-nuclear families (h = 85.416; p < .001), as well as adolescents from extended and non-nuclear families (h = 96.601; p < .001). However, the groups (types of family) showed very different sizes of samples and consequently, the sample was reduced in homogenous groups (n = 36, each). And it was found that there were still significant differences between emotional closeness only in adolescents from nuclear and non-nuclear families (h = 29.500; p = .003), being greater in nuclear families.

These outcomes suggest that the presence of at least one of the biological or legal parents may be related to higher levels of affective bonding perceived by the adolescents. In addition, in line with Luengo (2008), Sobrino (2008), Bardales (2005), this study would lead to the conclusion that the family composition influence family interactions, especially the emotional bonding between members.

This may be due to the fact that the absence of a stable parental figure causes the adolescent to perceive little emotional closeness with the rest of the family system. Therefore, it would be necessary that the members of the non-nuclear families can facilitate jointly or through a specific person in

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charge, that the adolescents can be connected more closely and with more confidence to the rest of the members of the family (siblings, grandparents, uncles, aunts, cousins, etc.)

On the other hand, the analysis of the internal structure of FACES III through the EFA shows an optimal sampling adequacy (KMO > .70; Pardo & Ruiz, 2002; Hair et al., 1999), and an appropriate percentage of variance explained (> 40%; Lloret-Segura et. al., 2014) only in the cohesion dimension. However, one of its items did not reach the minimum values within factor loads (>.300; Hair et al., 1999) and consequently, EFA was performed with the original subscales (all the items) and the subscales modified (with an item eliminated). This analysis determined that the original cohesion subscale presented a better factor solution compared to the modified version, but the family adaptability subscale presented unsuitable psychometric properties, so that it was excluded from subsequent analyses. Based on the outcomes, the findings show that FACES III has no proper factor solution compared to the original proposal made by Olson et al. (1982), and a factor inconsistency was observed in the family adaptability dimension and in previous studies (Kouneski, 2002; Mirnics, Vargha, Tóth & Bagby, 2010; Schmidt, Barreyro & Maglio, 2010).

Among the limitations of the study there are those referred to the sampling process (non-probabilistic), so that the conclusions refer to the sample studied. In addition, the difficulties of the FACES III instrument prevented from achieving the aim of evaluating the family adaptability. This was due to the fact that the scale reported, in this study, unsuitable psychometric properties.

The complexity of family relationships requires that future research works include variables such as influence of the family discipline, communication between members of the family, the exercise of parental roles, among others. This would make it possible to understand better the family dynamics in each context.

Finally, it is concluded that a) there are significant differences between emotional bonding between member of the family (cohesion) perceived by the adolescents from non-nuclear and nuclear families. On other hand, b) FACES III shows unsuitable global psychometric properties. Therefore, it is recommended to study more about it and to make stronger analyses. It is expected that the findings of this study will be used for subsequent research works in our context.

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