



## ORIGINALES

### Internal consistency and validity of the instrument *Attachment between parents and newborn children*

Validez y consistencia interna del instrumento *Vínculo entre padres e hijos neonatos*

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#### ABSTRACT:

**Objective:** To determine the validity and internal consistency of the instrument *Attachment between parents and newborn children*, spanish version as a result from the transcultural adaptation of the Maternal Attachment Inventory (MAI) by Mary Muller.

**Materials and method:** Methodological – psychometric descriptive study, whose facial and content validity was achieved with the participation of a panel of experts and 385 potential parents with low level of schooling. For the validity of construct and internal consistency the sample was 352 parents of full-term newborns.

**Results:** Facial validity for the general population showed a global and item understanding of more than 90%, and a higher acceptability rate in the three categories valued; likewise, the Kapa and Fleiss index showed inter-concordance for each of the items above 0.69. The validity of global content has a strong pertinence and relevance with a Kapa and Fleiss index of 0.71 and 0.77 respectively. In the validity of the construct, the exploratory factor analysis yielded four factors with a total variance explained by the Kaiser-Meyer-Olkin Index (KMO) of 73%, and the internal consistency by Cronbach's Alpha was 0.7 for the total of the scale.

**Conclusions:** The *Attachment between parents and newborn children* instrument is valid and reliable to measure the affective attachment in the Colombian context whose use favors the practice of evidence-based nursing in diverse contexts such as Neonatal Care Units and in ambulatory practice.

**Keywords:** Affective attachment, validity, reliability, psychometry.

#### RESUMEN:

**Objetivo:** Determinar la validez y la consistencia interna del instrumento *Vínculo entre padres e hijos neonatos* versión en español resultado de la adaptación transcultural del Maternal Attachment Inventory (MAI) de Mary Müller.

**Materiales y método:** Estudio descriptivo metodológico – psicométrico, cuya validez facial y de contenido se logró con la participación de un panel de expertos y 385 potenciales padres con bajo nivel de escolaridad. Para la validez de constructo y consistencia interna la muestra fue de 352 padres de recién nacidos a término.

**Resultados:** La validez facial para la población general mostró una comprensión global y por ítems superior a 90 %, y un índice de aceptabilidad superior en las tres categorías valoradas; igualmente el índice de Kapa y Fleiss mostró concordancia interjueces para cada uno de los ítems por encima de 0.69. La validez de contenido global presenta fuerte pertinencia y relevancia con un índice de Kapa y Fleiss de 0.71 y 0.77 respectivamente. En la validez de constructo el análisis factorial exploratorio arrojó cuatro factores con una varianza total explicada por el índice de Kaiser-Meyer-Olkin (KMO) de 73 %, y la consistencia interna por el Alfa de Cronbach fue de 0.7 para el total de la escala.

**Conclusiones:** El instrumento *Vínculo entre padres e hijos neonatos* es válido y confiable para medir el vínculo afectivo en el contexto colombiano cuyo uso favorece la práctica de enfermería basada en evidencia en contextos diversos como Unidades de Cuidado Neonatal y en la práctica ambulatoria.

**Palabras clave:** Vínculo afectivo, Apego, Validez, Confiabilidad, Psicometría.

## INTRODUCTION

The affective attachment addressed from the human sciences, and begins mainly with John Bowlby's studies in 1951, related to the maternal care and mental health from which attachment theory derives<sup>(1)</sup>. In the 1950s, Ainsworth partnered with Bowlby to work on the development of the theory, a work from which the classification of attachment types arises<sup>(2)</sup>. And as a contribution to this line of knowledge, in the 1980s, the pediatricians Kennell and Klaus advance in knowledge of Bonding, that refers to the child's bond with their mother in the early hours after birth<sup>(3)</sup>. On the other hand, the nurse Reva Rubin in her professional practice begins the study of the observation of the mother-son approach in the neonatal period and its importance for the establishment of the attachment and consolidation of the maternal role<sup>(4)</sup>.

Based on the progress made by Rubin and Bowlby, the theorist Ramona Mercer strengthens the foundation for the development of the theory *Becoming a Mother* that proposes the connection between the possibility of successfully carrying out the process of exercising motherhood and attachment<sup>(4)</sup>. The achievement of the role and strengthening of the mother-child attachment is evident in the concepts of Mercer's theory, which describes union/interaction as an issue that facilitates the origin of the affective and emotional bond between two individuals and is part of the parental role, along with the emotional support, and the informative support that offer tools to deal with stress situations in the exercise of motherhood<sup>(4)</sup>.

In order to assess the affective attachment it is necessary to have valid and reliable empirical indicators that facilitate its measurement, however, there is controversy regarding the most convenient way to do it, either through direct observation or the expression of emotions and feelings<sup>(5)</sup>.

Based on the importance of promoting and strengthening the affective attachment in the personal development and taking into account that Nursing as a discipline and profession has a leading role in the assessment and consolidation of the affective attachment between parents and children, by providing early perinatal maternal care, a search was carried out in order to have a valid and reliable empirical indicator to assess the affective attachment between parents and their full term newborn children, with the option of use it in the clinical field and in the home context, from this task was selected the *Maternal Attachment Inventory (MAI) of Mary Muller* instrument that is characterized by having valid psychometric parameters and that was performed by a nurse for dyads of newborns hospitalized in Neonatal Care Units and in the ambulatory scenario<sup>(6)</sup>.

Starting from the premise that nursing in the Colombian context requires identifying in everyday life the behaviours of parents with their full term newborn children related to the affective attachment, and planning from these observations a care according to reality with the intention of addressing the family nucleus of the newborn, In a first phase, the transcultural adaptation of the Maternal Attachment Inventory was carried out, since only the English version of Müller (1994) and a Taiwanese version of Yu, Hung, Chan, Yeh, and Lai were available<sup>(7)</sup>. As a result of this procedure, the instrument called Attachment between parents and newborn children was created to be filled out by mothers and fathers, with 24 items grouped in four dimensions in accordance with the concepts of the *Becoming a Mother theory* by Ramona Mercer<sup>(4)</sup>, of which this article gives an account of the process of validity and reliability.

## OBJECTIVE

To determine the validity and internal consistency of the instrument *Attachment between parents and newborn children*, Spanish version resulting from the transcultural adaptation of the Maternal Attachment Inventory (MAI) by Mary Muller.

## MATERIAL AND METHODS

Descriptive methodological study of psychometric character<sup>(9)</sup>, endorsed by the Ethics Committee of the Nursing Faculty of the National University of Colombia, Bogotá (Administrative Act, Act 8 of May 25th, 2015. endorsement-012-2015)

### Sample

The facial validity of the instrument was carried out on a sample of 385 potential parents of reproductive age, alphabets, with low level of schooling (according to the principle of Ockham Knife parsimony<sup>(10)</sup>. In order to statistically estimate the comprehensibility of the 24 instrument items, a confidence of 95% and a maximum permissible error of 5% were assumed. For facial and content validity, a group of five health professionals specialized in the perinatal maternal area, with experience in research and arbitration of methodological studies, was selected. The construct validity and internal consistency were obtained from a sample of 352 parents, determined from the classic theory of validity of a Streiner and Norman instrument<sup>(11)</sup>, which suggests for the effects of the factorial analysis a range between 5 to 20 individuals per item, in this case the number of participants was fifteen for each item. The participants had to be mothers and fathers of full-term newborns, whose selection was made by simple random sampling<sup>(12)</sup>.

### Procedure

The *attachment between parents and newborn children* instrument arises from the research exercise of transcultural adaptation from the English to the Spanish version of the Maternal Attachment Inventory (MAI) scale by Mary Muller<sup>(12)</sup> whose theoretical basis derives from the human sciences with the contributions of Bowlby and from nursing with the concepts of Rubín (1984), Mercer and Ferketich (1986). The transcultural adaptation procedure of the Maternal Attachment *Inventory* (MAI) was developed in two stages, the first one comprised the selection of the instrument and the second one, and the transcultural adaptation itself, which as indicated by Tristan-Lopez<sup>(13)</sup> is carried out from three phases as shown later in the text.

## First stage. Instrument selection

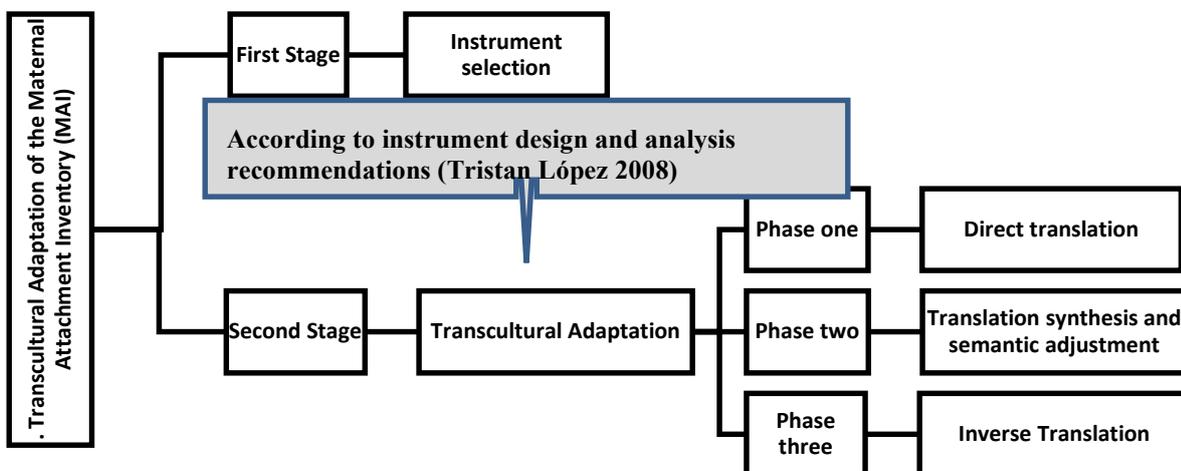
Mary Muller's *Maternal Attachment Inventory* (MAI) instrument was chosen because in addition to being a valid and reliable empirical indicator, its author designed it to be applied in clinical and ambulatory scenarios, to assess the affective attachment between parents and their full-term newborn children <sup>(6)</sup>.

In its original version, the MAI instrument is composed of 26 items, with a Likert Type scale that yields a minimum score of 26 and a maximum of 104, whose interpretation corresponds to a higher score for higher emotional attachment. The instrument expresses facial validity, of content, construct and reliability, its author made convergent and concurrent validity with three instruments measuring maternal attachment and adaptation, they are the HIFBN, MSAS and PPMAMA, the result of this process showed that two instruments reported adequate mSAS (0.71) and PPMAMA (0.64) correlation levels with a significance  $<0.01$ , therefore an adequate convergent validity is reported, since the correlation values of THE MAI with the "Gold standar" indicated that it measures the same phenomenon. Cronbach's alpha resulted in 0.85 <sup>(6)</sup>.

## Second stage. Transcultural adaptation

Based on the recommendations of Tristan <sup>(13)</sup>, the procedure of transcultural adaptation was carried out in three phases (see figure 1)

**Figure 1. Transcultural adaptation of the Maternal Attachment Inventory (MAI)**



Source: Developed by researchers

### Phase 1. Direct translation

The procedure involved three certified official translators, one of them was a bilingual nurse of Colombian nationality with expertise in the maternal perinatal area who works as a health professional in the United States. The two interpreters performed the translation simultaneously and provided the closest version to the original MAI scale in terms of grammar and context <sup>(10)</sup>.

## **Phase 2. Translation synthesis and semantic adjustment**

In this phase, a group made up of a linguist, a statistician, the thesis director and the main researcher participated in order to investigate the drafting, phrasing and content of each of the 26 items of the instrument. With the result of the translations, adaptations and changes were made, according to the Colombian context. The writing, the sense of the sentences, and the coherence of the content were evaluated with the support of the linguist who was familiar with the medical terms, synthesizing the translations in a preliminary version.

This procedure showed similarities of the original version of the MAI, between items 11, 10 and 20 with items 13, 16 and 23 respectively, which led the expert group to delete these last three items from the translation. On the other hand, in the translation, item 2 of the original version of the MAI gave rise in two different items. As a result, the synthesis of the translations gives a new version composed of 24 items.

## **Phase three. Reverse translation**

With the participation of the three official translators, the Spanish version of the instrument resulting from phase two was retro-translated into English. The product of this process was sent to Mary Müller, in her concept, she gave free rein to continue with the process of validity and reliability of the new instrument, however, for her, it presented some differences from the original.

The new instrument called Attachment between parents and newborn children was subjected to psychometric tests of facial validity, content, construct and internal consistency <sup>(8)</sup>

### **Facial and content validity of the instrument *Attachment between neonat parents and children***

Statistical determination of facial and content validity was made with the modified Lawshe Index and Kappa and Fleiss. The modified Lawshe index determines the number of agreements between experts, this method assesses the expert panel's opinion of the instrument items, and rates the instrument in general and by items <sup>(13)</sup>. And Fleiss' Kappa index checks the agreement between observers to determine the degree of acceptance and similarity between the given answers to the assessment of each item by the judges <sup>(14)</sup>.

For this investigation, those items that obtained a higher degree of acceptability with values between 0.61 and 0.80 demonstrating substantial acceptable agreement, and a value equal to or greater than 0.81, were considered satisfactory in the modified Lawshe and Kappa and Fleiss indices.

With the participation of the group of potential parents and the expert panel, facial validity focused on assessing comprehension, clarity and accuracy. Conceived, comprehension as the understanding that exists when an item is read; clarity as the type of language used and the way it is written; and accuracy as the use of concise and accurate language to avoid ambiguity.

The validity of content assessed by the panel of experts was oriented to solve the criteria of pertinence and relevance of the 24 items that make up the instrument, with

answer options presented as relevant, not very relevant and not relevant, pertinent, not very relevant and not pertinent; in order to determine if the instrument's reagents adequately represent the universe of content. And the group of potential parents carried out the verification of the phrasing of the instrument in its entirety, determining comprehension, clarity and precision.

The validity of the construct and the internal consistency was achieved with a group of participants resulting from intentional sampling in order to ensure representativeness regarding the phenomenon to be evaluated by the instrument. The statistical estimation of the construct was made through exploratory factorial analysis of common factors whose purpose is to establish the internal and cross structures of a set of variables, and to provide an estimate of the factorial load of the instrument in each of the parts and in its entirety <sup>(15)</sup>.

The determination of the internal consistency of the instrument was made with the Cronbach's Alpha, the sensitivity to change and the degree of internal consistency of the totality and each of the dimensions that make up the instrument was measured <sup>(16)</sup>. According to George and Mallery, the Cronbach's Alpha below 0.5 shows an unacceptable level of reliability, a value of 0.70 to 0.90 is accepted as a measure of homogeneity of an instrument.

## RESULTS

The *Attachment Between Parents and Newborn Children* instrument contains 24 items with a Five-choice Likert measurement scale, which score is between 0 and 4. The scale is divided into two groups, which are determined by the criteria of intensity and frequency, the first twelve items assess the intensity with a scale that contains the criteria: Very intensely, Intensely, Moderately, Slightly, Definitely not, and the remaining twelve items assess the frequency with a scale that contains the parameters Always, Almost Always, Sometimes, Rarely, and Never. (See Table 1)

**Table 1. Instrument: *Attachment between parents and newborn children.***

Statement	Very intensely	Intensely	Moderately	Slightly	Definitely not
1. I feel love for my baby					
2. I feel tender for my baby					
3. I feel happiness with my baby					
4. I make future plans with my baby					
5. I know my baby needs me					
6. I feel happiness when my baby is cheerful					
7. I feel my baby is safe with me					
8. I feel my baby is beautiful					
9. I'm glad that this baby is mine.					
10. I feel happiness when my baby does new things					

11. I enjoy having my baby near me					
12. I feel I'm important to my baby					
13. The time I spend with my baby is special					
14. I like to have contact with my baby					
15. I talk to others about my baby					
16. I enjoy being with my baby					
17. I think about my baby					
18. I recognize my baby's expressions and gestures					
19. It's easy to express love to my baby					
20. I'm glad to feel my baby					
21. I'm proud of my baby					
22. I'm looking out for my baby's care					
23. I'm keeping an eye on my baby while he/she is sleeping					
24. I comfort my baby when he/she cries					

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

For the interpretation of the results of the instrument, the Dalenius-Hodgers criterio<sup>(17)</sup> was used, which determines that a total score less than or equal to 85 points indicates a low affective attachment between parents and newborn children, a score between 86 and 89 points indicates a medium or moderate affective attachment between parents and newborn children, and when the total score is higher than 90 points, the affective attachment between parents and newborn children is high.

### **Facial validity of the instrument Attachment between parents and newborn children**

The participants who made up the facial validity sample were 26% men (102) and 74% women (286). In relation to the educational level, 25% had a level of education lower than primary, 34% completed primary, 7% incomplete middle level, 19% complete middle level, and 15% with a secondary level.

The overall comprehensibility level of the Attachment between parents and newborn children instrument was 98% and the analysis of comprehension per item was above 97%, in other words, participants rated the instrument in terms of understanding at a higher level. (See table 2).

**Table 2: Facial Validity by general population of the instrument Attachment between parents and newborn children.**

Item	% of Net Comprehensibility
1. I feel love for my baby	98
2. I feel tender for my baby	99
3. I feel happiness with my baby	97
4. I make future plans with my baby	98
5. I know my baby needs me	98
6. I feel happiness when my baby is cheerful	98
7. I feel my baby is safe with me	98
8. I feel my baby is beautiful	98
9. I'm glad that this baby is mine.	98
10. I feel happiness when my baby does new things	99
11. I enjoy having my baby near me	97
12. I feel I'm important to my baby	98
13. The time I spend with my baby is special	98
14. I like to have contact with my baby	98
15. I talk to others about my baby	98
16. I enjoy being with my baby	98
17. I think about my baby	99
18. I recognize my baby's expressions and gestures	98
19. It's easy to express love to my baby	99
20. I'm glad to feel my baby	99
21. I'm proud of my baby	99
22. I'm looking out for my baby's care	98
23. I'm keeping an eye on my baby while he/she is sleeping	99
24. I comfort my baby when he/she cries	97

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

On the other hand, Table 03 shows the results of the modified Lawshe and Fleiss Kappa indexes for the Clarity, Comprehension and Accuracy criteria. In the modified Lawshe index, the result of the value of each of the criteria was higher than the pre-established minimum (0.528), and according to the Fleiss Kappa index in the interobserver agreement analysis, it was verified that the result was above 0.69 in each one of the criteria, demonstrating a strong degree of agreement. results that lead to infer that the facial validity of the instrument is satisfactory to be applied to the Colombian context.

**Table 3. Expert facial validity: Lawshe and Fleiss Kappa indexes of the Attachment between parents and newborn children instrument.**

Criteria	Modified Lawshe Index	Fleiss Kappa Index
Clarity	0,69	0,69
Comprehension	0,75	0,75
Precision	0,73	0,73

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

## Content Validity of Attachment between parents and newborn children Instrument content

For this phase of the instrument validity process, the expert evaluators of the facial validity phase participated (see table 4), in order to determine the pertinence and relevance of the instrument items, the reagent was sent to the experts electronically with the appropriate guidelines and a Likert scale with an option to answer presented as relevant, not very relevant and not relevant, pertinent, not very relevant and not relevant for each of the items, with space for observations.

**Table 4. Features of experts involved in facial and content validity**

<b>Expert 1.</b> Nurse. Master's Degree in Nursing with Emphasis on Perinatal Maternity. Neonatal Intensive Care Nurse at the Central Military Hospital. Occasional Professor Specializing in Maternal and Perinatal Nursing at the National University of Colombia. Researcher in the area.
<b>Expert 2.</b> Nurse, Master's Degree in Nursing with Emphasis on Perinatal Maternity. Candidate for Doctor of Nursing, Faculty of Nursing, National University of Colombia. Researcher in the area and expert in instrument validation.
<b>Expert 3.</b> Nurse, Master's Degree in Nursing with Emphasis on Perinatal Maternity. Associate Professor, National University of Colombia, Candidate for Doctor of Nursing, Faculty of Nursing, National University of Colombia. Researcher in the area and expert in instrument validation.
<b>Expert 4.</b> Nurse, Pediatric Intensive Care Specialist. Master's Degree in Nursing with Emphasis on Maternal and Perinatal Care, Candidate for Doctor of Nursing at the National University of Colombia. Professor at the University of Tolima.
<b>Expert 5.</b> Nurse, Health Services Management Specialist Nurse birthing room at Marly's Clinic. Professor at Fundación Universitaria del Área Andina.

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

Table 5 shows the result of the content validity that gave the result of the analysis of the panel of experts in the criteria of relevance and pertinence whose values are satisfactory because they show a high degree of agreement in the Modified Lawshe Index with values above 0.5823, and with the Fleiss Kappa Index that showed a strong degree of agreement with values of relevance and pertinence above 0.61.

**Table 5. Validity of global content by experts: Lawshe and Fleiss Kappa indexes of the Attachment *between parents and newborn children* instrument.**

Modified Lawshe Index	Fleiss Kappa Index
Relevance: 0.93	Relevance: 0.71
pertinence: 0.92	Pertinence: 0.77

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

### **Validity of Construct of the *Instrument Attachment Between Parents and Newborn Children***

In this phase of the instrument's validation process, a group of parents of full-term newborns was convened in order to demonstrate whether the Attachment Between Parents and Newborn Children instrument really valued the theoretical construct for

which it was designed, the classical theory of instrument validity was taken into account, according to Streiner and Norman, for the purposes of factorial analysis, a sample of 5 to 20 individuals per item is assumed, which led to a sample for the number of items between 120 and 480 participants.

Finally, the sample for the validity of the construct consisted of 352 parents of full-term newborns 29.5% male (104) and 70.5% female (248), 39% had primary education, 55% at intermediate level and 27% with secondary education. The age of the participants ranged from 18 to 50 years, and 52.7% were in the range of 18 to 30 years.

The results of the construct validity confirm that the phenomenon to be measured is the affective attachment between parents and their newborn children. The Kaiser-Meyer-Olkin test (KMO) was 0.732, which gets closer to the unit, showing an important association between the variables. This value indicates that the Parent-Newborn attachment instrument explains 73% of the variance that means it measures 73% of the attachment phenomenon for which it was designed <sup>(4)</sup>.

In the analysis of the structure of the construct of the affective attachment between parents and their newborn children instrument, the exploratory factor analysis method was applied, with which each one of the factors was extracted through the principal component method and for the interpretation, the Varimax rotation was used, this procedure gave rise to four factors, as shown in Table 6.

**Table 6. Result of grouping the items of the Attachment between parents and newborn children**

Factor	Item
1	7, 14, 15, 16, 19 and 24
2	1, 2, 3, 4, 5, 6 and 20
3	10, 11, 12, 13, 21 and 23
4	8, 9, 17, 18 and 22

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

### Interpretation of factors resulting from Varimax rotation

Taking into account that the theoretical bases of the instrument are part of Ramona Mercer's theory "becoming into a mother", the coherence of the factors found in Varimax rotation with the concepts of theory was analyzed, in this exercise it was found concordance between the concepts emotional support, union - interaction, informational support and stress and the items grouped by factor (Mercer, R. 2004). (See table 7)

**Table 07. Relation between theoretical concepts and grouping by factors**

Factor one: Emotional Support Concept	
Definition of the concept	Grouped items that correspond to the concept
Feeling loved, cared of, trusted and understood. (Mercer, 1986).	7: I feel my baby is safe with me. 14: I like to have contact with my baby. 15: I talk to others about my baby. 16: I enjoy being with my baby.

	19: It's easy to express love to my baby. 24: I comfort my baby when he/she cries.
<b>Factor two: Union – Interaction concept</b>	
A process by which an affective and emotional bond is created with an individual, which is part of the parental role. Union is one of the concepts that can be interpreted as affective attachment, by relating the concept given by Mercer. (Mercer, 1986).	1. I feel love for my baby. 2. I feel tender for my baby 3. I feel happiness with my baby 4. I make future plans with my baby 5. I know my baby needs me. 6. I feel happiness when my baby is cheerful 20. I'm glad to feel my baby.
<b>Factor three: Information Support Concept</b>	
It helps the individual (mother-father) to solve problems on their own by offering useful information for each problem and/or situation. (Mercer, 1986).	10. I feel happiness when my baby does new things. 11. I enjoy having my baby near me. 12. I feel I'm important to my baby 13. The time I spend with my baby is special. 21. I am proud of my baby. 23. I'm keeping an eye on my baby while he/she is sleeping
<b>Factor Four: Stress concept</b>	
Life events perceived positively and negatively and environmental variables. (Mercer, 1986).	8: I feel my baby is beautiful. 9. I am glad that this baby is mine. 17. I think about my baby. 18. I recognize my baby's expressions and gestures. 22. I'm keeping an eye on my baby while he/she is sleeping

Source: Vargas-Vasquez, A. (2016). Validation of the Instrument "Attachment between Parents and newborn Children" from the Maternal Attachment Inventory.

## DISCUSSION

Having valid and contextualized tools makes it easier for health professionals and in this case, for nurses to detect protective and risk factors in a situation of change for the family such as the birth of a child.

The importance of strengthening the affective attachment between mothers, fathers and children during the first days of life is of special interest to nurses, since the child birth requires the reorganization of roles and the confrontation of feelings at a personal and family level by the parents; without ignoring the differences that this behavior has in terms of gender, culture, age, psychosocial conditions of the environment, health conditions of the children, and the hospital environment, among other reasons, as affirmed by various experts <sup>(19-21)</sup>.

The affective attachment between parents and children is constantly referred by nursing and other disciplines researches, which highlight the importance of promoting it to contribute to the future of the country <sup>(22,23)</sup>.

This closeness provides safety and gratification to the baby and works as a pattern or internal representation for all subsequent attachment relationships, meanwhile the adult also manifests certain behaviors in response to the baby's expressions of attachment. These reciprocal behaviors lead to the development of a complex and lasting relationship, the attachment <sup>(24)</sup>.

The establishment of the affective attachment between mothers, fathers and their full-term newborn children contributes to the adequate psychic and cognitive structuring of the newborns for their development and survival during all stages of the life cycle, generating future security, confidence, self-esteem, maturity and responsibility as a parent <sup>(19, 25,26)</sup>.

Nursing care of the newborn implies the care of their family, especially their parents, but to be able to provide family care around the newborn, it is necessary to assess with empirical indicators valid for practice, which facilitate the nurse in different contexts such as neonatal care units, obstetrics and gynecobstetrics services, the birthing room, joint accommodation or home visits in the postpartum period, recognition of the emotions, aspirations, care needs, strengths, conditions and cultural diversities of each family, in order to plan care based on the real and specific needs identified within the processes of parent-child interaction<sup>(27-29)</sup>.

Like there are no valid instruments in the Colombian context to measure the affective attachment between parents and their full-term newborns, the Maternal Attachment Inventory (MAI) instrument was validated transculturally with due methodological rigour: Translation, retro-translation by experts and official translators, linguistic and statistical assessment in its phases of facial, content and construct validation, this enriching exercise evidences the need for an adequate process of semantic adaptation of instruments in each context and led the researchers and the author of the MAI to conclude that the result was a new instrument valid for Colombia but different from the original.

The results of the validity of the construct, provide evidence to infer that the new instrument measures the phenomenon for which it was designed: affective attachment between parents and newborn children defined as verbal, gestical and sign expressions and behaviors between mothers and/or fathers and newborns, which establish the specific and privileged relation given by the permanent union that begins even from preconception and is consolidated primarily in the first hours after birth <sup>(6)</sup>.

The construction of an instrument to measure attachment to parents of full-term newborns that during its design takes into account the possible variables described in the literature as influencing attachment consolidation, aims to obtain results with the least amount of bias possible in addition to provide assurance during its application; As an example of situations that interfere with attachment, like the health of the newborn and the maternal, with reference to the family separation that this condition implies, when the attachment relationship has been measured in comparison with healthy and hospitalized newborns, the variables that affect attachment are described as hospitalization, invasive procedures and the difficulty that parents have in

interacting with their children in the environment of the neonatal unit, which they describe as hostile <sup>(30)</sup>.

## CONCLUSIONS

The *Affective Attachment between Parents and Newborn Children* instrument is valid and reliable to be used in nursing practice in both neonatal care units and the ambulatory stage to measure the attachment of mother-child or father-child dyads.

The Varimax rotation as a statistical method for assessing the structure of the instrument's construct groups the items according to the coincident values in four factors, which in their content are related to the concepts of the theory of Becoming into a Mother by Ramona Mercer, they are: emotional support, union-interaction, information support and stress.

For the discipline of nursing, having valid and reliable empirical instruments protected by their own theoretical constructs contributes to the formulation of intervention proposals that can be measured, in this case proposals directed at the maternal perinatal group for the strengthening of the affective attachment between parents and children that focus on the well-being of the children in their development.

Since the postpartum period is a period of intense change in the different dimensions of the human being, involving not only the mother in her exercise of maternity but also the newborn, it is important for nursing to make possible moments such as skin-to-skin contact, the early start of breastfeeding, the joint accommodation of mother and child in the obstetrics and gynecology services, in order to strengthen attachment behavior and encourage the future development of the infant.

The use of the instrument resulting from this research is important, recognizing the authorship and offering the authors complete information on the results of this research in order to continue strengthening the psychometric properties of the instrument.

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