

Attachment behavior of Mapuche and non-Mapuche infants in Chile

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FOREWORD

With this master thesis, I will complete my master specialization ‘Child & Family studies’ at the Leiden University. During this master I learned with pleasure about the development of children and what is important in their relationships with parents and other caregivers. More specifically, the importance of attachment security for children and sensitivity of their parents is what I hope to convey and to contribute in my future work. Due to this master thesis it was possible for me to study mother-child relationships in Mapuche and non-Mapuche cultures in Chile. This was special to me because I previously had not studied these cultures before. It was also a challenge to understand a new country, with his history, language and habits, in order to form an image of the social-cultural contexts and home environments in which children are raised and develop. I want to thank my supervisors, Harriet Vermeer and Rodrigo Cárcamo, for giving me the opportunity to study Chilean mothers and children. I also want to thank them for their support and feedback so I could improve my academic knowledge and skills. Due to this master I know the importance of family and friends for human development and this I have also experienced myself. I want to thank my family and friends for all their trust, love and support the past few years. Special thanks to my parents, Jan and Annette, and my sisters, Jeske and Fenna. I am grateful to have grown up in a positive, loving and safe environment, something I think each child needs and deserves. Finally, I thank Pieter, who will visit me in Chile next year. I am looking forward to discover with him this intriguing country!

Aniek Woudstra.

ABSTRACT

Cross-cultural research has shown that attachment behavior of children can be found in many different cultures around the world. In the reported study attachment behavior was examined in the largest indigenous minority group in Chile. In the study reported here, attachment behavior of 29 Mapuche and 28 non-Mapuche infants (6.43 months, $SD = 1.51$) in Chile was studied. Furthermore, maternal sensitivity beliefs between Mapuche and non-Mapuche mothers were compared. It was also examined whether ethnicity, maternal sensitivity beliefs, maternal age and socio-economic status could explain individual differences in attachment behavior. Participants were recruited in Primary Health Centers and childcare centers in Temuco and Castro in Chile. Home visits were conducted to video-record mothers and children and to interview the mothers. The Attachment During Stress scale (ADS scale) was used to measure secure and non-secure attachment behavior of children in a naturalistic setting. The Maternal Behavior Q-sort (MBQS; Pederson, Moran, & Bento, 1999) was conducted to measure maternal sensitivity beliefs. It was concluded that attachment behavior, maternal sensitivity beliefs and socio-economic status did not differ for the Mapuche and non-Mapuche families. Ethnicity, maternal sensitivity beliefs, maternal age, and socio-economic status did not predict security of attachment behavior. This study contributed to the cross-cultural research of the universality of attachment because it was the first study on attachment behavior in the Mapuche culture. It showed that secure and insecure attachment behaviors could be detected at a very young age in Mapuche and non-Mapuche cultures. Future research should examine whether, in this culture, the quality of attachment behavior of children at a very young age can predict quality of attachment relationships at older ages.

1 INTRODUCTION

1.1 Introduction

Bowlby (1982) described attachment behavior of children (e.g. vocalizing, smiling, crying, approaching) and suggested that these behaviors are intended to maintain contact with specific attachment figures. Since attachment theory, attachment behavior of children has been studied for many years. Cross-cultural research has tested the universality of attachment by investigating attachment behavior of children in different cultures. It can be concluded that children in many different cultures around the world show the same attachment behavior patterns (Van IJzendoorn & Sagi-Schwartz, 2008). Despite ample cross-cultural research on attachment behavior, no studies have been published yet on the attachment behavior in the Mapuche and non-Mapuche cultures in Chile. Research on this is important, because it contributes to the knowledge of the universality of attachment behavior and the unique way of shaping attachment relationships in specific cultures. It is also important for the public health policies in Chile. For example, it may contribute to the care provided by Primary Health Centres and for preventive interventions in families within Mapuche and non-Mapuche cultures. Therefore, in this study attachment behaviors of Mapuche and non-Mapuche infants in Chile were studied.

The evolution of cross-cultural research had been described in different phases (Matsumoto & Hee Yoo, 2006). These phases are important to underline how cross-cultural research improved validity and reliability of methods to compare cultures and describe explanations for cultural differences. For example, in the first phase of cross-cultural research cross-cultural comparisons were made between two different groups (Matsumoto & Hee Yoo, 2006). However, in this phase it remains unclear if differences between cultures exist because of cultural factors or other factors. In later phases, cross-cultural research focused on identifying factors that could be associated with cultural variability and comparing relationships between variables on different levels (e.g. intrapersonal, interpersonal) across cultures to explain how these variables function in different contexts. Sequentially, the direction of causal relationships between different factors was also examined (Matsumoto & Hee Yoo, 2006).

In this study, cross-cultural research was used to investigate the attachment behavior of Mapuche and non-Mapuche infants and possible cultural and non-cultural factors which

could be associated with these attachment behaviors. Because it was an explorative study, no hypotheses were made about expectations from both cultures. First, the social-cultural context of the Mapuche population in Chile will be discussed. Secondly, attachment behavior will be described because of its importance to the social-emotional development of children. Thirdly, maternal sensitivity beliefs, maternal age, and income (as indicator of socio-economic status), will be clarified and it will be explained how these factors could influence attachment behavior.

1.2 Ethnic minority in Chile: Mapuche

The first contact between European people (e.g. Spaniards) and the indigenous populations in Chile took place in the early 16th century (Ray, 2007). As a result, a distinction can be made between indigenous and non-indigenous populations in Chile. Nowadays the Mapuche represent the largest indigenous minority group although other indigenous ethnicities still exist (e.g. Aymará). In total, 4.6% of the population in Chile belongs to ethnic minorities of which 87.3% is Mapuche (Instituto Nacional de Estadísticas Chile, 2002).

Mapuche means ‘people of the land’ and because of their own language, ceremonies and spiritual leaders the original Mapuche form a separate subpopulation in Chile (Ray, 2007). The Mapuche have a history of conflicts and struggles for independency, which has an influence on their identity and their living conditions nowadays (Ray, 2007). For example, many indigenous movements emerged to fight for many land rights (e.g. land ownership and the right to natural resources; Tomaselli, 2012). For this purpose, protests and violent fights still occur between Mapuche and the Chilean state (Tomaselli, 2012).

Differences and inequality between the Mapuche and non-Mapuche populations may arise or strengthen because of this history of conflicts and traditions. For example, in a small study, Mapuche people were interviewed and their experiences and feelings of being subordinated were reported (Merino, Mellor, Saiz, & Quilaqueo, 2009). It was concluded that the Mapuche participants suffered from verbal and behavioral discrimination. Another example of inequality concerns the socio-economic circumstances among ethnic groups in Chile. It was found that the Mapuche had the highest poverty rates in comparison with other indigenous and non-indigenous populations (Agostini, Brown, & Roman, 2010).

In Chilean studies on development of children, the physical health of indigenous and nonindigenous children was studied. For example, the growth of indigenous and nonindigenous Chilean children aged 6 to 9 years was examined (Bustos, Amigo, Muñoz, &

Martorell, 2001). It was found that the height of children was related to poverty. Within extreme, medium, and low household poverty no differences were found between Mapuche and non-Mapuche children. However, Mapuche children had more often a shorter stature than non-Mapuche children because of a lower socioeconomic status. Further it was found that stunting in indigenous and non-indigenous children decreased in the period 1997 to 2005, but the prevalence was higher in children with two Mapuche last names than in indigenous group with one last name of indigenous origin and the nonindigenous group (Bustos, Muñoz, Vargas, & Amigo, 2009). This was explained by a decrease in poverty from 1997 to 2005.

Interestingly, inequality has not been reported in newborns when comparing indigenous and non-indigenous groups (Amigo, Bustos, & Kaufman, 2010). In a public health study, weight and length of Mapuche and non-Mapuche newborns were examined over a 5-year period. No higher risk or insufficient fetal growth was found in the Mapuche group in comparison with the non-indigenous group. The proportions of preterm and multiple births in both groups were taken into account.

Further, cultural specific rules and beliefs exist for Mapuche women during pregnancy and the postpartum period (Alarcón & Nahuelcheo, 2008). Rules were aimed at physical health of mothers and children. Pregnant women were advised by the major persons of the community to avoid specific food because of their own health or because it could harm the fetus. For example, it was found that pregnant women were advised to avoid heavy, fat or spicy food. Double-yolked eggs could cause to give birth to twins and were also not recommended. Other rules were aimed at environmental or spiritual conditions of Mapuche women (Alarcón & Nahuelcheo, 2008). For example, mothers were advised to remain a balance between cold and warm temperatures and to avoid contact with spirits that could influence themselves and their child. In a study on the cultural dimensions of the childhood primary health care delivery process, a medical model of the traditional Mapuche has been explained (Alarcón-Muñoz & Vidal-Herrera, 2005). This medical model of the Mapuche is based on natural phenomena and magic-religious explanations. It is conceivable that Mapuche and non-Mapuche mothers handle different in case of diseases of their children because of differences in health care beliefs.

The different background in their history of customs and traditions of the Mapuche and their current social circumstances contribute to a specific social-cultural context which might differ from the social-cultural context of the non-indigenous families in Chile. Therefore, it is interesting to investigate whether these different social-cultural contexts in which children are raised influence the development of attachment behavior of children.

1.3 Attachment behavior

Bowlby (1982) described attachment behavior as a child's tie to a specific attachment-figure, mostly the mother. According to attachment theory, the tendency to form attachment relationships is innate (Bowlby, 1982). In an evolutionary perspective, this attachment is necessary to increase proximity between child and mother to become protected, especially in cases of frightening or stressful situations. For example, a child can display attachment behavior, such as vocalizing or crying to make contact with his mother and to alert her.

Despite of this naturally tendency for attachment, the social-cultural context of children partly contributes to the development of attachment relationships (Van IJzendoorn, 2008). In some non-Western countries children are raised by multiple caregivers (Van IJzendoorn & Sagi-Schwartz, 2008), as in for instance in the traditional Mapuche culture in Chile. In this culture, not only the role of the mother is considered to be important, but also the contribution of other family members, like aunts and grandmothers (Sadler & Obach, 2006). Raising children is seen as the responsibility of the entire community where the children live in. In this context, children can also form attachment relationships with other caregivers beyond the mother.

By measuring the quality of the attachment relationships of children it is possible to compare attachment relationships in different social-cultural contexts. The quality of attachment is usually divided in secure, insecure-avoidant and insecure-ambivalent attachment relationship classifications (Ainsworth, Blehar, Waters, & Wall, 1978). After a stressful situation, children within each classification will react differently to their specific caregiver. Securely attached children can be distressed but when comforted by their caregiver they are able to play and explore again. Insecurely-avoidant attached children will ignore and avoid contact with their caregiver by looking or turning away. Insecurely-ambivalent attached children want proximity of their caregiver but once they have this they want to keep distance and they are unable to calm down and explore again. Beside these three classifications, children can have a disorganized attachment classification if they show behavior that can not be categorized under one of the previous classifications (Main & Solomon, 1990). For example, children show contradictory or very fearful behavior to their caregiver. A secure attachment relationship stimulates exploration of the environment and positive expectations of interactions with other people. Securely attached children experience a caregiver as a consistent and available person, who they trust and who offers proximity and protection when

necessary, as opposed to insecurely attached children (Weinfield, Sroufe, Egeland, & Carlson, 2008).

In cross-cultural research, differences were found in the distribution of types of attachment qualifications among different countries. For example, in Japan and Israel, researchers reported more insecure-ambivalent attachment quality than in Western-European countries (Van IJzendoorn & Kroonenberg, 1988). According to the standard distribution of attachment qualifications around 70 percent of the children show a secure attachment quality, and 30 percent show an insecure attachment quality, of which around 20 percent is labeled insecure-avoidant and 10 percent insecure-ambivalent (Ainsworth et al., 1978).

In a study on the quality of attachment relationships of Chilean children between 11 and 19 months old, the distribution of attachment quality appeared to be similar to a standard distribution of attachment qualifications in the United States and the Netherlands. In this Chilean sample, it was shown that 73 percent was securely attached to the mother, whereas 14 percent showed insecurely-avoidant and 13 percent showed insecurely-ambivalent attachment relationships (Lecannelier, Kimelman, González, Nuñez, & Hoffmann, 2008). Chilean mother-child attachment relationships were also investigated in an early intervention study to promote secure attachment (Santelices et al., 2010). It was found that in this low-risk sample, in total, 65 percent of the children was securely attached, 26 percent showed insecurely-avoidant and 8 percent showed insecurely-ambivalent attachment relationships.

Bowlby (1982) described three phases in which children develop attachment relationships which occur during the first year of life: In the first phase, children have a limited ability to discriminate figures, while from the second phase children aim to direct their signals towards one or more discriminated figures. The second phase starts between 3 and 6 months and is important, because more complex attachment behavior is shown in this phase. For example, in the first six months children develop more control in their individual system of visual orientation and motor skills (Bowlby, 1982). The third phase starts between 6 and 9 months and the attachment behaviors become more consolidate. Children show more wariness toward a strange person and they develop more skills (e.g. more verbal communication skills; Bowlby, 1982).

In this study, the attachment behavior of children in the second and third phases of developing attachment was observed and possible similarities and differences in attachment behavior between Mapuche and non-Mapuche Chilean children were studied. Although attachment is usually described as a universal phenomenon, it is worth investigating whether

attachment behavior of Mapuche and non-Mapuche children can be explained by culture-specific factors, such as maternal sensitivity beliefs, maternal age and socio-economic status.

1.4 Maternal sensitivity beliefs

Harkness & Super (1996) described parents' cultural belief systems, which include ideas about the nature of children and their development and behavior. These parental beliefs are shared views of parents from the same cultures and might be important to the actual acting of parents within childrearing. In the reported study, the maternal sensitivity beliefs of Mapuche and non-Mapuche mothers are compared to investigate possible similarities and differences in cultural parental beliefs about raising a child. Beside this, it will be investigated if the maternal sensitivity beliefs concur with the standard sensitivity beliefs from Dutch experts. These sensitivity beliefs are a result of the sensitivity definition from Mary Ainsworth. Sensitivity refers to the extent of which parents receive the signals of their children and respond appropriately to them (Ainsworth, 1969). Maternal sensitivity is important for the social-emotional development of children and the development of secure attachment relationships (De Wolff & Van IJzendoorn, 1997; Egeland & Farber, 1984; Weinfield et al., 2008).

In a Dutch study, sensitivity beliefs of Dutch, Moroccan, and Turkish mothers in the Netherlands were studied. It was found that the sensitivity beliefs of mothers were highly similar with the criterion sort (Emmen, Malda, Mesman, Ekmekci, & Van IJzendoorn, 2012). The description about sensitive behavior of an ideal mother appeared similar across cultures. However, low income predicted lower sensitivity belief scores (Emmen et al. 2012): ethnic minority mothers had lower sensitivity belief scores than Dutch mothers.

Measuring the maternal sensitivity beliefs gives more insight into the characteristics of ideal motherhood within Mapuche and non-Mapuche mothers. In this study, similarity or dissimilarity in sensitivity beliefs between both groups will be explored. Maternal sensitivity beliefs were studied as cultural factor. Beside that, the influence of two non-cultural factors, socio-economic status and maternal age, was tested as well.

1.5 Maternal age

In previous research the influence of maternal age on the mother-child relationship was examined. More sensitive behavior and greater parental satisfaction with parenting were

found when mothers were older (Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982). In studies on teenage mothers it was found that maternal age predicted risk of negative child outcomes. For example, young mothers had more often deviant parent-child interactions and lower parent-child quality relationships (Jaffee, Caspi, Moffitt, Belsky, & Sylva, 2001).

In a longitudinal New Zealand study the relationship between maternal age and educational and psychosocial child outcomes at age 18 was studied (Fergusson & Woodward, 2003). Older mothers were found to provide more often nurturing and supportive parenting behavior and stable child-rearing environments than younger mothers (Fergusson & Woodward, 2003).

In a Chilean study on the amount of maternal stress and the perceptions of self-efficacy, it was found that younger mothers had more often stress related to the characteristics of their child: they more often than older mothers experienced their child as difficult (Farkas & Valdés, 2010). It was suggested that older mothers probably have more life experiences whereby they experience less stress in managing the behavior of their child (Farkas & Valdés, 2010).

Maternal age may have a direct or indirect influence on the mother-child relationship. Therefore, in this study, it was examined whether maternal age had an important role in predicting attachment security.

1.6 Socio-economic status

The family stress model describes a relationship between socioeconomic status and family processes which may affect child development (Conger & Donnellan, 2007). For example, previous research demonstrated that not ethnicity but socio-economic status was associated with attachment security. Bakermans-Kranenburg, Van IJzendoorn, & Kroonenberg (2004) reported that African-American children were more often insecurely attached than white American children because they lived in less optimal socio-economic circumstances.

Also, the sensitivity and sensitivity beliefs of parents can be influenced by socio-economic status. In a literature review, it was found that ethnic minority parents had lower sensitivity levels than parents of majority families. This relationship diminished when socio-economic factors were taken into account (Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012). As noted before, it was found that sensitivity beliefs of ethnic minority mothers in the Netherlands were influenced by family income (Emmen et al., 2012).

In a Chilean study, it was found that the family income per capita in relation with number of people living in the house predicted maternal stress (Farkas & Valdés, 2010). Mothers were more stressed when the number of people in the house increased whereby the average income per person decreased. The amount of stress mothers experience may have an influence on their parenting behavior. In another Chilean study, the relationship between income, maternal stress and child outcomes was studied (Fresno, Spencer, Leiva, & Gallardo, 2011). It was found that income predicted the level of depression of mothers and their financial worries, which both influenced the level of stress of mothers, whereby the quality of attachment of their children had been affected (Fresno et al., 2011). This implies that when mothers have a low income, they will have more financial worries and more often have a depression than mothers with a high income. Therefore, low income mothers experience more stress and this may influence their parenting behavior, which in turn may lead to more insecure attachment relationships in their children.

In the reported study, family income was used as an indicator of socio-economic status to investigate a possible role in the development of attachment of Mapuche and non-Mapuche children.

1.7 Research questions

Taken together, the main question of this study was: ‘Do ethnicity, maternal sensitivity beliefs, maternal age and socio-economic status predict attachment behavior of Mapuche and non-Mapuche infants in Chile?’. The following research questions were defined:

- Do differences exist in attachment behavior between Mapuche and non-Mapuche children?
- Do differences exist in sensitivity beliefs between Mapuche and non-Mapuche mothers?
- Can individual differences in attachment behavior be explained by ethnicity, maternal sensitivity beliefs, maternal age, and socio-economic status?

2 METHOD

2.1 *Participants*

Participants were part of the research project ‘Cross cultural differences in childcare and attachment’ which is a collaboration of the Leiden University and the Universidad Autónoma de Chile. In this study, 60 children between the age of four to ten months old were included. Participants were part of a non clinical sample. The recruited participants consisted of 34 boys and 26 girls. Of these, 30 children had a Mapuche ethnicity and 30 children had a non-Mapuche ethnicity. The average age of the children was 6.43 months ($SD = 1.51$). As regards to family composition, 25 (42%) children had no siblings, 19 (32%) children had one sibling, and 16 (27%) children had more than one sibling. The distribution of gender, age and the amount of siblings did not differ statistically in Mapuche and non-Mapuche children.

2.2 *Procedure*

In Primary Health Centers and childcare centers in Temuco and Castro, brochures were distributed to inform parents about the research project. The data were collected in Chile; Chilean students from the Universidad Autónoma de Chile visited families at home. In The Netherlands, the preparations of the research were conducted, and the data were processed afterwards.

Parents confirmed their willingness to participate with a consent form and gave permission to have their child video recorded. Together with a consent form they received information about the study, and they were (re)assured that their participation was treated confidentially. They were told that the data will only be used for the purpose of this study and that codes are used to label the data instead of their (sur)names. Mothers were asked to fill out a questionnaire about their family characteristics (e.g., their age, ethnicity and marital status).

Home visits took about 2.5 hours and were located in Temuco and Castro. In the home visit, the behaviors of mother and child were recorded on video during three different tasks: the mother feeding the child, the mother changing the child’s diapers, and mother and child playing together. The mother was also interviewed by using a Q-sort. Copies of the consent forms, questionnaires and film material were sent from Chile to the Netherlands. In October 2011 the flyers to inform parents were distributed. In January and February 2012, the home

visits were accomplished. After that, videos were coded and the data were processed. Home visitors and coders were independent; home visitors did not code the videos and coders did not observe mother and child or interview the mothers.

2.3 *Measurements*

2.3.1. Attachment behavior

Attachment behavior of children was measured with the Attachment During Stress scale (ADS scale; Massie & Campbell, 1992). In a validation study, ADS scale attachment behavior classifications were compared with Strange Situation Procedure (SSP) attachment classifications (Cárcamo, Van IJzendoorn, Vermeer, & Van der Veer, 2013). It was found that the ADS scale is a valid measure to classify secure and non-secure mother-child attachment relationships.

The ADS scale was developed to observe the mother-child interaction and comprises two parts that separately examine the behavior of the child and the mother. In this study, the ADS infant subscale was applied because it was reported to be a valid instrument to measure secure or non-secure attachment behavior of children (Cárcamo et al., 2013). In the home visit, the behavior of the child was recorded on video during three different tasks: the mother feeding the child, the mother changing the child's diapers, and mother and child playing together. The ADS infant scale comprises six scales: gazing, vocalizing, touching, holding, affect and proximity. Five frequencies are distinguished to qualify the level of the infant behavior. For example, the infant gazing scale scores are "always looks away from mother's face" (1), "rarely searches out mother's face; fleeting looks at mother's face"(2), "occasionally looks at mother's face"(3), "frequently long and short gazing at mother's face"(4), "rivets gaze on mother's face for long periods" (5). When a certain behavior does not occur, "behavior not observed" (x) must be chosen.

The scores 1, 2, and 5 are indicators of non-secure infant attachment behaviors, whereas the scores 3 and 4 are indicators of secure infant attachment behaviors. With these scores frequencies of indicators of secure or non-secure attachment behavior can be counted and summed. For each infant six scales were scored after which the amount of non-secure and secure scores were counted. The attachment behavior of the infant was coded as secure when the scores of 3 or 4 were given in more than 50% of the cases. The attachment behavior of the

infant was coded as non-secure when the scores of 1, 2 or 5 were given in 50% or more than 50% of the cases.

In this study, the inter-rater reliability of the ADS scale was measured in a separate dataset to estimate the agreement among observers. The inter-rater reliability is important because it measures the consistency between observers when recording the behavior of participants. For the ADS infant subscale, inter-rater reliability was 0.60 (*PABAK*; $n=15$); percentage of agreement was 80%. *PABAK* was calculated because it adjusts for bias between observers and the probability of agreement and disagreement between observers (Byrt, Bishop, & Carlin, 1993).

2.3.2. Maternal sensitivity beliefs

The maternal sensitivity beliefs were measured with the Maternal Behavior Q-sort (MBQS; Pederson, Moran, Sitko, Campbell, Ghesquire, & Acton, 1990). The MBQS was originally designed to observe maternal sensitivity. The MBQS involves 90 cards with descriptions of maternal behavior to measure the tendency of mothers to recognize their children's signals and to respond promptly and appropriately to them. The MBQS comprises descriptions about child care, maternal affect, attentiveness, interaction style and communication skills of the mother (Pederson et al., 1990). An example of a child care description is: "Makes sure that there are toys that fit the age of her child." In this study, the MBQS was used to assess the maternal sensitivity beliefs. Mothers were asked in an interview to use the MBQS to describe the ideal mother. The MBQS cards were distributed in three rounds (Mesman, Bakermans-Kranenburg, & Van IJzendoorn, 2011; Emmen et al., 2012). In the first round, mothers were asked to distribute the cards into three stacks: one stack that fits the behavior of an ideal mother well, one stack that fits the behavior of an ideal mother somewhat, and one stack that does not fit the behavior of an ideal mother. In the second round, each stack was distributed by the mother in three separate stacks in the same way as in the first round resulting in nine separate stacks in total. In the third round, the cards were evenly distributed by the mother, which means that each stack eventually consisted of ten cards.

The ratings of the mothers were counted and compared with standard sensitivity belief scores from Dutch experts who provided criterion sorts of the ideal mother (Emmen et al., 2012).

2.3.3. Family background

2.3.1.1 Ethnicity

The ethnicity of the children was defined by a direct method: self-report. Children were defined as Mapuche when mothers clarified in a questionnaire that their children live in a Mapuche family context. Self-report has been used as a golden standard in many studies to define ethnicity (Fiscella & Fremont, 2006; Boehmer, Kressin, Berlowitz, Christiansen, Kazis, & Jones, 2002; Baumeister, Marchi, Pearl, Williams, & Braveman, 2000).

2.3.1.2 Maternal age

Mothers were asked for their date of birth to define the maternal age in years.

2.3.1.3 Socio-economic status

Income as an indicator of the socio-economic status was estimated by self-report. In a questionnaire, mothers were asked to encircle if their income per capita each month was limited to \$ 61.911 (\$ 131.10 USD), \$ 105.907 (\$ 224.26 USD), \$ 167.879 (\$ 355.49 USD), \$ 300.869 (\$ 637.10 USD), more than \$ 300.870 (\$ 637.10 USD), over \$ 2.500.000 (\$ 5293.38 USD) Chilean Peso (CLP). The distributions of the five classifications were based on the five quintiles from the Instituto Nacional de Estadísticas de Chile. Each quintile represents 20 percent of the population. However, a sixth classification was added to distinguish high income and very high income, and a seventh classification was added to include families without income. For the analyses, a distinction was made between low income (0 - ≤61.911 CLP) and high income (>61.911 CLP).

2.4 Data-inspection

For the analyses, normality and outliers were examined for the numeric variables maternal sensitivity beliefs and maternal age. For normality, the standardized z-scores of skewness and kurtosis were calculated. Maternal sensitivity beliefs and maternal age were

both normally distributed with the criteria of standardized z-scores between -3 and +3. No univariate and bivariate outliers were detected for both variables.

2.4.1. Statistics

The chi-square test was used to measure if there were differences in attachment behavior between Mapuche and non-Mapuche children. The two-sample *t* significance test was conducted to compare the mean sensitivity beliefs between Mapuche and non-Mapuche mothers. Cohen's *d* effect size was also calculated. Multiple logistic regression analysis was used to measure the probability of secure or non-secure attachment behavior based on the predictor variables ethnicity, maternal sensitivity beliefs, maternal age, and socio-economic status. The categorical predictor variables must be changed in a dummy variable. Ethnicity will be Mapuche (0) and non-Mapuche (1). Socio-economic status will be low income (0) and high income (1). Dummy coding is necessary to measure the influence of a reference category on the outcome of the logistic regression analyses.

3 RESULTS

3.1 *Sample descriptives*

Mothers of participants were examined on family characteristics. The age of one non-Mapuche mother was missing; therefore, an estimation of her age was imputed by calculating the average age of the non-Mapuche mothers. The average age of the Mapuche mothers was 25.40 years ($SD = 7.59$, range 16-39) and the average age of non-Mapuche mothers was 26.33 years ($SD = 6.82$, range 14-42). The majority of 60 mothers had a low-educational level; 3 (5%) mothers did not complete primary school, 17 (28%) mothers finished primary school or did not complete secondary school, 33 (55%) mothers finished secondary school, 2 (3%) mothers finished a technical education, and 5 (8%) mothers graduated from university.

Fifty-six percent of the mothers lived with a partner, from 4 mothers it was unknown if they lived with or without a partner. Twenty-six (43%) mothers were single, 23 (38%) mothers were married, and 7 (18%) mothers lived unmarried with a partner. Mothers were asked if they participated in labor force. For one mother this was unknown; 21 (35%) mothers worked, 19 (33 %) mothers were students, and 19 (32 %) mothers did not work.

Because 52 percent of the mothers had an income per capita each month around \$ 61.911 CLP (\$ 131.10 USD), it was chosen to divide the seven income classifications into two classifications: the low income classification with families without income, an income equal and up to \$ 61.911 CLP (\$ 131.10 USD), and the high income classification with an income over \$ 61.911 CLP (\$ 131.10 USD). Consequently, 58 percent of the mothers were categorized in the low income classification and 42 percent of the mothers in the high income classification.

The distribution of age, educational level, marital status, participation in labor force and income did not differ statistically in Mapuche and non-Mapuche mothers.

3.2 *Attachment behavior classifications*

First it was examined whether differences exist in attachment behavior between Mapuche and non-Mapuche children. Participants with missing data in attachment behavior were not taken into analyses. Therefore, 3 participants were excluded and 57 participants were included in the analyses. In total, 41 children (72%) showed secure attachment behavior and

16 children (28%) showed non-secure attachment behavior. Table 1 shows frequencies of secure and non-secure attachment behavior of Mapuche and non-Mapuche children. Chi-square statistic was used to examine possible differences in attachment behavior between Mapuche and non-Mapuche infants. It was found that Mapuche and non-Mapuche children did not differ in attachment behavior $\chi^2 (1, N = 57) = .01, p = .93$.

Table 1.

Descriptives Mapuche and non-Mapuche mothers and children (n = 60)

		<i>Ethnicity</i>		
		Mapuche (n = 30)	Non-Mapuche (n = 30)	Total (n = 60)
<i>Frequencies (%)</i>				
Attachment behavior *	secure	21 (37)	20 (35)	41 (72)
	non-secure	8 (14)	8 (14)	16 (28)
Income	≤61.911 CLP	18 (30)	17 (28)	35 (58)
	>61.911 CLP	12 (20)	13 (22)	25 (42)
<i>M (SD)</i>				
Maternal sensitivity beliefs		.67 (.07)	.67 (.04)	.67 (.01)
Maternal age		25.40 (7.59)	26.33 (6.83)	25.87 (7.17)

Note. * Information on the attachment behavior of 3 participants was unavailable

3.3 Maternal sensitivity beliefs

Next it was examined whether differences exist in sensitivity beliefs between Mapuche and non-Mapuche mothers. The Mapuche mean sensitivity beliefs score was .67 ($SD = .07$, range .52-.75; see Table 1). Non-Mapuche mothers mean sensitivity beliefs score was .67 ($SD = .04$, range .56-.73). In total, 60 mothers were included in the analysis. The two-sample t significance test showed that the maternal sensitivity beliefs did not differ from each other, $t(50) = -0.30, p = .77$. This means that no differences were found in sensitivity beliefs between Mapuche and non-Mapuche mothers.

3.4 Multiple logistic regression on attachment behavior

Finally, multiple logistic regression analysis was conducted to examine if ethnicity, maternal sensitivity beliefs, maternal age, and the socio-economic status could predict secure or non-secure attachment behavior (Table 2).

Table 2.

Description multiple logistic regression attachment behavior (n=57)

Attachment behavior	Total sample (N)	Ethnicity		Income		Maternal sensitivity beliefs		Maternal age	
		Mapuche	Non-Mapuche	≤61911 CLP	>61911 CLP	M	SD	M	SD
Secure	41	21	20	22	19	.66	.06	25.17	6.83
Non-secure	16	8	8	11	5	.67	.05	28.75	7.80
Total	57	29	28	33	24	.67	.06	26.18	7.23

Indicator variables were included and for two variables dummy coding was applied (0 or 1): ethnicity (Mapuche or non-Mapuche) and income (low or high income). Pearson correlations between variables were calculated. Table 3 shows that no significant correlations were found ($p > .05$).

Table 3.

Pearson correlations between attachment behavior, maternal sensitivity beliefs, maternal age, income and ethnicity

	1	2	3	4	5
1 Attachment behavior	-				
2 Maternal sensitivity beliefs	-.08	-			
3 Maternal age	-.22	-.22	-		
4 Income	.14	-.07	.02	-	
5 Ethnicity	-.01	.04	.07	.03	-

Multiple logistic regression showed that ethnicity, maternal sensitivity beliefs, maternal age and socio-economic status did not predict attachment security (Table 4).

Table 4.

Multiple logistic regression on attachment behavior (n=57)

Predictor variable	β	SE β	Wald's χ^2	df	p	e^{β} (odds-ratio)
<i>Step 0</i>						
Constant	.94	.30	10.19	1	.01	2.56
<i>Step 1</i>						
Constant	7.16	4.60	2.42	1	.12	1282.76
Maternal sensitivity beliefs	-5.53	6.07	.83	1	.36	.01
Maternal age	-.08	.04	3.21	1	.07	.92
Income	-.62	.64	.93	1	.34	.54
Ethnicity	-.03	.62	.01	1	.97	.97

Nagelkerke R² = .12

4 DISCUSSION

In this study, the attachment behavior of Mapuche and non-Mapuche infants in Chile was examined. There were no differences in attachment behavior between both groups. Furthermore, sensitivity beliefs did not differ for the Mapuche and non-Mapuche mothers. Finally, ethnicity, maternal sensitivity beliefs, maternal age and socio-economic status did not predict secure or insecure attachment behavior.

4.1 *Attachment behavior*

Although the children were very young ($M = 6.43$ months, $SD = 1.51$), both secure and insecure attachment behaviors could be detected. This result is important for several reasons. Firstly, it appears to be possible to distinguish attachment behavior at a young age. According to attachment theory, the tendency to form attachment relationships is innate (Bowlby, 1982). This study contributed to this theory, because it was found that children from four to ten months already showed attachment behaviors as crying, smiling, vocalizing and looking for proximity to make contact with a specific attachment figure. Secondly, this study confirmed that attachment appears to be a universal phenomenon of child development. Attachment behavior was found in different cultures around the world (Van IJzendoorn & Sagi-Schwartz, 2008). This study showed that secure and insecure attachment behaviors were also found in children living in a Mapuche family context. The distribution of attachment qualifications was consistent with the universal standard distribution in which the majority of children show a secure attachment relationship. Thirdly, attachment behaviors were found not to be different within cultures in Chile. Despite of different socio-cultural contexts, overall the quality of attachment behaviors were not different for Mapuche and non-Mapuche infants. Because of the importance of attachment for the social-emotional development of children, this equality for ethnic majority and minority might be important for child and family public health policies in Chile.

4.2 *Sensitivity beliefs and socio-economic status*

This study also showed that sensitivity beliefs did not differ between the Mapuche and non-Mapuche mothers. This is in line with a Dutch study on sensitivity beliefs of ethnic

minorities in the Netherlands (Emmen et al. 2012). In the Emmen et al. study within socio-economic groups' sensitivity beliefs did not differ between different cultures. However, socio-economic status predicted lower sensitivity belief scores (Emmen et al. 2012). In the reported study, it was found that Mapuche and non-Mapuche families did not differ in socio-economic status. Perhaps because of the low socio-economic variability in this study, no differences in sensitivity beliefs between the ethnic majority and minority were found. On the other hand, the Emmen et al study showed that even when there were differences in socio-economic status, sensitivity beliefs were highly similar between groups. It is interesting that despite differences in social-cultural contexts, Chilean mothers highly agree about how the ideal mother should raise her child.

4.3 Predictors of attachment behavior

This study showed that ethnicity, maternal sensitivity beliefs, maternal age and socio-economic status did not predict the attachment behavior of Chilean children. In earlier studies, it was found that differences in attachment qualities between ethnicities could be explained by socio-economic status (Bakermans-Kranenburg, Van IJzendoorn, & Kroonenberg, 2004). In this study, attachment behavior and socio-economic status were not different for Mapuche and non-Mapuche families. This could explain why ethnicity did not predict secure or insecure attachment behaviors.

Furthermore, the maternal sensitivity beliefs were not related to the quality of attachment behavior of children. It is important to distinguish between sensitivity beliefs and sensitive behavior. Sensitivity beliefs refer to the behavior of the ideal mother whereas sensitive behavior refers to the actual acting of a mother. Maternal sensitivity was found to be important for the development of attachment security (De Wolff & Van IJzendoorn, 1997). Perhaps, some mothers may have ideas about how a sensitive mother should behave but in practice their own sensitive behavior deviates far off these beliefs, so that it could not predict the quality of mother-child attachment relationships.

Also, the age of Chilean mothers was not related to attachment behavior of their children. The average age of the Mapuche mothers was 25.40 years and the average age of non-Mapuche mothers was 26.33 years. In Chile, it is common that women become pregnant for the first time before 24 years of age (Instituto Nacional de Estadísticas Chile, 2007). It is possible that although young mothers participated in this study, their age did not predict more insecure attachment behavior because the society in Chile was adjusted to women that

become pregnant at a young age. It is possible that mothers were not at risk and did not experience a lot of stress in raising their child.

Finally, the low variability in socio-economic status may have weakened the association between family income and attachment security. However, other studies reported an indirect influence of socio-economic status on attachment of children. For example, low income could cause depression and financial worries of mothers which influence the amount of stress they experience which in turn influences the quality of attachment relationships (Fresno et al., 2011). It is possible that despite low socio-economic status mothers in this study did not experience much stress that may influence their behavior toward their children, and indirectly, attachment behavior of their children.

4.4 Limitations and recommendations

Despite the contributions of this study, several limitations should be noted. Although secure and insecure attachment behaviors were found at a young age in this study, one limitation of this study is that in the first six months of child development attachment relationships are developing. Between six and nine months of age, attachment between children and caregivers starts to become more consolidate (Bowlby, 1982). Therefore, the quality of mother-child attachment relationships may also develop and become more stabilized at an older age.

In future research, it would be interesting to investigate whether the secure or insecure attachment behavior at a very young age could predict the quality of attachment relationships at older ages. In earlier studies, continuity of secure and insecure attachment classifications from infancy through early adulthood was found (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). For example, securely attached children at 12 months had more often secure attachment representations in early adulthood than children who were insecurely attached at 12 months (Waters et al., 2000). If this continuity of secure and insecure attachment behavior from very young children to adulthood could be found it would be of importance for early intervention in clinical practice. As noted before, maternal sensitivity is important for the development of attachment security (De Wolff & Van IJzendoorn, 1997). In a meta-analysis, it was also found that interventions focused on promoting maternal sensitivity were most effective in enhancing sensitive parenting and secure attachment of children (Juffer, Bakerman-Kranenburg, & Van IJzendoorn, 2008). Moreover, interventions that started when children were six months or older were more effective in promoting

attachment security than interventions that started prenatal or in the first six months of age (Juffer et al., 2008). Therefore, observing secure and insecure attachment behaviors of children in the first six months could make it possible to start early intervention to stimulate secure mother-child attachment relationships.

A second limitation is that attachment behavior was measured with the Attachment During Stress scale (ADS scale). This instrument was validated to distinguish secure and non-secure attachment behaviors in a naturalistic setting (Cárcamo et al., 2013). However, it was not possible to classify insecure-avoidant and insecure-ambivalent attachment relationships. Therefore, the distribution of attachment classifications of Mapuche and non-Mapuche infants could not be exactly compared with that of the standard distribution. Globally, in the standard distribution 70 percent of the children was securely attached and 30 percent was insecurely attached (Ainsworth et al., 1978). In this study, 72 percent of the children showed secure attachment behavior and 28 percent showed insecure attachment behavior. This suggests that the distribution of attachment quality in this study is highly similar with the standard distribution of secure and insecure attachment relationships. The amount of secure and insecure attachment behavior in this study is also comparable with the quality of attachment distributions in other Chilean samples (Lecannelier et al., 2008, Santelices et al., 2010). However, one must be careful in comparing these results because of the different instrument in this study which results in less specificity in attachment qualifications.

In future research, it would be interesting to investigate whether it is possible to distinguish between insecure-avoidant and insecure-ambivalent attachment behavior classifications at a young age. Perhaps adjustments of the ADS scale will make that achievable (Cárcamo et al., 2013). Moreover, for cross-cultural research with respect to the universality of attachment it is important to examine attachment in the Mapuche culture when children are older and to make it possible to compare the attachment classifications with the standard distribution.

A third limitation is that maternal sensitive behavior was not studied. As noted before, a distinction must be made between sensitive beliefs and sensitive behavior. Interestingly, in a literature review, it was shown that ethnic minority parents showed lower levels of sensitivity than ethnic majority parents (Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012). Again the socio-economic factors mediated this relationship. In this study, it was not possible to compare relationships between maternal sensitivity, maternal sensitivity beliefs and socio-economic factors within different cultures. For this purpose, future research should include maternal sensitivity. It is also recommended to recruit participants with more variability in

socio-economic status. When there is more variability, the influence of high and low income on the development of attachment behavior can be studied better.

In future research emphasis should also be on other potential risk and protective factors for explaining differences in attachment behavior. An example of a risk factor is the amount of stress mothers' experience. Maybe mothers in this study did not experience a high level of stress and this would explain why maternal age and socio-economic status did not predict secure and insecure attachment behavior. When the level of stress is taken into account, it will also be possible to study whether stress of mothers could predict maternal sensitivity beliefs, maternal sensitive behavior and child attachment quality. An example of a protective factor is the amount of social support mothers experience in Mapuche and non-Mapuche cultures. Perhaps support of other family members will diminish adverse influences of factors on the development of attachment relationships. For example, it is conceivable that mothers in this study did experience a lot of stress because they were young or because of their low socio-economic status. However, because of high social support from family members this may not have influenced the quality of the attachment relationships of their children. It is known that in the Mapuche culture, this support from family members such as aunts or grandmothers is usual (Sadler & Obach, 2006).

A fourth limitation is that attachment behavior and possible predictors were examined at the same time. Therefore, no causal relationships could be investigated. A fifth limitation is that the sample was not representative because of the low variability in income. A last limitation is that this study contained a small sample size. For future research it is recommended to endeavor a greater sample size because this would increase generalizability.

4.5 Conclusion

This study contributed to the cross-cultural research of the universality of attachment. To the best of our knowledge, this was the first study on the attachment behavior in the Mapuche culture in Chile. It was concluded that secure and insecure attachment behavior of very young children could be detected and that Mapuche and non-Mapuche infants in Chile did not differ in quality of attachment behavior. Future research should examine whether, in this culture, the quality of attachment behavior at a young age could predict the quality of social-emotional development of children at later ages.

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