RIDU REVISTA DIGITAL DE INVESTIGACIÓN EN DOCENCIA UNIVERSITARIA
ISNN 2223-2516

RESEARCH ARTICLE

# Validation of the Parent-Adolescent Communication Scale among University Students from Lima

## Validación de la Escala de Comunicación Padres-Adolescente en jóvenes universitarios de Lima

## Validação da Escala de Comunicação Pais-Adolescente entre estudantes universitários em Lima

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**Recibido:** 19/6/17 **Revisado:** 15/11/17 **Aceptado:** 15/03/18 **Publicado:** 30/06/18

**Abstract.** The purpose of this study was to provide evidence of validity and reliability for the Barnes and Olson's (1982) Parent-Adolescent Communication Scale among university students from Lima, aged 16 to 25. Participants were 255 students (162 females) from two universities. An exploratory factor analysis was performed to assess the viability of bi-factor and tri-factor structures. This exploratory factor analysis supported the two-factor structure originally proposed for this instrument (open communication and problem communication). Both in the father-adolescent and in the mother-adolescent version, obtained Cronbach's alpha values were high (ranging between .80 and .90). The structural model also showed good fit indexes. This confirms the reliability and validity of this instrument in the sample under study.

*Keywords:*
*adolescents, family communication, reliability, validity, university students.*

**CITE AS:** Araujo-Robles, E. D., Ucedo-Silva, V. H. & well-block, R. (2017). Validación de la Escala de Comunicación Padres-Adolescente en jóvenes universitarios de Lima. *Revista Digital de Investigación en Docencia Universitaria*, *12*(1), 246-265. doi: http://dx.doi.org/10.19083/ridu.12.560
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**Resumen.** El objetivo fue presentar evidencias de validez y confiabilidad de la Escala de Comunicación Padres-Adolescente de Barnes y Olson (1982) en universitarios de Lima de 16 a 25 años. Participaron 255 estudiantes (162 mujeres) de dos universidades de Lima. Se realizó un análisis factorial confirmatorio con el objetivo de evaluar la viabilidad de las estructuras bifactorial y trifactorial de la escala. El análisis factorial exploratorio apoyó la estructura de los dos factores inicialmente propuestos para esta escala (apertura de comunicación y problemas de comunicación). Tanto en la versión de comunicación con el padre como en la de comunicación con la madre se obtuvieron altos valores de alfa de Cronbach (entre .80 y .90). El modelo estructural construido presentó también adecuados índices de ajuste. Con ello se confirma la confiabilidad y la validez de este instrumento en la muestra investigada.

*Palabras clave:*
*adolescentes, comunicación familiar, confiabilidad, universitarios, validez*

**Resumo.** O objetivo da pesquisa foi apresentar evidências de validade e confiabilidade da Escala de Comunicação Pais-Adolescente de Barnes e Olson (1982) em universitários de Lima de 16 a 25 anos. A amostra foi formada por 255 estudantes (162 mulheres) de duas universidades de Lima. Foi realizada uma análise fatorial exploratória com o objetivo de avaliar a viabilidade das estruturas bifatorial e trifatorial da escala. A análise fatorial confirmatoria apoiou a estrutura dos dois fatores inicialmente propostos para esta escala (comunicação aberta e problemas de comunicação). Tanto na versão de comunicação com o pai quanto na comunicação com a mãe, foram obtidos valores altos para o coeficiente alfa de Cronbach (entre .80 e .90). O modelo estrutural construído também apresentou índices de ajuste adequados. Isto confirma a confiabilidade e validade deste instrumento na amostra investigada.

*Palavras-chave:*
*adolescentes, comunicação familiar, confiabilidade, validade, universidade.*

Communication is often defined as the use of “symbols” that are conventionally linked to certain references so that others can respond to them (Adler & Rodman, 2006; Koerner & Fitzpatrick, 2002). From a psychological point of view, the term “communication” involves much more than just the possibility to say things to one another. Communication is an essential tool to maintain group cohesion. This is particularly true in the human environment, and even more within the family. For example, communication promotes welfare both in the family group and with each of its members.

As in any group, communication within the family occurs at different levels. For example, there is communication between spouses, communication between parents and children, and communication between siblings. In this paper, our interest focuses on the communication between parents and the adolescent or young adult child. Some technological breakthroughs like the mobile phone have expanded the opportunities for communication between parents and children in a way. However, these benefits do not occur in all families since in many of them the consequences have been rather an increase in the isolation of adolescents from family life (Devitt & Roker, 2009).

On the other hand, many adolescents may experience problems and lack of confidence to communicate with their parents. A study conducted by Ackard, Neumark-Sztainer, Story, and Perry (2006) found that between a quarter and half of the interviewed adolescents may experience these difficulties. It is also a fact that the degree and perhaps the quality of communication between the adolescent and their parents is diminished as they acquire greater autonomy (Finkenauer, Engels & Meeus, 2002), which translates into the decision of how much information they want to share or hide from their parents, for example, their daily activities or friendships (e.g. Keijsers & Poulin, 2013). It has been observed that the tendency of adolescents to reveal this kind of information to their parents is related to the degree to which they consider their parents have the right to obtain this information (Keijsers & Laird, 2014). It has also been found that the more adolescents consider their parents "invade" their privacy, the less likely they are to reveal important aspects of their activities and relationships (Hawk et al., 2013). Coleman (2014) also notes that "there will be a group of areas related to personal decisions in which parents and their children will disagree during adolescence" (p. 207).

However, the quality of communication with their parents has a significant impact on the lives of adolescents and young adults. For example, the study conducted by Ackard et al. (2006) showed that low levels of communication with parents, among other factors, were linked to body dissatisfaction, drug use, suicide, depression, and low self-esteem. Another research found that female adolescents with eating disorders perceived a less open communication and more communication problems than the ones without such disorders (Maglio & Molina, 2012).

On the other hand, good communication acts as a protective factor mainly against risk conditions. For example, communication in general or specifically on sexual topics may act as a protective factor against unwanted pregnancies and sexually transmitted diseases, by putting an emphasis on delaying sexual initiation and practicing safe sex (Fasula & Miller, 2006; Fisher, 1987; Salazar-Granara et al., 2007; Weinman, Small, Buzi & Smith, 2008). Proper communication also acts as a protective factor against substance abuse in adolescents (e.g., Cava, Murgui & Musitu, 2008; Highet, 2005; Macaulay, Griffin, Gronewold, Williams &

Botvin, 2005) and indirectly against the involvement in criminal behavior (Jiménez, Murgui, Estévez & Musitu, 2007). In fact, Bandura (1997) had pointed out that young people who express their opinions and expectations effectively with their parents and adults resist peer pressure better. The quality of communication with their parents has an impact on problems associated with internet addiction (e.g., Park, Kim & Cho, 2008), or with being victims of cyberbullying (Larrañaga, Yubero, Ovejero & Navarro, 2016).

Good communication with their parents promotes the development of social skills and positive values in adolescents (Hillaker, Brophy-Herb, Villarruel & Hass, 2008), as well as healthier lifestyles (Rodrigo et al., 2004), coping strategies and self-confidence (Luna, Laca & Cedillo, 2012), self-esteem (Estévez, Musitu, & Herrero, 2005), life satisfaction (Levin, Dallago & Currie, 2012), and a stable and properly defined sense of self-concept (van Dijk et al., 2014). In addition, in the educational context, the quality of communication is an important factor that may have an impact on the adolescents' academic achievement, for example, enhancing their interest in certain academic areas like sciences or mathematics (Hyde et al., 2017).

In Peru and other countries, many unmarried young adults continue to live in their parents' homes. In those cases, their stay is often extended at least until they complete their professional preparation, and, in many cases, even until they form their own families. Aside from the differences with adolescents regarding age and economic dependence, among other factors, living with their parents could mean that communication with them has characteristics and effects that are quite similar to those observed in adolescents. In fact, the benefits of quality communication should not be limited only to the early years of adolescence. In this article, we are interested in a particular group of young adults: university students. For these students, a quality communication with their parents has also a significant value, and many evidences prove it.

For instance, young university students have fewer physical symptoms in family environments with a better quality of communication, in particular, when they feel that they are free to express themselves within their family (Rivero-Lazcano, Martínez-Pampliega & Iraurgi, 2011). Taniguchi and Aune (2013) evaluated 143 undergraduate students (18 to 25 years of age) from a university located in western United States and found that body satisfaction correlated negatively with the perception of communication problems with their parents. Some studies in Peru indicate that good communication between parents and university students is associated with better levels of family satisfaction (Bueno, 1996). On the other hand, for many young adults, initiating university life means physical separation from their families of origin. This does not necessarily imply rupture of communication with their parents. The benefits of this communication may still persist in such cases. For example, it has been observed in college students that a better communication with their parents is associated with fewer obsessive, phobic, anxiety, depressive, and somatization

symptoms (Hiester, Nordstrom & Swenson, 2009), and a greater sense of psychological well-being (Sax & Weiuntraub, 2014). It is worth noting that all or most of the participants in the last two studies cited were not living with their parents, even though they maintained communication with them.

Considering the importance of communication between adolescents and young adults and their parents, it is necessary to have validated instruments that would allow a reliable measurement of this variable, and that may be useful both in research as well as in the professional practice. For that purpose, there are some instruments in Spanish like the Scale of Family Communication Styles (Pérez & Aguilar, 2009), while others incorporate the communication between adolescents and their parents as part of its structure (e.g., Hernández, 1996; Moreno, Muñoz-Tinoco, Pérez & Sánchez-Queija, 2006). The first one consists of a list of adjectives that qualify the mother or father's communication style with the adolescent, while the other two devote some items to family communication or communication with parents as part of a wider variety of topics. However, none of these instruments has been validated in Peru. Barnes and Olson (1982) proposed the Parent-Adolescent Communication Scale (PACS), created as part of the instrumentation required for researching the circumplex model of family function, widely used at an international level.

In this study, the aim is to provide evidence of the validity of the PACS, by examining its factor structure, as well as the estimation of reliability by internal consistency of these instrument scores in university students from the city of Lima, comprising an age range wider than that considered by the authors initially. The PACS explores the quality of communication with their parents as perceived by adolescents through the dimensions of open communication and communication problems. The dimension of openness includes positive aspects of communication and satisfaction of the adolescent on the quality of communication. The dimension of communication problems refers to the adolescent's perception of aggressiveness in communication, and resistance to convey certain contents. These dimensions were substantiated by Barnes and Olson through factor analysis. Unlike what happens with the instruments that explore the quality of communication with parents regarding specific topics (e.g., Parra & Oliva, 2002; Sales et al., 2008), this instrument assesses the general characteristics of parent-adolescent communication.

Based on the PACS, some authors have developed new versions of instruments to evaluate parent-adolescent communication (Schmidt, Maglio, Messoulam & González, 2010). However, we consider that the PACS in its original content is still a viable instrument, shown in the large number of studies that have used it, even in the Spanish-speaking population (e.g., Estévez, Murgui, Moreno, & Musitu, 2007; Jiménez, Musitu & Murgui, 2006; Jiménez et al., 2007; Luna et al., 2012; Martínez-Ferrer, Musitu-Ochoa, Murgui-Pérez & Amador-Muñoz, 2009). Only some of these studies reported results concerning the factor structure and

reliability of the PACS (e.g., Estévez et al., 2007; Martínez-Ferrer et al., 2009). Furthermore, Schmidt, Messoulam, Molina, and Abal (2008) created an adaptation of the PACS for the Argentinian context, which included the removal of some items and the incorporation of others, resulting in a 26-item version. In addition, the results of some of those projects (e.g., Estévez et al., 2007; Martínez-Ferrer et al., 2009; Schmidt et al., 2008) point toward a tri-factor structure: open communication, communication problems, and selectivity (or avoidance) in communication. For this reason, this study will begin exploring the feasibility of the bi-factor and tri-factor structures for the PACS.

Theoretically, the PACS is based on the circumplex model of family function (Olson, 2011; Olson, Sprenkle & Russell, 1979). According to this model, any family can be described along two fundamental dimensions: cohesion and adaptability (the latter, renamed as flexibility, Olson, 2000). Cohesion is related to the emotional bonding between members, while flexibility has to do with the ability to modify the patterns and characteristics of family functioning in response to internal or external demands. A third dimension, communication, is considered as the mechanism by which the family can acquire a greater or lesser degree of cohesion and adaptability (Barnes & Olson, 1985; Olson, 2011). Families located at intermediate levels in the dimensions of cohesion and flexibility showed higher levels of communication than those with extreme values in these dimensions (Bhushan & Shirali, 1992; Rodick, Henggeler & Hanson, 1986). The level of family communication is fundamental because it allows maintaining or altering the system conditions, which occurs by facilitating negotiation processes of the rules that govern the relationships within the family, as noted in Morrison and Zetlin (1992). Good family communication improves understanding of the needs, interests, and affections of the family members, collaborating with the search for solutions when one of them is facing difficult situations.

## METHOD

### Participants

Students were selected randomly among those who were in the classroom at the time of the evaluation and were available to answer the test. The sample consisting of 255 students (63.5% women and 36.5% men) from five different majors in a public university and a private university from Lima. Their ages varied from 16 to 25 (M = 20.10; SD = 1.79). These students belonged to the first two years of studies distributed into four semesters: first (12.9%), second (40.4%), third (23.1%), and fourth (23.5%). Being a parent was considered an exclusion criterion.

## Instrument

The Parent-Adolescent Communication Scale (PACS; Barnes & Olson, 1982, 1989). The PACS consists of two scales that evaluate the dimensions of open communication and communication problems. In its original version, each of these scales consists of 10 items. Each item describes behavior, situations, or facts linked to the quality of parent-adolescent communication. Participants express their degree of agreement with what is stated on each item using a five-option Likert scale. A higher score on each scale indicates a better communication (communication problems scale score is reversed). The scores can be added up to obtain an overall score. The scale is presented in two versions, one for the adolescent to assess the communication with the father, and the other to do the same with respect to the mother, but both versions contain the same items. In the original study, Barnes and Olson (1982, 1989) obtained alphas of .88, .87, and .78 for the total scale, the open communication subscale, and the communication problems subscale, respectively. Bueno (1996) used the PACS in university students of Lima, utilizing the instrument's original structure, and obtained item-test correlations that varied from .32 to .83 in the communication with the father version, and from .37 to .85 in the communication with the mother version. He additionally obtained alphas between .75 and .92.

## Procedure

The scale in its two versions (father and mother) was given to the participants in the classroom after obtaining their acceptance. The application of the scale was individual and in small groups during different hours of the day.

In terms of ethical considerations, the tests are part of the evaluation protocol attached to the informed consent. The ethical principles of Respect for Human Dignity (Polit & Beck, 2012, p.152-156) were taken into account, since study objectives were explained to the adolescent, thus obtaining their consent; Beneficence, since the physical and psychological welfare of the subject being evaluated was protected before, during, and after data collection, offering psychological guidance and counseling to their request; and Justice, since steps were taken so that all potential participants had the same chances of being selected for the sample and to protect their anonymity.

## Data analysis

The correlations between the items and the total PACS score were calculated initially. A decision was made to remove from the instrument the items that had a correlation with the total score of less than .25. Reliability was estimated by Cronbach's alpha, based on the

parallel analysis results. The alpha confidence intervals (at 95%) were calculated based on Domínguez-Lara and Merino-Soto (2015), using the Bonett method (as cited in Domínguez-Lara and Merino-Soto, 2015).

After the removal of the items whose correlation with the total score was less than .25, the exploratory factor analysis (EFA) (n = 98) was performed, using the non-weighted least squares method and varimax rotation. As stated before, given the results obtained in other studies (e.g., Estévez et al., 2007; Schmidt et al., 2008), it was deemed relevant to assess the adequacy of a tri-factor structure, besides the bi-factor, that is the one originally proposed by the authors of the PACS. Subsequently, another exploratory factor analysis (EFA) was conducted (n = 255) for the bi-factor structure, also using the varimax rotation and the non-weighted least squares method. Prior to each of these factor analyses, Kaiser-Meyer-Olkin and Bartlett's sphericity tests were performed to assess the adequacy of the data to carry out such analysis.

A structural model based on different estimation methods was built on the basis of the bi-factor structure with 18 items using the SPSS 21 Amos module. The multivariate normality was previously assessed (Medrano & Muñoz-Navarro, 2017). Then, we assessed different methods (maximum likelihood estimation methods, non-weighted least squares methods, among others), obtaining similar results in parameter estimates by opting for a robust estimate given the absence of the multivariate normality, and specifically for variables in ordinal scale, and a better model adaptation was obtained with the Scale-Free Least Squares method. Different global adjustment indices to this model were also obtained. These indices were evaluated under the consideration of the size of the sample (n = 255), and the number of observed variables (18 items). The adjustment indices considered were the $\chi^2$/gl ratio, GFI, AGFI, NFI, and RFI. The appraisal of these indices was performed according to the criteria described by Westland (2015) in the case of the GFI and the AGFI, and by Manzano and Zamora (2009) with respect to the NFI and the RFI.

## Results

Each item's correlations with the total score are shown in Table 1. Correlations were much higher than .30 except for two items. One about communication problems (item 11: "I am very careful about what I say to my mother-father"), and the other about open communication (item 16: "I find it easy to discuss problems with my mother-father"). Therefore, it was decided to continue with the analysis without considering these items.

**Table 1**

*First corrected calculation of item-test correlations and Cronbach's alpha*

| COMMUNICATION WITH THE MOTHER | | | COMMUNICATION WITH THE FATHER | | |
|---|---|---|---|---|---|
| **Item** | **r** | *α* | **Item** | **r** | *α* |
| **01** | .68 | .87 | **01** | .55 | .84 |
| **02** | .49 | .88 | **02** | .29 | .85 |
| **03** | .63 | .88 | **03** | .64 | .84 |
| **04** | .57 | .88 | **04** | .54 | .84 |
| **05** | .59 | .88 | **05** | .44 | .85 |
| **06** | .47 | .88 | **06** | .49 | .85 |
| **07** | .70 | .87 | **07** | .66 | .84 |
| **08** | .50 | .88 | **08** | .48 | .85 |
| **09** | .60 | .88 | **09** | .61 | .84 |
| **10** | .47 | .88 | **10** | .40 | .85 |
| **11** | .01 | .89 | **11** | .04 | .86 |
| **12** | .51 | .88 | **12** | .36 | .85 |
| **13** | .48 | .88 | **13** | .51 | .84 |
| **14** | .48 | .88 | **14** | .49 | .85 |
| **15** | .51 | .88 | **15** | .38 | .85 |
| **16** | .13 | .89 | **16** | .20 | .86 |
| **17** | .58 | .88 | **17** | .47 | .85 |
| **18** | .59 | .88 | **18** | .49 | .85 |
| **19** | .42 | .88 | **19** | .42 | .85 |
| **20** | .56 | .88 | **20** | .38 | .85 |

*Note: r = corrected item-total correlation; α = Cronbach's alpha if item is deleted.*

The parallel analysis showed that the alleged parallelism is not met for the full scale ($\chi 2$ = 1028.714; gl = 208; p = .000) or for the scale omitting items 11 and 16 ($\chi 2$ = 721.06; gl = 169; p = .000). For this reason, Cronbach's alpha was considered a better option to estimate reliability. Before eliminating items 11 and 16, the alphas for the total scale were .85 for communication with the father, and .88 for communication with the mother. After eliminating these items, the alphas for the total scale were .89 and .90, respectively. Table 2 shows the item-test correlations calculated again. It can also be seen that, in both versions, the elimination of any item would reduce the alpha value of the total scale.

**Table 2**
*Second corrected calculation of item-test correlations and Cronbach's alpha*

| COMMUNICATION WITH THE MOTHER | | | COMMUNICATION WITH THE FATHER | | |
|---|---|---|---|---|---|
| **Item** | **r** | *α* | **Item** | **r** | *α* |
| **01** | .67 | .89 | **01** | .538 | .86 |
| **02** | .51 | .90 | **02** | .334 | .87 |
| **03** | .64 | .89 | **03** | .657 | .85 |
| **04** | .54 | .90 | **04** | .511 | .86 |
| **05** | .59 | .89 | **05** | .438 | .86 |
| **06** | .48 | .90 | **06** | .500 | .86 |
| **07** | .69 | .89 | **07** | .647 | .85 |
| **08** | .52 | .90 | **08** | .507 | .86 |
| **09** | .59 | .89 | **09** | .610 | .85 |
| **10** | .49 | .90 | **10** | .405 | .86 |
| **11** | - | - | **11** | - | - |
| **12** | .52 | .90 | **12** | .368 | .86 |
| **13** | .49 | .90 | **13** | .517 | .86 |
| **14** | .49 | .90 | **14** | .488 | .86 |
| **15** | .48 | .90 | **15** | .356 | .86 |
| **16** | - | - | **16** | - | - |
| **17** | .57 | .89 | **17** | .450 | .86 |
| **18** | .62 | .89 | **18** | .496 | .86 |
| **19** | .44 | .90 | **19** | .427 | .86 |
| **20** | .55 | .89 | **20** | .371 | .86 |

*Note: r = corrected item-total correlation; α = Cronbach's alpha if item is deleted.*

After discarding items 11 and 16, we performed an AFE. The Kaiser-Meyer-Olkin test (KMO), and Bartlett's sphericity test reported values suitable for two and three factors, both in the case of communication with the father (KMO = .797; $\chi 2$ = 796.79; gl= 153; *p*= .000, for both solutions), and in the case of communication with the mother (KMO = .847; $\chi 2$ = 847.55; gl = 153; *p* = .000, for both solutions), which shows data adequacy for the EFA.

The three-factor solution does not seem the most acceptable. In the case of communication with the father, the tri-factor solution results in two factors with various items, and a third factor with a single item, the number 2 ("sometimes it is difficult to believe everything my

**Table 3**
*Parent-Adolescent Communication Scale Factor Loadings*

| COMMUNICATION WITH THE MOTHER | | | COMMUNICATION WITH THE FATHER | | |
|---|---|---|---|---|---|
| **Item** | **Mother O** | *α* | **Item** | **Father O** | *α* |
| **01** | .58 | | **01** | .56 | |
| **02** | | .40 | **02** | | .35 |
| **03** | .51 | | **03** | .69 | |
| **04** | | .45 | **04** | | .52 |
| **05** | | .69 | **05** | | .75 |
| **06** | .55 | | **06** | .70 | |
| **07** | .64 | | **07** | .74 | |
| **08** | .51 | | **08** | .62 | |
| **09** | .64 | | **09** | .70 | |
| **10** | | .47 | **10** | | .48 |
| **11** | | | **11** | | |
| **12** | | .62 | **12** | | .68 |
| **13** | .63 | | **13** | .76 | |
| **14** | .58 | | **14** | .72 | |
| **15** | | .41 | **15** | | .53 |
| **16** | | | **16** | | |
| **17** | .65 | | **17** | .51 | |
| **18** | | .73 | **18** | | .61 |
| **19** | | .56 | **19** | | .47 |
| **20** | | .46 | **20** | | .45 |

*Note: O = Open Communication; CP = Communication Problems*

father tells me"). Factor loadings vary from .50 to .81 on the first factor, and from .25 to .79 on the second factor, whereas item 2 loading is .77 on the third factor. In the bi-factor solution, item 2 loading is in the open communication dimension. This way, loadings varied from .27 to .81 on the first factor, and from .26 to .76 on the second factor.

In the case of communication with the mother, the tri-factor solution seems clearer than in the communication with the father, given the emergence of factors with six items each. On the first factor, the loadings vary from .31 to. 72; on the second factor, they vary from .35 to .73; and in the third factor, from .42 to .69. But when the analysis is restricted to two factors, the

items load in their respective dimensions in the same way as in the original instrument, except for three of them. In this case, the factor loadings vary from .37 to .75 on the first factor, and. 47 to .77 on the second one.

Subsequently, an exploratory factor analysis (EFA) was carried out based on the two theoretically-proposed factors, deemed viable according to the preliminary results. The results of the Kaiser-Meyer-Olkin and Bartlett testes were adequate, both for communication with the father (KMO=.847; $\chi^2$=1839.52; gl=153; *p*=.000), and communication with the mother (KMO=.885; $\chi^2$=1832.02; gl=153; *p*=.000). Factor loadings of the scale items in its two versions (father and mother) are shown in Table 3. These results confirm the original structure of the instrument. This means that they reaffirm each item's appropriateness to the scales (open communication or problems) that they correspond to in the original version, except for the exclusion of items 11 and 16.

A new calculation of the Cronbach's alpha was subsequently conducted. The communication with the father version obtained the following alpha values, and its CIs (95%): .87 (CI: .84-.89) for the total scale, .89 for open communication (CI: .87-.91), and .80 (CI: .76-.83) for communication problems. For the communication with the mother version, the alpha values and their CIs (95%) were .90 (CI: .88-.92) for the total scale, .86 (CI: .84-.89) for open communication, and .83 (CI: .79-.86) for communication problems.

As part of the confirmatory factor analysis (CFA), a structural model was built on the basis of the bi-factor structure made up of 18 items. It was found that the variables as a whole lack multivariate normality both in the case of communication with the father (statistical 64.87 > critical value of 18.11 with a significance level of .05), and communication with the mother (statistical 57.89 > critical value of 17.23 with a significance level of .05). The assessment of different methods showed a better adaptation of the model to the Scale-Free Least Squares method, which obtained the factor loadings shown in Figure 1.

Table 4 shows the values obtained for the various adjustment indices. The $\chi$2 values were significant in both versions (father and mother). However, the $\chi$2/gl ratio (for gl = 134) was less than 3, considering the Scale-Free Least Squares method, which is considered ideal for the structural model (small). The goodness of fit index (GFI) shows the adequacy of the model in both versions, since, as indicated in Westland (2015, p. 55), although some authors estimate that the suitable cut-off point for this indicator is .95 by convention, the value .90 is adopted as a cut-off point. Also, the adjusted goodness of fit index (AGFI) presents values higher to .90, which is also considered as a cut-off point (Westland, 2015, p. 55). The NFI and RFI values are also within the acceptable limits (Manzano & Zamora, 2009).

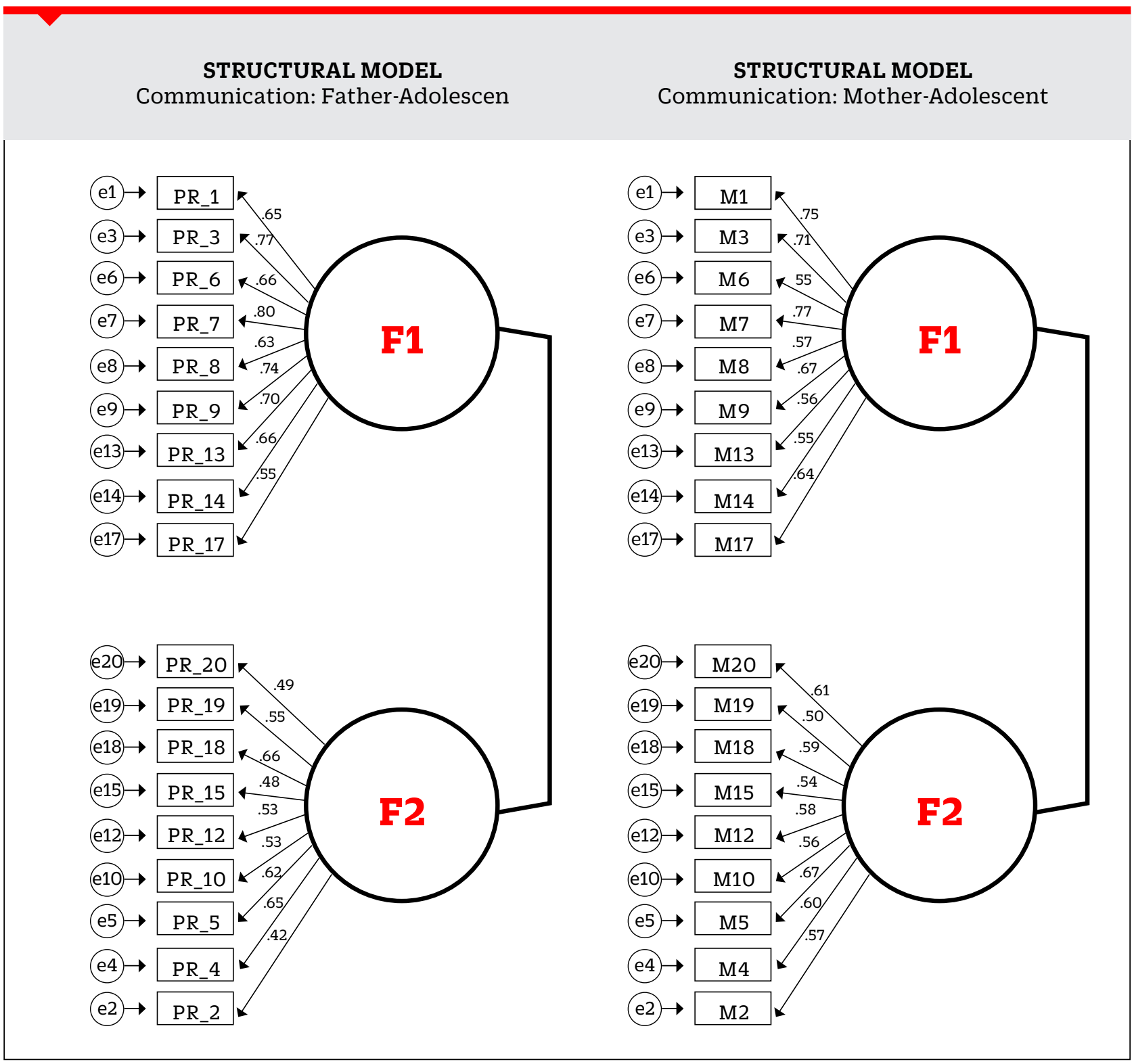


***Figure 1.*** Structural model for the Parent-Adolescent Communication Scale

**Table 4**
*Rates of Adjustment for the Parent-Adolescent Communication Scale Structural Model*

| COMMUNICATION WITH THE MOTHER VERSION | | | |
|---|---|---|---|
| **Indices** | **Maximum Likelihood** | **Scale-Free Least Square** | **Free Asymptotic Distribution** |
| X2 | 426,74 | 183.60 | 1011.61 |
| p value | 0.00 | 0.00 | 0.00 |
| GFI | 0.84 | 0.97 | 0.96 |
| AGFI | 0.80 | 0.97 | 0.95 |
| NFI | 0.77 | 0.96 | 0.70 |
| RFI | 0.74 | 0.96 | 0.66 |
| **COMMUNICATION WITH THE FATHER VERSION** | | | |
| X2 | 485.61 | 257.06 | 982.37 |
| p value | 0.00 | 0.00 | 0.00 |
| GFI | 0.82 | 0.96 | 0.91 |
| AGFI | 0.77 | 0.95 | 0.89 |
| NFI | 0.74 | 0.93 | 0.52 |
| RFI | 0.71 | 0.92 | 0.46 |

## DISCUSSION

The main objective of this work was to present evidence of construct validity, and an estimate of the reliability of the scores of Barnes and Olson's (1982) Parent-Adolescent Communication Scale (PACS) in late adolescents and young adults. This instrument was built for its use in adolescents. For example, in the study conducted by Barnes and Olson (1985), the participants' maximum age was 20 years. The ages covered in a large number of studies vary from 11 to 19 years (e.g., Bandura, Caprara, Barbaranelli, Regalia & Scabini, 2011; Carrascosa, Cava y Buelga, 2015; Estévez et al., 2007; Feldman & Rosenthal, 2000; Jiménez, Estevez & Murgui, 2014; Luna et al., 2012). However, some works include a wider range of ages. For example, Landman-Peeters et al. (2005) considered participants from 13 to 25 years of age. This study explored some clinical indicators, and the social support and quality of communication in children of families whose parents had received a treatment for emotional disorders. Landman-Peeters et al. (2005), considered PACS as fully valid to be part of the instruments to explore the relationships between the mental health of parents and children, even for 25-year-old youngsters. Other examples are the study conducted by Cha, Doswell, Kim, Charron-Prochownik, and Patrick (2007), and the

aforementioned Taniguchi and Aune (2013). These examples are enough to demonstrate the PACS usefulness in age levels beyond those initially considered by its authors, which justifies our decision to validate this instrument in young adults.

The results indicate that the PACS has a high level of internal consistency, both in the communication with the father, and in the communication with the mother versions. Our results are as high or higher than some of those obtained in other cultural contexts. For example, Carrascosa et al. (2015) obtained alphas in Spain in the open communication scale of .89 and .88 for communication with the father and the mother, respectively; and alphas of .64 and .69 for communication problems with the father and mother, respectively. In other studies conducted in the Netherlands, the alphas had values from .85 to .65 (Jackson, Bijstra, Oostra & Bosma, 1998), .91 for open communication, and .85 for problems (Landman-Peeters et al., 2005). Several studies only used the open scale. In Nash, McQueen, and Bray's work (2005), this scale showed alphas of .84 and .95 in communication with the mother and the father, respectively. In Italy, Capara, Pastorelli, Regalia, Scabini, and Bandura (2005) obtained alphas of .83 for the open communication scale in its two forms (mother and father). And, in Spain, Cava (2011) confirmed for this same scale, alphas of .87 for communication with the mother, and .89 for communication with the father. In another study (Romo, Lefkowitz, Sigman & Au, 2002), the alpha was of .89. In short, our results confirm global reports on the high internal consistency of the PACS.

The EFA showed the feasibility of a two-factor structure, which was endorsed by the CFA. The latter not only endorsed the bi-factor structure originally proposed by the authors but also the items distribution on the scales that corresponded to the original version. In some studies, the researchers simply assumed the validity of the bi-factor structure (e.g., Bandura et al., 2011; Landman-Peeters et al., 2005). In other cases, the factor analysis confirms the bi-factor structure, but altering the composition of the scales (e.g., Jackson et al., 1998). However, as mentioned previously, a discussion about other ways of conceiving instrument structure has recently arisen. For example, Estévez et al. (2007) found in Spain a three-factor structure: positive communication style, offensive communication style, and avoidant communication style. The resulting scales showed good internal consistency (.87, .76, and .75, respectively). Another study, also in Spain, confirmed this same structure (Estévez, Herrero, Martínez & Musitu, 2006). A finding concerning the three factors is the presence of a low reliability of its internal consistency. For example, Feldman and Rosenthal (2000) report three factors with alfas that go from .59 to .89. Those lower values are probably due to the fact that two of the three factors have a relatively low number of items.

In Argentina, Schmidt et al. (2008) reviewed the PACS, concluding that an aspect included as part of the communication problems dimension could not be properly qualified

as a problem. They particularly referred to "selectivity and caution on the content of what is shared" that Barnes and Olson included as part of the communication problems definition. His objection is that such selectivity and caution is part of normal adolescent behavior, and instead of indicating problems, it is rather a sign of the search for autonomy. As it is stated above, the level of adolescent communication with their parents decreases as they seek greater autonomy (Finkenauer et al., 2002). Factor analysis of the revised scale—and expanded to 26 items—by Schmidt et al. (2008) resulted in a three-factor structure similar to the one reported by Estevez et al. (2005): positive, aggressive, and avoidant styles.

We must bear in mind that the tri-factor structure (openness, problems, and selectivity or avoidance) had already been identified by the same authors of the instrument, who, however, considered appropriate to conceptually integrate aggressive and selective styles in a single dimension in which what they considered the *negative aspects* of communication are represented. In this regard, we must point out that even though, as indicated in Schmidt et al. (2008), the selective or avoidant style could not be considered a "problem" because it involves aspects of the adolescent's normal development, it is an undesirable aspect of communication. Some evidence, provided by the same authors (2008), supports this categorization: a) selectivity or avoidance factor correlates positively with the communication problems factor, and negatively with the openness factor, and b) when an analysis limited to two factors is performed, the problems and selectivity or avoidance dimensions collapse into one, leaving openness as an independent dimension. We must also remember that the aim of the PACS is not to assess emotional or social development of the adolescent, but the quality of their communication with their parents. That is why Barnes and Olson included avoidant or selective aspects as part of communication problems factor, which can be understood globally as circumstances that decrease the level or quality of the parent-adolescent communication. Therefore, we consider relevant to consider such selectivity as part of the communication problems dimension, as the authors of the instrument did.

Our results support a bi-factor structure. For this reason, given the successful use of this approach in several of the studies cited in this work, we consider that the structure is still valid. In our case, the bi-factor solution is well suited to the data. We must also bear in mind that that solution is reached after the removal of two items: "I am very careful about what I say to my mother-father," and "I find it easy to discuss problems with my mother-father," because of their low correlation with the total score.

The studies cited in this article indicate the importance of the communication between the adolescent and young adult (including university students) and their parents, in addition to their impact on various indicators of these adolescents and youngsters' psychological functioning. As shown in some of these studies, communication with parents is of great

importance for the university student's psychological well-being. Given the lack of studies on the population of Peruvian university students about these aspects, and the great need of having them, it is essential to develop or validate instruments which can be reliably used in that population. Our results are a step forward in this direction because they provide evidence of the validity of an instrument that can be easily administered. Moreover, this instrument is widely used at an international level, which facilitates intercultural comparisons.

The limitations of this study are related to the universe under consideration, the size of the sample, and the validation methods. Therefore, we believe that future studies should provide data on (a) a broader universe than university students in the age group considered in this work, (b) larger groups, where it is possible to assess possible differences in the instrument's factor structure with respect to socio-demographic variables such as gender or age, and (c) other forms of validity, as the discriminant, by comparing risk groups with general population groups both in open communication and in communication problems.

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