

IS BREASTFEEDING RELATED TO MATERNAL WARMTH AND ACCEPTANCE  
AMONG SAUDI MOTHERS?

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

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by  
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The undersigned, appointed by the dean of the Graduate School, have examined the  
thesis entitled  
**IS BREASTFEEDING RELATED TO MATERNAL WARMTH AND ACCEPTANCE  
AMONG SAUDI MOTHERS?**

presented by Sumayyah Allazzam,

a candidate for the degree of master of Science,

and hereby certify that, in their opinion, it is worthy of acceptance.

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## DEDICATION

*To my soulmate and the father of my children, my husband Abdulmajeed. To my children, the colors of my life, Abdullah and Sarah. To my parents. Thanks for your unlimited support. Without you, none of my success would be possible.*

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## **Abstract**

The majority of studies that explored the benefits of breastfeeding for mothers focused on the health benefits. Yet, this study among the first to consider the possible effect of breastfeeding on maternal caregiving behavior, particularly, maternal warmth and acceptance. A total of 399 middle income Saudi mothers participated in the study to explore the differences of maternal warmth and acceptance based on the infants' feeding methods. The study also examined the association between breastfeeding duration and maternal warmth and acceptance. The results highlighted that mothers who exclusively breastfed their children scored significantly higher in maternal warmth and acceptance than mothers who only bottle fed and those who mix between breastfeeding and bottle. Breastfeeding duration was also found to have a significant positive association with both maternal warmth and acceptance. The findings provide insight into understanding the possible social and emotional benefits of breastfeeding to the mothers.

Keywords: Breastfeeding, maternal warmth, maternal acceptance

## Chapter 1: Introduction

Breastfeeding has been identified as the “gold standard” of infant feeding. In fact, the World Health Organization (WHO) stated that “breastfeeding saves children’s lives” as it has been suggested to prevent infant mortality due to common childhood illnesses (León-Cava, Lutter, Ross, & Martin, 2002). Nutritionally, human milk provides all the nutrients needed by infants up to six months. The nutrients provided through breastfeeding act as protective factors as they increase immunity against diseases and lower the likelihood of developing childhood obesity (Ballard & Morrow, 2013).

According to Oddy, Robinson, Kendall, Zubrick, and Stanley (2011), children who were breastfed as infants display several cognitive developmental benefits such as better fine motor skills and higher communication scores at ages 1 and 3 years. The benefits of breastfeeding may extend to mothers as it was found to be associated with lower risk of breast and ovarian cancer (Godfrey & Lawrence, 2010). In addition, in one study, breastfeeding was found to be correlated with lower rate of postpartum depression, which has been identified as a significant barrier for maternal functionality (Hahn-Holbrook, Haselton, Dunkel Schetter, & Glynn, 2013). Moreover, breastfeeding has been found to be associated with higher quality of mother-child interaction (for a review, see Jansen, de Weerth, & Riksen-Walraven, 2008).

Based on the wide range of benefits of breastfeeding for both mothers and infants, the WHO recommends breastfeeding exclusively for six months postpartum and continuation of breastfeeding until 2 years of child age. Despite this recommendation, findings from a study that was conducted among Saudi Arabian sample indicated that

77.8 of new mothers intended to breastfeed their infants exclusively, yet only 12% continued exclusive breastfeeding for six months or more (Amin, Hablas, Al Qader, 2011).

Most of studies that investigated the benefits of breastfeeding focused on its nutrient values (e.g. Ballard & Morrow, 2013) and its health benefits for mothers and infants (e.g. Godfrey & Lawrence, 2010; León-Cava, Lutter, Ross, & Martin, 2002) with less focus on its association with maternal adjustment and caregiving behavior. In addition, within the limited studies that explored the relation between breastfeeding and maternal behavior, almost all of them were conducted in western cultures. As a step toward testing the cross-cultural generalizability of relations between breastfeeding and maternal behavior, the aim of this paper is to investigate the association between breastfeeding and maternal warmth and acceptance among Saudi mothers.

### **Cultural Background of Saudi Arabia**

Saudi Arabia is one of the biggest developing countries in the middle east with about 33 million inhabitation in which about 51% of the population is under the age of 25. About 48% of the population is concentrated in Riyadh, the capital, and in the western cities of Saudi Arabia (Jeddah, Makkah, Taif) (“Saudi Arabia Population”, 2018). It is a high-income country where the median per capita annual income in 2017 reached about \$55,000 (The World Fact Book, 2018).

The Saudi Arabian culture is deep and rich and mainly influenced by the Islamic religion and the Arab and Bedouin traditions. As collectivists, Saudi people maintain very high regard for the extended family, especially the elderly. The family structure is mostly hierarchical where the father plays the dominant role. Fathers are responsible for all of

the financial needs of the family including the mother even if she is employed. Mothers are usually responsible for rearing children (The Culture of Saudi Arabia, 2018).

With the significant influence of Islamic religion on Saudi culture and tradition, it is essential to consider religious recommendations about breastfeeding. Muslim women are instructed in the Quran to breastfeed their infants for two years. To promote this long duration, the father of the infants, even if the couples are divorced, is required to take full responsibility for the infants' and the mothers' sustenance. However, with the modernization of the country and increased promotion of infant formula, the prevalence of breastfeeding has been decreasing (Radwan, 2013).

The Saudi society has been experiencing dramatic development over the last a few years, especially with the government plan of economic development (2030 Saudi Vision). With this vision, female employment and leadership has been empowered and more welcomed. At the same time, the use of bottle feeding has become more popular and accepted as women perceive it as more "modern." Descriptive statistics about breastfeeding in Saudi Arabia vary across different studies. In the last recent review, Al Juaid, Binns, and Giglia (2014) reported a decline in breastfeeding duration from 14-months in 1985 to 8-months in 2010. Among a sample of 827 pregnant Saudi mothers, 48% reported the intention to use mixed feeding (i.e. bottle and breastfeeding) (Alwelaie et al., 2010).

Al Juaid and colleagues (2014) reviewed the factors related to breastfeeding among Saudi mothers through examining 15 descriptive studies. They revealed that mothers who were older, rural, or less educated were more likely than younger educated mothers to breastfeed for longer duration. Reasons preventing some mothers from

breastfeeding their infants included the use of oral contraception, caesarean sections, employment, insufficient breast milk, mother or infant health issues, and new pregnancies (for review, see Al Juaid, Binns, and Giglia, 2014).

## **Patterns of Breastfeeding**

There are two approaches that determine how often the infant will breastfeed. The first approach is known as infant-led or unrestricted breastfeeding and the second approach is labeled as scheduled breastfeeding. In the first pattern, the feeding time depends on infant cues. On the other hand, scheduled breastfeeding is led by the clock. In this case, infant feeding is scheduled based on clinical recommendations, which is every two hours for newborns. Some mothers choose to mix between the two methods. (Fallon, Van der Putten, Dring, Moylett, Fealy, & Devane, 2014).

In the early 20th century, women were advised by health care providers to breastfeed their babies based on the clock. However in the mid 20th century, guidelines considered the different nutritional values between the mother milk and the formula. As a result, infant-led feeding has been suggested as the preferred approach in which unrestricted contact between the mother and infant is encouraged. This form of feeding allows the infant to control the supply of milk as its production will be formed based on the infant's needs (Fallon, et al., 2014).

The WHO identify three different types of feeding based on the infants' source of nutrients. The first is exclusive breastfeeding in which no food, water, or any form of food is introduced to the infant other than the mother's milk, either expressed or through direct feeding. The second type is predominant breastfeeding in which the infant's predominant source of food is the mother's milk. In this type, the infant may receive

liquids such as water and water-based drinks. The third type of infant feeding is bottle or formula feeding, in which the infant's source of food is artificial milk or formula (WHO's Infant Feeding Recommendation, 2018). In addition to these type of infant feeding, some mothers choose to mix between bottle and breastfeeding. This form of feeding is termed mixed-feeding method in this paper.

The WHO defined breastfeeding as feeding infants or younger children from the mother's milk regardless of the method of feeding (direct feeding or expressed milk fed through bottles). In this paper, breastfeeding is defined as providing the infant with breast milk directly while maintaining physical proximity.

## Chapter 2: Literature Review

### Breastfeeding and Maternal Caregiving Behavior

The most salient dimension of maternal caregiving behavior in the literature is whether the mother is supportive or not. According to Ispa et al. (2004), supportive mothers tend to be characterized as sensitive, accepting and warm. In fact, attachment theory highlights the role of maternal sensitive responsiveness as a key component and predictor of mother-child secure attachment. Infants become securely attached to caregivers to whom they can return when feeling distress and who tend to be responsive. Failure to form secure attachment is usually the result of lack of showing positive caregiving behaviors such as acceptance and responsiveness (Ainsworth, 1979; Bowlby, 1977).

Parental Acceptance and Rejection Theory (PARTheory) is a socialization theory that aims to explain the different dimensions of parental warmth and explore its antecedents and consequences (Rohner, Khaleque, & Cournoyer, 2005). According to Rohner, parental warmth and acceptance are associated with children's psychological adjustment and development regardless of differences in culture, ethnicity, gender and race. This theory has been examined across 15 countries, including some middle eastern countries, and the findings confirm the positive association between parental acceptance and warmth and positive child outcomes (Rohner & Rohner, 1980). Lohaus and others (2001) tested the association between observed maternal warmth, acceptance, and sensitivity. The findings suggested that maternal warmth and acceptance are highly related to maternal sensitivity. They concluded that raters of mother-child interaction did

not differentiate between the three dimensions of maternal caregiving behavior (Lohaus, Keller, Ball, Elben, & Voelker, 2001).

**Duration of breastfeeding.** Maternal acceptance and warmth may be related to breastfeeding, especially when breastfeeding is characterized as long and exclusive. Longitudinal investigations have revealed that longer breastfeeding duration is associated with positive caregiving behavior years later (Papp, 2014; Weaver, Schofield, & Papp, 2018). Weaver, Schofield, and Papp's (2017) conducted a longitudinal investigation of the potential benefits of long breastfeeding duration on maternal sensitivity across the first decade of life. Their findings highlighted the positive outcomes of breastfeeding on maternal sensitivity beyond the periods of infancy and toddlerhood. The breastfeeding duration range in their study was between never breastfed (28.6%) to 24 months (1%). The majority of mothers reported breastfeeding for six weeks (50.3%). They found longer breastfeeding duration to be related to higher observed maternal sensitivity over the period from 6-months to 11-years. They also found longer breastfeeding duration to facilitate secure attachment at age 24-months.

In another longitudinal study, Papp (2014) examined the association of breastfeeding with the observed quality of 1,306 mother-child dyads' interaction. The researcher followed the sample four times: at child age of 6, 15, 24, and 36-months. In each time, he asked mothers to answer a series of questions regarding breastfeeding. To measure the quality of mother-child interaction, he videotaped 15 minutes of mother-child interaction across the four times. The results indicated that mothers who breastfed more than six months scored higher on observed maternal sensitive responsiveness over the first three years of parenting, even after accounting for demographic and early

relational characteristics (Papp, 2014). Similarly, Tharner et al. (2012) examined maternal responsiveness across different durations of breastfeeding. Mothers answered a questionnaire about their breastfeeding practices two and six months postpartum. At the child age of 14-months, maternal sensitivity was measured using Ainsworth's sensitivity scale and attachment quality was measured through the Strange Situation. Their results indicated that longer duration of breastfeeding was associated with higher maternal sensitivity and responsiveness and greater likelihood of child secure attachment. Freeman (1932) conducted a study in which he compared the mother's' attitude toward the child between 100 mothers who breastfed for longer than one year and 100 mothers who breastfed for less than a month. The findings suggest that half of the mothers who breastfed for less than a month showed signs of rejecting their children (Freeman, 1932).

**Intention of breastfeeding.** Intention to breastfeeding is another factor that has been found to be associated with quality of mother-child interaction. Britton and colleagues (2006) investigated whether choosing to breastfeed is associated with maternal sensitive responsiveness. Their results indicated that mother who intended to breastfeed showed greater sensitive responsiveness three months postpartum compared to mothers who did not intend to breastfeed. Similarly, Else-quest and colleagues (2003) tested the association between breastfeeding in the first week postpartum with the quality of mother-child interaction 4 and 12-months postpartum among 570 mother-child dyads. They found that early breastfeeding is associated with less maternal negative affect and rejection at 12 months.

Breastfeeding particularly direct feeding differs from bottle feeding in many ways. Animal studies showed that the hormones that are released during the production

of milk affect maternal caregiving behavior. The same may be true in humans. In addition, the benefits of breastfeeding includes non-nutritive features that might enhance maternal behavior such as more mother-child physical proximity (Jansen, Weerth & Riksen-Walraven, 2008). The underlying mechanisms that may mediate the association between breastfeeding and maternal caregiving behavior are discussed in details in the next section.

## **Mechanisms of Association between Breastfeeding and Maternal Caregiving**

**Hormonal effects.** The endocrine system plays a significant role in breastfeeding. Specifically, the release of peptide hormone oxytocin is stimulated by infant suckling. In addition, Prolactin is another peptide hormone that is released during suckling. Recent animal studies suggest that the release of these hormones plays a critical role in enhancing positive maternal behavior among mammals (Pedersen, Caldwell, Walker, Ayers, & Mason, 1994). In addition, recent human studies show a positive association between the release of these hormones and positive maternal caregiving behaviors (for review, see Jansen, Weerth & Riksen-Walraven, 2008).

*Oxytocin (OT).* This hormone has been identified as a stress reducing hormone; it has also been called a maternal hormone. In an animal study, Kendrick (2000) studied the effect of oxytocin on maternal caregiving behavior. The findings revealed that the release of oxytocin in the mother's system activates maternal behavior that is necessary for the survival of the offspring and deactivates behaviors that might harm the offspring. In addition, induction of oxytocin in female rats (Pedersen, Caldwell, Walker, Ayers, & Mason, 1994) and sheep (Da Costa, Guevara-Guzman, Ohkura, Goode, & Kendrick,

1996; Kendrick, Keverne, & Baldwin, 1987) causes these animals to show maternal behavior. Moreover, administering antagonist oxytocin to the mother's system shortly after parturition decreases the likelihood of displaying maternal behavior (Van Leengoed, Kerker, & Swanson, 1987). These experiments with animals provide evidence that oxytocin level in animals influences the quality of maternal caregiving behavior.

In support of the cited animal studies, recent human studies suggest significant associations between oxytocin concentration level and maternal caregiving behavior. Levine and others (2007) compared the quality of maternal fetal attachment across different levels of prenatal oxytocin. They found a positive correlation between the level of oxytocin and maternal-fetal attachment (Levine, Zagoory-Sharon, Feldman, & Weller, 2007).

When the infant suckles, the muscles in the mother's breast contract due to the release of oxytocin, allowing the smooth muscle cells to release milk. As a result, longer durations of breastfeeding increases the release of oxytocin in the mother's system, thus decreasing the mother's stress level and increasing her engagement while interacting with her child (Jansen, Weerth & Riksen-Walraven, 2008).

*Prolactin (PRL)*. The role of prolactin in maternal caregiving behavior has also been widely investigated in animal studies (Bridges, 2015; Mann & Bridges, 2001). The literature provides evidence that hormonally primed rats display higher onset of maternal caregiving behavior than non-hormonally primed rats (Bridges, DiBiase, Loundes, & Doherty, 1985). There is only one human studies regarding the role of prolactin on caregiving behavior, and it was conducted among fathers (Storey, Walsh, Quinton, & Wynne-Edwards, 2000). Storey and colleagues tested the correlation between paternal

level of prolactin and responsiveness to infant cues. They obtained blood samples from the mother and father and compared the fathers' level of prolactin to their responsiveness to infant cues of distress. Their results suggest that higher levels of prolactin is associated with higher reactivity to infant cries. Although their findings add support to the role of prolactin in promoting paternal caregiving behavior, little evidence exists regarding the role of prolactin in relation to maternal caregiving behavior. However, it has been suggested that breastfeeding is associated with higher level of prolactin. In one study, mothers who were breastfeeding for more than 4 months postpartum had significantly higher levels of prolactin than mothers who were bottle-feeding (Widström, et al., 1990).

*Activation of brain regions.* Functional magnetic resonance imaging (fMRI) of human mothers has identified several brain regions that are involved in maternal sensitive responsiveness to infants' stimuli. These regions include: the hypothalamic regions, including the medial preoptic area, a rich set of limbic and cortical brain regions in the midbrain, amygdala, striatum, anterior cingulate gyrus, and the prefrontal cortex (Kim, et al., 2011). The relationship between the activity of these regions and breastfeeding was investigated by Kim and his colleagues (2011). Seventeen mothers with full-term babies were recruited and divided into two groups based on their feeding methods i.e., exclusive breastfeeding vs. exclusive bottle feeding. Mothers' brain image data were collected while listening to their babies cry two to four weeks postpartum. Maternal sensitivity was measured three to four months later through videotaped mother-child interaction. Results revealed that mothers who were breastfeeding showed greater activation in the superior frontal gyrus, insula, precuneus, striatum, and amygdala in the first postpartum month while listening to their own baby-cry compared to mothers who were not breastfeeding.

At 3-4 months postpartum, breastfeeding mothers showed a trend toward higher maternal sensitivity while interacting with their babies, compared to bottle-feeding mothers (Kim, et al., 2011).

**Situational factors.** In addition to the hormonal effects of breastfeeding on promoting maternal caregiving behavior, there are situational aspects of breastfeeding that might mediate the association between breastfeeding and maternal caregiving behavior. Lavelli, and Poli (1998) found that maternal physical contact and touching were significantly higher among mothers who were breastfeeding as compared to bottle-feeding mothers. Breastfeeding can facilitate maternal sensitivity through the formation of direct sensory feedback that might enhance the mothers' sensitivity toward her infant's needs, which in turn fosters mother-infant secure attachment (Jansen, Weerth & Riksen-Walraven, 2008). Direct feeding of the infant prompts physical proximity as the mother holds her child closely while breastfeeding. According to Harlow and others (1965), physical contact and proximity with the mother plays a significant role in promoting the mother-child attachment. Moreover, physical proximity enhances the release of oxytocin which in turn promotes the mother's mood and adjustment (Jansen, Weerth & Riksen-Walraven, 2008).

### **Breastfeeding and Postpartum Depression**

Postpartum depression (PPD) is a serious mental illness that can occur among new mothers after delivery. Its risk increases from one week postpartum to two years. One of the major symptoms of PPD is the mother's difficulties in bonding and engagement with the newborn (American Psychiatric Association, 2013). It affects 19.8% of mothers worldwide and about 17.8% of Saudi mothers (Alasoom & Koura, 2014).

Mothers who develop the disorder are less likely to breastfeed or display sensitive caregiving behavior. One study suggests that mothers who experiences PPD are more likely to stop breastfeeding (Dennis & McQueen, 2007). However, recent work have shown that not breastfeeding might be associated with higher likelihood of developing PPD (e.g., see Borra, Iacovou, & Sevilla, 2015; Strathearn, Mamun, Najman, & O'Callaghan, 2009).

In another study, longer duration of breastfeeding was found to be associated with lower risk of PPD even after controlling for history of depression and higher rates of life stressors (Hatton, Harrison-Hohner, Coste, Dorato, Curet, & McCarron, 2005). In addition, a number of studies have shown a relation between early weaning and depressive symptoms (e.g., Akman, et al., 2008 ; Seimyr, Edhborg, Lundh, & Sjögren, 2004).

In addition to the possible benefits of longer duration, exclusive breastfeeding has been shown to be related to fewer depressive symptoms postpartum. Thomas and others (2006), collected data from 734 Icelandic mothers two to three months postpartum. They compared PPD scores across mothers who were exclusively feeding their infants and mothers who were partially breastfeeding. They found that mothers who were exclusively breastfeeding had significantly fewer depressive symptoms compared to mother who were not exclusively breastfeeding (Thomas, Alder, Ramel, 2006). Therefore, mothers who exclusively breastfeed for longer period of time might be at lower risk of developing PPD. Since disengagement with the infant and compromised maternal caregiving behavior are key symptoms of PPD, it may be that breastfeeding enhances maternal caregiving behavior through protecting against PPD.

All of these findings were based on non-experimental investigations thus, the directional of the association is still not clear. However, experimental evidence with animals shows that increased level of oxytocin predict greater maternal responsiveness (Levine, et al., 2007). Therefore, it is possible that the level of oxytocin might predict the initiation and maintenance of breastfeeding. Since oxytocin is responsible for the release of mothers' milk, it can be concluded that breastfeeding might lower the risk of developing PPD through increased levels of oxytocin.

The hormonal and situational components of breastfeeding are thus suggested to be related to higher quality of maternal caregiving behaviors. In any case, maternal sensitive responsiveness, warmth, and acceptance are highlighted in the literature as possible factors that are related to breastfeeding. Longer and exclusive breastfeeding were compared to other durations and patterns of infant feeding and consistently found to be associated with positive aspects of maternal caregiving behavior. The majority of studies that explored the association focused on western mothers. Although I expected to find similar findings among my Saudi sample because of the hormonal mechanisms, research is needed to test the cross-cultural generalizability of this relation. The current study will focus on Saudi mothers. Saudi Arabia is a country where thus far no such studies have been conducted.

### **Statement of Current Research Purpose**

Giving the scarce research regarding breastfeeding in Saudi Arabia, the purpose of this study is to investigate the relation between breastfeeding and maternal caregiving behavior among Saudi mothers. This study will be conducted through testing the following hypothesis:

H1: Duration of breastfeeding is positively associated with maternal acceptance and warmth among Saudi mothers.

H2: Duration of exclusive breastfeeding is positively associated with maternal warmth and acceptance among Saudi mothers.

H3: Mothers who exclusively breastfeed are higher in maternal warmth and acceptance than those who bottle feed and mixed between bottle and breast milk.

H4: Saudi mothers who exclusively breastfeed for four months will score higher on maternal warmth and acceptance than Saudi mothers who mixed feed and mothers who exclusively bottle feed their infants.

H5: The relation between breastfeeding and maternal warmth and acceptance is stronger among mothers who intended to breastfeed only prenatally than mothers who did not intend to breastfeed.

H6: Mothers who prenatally intended to breastfeed exclusively are higher in maternal warmth and acceptance than mothers who intended to mix and those who intended to bottle feed only.

### **Significance of the Study**

The decline of breastfeeding rates among Saudi mothers seems to be due to the lack of support from healthcare providers. Even if they do encourage breastfeeding, healthcare providers mainly focus on the health benefits when encouraging mothers to breastfeed (Al Jassir, El Bashir, Moizuddin, & Abu Nayan, 2006). This study investigated the link between breastfeeding and maternal caregiving behavior. It also highlighted patterns in Saudi mothers' breastfeeding and identified barriers and predictors. My goal for this study was to offer informative findings for healthcare

providers and policy makers who wish to eliminate barriers and encourage public awareness. The studies also provided baseline information for any upcoming studies that aim to investigate breastfeeding among Saudi mothers.

## Chapter 3: Methods

### Participants

I used convenience sampling plus snowballing to reach potential participants. Recruitment involved sharing the Qualtrics link of the survey with brief description of the study in social networking sites such as Twitter, Instagram, and WhatsApp. The link of the survey was also sent to social media influencers and experts in parenting in Saudi Arabia to share it with their followers. The participants did not receive incentives for participation.

The sample included 399 middle income Saudi mothers (age  $M = 28.5$  years,  $SD = 6.3$ ). All of the mothers were unemployed and had only one child (age  $M = 31.5$  months,  $SD = 24.7$ ). About 79% of the mothers were college graduates. See Table 1 for additional demographic information about the study participants. Also, see Table 2 for the number of mothers who selected either exclusive breastfeeding, exclusive bottle, or mixed based on the following questions: “during infancy, how did you feed your baby?” (overall feeding method), “In the first four months of your child’s life, what was the form of feeding”, (feeding method in the first four months) and “When you were pregnant, which form of feeding you intended to use” (prenatal intention of feeding).

### Study Design

This study employed a cross-sectional nonexperimental comparative and associational design. Breastfeeding duration and pattern of feeding were the independent variables, whereas maternal warmth and acceptance were the dependent variables. The control variables included mothers’ age, economic security (ES) (ES; assessed by self-

reported adequacy of household resources), marital status, and the age of the baby. All data were from mothers' responses to questionnaires.

### **Data Collection Procedure**

After receiving the invitation to the online Qualtrics survey, participants were asked to agree to participate on the consent form. Then, they answered the online survey that consisted of: a demographic questionnaire, a breastfeeding measure, and the warmth and acceptance measures. All of the measures were translated to Arabic language. The average duration of completing the survey was between one minute and about 11 minutes.

### **Measures**

**Demographic questionnaire.** This questionnaire asks participants about their educational level, age, ES, religiosity, marital status, type of settlement, and the child's gender and age. level of ES was measured through asking mothers two questions about their perception of their current economic security. These questions included: "Do you worry if you can meet household expenses at the end of the month?" and "Do you feel your family income meets all of your basic needs (for food, housing transportation, clothing?)". Mothers who worried about meeting their household expenses by the end of the month and whose income did not meet their basic needs were placed in the low income category (low ES). Those who either worried or did not have enough income (but not both) were placed in the middle category (middle ES). Mothers who did not worry and stated that they had enough income were placed in the high income category (high ES). (See Appendix A for the English version of the demographic questionnaire.)

**Breastfeeding questionnaire.** This questionnaire asks mothers about the pattern (i.e., bottle only, breastfeeding only, or mixed) and duration of their feeding practices. Example items include: “For how long did you breastfeed your baby?” and “During infancy, how did you feed your baby?” The questionnaire also includes items related to predictors of breastfeeding (e.g., “What encouraged you the most to breastfeed?”) and items related to barriers against breastfeeding (e.g., “What factors prevented you from breastfeeding?”). Respondents chose among a number of options. (The English version of the questionnaire is in Appendix A.)

**Parental Acceptance and Rejection Questionnaire (*PARQ-Infant Version*).**

This questionnaire measures parents’ self-perception of rejection toward their child (Rohner, 2005). The original PARQ-Infant Version consists of 63 items divided between five subscales: warmth/affection, hostility/aggression, indifference/neglect, undifferentiated rejection, and control. In this study, I only used the rejection and warmth subscales. This means that a total of 22 items were included. The response options are presented as 4-point Likert-type items ranging from 4 (almost always true) to 1 (almost never true).

The warmth/affection subscale consists of 17 items (e.g., “I talk to my baby in a warm and affectionate way”). Scores range between 67 (high warmth) to 17 (low warmth). The original measure was designed to reflect negative outcomes (i.e., parental rejection), Therefore, Rohner’s instructions recommend reversing the scores on the warmth subscale so as to measure lack of warmth. Because my dependent variables of interest are positive (i.e. warmth and acceptance), I did not reverse score the warmth subscale.

In addition, a total of 10 items are included in Rohner's undifferentiated rejection subscale (e.g., "I pay no attention to my baby"). Higher scores indicate higher rejection. Two of the items should be reversed (e.g., "I am sympathetic to my baby when (s)he is having trouble"). In order to get a score that reflects acceptance, I kept the scores that should be reversed as is, and reversed the eight others. Since Warmth and Acceptance were not highly correlated ( $r=.38$ ), I used them as two separate scales.

Rohner (2005) reported that without the control scale, the internal reliability of the measure was .74 and test-retest reliability twelve months later was .76 (Khaleque & Rohner, 2008). The PARQ-Infant Version that I used was adapted from the PARQ-child version which has been shown to be valid and reliable in Arab cultures (Khaleque & Rohner, 2002). I made a few minor changes to the Arabic infant version so the questions are appropriate for mothers of older children (i.e., I replaced the word "baby" with "my child"). A second Saudi speaker back-translated the instrument into English and we agreed that there was no change in the meaning of items after translation.

The reliability of the scales that were used in the current study were good. Cronbach's alpha for the Warmth scale was .78. Cronbach's alpha for the Acceptance scale was .78, which also indicates good reliability.

All instruments are in Appendix A.

### **Data Analysis Plan**

Based on the results of ANOVA, the three groups were similar in terms of: education, marital status, age of the mother, type of settlement, and the gender of the baby. However, the groups differed in terms of the child's age; therefore I controlled for child age in the analyses.

Two sets of analysis of covariance (ANCOVAs) were conducted to determine if maternal warmth and acceptance differed across the three groups of mothers (H3). One set used mothers' responses to the question, "During infancy, how did you feed your baby?." This question did not specify the number of months mothers were to report on. The other ANCOVA used responses to the question, "In the first four months of your child's life, what was the form of feeding?" This question thus focused on a particular time period in the infant's life. (H4).

Pearson partial correlations were conducted to test the associations between the duration of breastfeeding (whether exclusive or mixed) and maternal warmth and acceptance (H1), and the relation between duration of exclusive breastfeeding and mothers' warmth and acceptance (H2).

To test H5, linear regression was conducted to test the interaction between intention to breastfeed and actual breastfeeding behavior in predicting maternal warmth and acceptance. I also conducted an independent sample t-test to examine the differences in maternal warmth and acceptance between mothers who prenatally intended to mix between breastmilk and bottle and those who intended to use bottle only (H6).

## Chapter 4: Results

The sample's average breastfeeding duration was 31.4 weeks (about 7 months). Mothers in the sample were high in maternal warmth ( $M= 63.4$ , Range = 46-68) and in maternal acceptance ( $M=30.4$ , Range = 16-40). Factors that influenced mothers to breastfeed included: knowledge about the benefits of breastfeeding (69.3%), family support (28.4%), religious teachings (23.6%), healthcare providers support (16.8%), the low cost of breastfeeding (7%). On the other hand, mothers reported the following factors that prevented the initiation of breastfeeding: poor or absence of milk supply (10.3), the baby was not interested (8.3%), medical problems (2.5%), pain while nursing (2.5%), and spending time away from the baby (1.3%).

Two sets of analysis of covariance (ANCOVAs) were conducted to determine if maternal warmth and acceptance differed across mothers who exclusively breastfed, exclusively bottle fed, or mixed between breast- and bottle-feeding. The results revealed that there was a significant difference between the three groups in terms of maternal warmth,  $F(2, 354) = 4.43$ ,  $p = .019$ ,  $d = .03$ . Mothers who exclusively breastfed were higher in maternal warmth than mothers who mixed between the two methods and than mothers who only bottle fed. The results of post hoc comparisons using the Tukey HSD showed a significant difference in maternal warmth between mothers who only breastfed ( $M = 64.25$ ,  $SD = 3.57$ ) and those who exclusively bottle fed ( $M= 62.76$ ,  $SD = 3.92$ ). Yet, the test did not show significant differences between mixed methods ( $M = 63.28$   $SD = 3.89$ ) and exclusive bottle feeding, or between mixed methods and exclusive breastfeeding.

The results also indicated that there was a significant differences between the three groups in terms of maternal acceptance,  $F(2, 354) = 4.71, p = .010, d = .5$ . Post hoc comparisons using the Tukey HSD test indicated that mothers who exclusively breastfed ( $M = 32.04, SD = 4.20$ ) were significantly more accepting than those who only bottle fed ( $M = 30.00, SD = 5.92$ ). Mothers who exclusively breastfed were also significantly more accepting than those who used mixed feeding ( $M = 29.79, SD = 4.85$ ). However, the test did not show significant differences between mothers who mixed between the two feeding methods and those who bottle fed only.

A second analysis of covariance (ANCOVA) was conducted to examine differences in maternal warmth and acceptance among mothers who either exclusively breastfeed, only bottle fed, or mixed between the two methods during the first four months of the child's age. The results suggested that there were significant differences between the three groups in terms of maternal warmth  $F(2, 354) = 6.12, p = .002, d = .04$ . The results of post hoc comparisons using the Tukey HSD test revealed that mothers who exclusively breastfed were significantly higher in maternal warmth ( $M = 64.34, SD = 3.63$ ) than mothers who mixed between the two forms during the four postpartum months ( $M = 62.92, SD = 4.15$ ). However, mothers who mixed were not significantly higher than mothers who bottle fed only ( $M = 63.06, SD = 3.67$ ).

The results of ANCOVA also revealed that there were significant differences between the three groups in terms of maternal acceptance,  $F(2, 354) = 4.64, p = .010, d = .03$ . Post hoc comparisons using the Tukey HSD test indicated that mothers who breastfed only were more accepting ( $M = 31.50, SD = 4.49$ ) than mothers who mixed between the feeding methods ( $M = 29.68, SD = 4.80$ ), but not significantly higher than

mothers who only bottle fed ( $M = 30.25$   $SD = 5.89$ ). The difference was not significant between mother who use both methods and those who only use bottle. (See Table 3 for the descriptive results of the ANCOVAs)

Partial Pearson correlation was conducted while controlling for the child's age to test the correlation between the overall duration of breastfeeding and maternal warmth and acceptance. The results indicated that there was a significant positive association between duration and maternal warmth,  $r(354) = .11$ ,  $p = .04$ , and between duration and maternal acceptance,  $r(354) = .13$ ,  $p = .02$ .

I also conducted Partial Pearson correlation to test the associations between exclusive breastfeeding duration and maternal warmth and acceptance. The results suggested that duration of exclusive breastfeeding was not associated with maternal warmth  $r(87) = .16$ ,  $p = .12$ , or maternal acceptance  $r(87) = .11$ ,  $p = .27$ . Table 3 shows the bivariate correlations among the study variables.

I performed a linear regression to test the interaction between intention to breastfeed and actual breastfeeding behavior in predicting maternal warmth and acceptance. The results revealed that intention to breastfeed prenatally and the actual breastfeeding duration did not interact in predicting on maternal warmth,  $F(3, 328) = 5.28$ ,  $p = .60$ , or maternal acceptance,  $F(3, 328) = 5.14$ ,  $p = .07$ . Table 5 displays the models of regression.

Finally, I compared the scores of maternal warmth and acceptance based on the mothers intention of feeding prenatally. Since there were only seven mothers who intended to exclusively bottle feed when they were pregnant, I limited the analysis to only two groups, mothers who intended to breastfeed exclusively and those who intended to mix between breastfeeding and bottle. To compare maternal warmth and acceptance

among the two groups, I performed an independent samples t-test. The results indicated that mothers who intended to exclusively breastfeed prenatally scored higher in maternal acceptance ( $M= 31.92$ ,  $SD= 4.63$ ) than mothers who intended to mix between breastfeeding and bottle ( $M= 29.30$ ,  $SD= 5.20$ ),  $t(321) = 3.62$ ,  $p < .001$ ,  $d = 0.42$ .

Similarly, in terms of maternal warmth, the result of the t-test revealed that mothers who intended to exclusively breastfeed scored higher ( $M= 64.08$ ,  $SD= 3.39$ ) than mothers who intended to mix between the two forms of feeding ( $M= 62.66$ ,  $SD= 3.95$ ),  $t(266) = 3.37$ ,  $p = .001$ ,  $d = 0.41$ .

## Chapter 5: Discussion

The literature is full of empirical evidence that highlights the health benefits of breastfeeding for mothers and infants. This study is among the first to consider the benefits of breastfeeding for the mothers' warmth and acceptance toward their children. Overall, the findings indicated a significant association between breastfeeding and maternal warmth and acceptance. In particular, the duration of breastfeeding was positively correlated with maternal warmth and acceptance. In addition, when comparing maternal outcomes among mothers who breastfed exclusively, those who bottle fed only, and those who mixed between the two forms, the results indicated that mothers who exclusively breastfed scored higher on both maternal outcome measures than the other two groups.

These findings are consistent with Weaver, Schofield, & Papp's (2018) finding that longer breastfeeding duration is related to maternal sensitivity six months postpartum. Hormonal mechanisms are a possible explanation as breastmilk is released by oxytocin, which is also called the bonding hormone due to its impact on maternal caregiving behavior (Levine, Zagoory-Sharon, Feldman, & Weller, 2007).

Differences in maternal warmth and acceptance based on infant feeding methods were found even when the duration of breastfeeding was not considered. Mothers who exclusively breastfed were significantly higher in acceptance than those who only bottle-fed or mixed between breastfeeding and bottle-feeding. In addition, mothers who mixed between the two methods scored higher than those who only bottle fed. Similar results were observed among the three groups in terms of maternal warmth, though mothers who mixed between the two forms did not significantly differ than those who bottle fed only.

The WHO advises exclusive breastfeeding for at least four months. Therefore, in addition to asking about associations between feeding type during infancy overall and maternal warmth and acceptance, I compared the three groups based on the type of infant feeding that they maintained only in the first four months. The findings indicated that mothers who exclusively breastfed in the first four months were significantly higher in warmth and acceptance than mothers who mixed between the two forms of feeding. These findings are consistent with the findings of Newton (1971) and Tashakori et al. (2012) who highlighted significant differences in maternal adjustment and mood among mothers who breastfed and those who did not (Tashakori, Behbahani, & Irani 2012). Mothers who exclusively breastfeed might have higher self-efficacy in their ability to care for their babies; thus they might perceive themselves as warmer and more accepting compared to mothers who mix between the two forms and those who do not breastfeed at all. The findings also indicated that mothers who bottle fed only scored slightly higher in maternal warmth and acceptance than mothers who mixed between breastfeeding and bottle. It is possible that those mothers were ambivalent; they may have maintained breastfeeding just to meet societal expectations. Their ambivalence about breastfeeding may have spilled over into their feelings about their infants.

Intention to breastfeed prenatally was also associated with greater maternal caregiving quality. Britton and others 2006 found that mothers who intended to breastfeed displayed greater sensitivity while interacting with their infants three months postpartum. Consistent with these findings, I found greater maternal warmth and acceptance among mothers who intended to exclusively breastfeed compared to those who intended to mix between breastfeeding and bottle-feeding. It is possible that

intention was actually predicted by maternal warmth prenatally. Because this study involved a cross sectional design, I did not examine the role of maternal warmth as a predictor of intention to exclusively breastfeed. Therefore, future research might address this gap through exploring maternal warmth prenatally as a possible predictor of exclusive breastfeeding intention.

Among mothers who reported that they exclusively breastfed for a period of time, longer duration of exclusive breastfeeding was not significantly related to higher acceptance or warmth. It is possible that mothers who exclusively breastfed were experiencing social pressure, which may have elevated maternal stress. Saudi culture is highly influenced by the religion of Islam, which encourages long duration of breastfeeding. It is not surprising, then, that Saudi mothers in my sample indicated that family support and Islamic teachings were among the factors that influenced them to breastfeed. Although social support is beneficial to maintain exclusive breastfeeding, social pressure can be detrimental. This is an area for a future research. Social services providers might also be mindful of social pressures when they work with mothers of infants.

Because mothers who intended and maintained exclusively breastfeed scored higher in maternal warmth and acceptance, I examined the effect of the interaction between the two variables (e.g., intention and maintenance of exclusive breastfeeding) on predicting maternal warmth and acceptance. The results implied that maintenance of exclusive breastfeeding did not depend on intention. Further research is needed to investigate other possible moderators.

Despite the strengths of this study (e.g., large sample size, using primary data, using a sample from an eastern culture, and limiting the sample to mothers with relatively similar characteristics), there were several limitations. First, using a cross sectional design limits my ability to explore the differences of maternal outcomes across time. Second, I used quantitative self-reports to measure maternal warmth and acceptance, thus some mothers might falsely select positive behaviors. Third, examination of the hormonal mechanisms behind the associations was beyond the scope of this study. Future investigation might consider testing the underlying processes in order to provide clear explanations for the findings. Fourth, there was variability in the child's age among the mothers in the sample. Although I controlled for the child's age in my analyses, it might have had an influence that I could not detect given the statistical procedures that I used. Finally, this study included only Saudi mothers; this limits my ability to generalize the findings to mothers from other groups.

Although the results revealed significant and positive association between duration of breastfeeding and positive maternal outcomes, the effect sizes were small. Clearly, factors in addition to feeding type also influence maternal acceptance and warmth. Feeding type is but one of the variables that play important roles. Further, it is possible that acceptance and warmth are personal characteristics that women have even before becoming mothers. In fact, these positive caregiving behaviors might be predictors of longer and exclusive breastfeeding. Future investigations might consider differences in caregiving behaviors before and after breastfeeding to highlight their role as predictors or outcomes. Finally, the current sample's demographic characteristics must be kept in mind. My results may not generalize to non-Saudi or non-Muslim samples or to samples

of mothers who study or work outside the home, who are less economically comfortable, or who have more than one child.

Although there were limitations of this study, my data may guide further research and influence decision makers in Saudi Arabia. For example, the minister of health might use the findings of this study to fund and support breastfeeding educational programs and public awareness. It was surprising that only 6% of our sample reported that positive influences of healthcare providers helped them maintain breastfeeding. Health care and other service providers should be encouraged to educate and support new mothers about the benefits of breastfeeding.

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## Tables

Table 1  
Participant Characteristics ( $N=399$ )

Variable	Frequency	Mean ( <i>SD</i> ) or Percent %
Age of mother		28.03 years (6.30)
Age of the child		32 months (24.79)
<u>Gender of the child</u>		
Male	212	53.3%
Female	186	46.7%
<u>Education level</u>		
Bachelor's	287	72%
High school	42	10.5%
Did not finish college	32	8%
Master's or PhD	28	7%
Middle school	6	1.5%
Elementary school	4	1%
<u>Type of settlement</u>		
Urban	323	81.2%
Suburban	53	13.3%
Rural	22	5.5%
<u>Marital status</u>		
Married	387	98%
Divorced	12	3%
<u>ES level</u>		
Middle ES		
High ES	257	64.4%
Low ES	119	30%
	23	6%

Note: level of economic security (ES), was measured through asking mothers the following questions: "Do you worry if you can meet household expenses at the end of the month?" and "Do you feel your family income meets all of your basic needs (for

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food, housing transportation, clothing?”). Mothers who worried about meeting their household expenses by the end of the month and whose income did not meet their basic needs were categorized as low ES. Those who either worried or did not have enough income (but not both) were categorized as middle ES. Mothers who did not worry and stated that they had enough income were placed in the high income category (high ES).

Table 2

Number and percentage of mothers in each group ( $N= 399$ )

Grouping criteria	<i>n</i>	Percent
<u>Overall feeding method</u>		
Breastfeeding only	94	24%
Mixed	219	55% %
Bottle only	86	22%
<u>Feeding methods in the first 4 months</u>		
Breastfeeding only	123	31%
Mixed	176	44%
Bottle only	92	23%
<u>Prenatal intention of feeding</u>		
Breastfeeding only	196	64.4%
Mixed	151	38.8%
Bottle only	8	2%

Note: grouping in the overall feeding method was based on mothers' answers to the question "During infancy, how did you feed your baby?"

Table 3

The descriptive statistics concerning warmth and acceptance among the three forms of feeding in the first four months (N = 359).

Groups	Maternal warmth			Maternal acceptance		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Exclusive breastfeeding	177	64.34	3.36	118	31.50	4.49
Exclusive bottle	82	63.06	3.67	83	30.25	5.89
Mixed	159	62.92	4.15	158	29.68	4.80

Note: The differences between mothers in the exclusive breastfeeding group and mixed group was significant in terms of maternal warmth  $p = .007$ , and maternal acceptance  $p = .007$ .

Table 4

Bivariate Correlations between the study variables ( $N=399$ )

Measure	1	2	3	4	5	6	7	8	9	10
1. Age of the child										
2. Age of mother	.32*									
3. Child's gender	.04	.00								
4. Marital Status	.16*	.00	.04							
5. Settlement	.08	.00	.10*	.13*						
6. Education level	-.03	-	.00	-.00	-.05					
7. Breastfeeding duration	.21*	.07	-.09	.03	-.03	-				
8. SES level	.05	.04	-.05	.10*	.04	.01	.04			
9. Acceptance	-.07	.06	-.01	-.02	-.08	.04	.10	.04		
10. Warmth	-.09	.01	.01	-.00	-.08	.05	.08	.01	.41**	

Note. \* $p < 0.05$ , \*\* $p < 0.01$ .

Table 5  
Results of the linear regression models

Variables	Model 1 (warmth)			Model 2 (acceptance)		
	B	SE B	$\beta$	B	SE B	$\beta$
Breastfeeding Intention	1.98	.55	.26***	2.12	.74	.21*
Actual breastfeeding	.01	.01	.17	.01	.01	.11
Intention*actual breastfeeding	.55	.01	-.20	-.00	.01	-.51

Note. \*p < 0.05, \*\*p < 0.01. \*\*\*p < 0.001.

## Appendices

### Demographic Questionnaire

1. Do you have only one child?
  - Yes (1)
  - No (2)
  
2. Is your child younger than 3 years old?
  - Yes (1)
  - No (2)
  
3. Are you from Saudi Arabia?
  - Yes (1)
  - No (2)
  
4. Do you live in Saudi Arabia?
  - Yes (1)
  - No (2)
  
5. Where do you live currently?
  
6. Are you employed or a student?
  - Yes (1)
  - No (2)
  
7. How old are you?
  
- Q13 How old is your child?
  - \_\_\_\_\_ Years (1)
  - \_\_\_\_\_ Months (2)
  
8. Are you still breastfeeding?
  - Yes (1)
  - No (2)
  
9. What is the gender of your child?
  - Male (1)
  - Female (2)
  
10. Was your baby full-term at the time of delivery?
  - Yes (1)
  - No (2)

11. What is your marital status?
- Married (1)
  - Divorced (2)
  - Widowed (3)
12. Where do you live?
- Urban (1)
  - Suburban (2)
  - Rural (3)
13. Do you worry if you can meet household expenses at the end of the month?
- Yes (1)
  - No (2)
14. Do you feel your family income meets all of your basic needs (for food, housing transportation, clothing)?
- Yes (1)
  - No (2)
15. What is your highest educational level?
- Elementary School (1)
  - Middle School (2)
  - High School (3)
  - Started but did not college (4)
  - Bachelor's degree (5)
  - Master or PhD (6)
16. On a scale of 1 - 5, how would you rate your religiosity?
- 1 (Not at all) (1)
  - 2 (Slightly religious) (2)
  - 3 (In the middle) (3)
  - 4 (Mostly religious) (4)
  - 5 (Very religious) (5)

## Breastfeeding Measure

1. For how long did you breastfeed your child?
2. During infancy, how did you feed your baby?
  - Exclusive breastfeeding (1)
  - Exclusive bottle feeding (2)
  - Mixed between breastfeeding and bottle (3)
3. Indicate which was used most?
  - Breastfeeding (1)
  - Bottle feeding (2)
  - About the same (3)
  -
4. What factors encouraged you mostly to breastfeed?
  - Family support (1)
  - Physicians support (2)
  - The health benefits of breastfeeding (3)
  - The low cost of breastfeeding (4)
  - Religious teaching (5)
  - Others (please specify) (6) \_\_\_\_\_
5. What factors helped you to decide to bottle-feed only?
  - Taking birth control pills (1)
  - Poor or absent milk supply (2)
  - Pain while nursing (3)
  - The baby was not interested (4)
  - Had to spend time away from the baby (5)
  - The baby was pre-mature (6)
  - Serious medical problems (7)
  - Others (please specify) (8) \_\_\_\_\_
6. In the first four months of your child's life, what was the form of feeding?
  - Exclusive breastfeeding (1)
  - Exclusive bottle feeding (2)
  - Mixed methods (3)

7. If you choose the mixed method, indicate which form was used more?
  - Breastfeeding more than bottle feeding (1)
  - Bottle feeding more than breastfeeding (2)
  - About the same, I breastfed and bottle fed about the same (3)
  
8. When you were pregnant, you planned to:
  - Breastfeed exclusively (1)
  - Mixed between breastfeeding and bottle (2)
  - Bottle feed only (3)
  - Don't know (4)

### Parental Acceptance and Rejection Questionnaire (PARQ)

The following pages contain a number of statements describing the way different parents sometimes act toward their babies. Read each statement carefully and think how well it describes the way you treat your baby. Work quickly; give your first impression and move on to the next item. Do not dwell on any item.

Four boxes are drawn after each sentence. If the statement is basically true about the way you treat your baby then ask yourself, "Is it almost always true?" or "Is it only sometimes true?" If you think you almost always treat your baby that way, put an X in the box **ALMOST ALWAYS TRUE**; if the statement is sometimes true about the way you treat your baby, mark **SOMETIMES TRUE**. If you feel the statement is basically untrue about the way you treat your baby then ask yourself, "Is it rarely true?" or "Is it almost never true?" If it is rarely true about the way you treat your baby put an X in the box **RARELY TRUE**; if you feel the statement is almost never true then mark **ALMOST NEVER TRUE**.

Remember, there is no right or wrong answer to any statement, so be as honest as you can. Respond to each statement the way you feel you really are rather than the way you might like to be.

I say nice things about my baby

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

1. I take a real interest in my baby's needs

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

2. I make my baby feel loved when (s)he does well

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

3. I wonder if I really love my baby

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

4. I praise my baby to others

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

5. I yell at my baby when I am angry

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

6. I talk to my baby in a warm and affectionate way

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

7. My baby is a nuisance for me
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
8. I praise my baby when (s)he deserves it
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
9. I make my baby feel wanted and needed
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
10. I make my baby feel wanted and needed
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)

11. I am sympathetic to my baby when (s)he is having trouble
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
12. I tell my baby how proud I am of him/her when (s)he is good
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
13. When my baby misbehaves, I make him/her feel I don't love him/her any more
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
14. I make my baby feel what (s)he does is important
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
15. I complain about my baby
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
16. I try to help my baby when (s)he is scared or upset
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)

17. I let my baby know (s)he is wanted
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
18. I respect my baby's feelings and encourage him/her to express them
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
19. I tell my baby I am ashamed of him/her when (s)he misbehaves
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)
20. I let my baby do things (s)he wants to do even if it is hard for me
- Almost always true (1)
  - Sometimes true (2)
  - Rarely true (3)
  - Almost never true (4)

21. When my baby misbehaves, I make him/her feel unloved

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

22. I am interested in the things my baby does

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

23. I try to make my baby feel better when (s)he is hurt or sick

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

24. I let my baby know I love him/her

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

25. I treat my baby gently and with kindness

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)

26. I try to make my baby happy

- Almost always true (1)
- Sometimes true (2)
- Rarely true (3)
- Almost never true (4)