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"MOTHERS' SENSITIVITY ENHANCEMENT AND ITS EFFECT ON INFANTS' FOOD HABITS. A RCT STUDY IN A RURAL COLOMBIAN ALTOANDINO CONTEXT"

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A mi esposa Andrea

y nuestros hermosos hijos Sofia y Gabriel

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Table of contents

List of Tables

List of Figures

Chapter 1

General Introduction

The ability of a mother to interpret the signals of her child, understand and respond appropriately is called maternal sensitivity. It is characterized by the ability to physically and emotionally meet the child's demands, as well as by being willing to adjust their spaces, activities, and schedules to synchronize with the emotional states and the child's particularities (Ainsworth, Blehar, Waters, & Wall, 1978).

It has been shown that the sensitive response of the mother in early interaction with her child is a factor that predicts the well-being and development of the child (Kemppinen, Kumpulainen, Raita-Hasu, Moilanen & Ebeling, 2006), which influences life social -the emotional and cognitive spheres (Landry, Smith, Swank, Assel & Vellet, 2001).

The comparison of maternal sensitivity in rural and urban communities of different cultures has concluded that the sensitive response seems to be a common characteristic of the mother-child dyad from the beginning of life, however, as children grow, the sensitive response is influenced by the specific context of each community, according to the region and the country, finding that for reasons of low educational level of parents, little access to health centers and few economic income, the sensitive respect is more low in rural contexts. (Bornstein et al., 2012; Posada, 2013).

The early intervention in the programs for family prevention is more effective for infancy, play a critical role in shaping social, emotional, and cognitive development (Phillips & Shonkoff, 2000). The programs for children aged 0–5 for parent support has employed a variety of approaches aimed at enhancing the capacity of the mother or primary caregiver to provide attention

and care. To promote the optimal development of the child, the caregiver requires providing attention in nutrition, health stimulation and responding in a affective way. The programs that work with parents to help them better promote their children's development lead to gains in child development parenting skills and encourage mothers and children to interact in ways that develop cognitive and socioemotional skills, with the strongest evidence for strategies that provide parental enrichment by mean of home visits (Walker & Chang, 2013).

There are a few studies that examine the rural mother sensitivity and the possible association with topics related to food habits. Therefore, this thesis was designed to explore the intervention on mother´s sensitivity and the influence in food habits improvement in relation to knowledge, attitudes, and practices.

1.1 Thesis Summary

The main goal of the current study is to analyze if a positive parenting program (Video feedback Intervention to Promote Positive parenting and sensitivity discipline, VIPP-SD), would affect mothers´ sensitivity and food habits concerning their preschool children in a rural area, namely Soracá (Boyacá) in Colombia. In order to accomplish this main aim, an RCT study was conducted by confronting two groups of mothers with their children (Experimental group N = 12 and Control group N =12). The first group (VIPP intervention group) received both the parenting intervention and the food habits intervention, while the second group received only the food habits intervention as the intervention as usual (Control group). Variables under consideration are socioeconomic status, parental discipline style, mother´s sensitivity and food habits in relation to knowledge, attitudes, and practices.

The first part (Chapter 1 and 2) provided a theoretical framework of the thesis and information for the general method section of study 1 and 2. The research has been implemented by two studies.

STUDY 1 (Chapter 3) focused on the description of the study variables and the equality of means of the VIPP-SD and control groups. Moreover, were explored the relationships between maternal sensitivity, parental discipline strategies, and food habits in a sample of rural mothers with their children aged 16-36 months in a context rural. These analyses allowed us to find that there was no significant difference between the VIPP and Control groups before starting the intervention.

STUDY 2 (Chapter 4) analyze the changes in the mothers' afore mentioned outcomes from the pre-intervention (T1) to the post-intervention (T2). The hypothesis of this study was that mothers who received the VIPP-SD intervention and the socio-educational program on eating habits would show improvements from T1 to T2 in their eating habits (knowledge, attitudes, and practices), sensitivity and parental strategies, regardless for the gender and age of their children, compared to mothers who received only the food habits intervention. Specifically, the present study evaluated the effect of the VIPP-SD intervention, combined with a socio-educational feeding program, on rural mothers through an RCT design. The comparison between the two groups has been done using ANCOVAs.

Chapter 2

Theoretical Framework

2.1 Introduction

The health and survival of children during the first years of life are the highest priorities rearing through cultures and universal goals of parenting (Bowlby, 1969). From birth, children are learning and rely on mothers and fathers, as well as other caregivers acting in the parenting role, to protect and care for them and to chart a trajectory that promotes their overall well-being (Gadsden, Ford & Breiner, 2016); for this reason, the infant attachment behavior aimed at gaining proximity to the caregiver and complement adult's caring behavior, have the adaptive biological function of promoting the nurturance and protection of children during the beginning of the life (Ainsworth, 1989). Ainsworth and Bell (1969), considered that an infant's repertoire of attachment behaviors, includes signaling behaviors such as crying and smiling that draw others into proximity to him and more active behaviors such as grasping, clinging, reaching and approaching through which he himself may gain and maintain proximity or contact and reciprocally promoting and maintaining behaviors caregivers are viewed as pre-programmed to respond to infant signals by providing nutrition and protection that promote the physical growth and well-being of children. Attachment can be thus understood within an evolutionary context in that the caregiver providing safety and security for the infant is adaptive as it enhances the infant's chance of survival and it is characterized by specific behaviors in children, such as seeking proximity with the attachment figure when need security (Bowlby, 1969).

The parenting is critical for effective attachment and a variety of positive developmental

outcomes for children. An important aspect to consider in the parenting is the infant feeding, where increasing evidence indicates that early feeding practices are important for dietary habits, which in turn predict the subsequent risk of malnutrition, either by the deficit or by the excess (Morawska, Laws, Moretto & Daniels, 2014). The task of parents and other caregivers is to respond to the needs of children, to prepare them for socially accepted physical, economic and psychological situations that are characteristic of the culture in which they must survive and thrive (Bornstein, 1991). Thus the conceptions of who and how are the parents, constitute the best conditions for the parenting, because vary according to the context and culture and preparing children to meet the demands of their environments and take advantage of opportunities within those (Bornstein, 2012).

Theoretical and empirical findings of the nature in the infant-mother relationship consistently it is associates quality of care with maternal sensitivity to respond to the infant's needs and communications (Mesman et al., 2016). In the early stages of development, when a large proportion of the interactions between infants and mothers are concerned with physical care, maternal sensitivity plays an essential role in supporting the regulation of emotions and reactivity in response to new environmental never seen before, in addition to physiological rhythms (ie, hunger, sleep) and the emergent behavioral organization (Ainsworth et al., 1978).

Maternal sensitivity and the ability to respond to the child's signals in a large degree influences the mother-child attachment relationship (Bakermans-Kranenburg et al., 2003; van IJzendoorn, Juffer & Duyvesteyn, 1995). Several authors (Baughcum et al., 2001; Black & Aboud, 2011; Parkinson & Drewett, 2001; Udall, 2007), argue that receptive parenting applied to the feeding context (e.g., receptive feeding) backs up an encouraging feeding relationship that promotes positive outcomes in terms of the child's eating habits, behaviors and future food preferences.

Mesman et al. (2016), emphasize the importance of using further investigation strategies that explain how culture relates to maternal beliefs about sensitive parenting, moreover the inclusion of rural groups in parenting research. Overall, the ideal mother is very similar to a sensitive mother across the globe, with regional and cultural variations in the strength of this pattern.

The rural areas in the Andean parts of Colombia are characterized by high levels of poverty and harsh living circumstances (Machado, 2012). These characteristics will affect maternal sensitivity caused by the low socioeconomic status and this can be unfavourable outcomes for the children (Mesman, van IJzendoorn, & Bakermans-Kranenburg, 2012). In addition, as recently shown, the manifestations of sensitive responsiveness may vary by culture.

Mesman, van IJzendoorn & Sagi-Schwartz (2016), in the analysis and integration of cross-cultural attachment research, suggest a balance between universal trends and contextual determinants, considering that:

> "The potentially universal role of sensitive care in fostering attachment security is consistent with the idea that when the socioeconomic context allows for sensitive care, the formation of a secure attachment to a sensitive person is more likely to result in adaptive functioning and integrity by the caregiver" (p.869).

There is evidence that although contingent response rates are very similar in very different cultures, the modalities through which parents respond to children depend on the culture, however, the mother s sensitive response may be conditioned by the restrictions of the different niches of development (Mesman, van IJzendoorn & Sagi-Schwartz, 2016).

2.2 Maternal sensitivity

Attachment security is a central aspect of development, has been defined as the child’s use

of the attachment figure to explore the environment and seek this in times of distress (Main & Cassidy, 1988). All children develop attachment in the relationships with their parents, but according to how their parents interact with their young children, including how they respond appropriate and coherent to the needs of their children, especially in times of distress, influence the relationship of attachment.

As the child grows, if the mother´s response is sensitive, the adaptive role of care expands to promote the autonomy and competence in the child, this provide in the child with a secure base from to explore the social and objective aspects of their environment (Waters & Sroufe, 1983). Thus, in the mother sensitivity may be observed a positive range of infant-mother interactions, including play, problem-solving and feeding.

Maternal sensitivity and child responsiveness are determined by the family socio-demographics status, parental attributes and child characteristics (Bornstein & Cheah, 2006). Just as children are dependent on their parents for sustenance, so in all but the most primitive communities, are parents, especially mothers, dependent on a greater society for economic provision. If a community values its children it must cherish their parents (Bowlby, 1951). According to with Ainsworth, Blehar, Waters & Wall (1978), "the most sensitive mothers are usually accessible to their infants and are aware even of their more subtle communications, signals, wishes, and moods these mothers accurately interpret their perceptions and show empathy with their infants" (p. 142), that is, the sensitive mother has this understanding and empathy with her son, this allows her to synchronize in her interactions in quality and speed.

The sensitive mother is the key for providing the support that children need to exercise their developing skills through activities that foster attachment security for children's social-emotional development, providing a robust evidence base for translation, implementation, and

intervention in practice (Mesman et al., 2016).

2.3 Why is it important for child development?

In the early childhood on the life cycle, there is the most critical period of human development, where the biological and psychological bases of the person are built, this coincides with the period in which the baby is in greatest condition of dependence of the adult and requires caregivers who deploy their human potential, strengthening the affective bonds and the quality of the care that they provide for the children (Schaffer, 2000).

Human development is a continuous process that occurs throughout life, on which will develop the capacities and human potentialities for this reason, the sensitive parenting is critical for effective of positive developmental outcomes for children. The sensitive parenting is defined as a caregiver's ability to perceive child signals, to interpret these signals correctly, and to answer them contingently and appropriately (Ainsworth, Bell, & Stayton, 1974), It is fundamental for child development, since sensitive parenting is the ability of parents to develop in their children, self-efficacy, motivation, sense of self, security and confidence to know and explore the world around them; the outcomes are positive and including in the child development, emotional security, behavioural independence, social facility, verbal ability, symbolic competence and intellectual achievement (Bornstein & Tamis-LeMonda 1989; Bornstein et al., 2007) and the healthy infant development (De Wolff & van IJzendoorn, 1997).

According to the theory of attachment, children are biologically predisposed to use their parents as a refuge, to feel comfort and protection when they perceive that they are distressed, this gives them a basis of security over which they can explore the environment (Bowlby, 1969), for this reason, in terms of sensitivity of care, attachment is explained from the early quality of the response of parents to their children, this directly affects the processes of socialization in the first

years of life (Ainsworth et al., 1978). Secure attachment between parent-child in childhood positively predicts outcomes in later life (Fagot, 1997; Groh, A. M., Fearon, Bakermans-Kranenburg, Van IJzendoorn, Steele & Roisman, 2014), whereas an insecure attachment relationship is predictive of less optimal infant development (Greenberg, 1999; Belsky & Fearon, 2002).

Parenting sensitivity is correlated with child development (Ainsworth et al., 1978; Bowlby, 1969; Sroufe, Egeland, Carlson, & Collins, 2005). Sensitivity, defines the reactions to young children parents display in the context of everyday dyadic exchange (Ainsworth et al., 1978; Bornstein, 1989; De Wolff & van IJzendoorn, 1997). In their review of this literature, De Wolff and van IJzendoorn (1997) underscored the role of sensitivity as especially important to healthy infant development, Sensitive and supportive parenting is one of the most consistent and robust prognostic factors of multiple developmental outcomes, including children's cognitive development (Tamis-LeMonda, Shannon, Cabrera & Lamb, 2004), However, research also identifies several points of convergence across parents, including the exploration during play (Power, 1985), developmentally appropriate styles of communication (Belsky, 1984), and general levels of sensitive caregiving (Notaro, & Volling, 1999).

2.4 Parenting style

In general terms, Darling & Steinberg (1993) defined the parenting style as a behavioral construct that establishes the emotional context within which parents and children interact (often characterized by having at least two dimensions: demand (how much control exercised by parents) and capacity response (warmth and acceptance in response to the needs of their children.) The parenting style is generally classified into one of four typologies, which vary according to the dimensions of warmth or responsiveness and the "demand" or degree of behavior control exhibited

by the parents (Maccoby & Martin, 1983); each of these parenting styles reflects different naturally occurring patterns of parental values, practices, and behaviors and a distinct balance of responsiveness and demandingness (Baumrind, 1991).

According with Darling (1999), the parenting style provides a robust indicator of parenting functioning that predicts child well-being across a wide spectrum of environments and across diverse communities of Children. Both parental responsiveness and parental demandingness are important components of good parenting. "Authoritative parenting, which balances clear, high parental demands with emotional responsiveness and recognition of child autonomy, is one of the most consistent family predictors of competence from early childhood through adolescence. However, despite the long and robust tradition of research into parenting style, a number of issues remain outstanding" (Darling, 1999, p.5). Nevertheless, "the extensive body of empirical evidence accumulated over the last several decades suggests that the typology of parenting styles is a useful framework for understanding parental dynamics and the potential outcomes they may have for children" (Estlein, 2016, p.3).

2.5 Parental discipline

Discipline is the structure that helps the child adapt to the real world in an appropriate and effective way. It is the basis for the development of the self-regulation of the child. Disciplining children is one of the most important but difficult responsibilities of parenting. The goal of the discipline is to encourage acceptable and appropriate behaviour in the child and to raise emotionally mature adults. The discipline applied with mutual respect in a firm, fair, reasonable and consistent manner aims to protect the child from danger, help him learn self-discipline and develop a healthy conscience and an internal sense of responsibility and control (Nieman & Shea,

2004).

Many aspects of parenting play roles in the socialization of children. Certain discipline strategies are among those clearly implicated in the development and maintenance of children's externalizing behavior disorders (Arnold, O'Leary, Wolff & Acker, 1993). Parenting practices exert an important influence on children's social development (Campbell,1997). Harsh discipline or excessively lax is significantly correlated with child externalizing behavior problems (Chang, Schwartz, Dodge, & McBride-Chang, 2003) and antisocial behavior and later delinquency (Patterson, DeBaryshe, & Ramsey, 1989). The quality of parental discipline also predicts the escalation and maintenance of children's externalizing problems (Rhoades & O'Leary, 2008), parents who decrease their use of harsh, inconsistent parenting have children whose externalizing problems decrease over.

The ineffective parental discipline includes the processes related to an inconsistent parental discipline and a failure to provide positive reinforcement for compliance and prosocial child behaviors (van IJzendoorn, Bakermans-Kranenburg, Juffer, Stolk & Alink, 2006). In the first years of life, the transaction that defines the emergence of coercion in early childhood is functionally linked to the exchange of compliance and reactive aggression between parents and children (Patterson, 2002). Bearing in mind that ineffective discipline includes non-compliance and aggression, as well as the emotional and ineffective reactions of caregivers and may inadvertently lead to an increase in conflict that provides a fertile ground for children to learn to be reactive, this process finally if leads to the withdrawal of parental request, then aversive behaviours of the child are negative reinforced (i.e., rewarded by the termination of the undesirable stimulus). This behaviour is explained by Patterson (1982), in the theory of coercion, where it is established that in the child outsourcing problems are more likely to arise when a child is reinforced to respond

with a negative behaviour to the requests of the parents or demands. The theory of coercion is based on the perspective of social learning and focuses on the ineffective discipline of parents (Patterson, 1982).

Parental warmth and discipline inductive are linked with positive child functioning, it is related with self-regulation fewer externalizing problems in the child. The physical punishment is associated with lower moral regulation and more severe behavior problems (Kerr, Lopez, Olson & Sameroff, 2004). The effectiveness of the discipline depends on the parents' general style of control, because the children are most likely to manifest positive developmental outcomes when parents have practices of discipline inductive and accompanied by clearly communicated, parental monitoring, and an atmosphere of acceptance toward the child. For example, attentive and responsive care appears to be positively linked to the development of self-esteem, competence, and social responsibility (Collins, Madsen & Susman-Stillman, 2005).

2.6 Socio-economic status and parenting

Bradley & Corwyn (2002) shows that SES is associated with a wide array of health, cognitive, and socioemotional outcomes in children, with effects beginning prior tbirth and continuing into adulthood. A variety of mechanisms linking SES to child well-being have been proposed, with most involving differences in access to material and social resources or reactions to stress-inducing conditions by both the children themselves and their parents. Bradley & Corwyn (2002) considering that:

> For children, SES impacts well-being at multiple levels, including both family and neighborhood. Its effects are moderated by children's own characteristics, family characteristics, and external support systems. It is not easy to determine with precision the processes through which SES influences child well-being, partly because low SES

> frequently co-occurs with other conditions that purportedly affect children (e.g., minority and immigrant status, single parenthood, a family member with a disability or serious mental illness, exposure to teratogens and other potentially hazardous environmental conditions)— the classic "third variable" problem. It is difficult to disentangle SES from such cofactors when there is evidence that they may exacerbate the effects of SES (i.e., they function as moderators) (p.1).

A low SES itself can be affect the parenting in relation to the impact that low economic resources has on parental stress, which in turn increases the risk of maladaptive parenting strategies.

The maternal senstivity and child responsiveness are shaped by multiple variables that play a role in the association (Belsky & Jaffee, 2015), such as individual and family characteristics (Braungart-Rieker et al., 2001), also in the contexts in which the mother and her child interact on a daily basis (Negrao, Pereira, Soares, & Mesman, 2016). For example, low socioeconomic status (SES) families tend to be exposed to a variety of stressors and negative life events, which in turn has been related to lower rates of maternal sensitivity and secure attachment when compared to middle-class dyads (Bárrig-Jó, et al., 2016). Growing up in a low-income family can be compromise children's development in nearly every domain of growth (Bornstein & Bradley, 2003; Bornstein, Hendricks, Haynes & Painter, 2007). In large part, this difficult is attributable to the because the stress environmental limited the parents abilities to engage in positive parenting and their abilities to provide materials, time, and energy required to stimulate children's learning (Dearing, 2004).

The quality of children's home environment, in terms of quality of stimulation and learning opportunities, is closely associated with their well-being (Bradley & Corwyn, 2005).

Having access to material learning resources and nurturing learning experiences consistently during the first few years of life affords children with the foundations for healthy development and lifelong learning (Attanasio, et al., 2013).

Extensive research has documented the negative consequences of growing up in poverty for children (Aber, Bennett, Conley & Li, 1997; BrooksGunn & Duncan, 1997; Dearing, McCartney, & Taylor, 2001; Smith, Brooks-Gunn, & Klebanov, 1997; Brooks-Gunn & Duncan, 1997; Evans, 2016) especially during the early years. In early childhood, the effects appear to be very significant both because the size of the association is largest at this stage and because problems developed early in life can "snowball" into larger problems later in life. Parenting toddlers can be challenging for all parents but, for those who live in deprived high-risk contexts, this is even more demanding because factors such as economic adversity, impaired social support, increased life stress, and fragile relationships threaten the quality of parenting.

Evans (2004), consider that "the poverty is harmful to the physical, socio-emotional, and cognitive well-being of children, youths, and their families. A potent explanation for this relation is cumulative, environmental risk exposure" (p.12). Low-income children are disproportionately exposed to more adverse social and physical environmental conditions. They suffer greater family disturbance, violence, and separation from their parents. Their parents are nonresponsive and harsh, and they live in more chaotic households, with fewer routines, less structure, and greater instability.

In fact, dyadic interaction among high-risk and impoverished families is characterized by maternal hostility, negative emotionality and coercion with the children, i.e., aversive behavioural management techniques that reinforce negative behaviour, as well as lower levels of involvement of the children towards mothers (Stack et al., 2012).

2.7 Maternal sensitivity and infant's food habits

The transition from exclusive breastfeeding to complementary feeding generally covers the period from 6 to 12 months of age, and is a period of great vulnerability due to the high prevalence of malnutrition in children under 5 years of age, due to the difficulties that can have Parents regarding how to introduce new foods and according to their nutritional properties, this situation affects the development of cognitive and socio-emotional skills in the early stages of life (McCoy, 2016). In this regard, the World Health Organization (WHO), estimates that in low-income countries, two out of every five children have a type of malnutrition, determined by socio-economic and environmental conditions.

Individual characteristics of the child, of the mother and of their relationship during the development of feeding patterns in the first three years of child's life is extremely important in the clinical assessment of early feeding disorders (Ammaniti, et al., 2004). Stein et al. (1994) observed mealtime behavior in mothers with eating disorders and their infants when they were age with (12–14 months), they found that the eating-disordered mothers were more likely to express negative emotion towards the child and that mothers behaved in a more intrusive way.

During the first six months the feeding of the child is given by breastfeeding, after six months when the complementary feeding is introduced, the child still needs the support of the caregiver during the meals to reinforce his "confidence" with pleasurable and pleasant experiences (WHO, 2004). The child also needs support for his or her developing autonomy, which is expressed in the early years of life through the desire to feed oneself. Gradually the child's balancing of attachment to the caregiver and emerging autonomy is mirrored by the parents' developmental tasks of balancing protective behaviours which stimulate feeding self-regulatory abilities, autonomous initiatives and the self-reliance of the child. Therefore, the relationship

between the caregiver and the child is characterized by a high degree of coordination and bidirectionality and the exchanges constitute a system of interactive regulation (Ammaniti, Ambruzzi, Lucarelli, Cimino, & D'Olimpio, 2004).

The mothers who are sensitively responsive to infant signals in respect to feeding tend to be contingently responsive to many other aspects of infant behavior promptly responsive to crying, well-paced in their responsiveness to vocalization, smiling and having coherent facial expressions, generally in face-to-face situations, and also sensitive in physical contact interactions (Ainsworth & Russel, 1972).

When the child is active and suckling, the mother limits her interaction, observes, supports feeding, and quiets her speech; when, on the other hand, the child is taking a break from feeding, the mother becomes more active, speaks to the child, and caresses the child and smiles at him or her (Ammaniti, 2004). The mother-child food relationship develops a rhythm and reciprocal adaptation, which can be considered an early form of social and effective dialogue (Stern, 1985).

The food habits are a key task of early parenting and the increase in evidence indicates that early feeding practices are important for dietary habits, which in turn predict the subsequent risk of malnutrition, be it deficit or excess (Morawska, Laws, Moretto & Daniels, 2014). For this reason, the food habits are a topic of special analysis, since we know that early nutritional problems affect the health and well-being of children.

Although the role of the family environment on children's growth and development is well recognized many interventions to prevent underweight or overweight have focused primarily on nutritional interventions (Kral & Rauh, 2010; WHO, 2003), with limited attention directed toward the interactive behaviours between caregivers and children that characterize early feeding experiences. However, evidence has shown that parent-child interaction patterns dominated by

parental intrusiveness and lack of reciprocity precede early feeding difficulties (Silberstein, Feldman, Gardner, Karmel& Kuint, 2009) and are associated with poor growth (Farrow & Blissett, 2006). Both parent-child interaction patterns and dietary behaviours established early in life track over time (Feinstein, Sabates, Sorhaindo, Rogers, Herrick, Northstone & Emmett, 2008), making the first few years of life an ideal time to help families establish healthy interaction patterns and dietary behaviors (Black & Aboud, 2011).

2.8 Why in Colombian context?

The prevalent pattern of child rearing in Colombia corresponds to that found in most western societies: a traditional nuclear family with culturally defined roles of the father as the breadwinner and the mother as the homemaker with responsibilities for the care of the children (ICBF, 2013). The women from low-income families have lower education and fewer employment opportunities and consequently remain primarily responsible for the care of children. Fathers contribute little to daily childcare, which, added to the scarcity of subsidized day care or hired help, leaves child rearing as solely the responsibility of mothers (Flagg, Sen, Kilgore & Locher, 2013). Frequently, young children spend all day with their mothers until they reach the childcare centre or primary school age.

As result of poor living conditions, very young children are often confined to their mothers in one or two rooms with limited opportunity for contact with other adults or peers. In the context of such close and extended infant-mother interactions, individual differences in the ability to provide sensitive caregiving acquire greater relevance, as a protective or harmful factor, in influencing the physical and social development of the young child (Katz, Corlyon, La Placa & Hunter, 2007).

In Colombia, many groups in poverty conditions are considered at risk in the nutritional and cognitive development of their children (Attanasio et al., 2013). Boyacá, region where the

study was proposed, is a department located in the center-east of Colombia, source of diversity of agricultural products and is a territory with different climates. In relation to the socioeconomic aspects, is a region of contrasts, on the one hand, it has good indicators in education and in its institutions, which place it as one of the most competitive departments, and at the other extreme, it has a low productive system and indicators of poverty that do not show a very prominent performance in the country (Reina & Rubio, 2017).

The National Survey of Nutritional Situation in Colombia 2010 (ENSIN) reports to Boyacá, as the department with the largest delay of height for age in population of 0-4 years shows that of the 20 municipalities with the highest delay of height for age in children aged 0 to 4 years, 16 are of Boyacá and in the same context the 43% of the population is in a state of food insecurity, with the higher prevalence in rural area. Rural parents have generally been found to endorse more authoritarian parenting styles and have less knowledge about child development than urban parents (Miller & Votruba-Drzal, 2013; Pinderhughes, Nix, Foster, & Jones, 2007).

Relatively little information is available with regard to specific aspects of parental caregiving that fulfil the nurturing role or how maternal sensitivity is related to the development of children in cultures in which infant survival is at substantial risk. Because children in developing countries are often exposed to environments that pose threats to both their physical and psychological development, studies of their development are central to attachment theory.

2.9 The attachment intervention

The programs for children aged 0–5 for parent support has employed a variety of approaches aimed at enhancing the capacity of the mother or primary caregiver to provide caring and care. To promote the optimal development of the child, the caregiver requires attention in nutrition, health stimulation and responding in a lovely way. The programs that work with parents

to help them better promote their children's development lead to gains in child development, with the strongest evidence for strategies that provide parental enrichment by mean home visits (Walker & Chang, 2013).

Interaction-focused and evidence-based interventions aimed at improving sensitive parenting may be implemented more broadly in populations at risk for attachment-related problems to enhance optimal child outcomes (van der Voort, Juffer & Bakermans-Kranenburg, 2014). Salinas-Quiroz and Posada (2015) believe that the relative absence of evidence-based on attachment theory research in Latin America: a) limits our understanding of the relationships subject caregiver-child; b) restricts knowledge of child development; c) make it difficult to generate intervention programs based on evidence and public policy intervention child development and evidence-based public policy child development.

The early interventions in the programs for family prevention are more effective for infancy, play a critical role in shaping social, emotional, and cognitive development (Phillips & Shonkoff, 2000). In relation to early intervention with attachment theory, major significant evidence on video feedback, Juffer, Bakermans-Kranenburg & van I Jzendoorn (2003), define this as:

> The Video-feedback Intervention to promote Positive Parenting (VIPP) aims at enhancing parental sensitive behavior through providing personal video feedback, possibly combined with written information (in brochures, booklets, a personal book, or an individual album) on sensitive responding in daily situations. VIPP-SD (VIPP combined with sensitive discipline) includes an additional focus on the use of sensitive discipline in challenging parent-child interactions shows the effects of early interventions in the sensitivity of the care and the attachment of children (Juffer, Bakermans-Kranenburg & van I Jzendoorn 2003), that is brief interventions, focused exclusively on the sensitivity and behaviour, are the most successful (p.12).

The VIPP programs use the interactions of the parents and the child involved feedback and videotaped video: watch and discuss the videotape together with the parent. The VIPP approach takes advantage of the current strengths of the father-son dyad and aims to improve the sensitive reactions of parents to child behaviour, (Juffer, Bakermans-Kranenburg & van I Jzendoorn 2003).

Juffer, Bakermans-Kranenburg & van IJzendoorn, (2012) established that the central issue of intervention based on early attachment is the assumption that a secure attachment relationship is an important foundation for the future development of children, especially in domains closely related to attachment, such as social development. Empirical studies have shown significant relationships between early childhood the security of attachment and the subsequent favorable social development of children and competence (De Wolff & Van IJzendoorn, 1997; Goldsmith & Alansky, 1987). Safe children tend to trust others, show adequate self-esteem in social interaction, make friends and experience social support (Barone, Lionetti & Green, 2017; DeWolff & van IJzendoorn, 1997; Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003).

2.10 Intervention: the VIPP-SD

The Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2008, 2014, 2017) is an attachment-based intervention aimed at enhancing sensitive parenting and adequate discipline strategies of parents with the ultimate goal of promoting positive parent-child relationships and reducing behaviour problems in children. VIPP-SD is based on attachment theory and the coercion theory.

The VIPP-SD is conducted in the home because the intervention focuses on filming and reinforcing interactions between parents and children that occur naturally in everyday situations (Juffer et al., 2008). In addition, parents can find it easier to integrate new behaviours into their

daily lives when these behaviours have been practiced in the home, and the home environment is usually a safe place to receive personal comments in addition.

The VIPP-SD program is a home-based and short-term intervention. The interventions are implemented in the home or childcare setting in a modest number of visits, usually six/seven sessions (Juffer, Bakermans-Kranenburg & van IJzendoorn, 2017). The reason for implementing VIPP-SD in the home or childcare setting lies in that fact that the intervention focuses on recording and reinforcing naturally occurring parent-child interactions in daily situations.

The Video-Feedback Intervention to Promote Positive Parenting-VIPP (Juffer et al., 2007) is one of the best-known and most validated evidence-based preventive programs, with an overall effect size of d = .47 over twelve randomized controlled trials (Juffer, Bakermans-Kranenburg & van IJzendoorn, 2017a). It is based on attachment theory and consists of a short and narrowly-focused program designed to improve the parent-child relationship by enhancing parental sensitivity and positive parent-child interactions (Barone, Lionetti, Dellagiulia, Alagna & Rigobello, 2015).

The protocol is effective when applied in accordance with recommended guidelines and is performed only as a result of a specific 4-day training and supervision process of the first implementation. The VIPP-SD protocol, these relate to the promotion of dyadic socio-emotional relationship, parental sensitivity and sensitive discipline (Bakermans-Kranenburg, van IJzendoorn, Juffer, 2003).

The training to become a VIPP-SD intervener is available in English, Dutch, Spanish and Italian, with manuals in each language. During training, the intervener learns to record relevant episodes of interaction between parents and children, how to prepare comments on the video by writing a "scripts" with the comments that will be made during the intervention visit, and how to

perform the intervention at home (or day-care). Building a supportive relationship with the mother (or caregiver) is considered one of the crucial ingredients of the VIPP-SD program (Juffer, et al., 2017).

Finally, the effectiveness of VIPP-SD has been examined in twelve randomized controlled trials and it has been found to be adaptive to various samples and variety of contexts, such as different countries (e.g., Netherlands, Italy, Portugal, Turkey, and Lithuania; Juffer, Bakermans-Kranenburg & van IJzendoorn, 2017b). The studies with children at risk include adopted children (Juffer, Bakermans-Kranenburg & van IJzendoorn, 2005; Barone, Barone, Dellagiulia & Lionetti, 2018). children at risk of externalizing problem behavior (Van Zeijl et al., 2006), children with autism, and infants at risk of autism (Green et al., 2015., Poslawsky, Naber, Bakermans-Kranenburg, De Jonge et al., 2014; Poslawsky, Naber, Bakermans-Kranenburg, van Daalen et al., 2014). The studies with parents in special situations include insecure or insensitive parents and highly despised, such as mothers with eating disorders (Stein et al., 2006), high risk families in a poverty context (Negrao, Pereira, Soares, & Mesman, 2014) maltreating parents and ethnic minority parents (Yagmur, Mesman, Malda, Bakermans-Kranenburg, & Ekmekci, 2014) and in samples of fathers (Lawrence et al., 2013).

Juffer & Bakermans-Kranenburg (2018), have shown the efficacy of VIPP-SD in twelve randomized controlled trials, in several samples of children at risk, parents at risk or in special situations, and in child care settings (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2017). They meta-analyzed the results of the twelve randomized controlled trials, which evaluated the ability of VIPP-SD in parenting sensitive parents. “The meta-analysis showed a substantial combined effect size of d = .47. This implies that sensitive parenting increased with about half a standard deviation as a result of participation in the VIPP-SD program” (Juffer, Bakermans-

Kranenburg, & Van IJzendoorn, 2017, p. 2). The combined effect size to improve the child's outcomes was d = .37. Four studies evaluated the effects of VIPP-SD on attachment and seven studies measured the effects on problem behavior in children. The conclusion of the 12 studies is that VIPP-SD is an effective intervention for professionals who work with families who need support from parents.

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Chapter 3

General Method Section for Study 1 and 2, and Results for Study 1

3.1 Main aim and hypotheses of the studies

The purpose of this study is to analyze if a positive parenting program (Video-feedback Intervention to Promote Positive parenting and sensitivity discipline, VIPP-SD; Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2008, 2014, 2017), would affect mothers´ sensitivity and food habits concerning their preschool children in a low-SES rural area, namely Soracá (Boyacá), in Colombia.

In order to accomplish this main aim, an RCT study was conducted to compare two groups of mothers with their children; the first group (VIPP intervention group) received both an attachment-based parenting intervention and the food habits intervention, while the second group (control group) received a dummy intervention and the food habits intervention.

3.2 Study 1

3.2.1 Main Aim

We aimed to compare two groups of mothers, before the intervention started, on the following variables: socio-demographic characteristics of families, maternal sensitivity, maternal food habits, and maternal discipline strategies.

3.2.2 Hypotheses

H0: No differences between the two groups of mothers (VIPP intervention group vs. control group) would be found concerning socio-demographic characteristics of families, maternal sensitivity, maternal food habits, maternal discipline strategies at pre-test (T1).

H1: Specific associations would be found among the following variables: socio-demographic characteristics of families, maternal sensitivity, maternal food habits, maternal discipline at pre-test (T1).

3.2.3 Method

Study design

The present study was an RCT with two conditions (i.e. experimental and control) as one group received the intervention, named the Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD), and another group received a dummy intervention. Moreover, both groups received an intervention in food habits, by mean a socio-educative program during a home visit. The variables were tested at pre-test (at the beginning of the intervention) and post-test (at the end of the intervention completion).

Procedure and randomization

Mothers and children involved in the current study were recruited through the Municipal Health Center *Fe y Esperanza,* from a database of the program *grow and develop;* the mothers that comply the criteria of inclusion in relation to the age of the children and lived in the rural area, were contacted by students of social work, a total of 40 mothers were invited to participate in the study and finally only 27 mothers voluntarily accepted and the other 13 mothers were not interested in participating. The recruitment took place by mean of telephone calls and home visits. The ethical

committee of the Department of Brain and Behavioral Sciences of the University of Pavia (Italy) approved the study (see appendix 1).

All mothers belonged to the rural sector of the municipality of Soracá, (Boyacá-Colombia). Soracá is a Colombian municipality, located in the Center province of the Department of Boyacá, located on the Andes mountains, the average temperature is 12 ° C, the most important products are potatoes and corn, and a little production of milk. It has a population of 5226 inhabitants, in the urban area 748 habitants (14.3%) and rural area 4478 inhabitants (85.7%) of the total population, distributed in 11 villages of the municipality. In relation to the socioeconomic situation of mothers, the poverty rates are high and have a low educational level (ESE Centro De Salud Fe y Esperanza Soraca. 2016).

Each mother-child dyad was randomly assigned either to the experimental condition with VIPP-SD intervention or to the control condition with a dummy intervention and both groups received a food habits socio education intervention by mean of three home visits. Randomization was performed as block randomization with 1:1 allocation using a computerized random number generator (12 VIPP and 15 Control). Mothers agreed to participate before randomization into the conditions. Researchers coding and analyzing the observation data were blind to the randomization and assessment (pre-test and post-test).

Assessments took place before the intervention started and six months after, when the intervention completion, through observations, questionnaires and standardized measures. The pre-test assessment (T1) was done before randomization and started about a week before the intervention. All mothers were tested for sensitivity using the Q-Sort methodology (Pederson & Moran, 1995); the validity of the Maternal Behavior Q-Sort (MBQS) in Colombia has initially been supported by results from a study of the relations between sensitivity and security in an

extremely poor sample (Posada et al., 1999; 2002; Posada, Kaloustian, Richmond & Moreno, 2007). Moreover, mothers were tested about the parenting strategies by mean of the Parenting Scale (Arnold, O'Leary, Wolff & Acker, 1993), and tested about food habits by mean of the Knowledge, Attitudes and Practice Questionnaire (KAP; Fautsch & Glasauer, 2014), to provide information about children's feeding and food habits in the home through questionnaires.

The VIPP-SD and dummy intervention lasted approximately 4 to 6 months and at the last home visit, both intervention groups repeated all post-test measures (T2).

Sample

A total of 27 mothers with their children aged between 16-36 months, were identified through the Municipal Health Center and them accepted to participate in the study.

The mothers' age was between 18 and 47 years (*M*age = 30.67, *SD* = 8.22). The selection criteria were being mothers with a child between 16 - 36 months, living in the low-SES rural context and not having any type of cognitive disability. The number of children in each family was between 1 to 5 children, 1: 29,6%; 2: 33,3%; 3: 22,2%; 4: 11,1% and 5:3,7% (*M* = 2.26 children, *SD* = 1.13). The age of the children ranged between 16 to 36 months (*M*age = 24.59 months, *SD* = 5.59); in relation to the gender, females = 14 and males = 13. (see table 1).

Table 1
Socio-Demographics Characteristics

Variable	M	SD	Range
Mother's age (year)	30.67	8.223	18 - 47
Number of children	2.26	1.130	1 - 5
Mother's years of educations	6.44	3.446	2 – 11
Monthly mother's income	65.52	60.365	20 – 200
Children's age (month)	24.59	5.590	16 - 36

Table 2
Socio-Demographics Characteristics in the Rural Context

Variable	%
Family typology	
Nuclear family	70.4
Extended family	29.6
Mother's level of education	
Primary education	55.5
Secondary education	22.2
Complementary education	22.3
Mother's occupation	
Housewife	81.5
Agriculture and formal	3.7
Employment	14.8
Monthly mother's income	
20 – 100 USD	70.3
101 – 200 USD	29.7
Gender distribution of children	
Females	55.6
Males	44.4

Experimental condition with VIPP-SD

Mothers and children in the experimental condition received the VIPP-SD, which is a short-term and home-based intervention developed by the Centre for Family Studies of Leiden (NL) aimed at enhancing primary caregiver sensitivity and positive and disciplinary strategies by using video-feedback. Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2008, 2014, 2017) is an attachment-based intervention aimed at enhancing sensitive parenting and adequate discipline strategies of parents with the main goal of promoting positive parent-child relationships and reducing behavior problems in children.

The VIPP-SD program is home-based and short by mean of a modest number of visits, usually six sessions. VIPP-SD is implemented in the home or childcare setting because the intervention focuses on recording and reinforcing naturally occurring parent-child interactions in

daily situations. In addition, parents may find it easier to integrate new behaviors in their daily lives when these behaviors have been practiced in the home, and the home setting usually is a safe place to receive personal feedback (Juffer, Struis, Werner, & Bakermans-Kranenburg, 2017). By offering VIPP-SD at home, it increases the chance that parents complete the entire program. During each intervention session, the intervener meets the mother-child dyad in standardized situations and then gives feedback using the video recorded in the previous home visit, as well as input on positive parenting techniques, in accordance with a standardized procedure. We worked with manual VIPP-SD version 3.0 (Juffer, Bakermans-Kranenburg, & van Uzendoorn, 2015), translation to Spanish by (Ortiz, 2016)

Table 3

Themes in the VIPP-SD Program (Juffer, Struis, Werner, & Bakermans-Kranenburg, 2017)

Session	Sensitive parenting	Sensitive discipline
Home Visit 1	Exploration versus attachment behavior	Inductive discipline and distraction
Home Visit 2	"Speaking for the child"	Positive reinforcement
Home Visit 3	Sensitivity chain	Sensitive time-out
Home Visit 4	Sharing emotions	Empathy for the child
Home Visit 5	Booster session	Booster session
Home Visit 6	Booster session	Booster session

Intervener and assessment coders. The intervener was trained and certified for adherence in accordance with the VIPP training guidelines published by official VIPP institutes of the Leiden University, in the Laboratory of Attachment and Parenting, University of Pavia.

Control condition with dummy intervention

The control group received six telephone calls at the same time intervals as the VIPP-SD sessions occurred. Each phone call revolved around a standard topic regarding child development (language, play, sleep, relations, specifying in feeding). These phone calls were conducted by the same researcher for alliance purposes. Within each topic questions are proposed, encouraging

mothers to talk about the development of their child, but no tips or advice were provided from the researcher (Negrão, Pereira, Soares, & Mesman, 2014).

Feeding socio-education

Both groups received an intervention on eating habits (Burgess and Glasauer, 2006) during home visits on days other than intervention with VIPP-SD and telephone calls. This intervention contains information on knowledge, attitudes and practices in relation to eating habits that are part of the nutrition of children. The sessions were interactive with ludic activities, using a simple and compressible vocabulary; All sessions were carried out through home visits. The intervention was performed during a period of 3 months, with a frequency of 1 month between each one. A total of 3 sessions were performed and each session was carried out for 45 minutes. The aim of the socio-educational program was to improve knowledge, attitudes and practice in relation to eating habits in children 2-4 years of age. The socio-educational program consisted of sessions on healthy eating, health and personal hygiene, nutrition, in addition to local knowledge, beliefs and eating habits; common local recipes, feeding children and the production, storage and cooking of recommended foods to prepare healthy, varied and balanced diets.

Measures

Maternal behaviour Q-Sort. Mother's sensitivity was evaluated using the Maternal Behavior Q-Sort (MBQS 3.1), developed by Pederson & Moran (1995, 1999), adapted version for the Latin American context by Posada et al. (1999). The validity of this instrument has been supported in several investigations (e.g., Pederson et al., 1998; Pederson et al., 1990; Posada et al., 1999; Posada et al., 2002, Posada, Carbonell, Alzate, & Silver, 2004).

The MBQS uses the Q-Sort methodology to describe maternal behavior in interaction with the child, through 90 items that are sorted based on observations recorded in natural context that

lasts approximately 90 minutes, focused on the relationship between mother and child during close interaction such as feeding, free play and maternal attention between the baby and other everyday activities.

According to each observation, the items are classified into three categories: (a) Uncharacteristic behaviors (piles 1, 2, 3); (b) highly characteristic behaviors (piles 7, 8, 9); (c) Behaviors not observed or not applicable to the case (piles 4, 5, 6). The coders were all reliable trained and were unaware of the experimental or control condition of mothers and of the timing of assessment. Each observation was made by two observers at each visit, so that each observer made a rating of the observation individually, and then compared it with the qualification of the other observer. Thus it was possible to establish the degree of inter-observer reliability; this was done, by calculating the similarity between the two independent ratings.

The scoring of the observations are made by pairs of evaluators following the methodology proposed by (Posada et al., 2004),. The coefficient of correlation between the independent ratings of each observer to each item should be higher than 0.70.

The Q-sort items of sensitivity rated as indicators of non-characteristic behaviors had to do with being aware of the cleanliness and arrangement of the children, resorting to trial and error to satisfy the children in the interactions. Among the indicators that reflected characteristic behaviors were those related to recognition of children's signals, answers according to their needs, unlimited physical access to the mother, search for face-to-face interactions and adjustment of the mother's body when she hugs the child.

The order of the items was classified in excel, by comparing the profile of the caregiver described as the ideal and the profile that was made from each observation. This score is the correlation (between 1 and -1) that describes how many relationships there was between an

observed behaviour profile of the mother and the ideal behavior (theoretically described) of a sensitive mother.

Parental discipline strategies. Mothers completed the Parenting Scale (PS) (Arnold et al., 1993). The PS is a 30-item measure designed to assess parental discipline strategies. Parents rate their probabilities of using specific discipline strategies in response to child misbehaviors. Ratings were made on 7-point scales that are anchored by one effective and one ineffective discipline strategy. After reverse coding some of the items, a score of 1 indicates effective discipline and a score of 7 indicates ineffective discipline. For the application, the questions were asked to the parents by mean of simple hypothetical situations to see how they would react to different behavior problems. The scale measures the parents on three subscales: laxness, over-reactivity and hostile parenting. Laxness refers to a parents' inconsistency or permissive parenting, overreaction refers to a parents' harsh or punitive parenting. Hostile parenting refers to the extent to which a parent hits, curses or insults their child (Rhoades and O'Leary, 2007). Cronbach alphas were .45 for laxness, .50 for overreaction and .43 hostility at the pre-test.

Food habits. The Knowledge, Attitude, and Practices (KAP) survey (Fautsch & Glasauer, 2014) was assessed to explore knowledge, attitudes, and practices relating to nutrition, diet, foods and closely related hygiene and health issues. The KAP survey was used to evaluate nutrition socio-education intervention. The KAP survey questionnaires have 13 modules that comprise predefined questions that capture information on critical knowledge, attitudes, and practices related to the 13 most common nutrition issues. The mothers answered the modules a. Feeding young children; b. Undernutrition; c. Personal hygiene and d. Water and sanitation. The items were summed to produce a unique summary score ranging from 0 (do not know) to 1 (know), min score 0 and max score 49. The Cronbach's alpha value was .78.

Plan of analysis

To analyze the results obtained at pre-test (T1), we performed independent t-tests and Pearson's chi-squared test ($\chi 2$) to establish whether the VIPP and the control groups would be different in terms of the socio-demographic characteristics of families, maternal sensitivity, maternal food habits, maternal discipline strategies. Moreover, we performed a Pearson correlation analysis to explore associations among the aforementioned variables.

3.2.4 Results

Sociodemographic and family educational, occupational and composition features

The socio-familiar characterization questionnaires were applied in 8 of the 11 villages of the municipality, through a prior visit by the research assistants, with the inclusion criteria of the age of the children between 16 and 36 months. A total of 27 mothers and their children agreed to participate. Before responding to the questionnaire, the mothers signed an informed consent letter in which the purpose of the study was described and the confidentiality and voluntary participation assured. The mean age of mothers was (30.67, *SD* = 8.22, range = 18- 47 years). In relation to the family typology, (70.4%) was nuclear and (29.6%) was family extended, by including grandmothers, grandfathers, uncles, and aunts. The mean of the number of children per family was (2.26, *SD* = 1.1). In relation to the educational level, primary education (55.6%); secondary education (22.2%); complementary education (22.2%); superior education (0%). The mother's occupation was (86.5%) housewife, with daily activities of milking and cultivation in a family parcel and (10.1%) in agriculture and formal employment (see table 1 and 2). The monthly mother income was (0-40 USD: 66.7%, 40-80USD: 22.2%, and >80 USD: 11.1%), (only the maternal income is reported, because the access to subsidies by the state, can be affected by the total income of the family and in many cases, the mothers omit this information). In relation to children, the

mean of the age was 24.59 months (*SD* = 5.6). Gender distribution was as following 15 females (55.5%) and 12 males (44.5%). The (40.7%) of children attended childcare center, whereas (59.3%) did not (see table 1 and 2).

In relation to the differences between the groups VIPP and control groups regarding the variable, no differences were observed concerning mother's age (*t (25)* = -1.18 *p* = .24), children's age (*t(25)* = .55, *p* = .58), mothers' education level, χ (5) = (13.36, p = .020), mothers' monthly income χ (12) = (13.36), (p = .795) number of children (*t (25)*= -1.35, *p* = .19), children's gender χ (1) = (.68, p = .795) and assistance to childcare centers χ (1) = (.008, p =.930).

Maternal Sensitivity (Q-sort results)

Trained observers made visits to family homes to rate maternal sensitivity using the MBQS, maternal behavior q-sort (Pederson, Moran, & Bento, 1999).. The observations were made during a time (x=85 minutes), (SD=3.8 minutes); the mothers were asked to stay during the visit and to carry out as usual routines of children care, such as change the clothes, feeding (breakfast or snack) and other usual activities. The inter-observer reliability was (x= 0.76), (*SD* = 0.06).

The rural mothers mean sensitivity score was 0.5 (range = -0.44 to 0.79, SD = 0.3), (see table 4), results similar to the study of urban mothers from four different countries (Colombia, Mexico, Peru, and the United States) mean sensitivity score at home was 0.43 (range = -0.55 to 0.82, SD = 0.34) (Posada, et al., 2016). However, we observed that only 10 of the 27 mothers bathed their children during the observation time, which reflects that the bathroom is not a routine of daily care. This is due to particularities of the context, the region is characterized by cold weather throughout the year and the families' homes are not equipped to protect children during bathing, which means that bathing is not daily and when it occurs quickly; sometimes this practice is a stressful situation for mothers and children.

Table 4
Results Q-Sort

	N	Min	Max	Mean	SD
Q-Sort Mother Score	27	-0.44	0.79	0.5	0.3

In relation to the comparing the VIPP and control groups, were no difference (t (25) = .39, p = .70).

Parenting Scale (PS)

The Parenting Scale was adapted of self-rating scale to measure disciplinary practices. The version original has 30 items, all items were reading and written by the researchers, according the anser of the mothers. The measure uses a structured alternative response format, asking parents to rate how they would react to various behavior problems by choosing between an effective or ineffective strategy on a 7-point scale. Each item receives a 1-7 score, where 7 is the "ineffective" end of the item. Thus, the following items have 7 on the left side (the others on the right): 2, 3, 6, 9, 10, 13, 14, 17, 19, 20, 23, 26, 27, 30 To compute the total score, average the responses on all items. To compute a factor score, average the responses on the items on that factor. The recommended clinical cut-off scores for the revised parenting scale are: Mothers: Laxness 3.6, Over-reactivity 4.0, Hostility 2.4; and Total Score 3.2. The result for the rural mothers scores (see table 5).

Table 5
Parenting Scale

	Min	Max	Mean	SD
Laxness	1.6	5.3	3.37	0.77
Over-reactivity	1.4	4.5	3.17	0.77
Hostility	1	4.7	2.2	0.88
Total score	2.7	4.6	3.55	0.45

Table 6
Comparing the VIPP and Control Groups

	Group	N	Mean	*SD*
Parenting	Control	15	3.58	0.49
Total	VIPP	12	3.52	0.42

We don't found difference between the VIPP and the control groups were observed (t (25) = .38, p = .71). (see table 6)

Food habits

Food habits evaluation was performed trough the Knowledge, Attitudes and Practices of the family questioner. The survey was composed by four modules, with a total of 49 items; 1. Feeding young children (18 items, x=13.33, SD=2.91); 2. Knowledge (6 items; x= 3.56, SD =1.12), 3. Attitudes (10 items; x= 8.48, SD = 1.25); 4. Practices (2 items; x=1.30, SD =.54); Undernutrition (8 items x=5.19, SD=1.74); Knowledge (6 items, x=3.74, SD =1.10). Attitudes (2 items; x=1.44, SD=.64). Personal hygiene to prepare food (8 items, x=7,07, SD=1.14), Knowledge (2 items; x=1.44, SD = .51), Attitudes (5 items; x=4.63, SD = 0.63), Practices (1 item; x= 1.0, SD = .00) and Water and Sanitation (15 items, x=9.59, SD=2,16), Knowledge (1 item; x=.00, SD = .00), Attitudes (5 items; x= 4.81, SD= 0.48), Practices (9 items; x= 4.78, SD = 1.67).

There were no difference between the control group (x = 35.07, SD = 2.69) and the VIPP group (x = 35.33, SD = 3.52); t(25)= .22, p =.83.

As shown in Table 7, in relation to socio-demographic characteristics of families, there is a negative correlation between mother´s age and level education, and a positive correlation between mother's age and number of children. This indicates that the older women in the rural context have a greater number of children in addition to a lower educational level. There is a positive correlation between parental discipline strategies scores and mother's level of education (.414), showing that mothers with higher education level reported higher parental discipline

strategies, this relation implies that the educational level is associated with the parenting in the rural context: a greater use of action strategies on how to exercise discipline, on a higher educational level.

Table 7

Correlations Between Socio Demographics Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Q-Sort	___									
2. Parenting	,305	___								
3. KAP	-,021	-,204	___							
4. Family type	,289	,367	,077	___						
5. Mother's age	,231	,041	-,122	-,164	___					
6. Child's age	,280	,248	-,210	-,114	,281	___				
7. Mother's level of education	,127	**,414***	,066	,227	**-,504****	,066	___			
8. Number of children	-,297	-,053	-,126	-,225	**,473***	,017	-,515**	___		
9. Mother's occupation	,237	,108	,105	,150	-,121	,063	,304	-,479*	___	
10. Child's gender	-,212	-,009	-,051	-,091	-,028	-,097	-,073	,194	,000	___
11. Monthly mother's income	,029	-,234	,081	-,063	-,037	,051	,298	,044	,370	,103

Note. *p>0,05 **p>0,01

3.2.5 Discussion

The main objective of this study was to explore socio-demographic characteristics, parental styles, maternal sensitivity, and eating habits in a group of low SES rural mothers, establishing equality of means in the study variables for the two groups, through the allocation of random numbers assigned in two groups (VIPP and Control).

In the table 2, we found that the (55%) of rural mothers have lower level educational have of 1 to 5 year of education and only (22.3%) has finished 11 year of education. For rural mothers, even without having a high educational level, education allows them to offer their children experiences that favor their development, which consolidates not only good treatment but also a strong affective bond (Gallego, 2012).

Rural mothers distribute their time in the care of their children, accompanied by the milking of the cows and the help in the agricultural work; However, these activities are considered as household responsibilities, for this reason, the majority of rural mothers occupy their home.. The

mother´s economic status, in relation to the income, is low per month; this factor indicates that the majority of rural mothers are in the margin of poverty (low SES). The participation of rural women in unemployment is important, and rural women also face discrimination in their economic retribution.

The low SES, could be associated with living environments characterized by scarcity of resources and multiple stressors, including abusive or violent family dynamics (Grantham-McGregor, Cheung, Cueto, Glewwe, Richter & Strupp, 2007), this situation can affect the parenting because the economic deprivation leads to depression and stress in the parents and ultimately dysfunction of the family that directly affects the children welfare (Bornstein, 2008).

The families were divided into two types, extended and nuclear. The nuclear family is the cohabiting family formed by the members of a single family nucleus, the group formed by the parents and their children. The broader definitions consider in a family nucleus both the groups formed by two matched adults, with or without children and those formed by an adult with one or several children. Some more restrictive definitions reduce it to the cases in that the two parents are present. This model of the basic or elemental nuclear family made up of father, mother, and children and has prevailed in Colombia (DANE, 2015). The "extended family" refers to a group that lives in a household, often with three generations living together (grandparents, parents, and children) and headed in patriarchal societies by the older man or matriarchal by the older woman. However, in the common language, the term "extended family" is often used by people simply to refer to their cousins, aunts, uncles, etc., even though they are not living together in a single group.

In Colombia, large households are a type of family organization that solves various social problems for the population, such as "the survival of low-income sectors hit by the economic crisis, the lack of opportunities for new generations or reduced coverage of the social security system.

The association exists between the extended family modality with low income (Puyana, 2004). According to the typologies, defined by Puyana (2004), we found that rural families located in this typology, can be grouped into 4 types, according to the main function they fulfil for their members in relation to households that cushion the effects of the economic crisis and low income; refugee homes for single mothers or separated youth; households that require the extensive form to generate their income finally those that constitute a life option because of the need to protect the elderly.

The families that living the effects of the economic crisis and low incomes, respond to a survival strategy in front to the economic and social pressures, this cause unemployment of them. The families that suggest the effects of the economic crisis and low incomes respond to a survival strategy in front of economic and social pressures that cause unemployment of member of the family´s members and the limitations to obtain a home income of their own. This situation makes families in the rural context, support themselves, to withstand the difficult economic situations and strengthen support networks and the limitations to obtain a home of their own.. This situation makes families in the rural context, support themselves, to withstand the difficult economic situations and strengthen support networks.

The childcare is a variable that can be inside in the results because in the rural area this is modality that promotes the development and care of children under 5 years of age in conditions of vulnerability, through actions that promote the exercise of their rights, with the active and organized participation of the family, the community and territorial entities (ICBF, 2017). In this modality, care, protection, health, nutrition, and psychosocial development is provided through community mothers, who provide an average of 13 children in their home, for 200 days per year, in 8-hour or half-day sessions.

The results in maternal sensitivity obtained in the rural context, indicate that the predominantly sensitive maternal response was in average in our sample in comparison with the studies in urban mothers from United States, Peru and Colombia (Posada, et al., 2016), also, an average score similar to those reported in other studies in Latin-American was found (Posada et al., 1999; Posada et al., 2002, Bárrig-Jó, et al., 2016). Contrary to our hypothesis, sensitivity in our sample rural with low SES mothers was higher when compared to a sample of a majority of middle-class dyads. However, in this study the number of participants is not sufficient enough to state any generalization of the results and the children were of different ages.

In relation to the maternal response, the behaviors characteristic in the rural context were response in a way of positive comments when they talk about your children, cuddling the children in your arms as a form of interaction in addition and daily care is shared with other family members, such as siblings and grandparents. Initially, we had the hypothesis that a low SES was a variable that negatively affects the upbringing of children. However, in this population we found that a low SES was not associated with a low sensitivity.

The levels of sensitivity can be explain to the fact that in this rural context specific, the low SES is not a risk for the link between caregiver-child, because other mechanisms of moderation and mediation as an extended family for the care of children, the social support in relation to the parenting and the representation about the caring of the children, these extended network of caregivers is present in the daily routines of these families. In this way, the mothers are able to share the responsibility with some other adults and also other children as siblings. The extended families and the support they bring in the rearing process of infants is a common characteristic in these communities.

These variables can explain the contingent responding are very similar across very

different cultures, the modalities through which responsiveness is channeled depending of the culture. (Mesman, van IJzendoorn & Sagi-Schwartz, 2017,). i.e. the multiple caregivers are also common in most East Asian cultures, “although non parental care is mostly restricted to care by grandparents, who often core side with the nuclear family and tend to provide extensive care for their grandchildren when one or both parents are working” (Mesman, van IJzendoorn & Sagi-Schwartz, 2017, p. 862).

Finally, our results are n similar way to the findings obtained by Fourment, et al., (2018), the study showed that mothers from rural Andean and Amazonian areas in Peru appeared to be very comfortable being filmed, showing hardly any camera shyness, and almost all scored in the higher range of sensitivity scale..

In relation to food habits, there was little consumption of fruits and vegetables determined by economic factors and food diversity. We found in the sample that the typical food is determined by rice, potatoes, soup and some grain such as beans, chickpeas, peas, and lentils as a factor that determines an adequate diet due to its high nutritional content, and is determined by the low cost. Egg consumption is 3 times a week and is produced by the chickens in the home. Finally, milk is consumed daily, as a result of daily milking practice in most households.

The most foods consumed for the families are potatoes, rice, corn, and pasta the reason are their easy access, conservation and price, these foods are complemented with other products produced for the families to auto-consume, for instance, eggs, milk, and occasionally chicken. The most important productions are potatoes and corn, some vegetables such as spinach, beet, lettuce, cauliflower. It is hard to access beef because of its high cost, so it is preferred to buy chicken or offal, also because of the high price are fruits and some vegetables. In addition, another aspect that

affects the type of food has to do with the conservation of food, since few mothers have a refrigerator.

Studies in the rural context help to improve the understanding of different styles of parenting that are culturally specific (Asanjarani, Abadi, Ghomi and Mesman, 2018). “The context and type of daily activities determine the parenting practices and the forms of interaction, determined by the quality of the mother-child relationship “(Mesman, Basweti & Misati, 2018, p.9).

Finally, regarding the participants, all the demographic information and the study variables of mothers and children in the experimental condition and the control condition do not show a significant difference, which guarantees the conditions between the groups to evaluate the possible effects moderate by intervention (Dettori, 2010).

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Chapter 4

Food habits, parental discipline strategies and mother´s sensitivity in the rural context and effects of the intervention.

4.1 Study 2

The previous chapter (Chapter 3) provided information about the food habits, parenting styles and mother´s sensitive in relation to the children in the rural context and some descriptives results on T1 (pre-test). The present chapter (Chapter 4) will focus on the results of the variables on T2 (post-intervention) and in the effect the VIPP-SD intervention on food habits (knowledge, attitudes, and practices), parental discipline strategies and mother's sensitivity. In particular, an RCT study was conducted to compare two groups of mothers with their children; the first group (VIPP-SD intervention group) received both the VIPP-SD intervention and the food habits intervention, while the second group received only the socio-education in food habits (Control group).

4.1.1 Main Aim

The main aim of the second study, was to analyze changes in mothers´ outcomes (food habits, parental discipline strategies, and sensitivity) from pre-test (T1) to post-intervention (T2). We hypothesized that compared to the mothers in the control group, mothers completing the VIPP-SD intervention and socio educative program in food habits would show: 1) Significantly greater increases in the food habits; 2) Significantly greater reductions in the parental discipline strategies – namely over-reactivity, hostility, and laxness; 3) Significantly greater increases in their maternal sensitivity.

4.1.2 Method

Sample

A total of 27 rural mothers living in Soracá were recruited, the allocation of the groups was made by generating aleatory numbers in order to minimize the allocation bias, balancing both known and unknown forecast factors in the allocation of the VIPP-SD intervention (see chapter 02). The selection criteria were being mothers with a child between 16 - 36 months, living in the low-SES rural context and not having any type of cognitive disability diagnosed. The age of the children ranged between 16 to 36 months, Age (Mage= 24.59 months, *SD* = 5.59); in relation to the gender, a total of (14 females) and (males = 13).

The control group had a number of 15 mothers (see chapter 02) and the intervention group had a total of 12 mothers.

Procedure

Each mother-child dyad was randomly assigned either to the experimental condition with VIPP-SD intervention and to the control condition with a dummy intervention, and both groups received a food habits socio-education intervention by mean of three home visits. The intervention group received the VIPP-SD intervention visited by a certificated intervener, and the control group received six phone calls, by the student of social work trained, in which they responded to standar questions about their children's development, behaviour, and problems with regards to play, feeding, and sleep, among other topics. (Juffer et al., 2008).

The post-test assessment (T2) was done after the VIPP-SD finished. All mothers were tested for sensitivity using the Q-Sort methodology (Pederson & Moran, 1995; Posada, Kaloustian, Richmond & Moreno, 2007). Moreover, mothers were tested about the parenting strategies by mean of the Parenting Scale (Arnold, O'Leary, Wolff & Acker, 1993), and scored by mean the

scales by Rhoades & O'Leary (2007). and tested about food habits by mean of the Knowledge, Attitudes and Practice Questionnaire (KAP; Fautsch & Glasauer, 2014).

The VIPP and Control group received 3 socio-educational home visits by a social worker in food habits, the visit was made every month, at different times from the VIPP-SD intervention and the dummy intervention.

Analytic plan

We first calculated the descriptive statistics of the variables (mean and standard deviations) at post-intervention. Then, we employed ANCOVAs with intervention condition as a between-subject factor (VIPP-SD vs. control) and time as a within-subjects factor (pre-and post-intervention).

4.1.3 Results

Food habits

The Knowledge, Attitude and Practices (KAP) survey (Fautsch & Glasauer, 2014) was assessed to explore knowledge, attitudes and practices relating to nutrition, diet, foods and closely related hygiene and health issues. The descriptive results (table 8), for the post-intervention are: Feeding young children (18 items, *M = 15.63, SD =1.60*); Knowledge (6 items; *M* = 4.59, *SD =0.*75), Attitudes (10 items; *M* = 9.04, *SD* = 0.85*);* Practices (2 items; *M* = 2, *SD* = 0.0*)*; Undernutrition (8 items *M = 6.41, SD = 1.26*); Knowledge (6 items, *M* = 4.63, *SD* = 0.84*).* Attitudes (2 items; *M* = 1.78, *SD* = 0.42). Personal hygiene to prepare food (8 items, *M = 7.78, SD = 0.63*), Knowledge (2 items; *M* = 1.85, *SD* = 0.36*),* Attitudes (5 items; *M* = 4.93, *SD* = 0.27), Practices (1 item; *M* = 1, *SD* = 0.0*)* and Water and Sanitation (15 items, *M=11.59, SD =1.80*), Knowledge (1 item; *M* = 1.0, *SD* = 0.0), Attitudes (5 items; *M* = 4.96, *SD* = 0.19), Practices (9

items; *M* = 5.59, *SD* = 1.53).

Table 8
Descriptive Statistics Regarding Food Habits (pre- and post-intervention)

	GROUP	N	PRE TEST		POST TEST	
			M	***SD***	***M***	***SD***
KAP KNOWLEDGE	CONTROL	14	8.86	1.16	11.79	1.36
	VIPP-SD	12	8.67	1.77	12.25	1.54
KAP ATTITUDES	CONTROL	14	19.71	1.97	20.21	0.97
	VIPP-SD	14	19.33	1.77	21.33	1.67
KAP PRACTICES	CONTROL	14	6.71	1.59	7.93	1.59
	VIPP-SD	12	7.33	1.77	9.17	1.19
KAP TOTAL	CONTROL	14	35.29	2.64	39.93	2.78
	VIPP-SD	12	35.33	3.52	42.75	2.30

In order to examine the effect of the VIPP-SD intervention on food habits (Knowledge, Attitude and Practice subscales of the KAP survey), we employed ANCOVAs with intervention condition as a between-subject factor (VIPP-SD vs. Control) and time as a within-subjects factor (pre-and post-intervention). Age and gender of children were included as covariates to investigate their influence on food habits.

Our results showed a significant interaction effect between time and intervention group on mothers' attitude (F (1, 22) = 7.88, p = .01, η2p = 0.26). Mothers who received the VIPP-SD intervention showed an increase in their attitude (F (1, 11) = 17.37, p = .002, η2p = 0.61) from pre-intervention to post-intervention (see Table 8 and Figure 1). On the other hand, we did not observe any increase in the control group (F (1, 13) = 1.44, p = .25, η2p = 0.10).

Regarding the Knowledge scale, neither main effects (time: F (1, 22) = 1.04, p = .31, η^2_p = 0.05; intervention: F (1, 22) = 0.01, p = .92, η^2_p = 0.00), nor interaction effect (F (1, 22) = 2.42, p = .13, η^2_p = 0.10) were observed along the two time points (T1 and T2). Moreover, once again, no interaction effect (F (1, 22) = 2.53, p = .13, η^2_p = 0.10) and no main effects (time: F (1, 22) = 1.51, p = .23, η^2_p = 0.07; intervention: F (1, 22) = 2.67, p = .12, η^2_p = 0.11) were found for the Practice

subscale of the KAP survey.

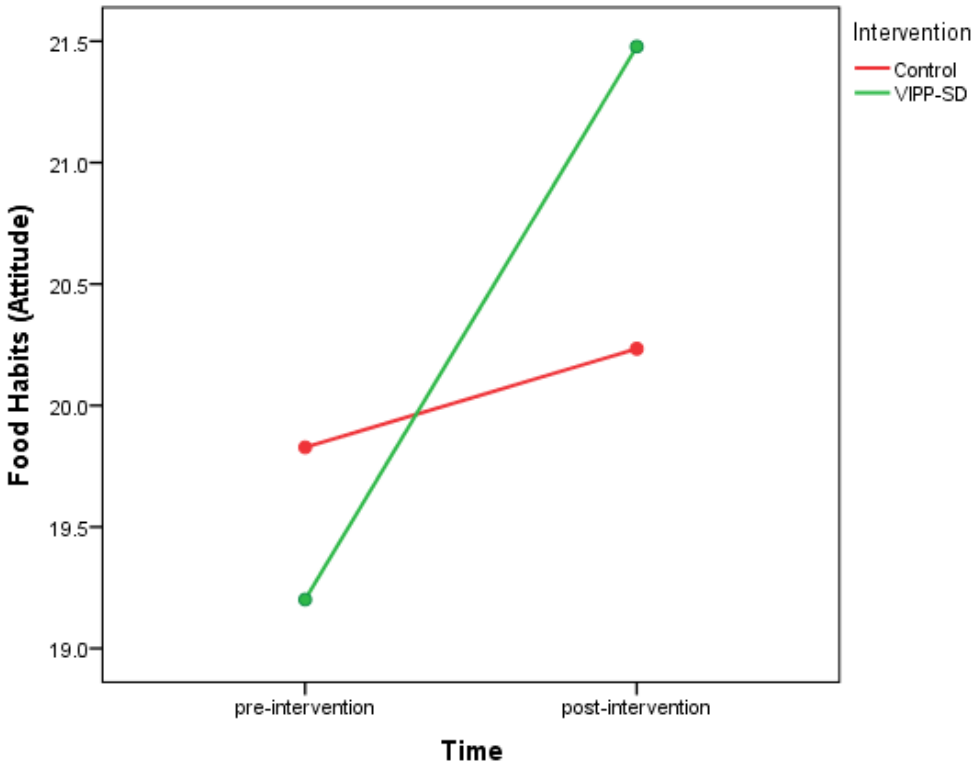

Figure 1. Attitude Scores of the KAP Survey. Graphical representation of the comparison between mothers who received the VIPP-SD Intervention and mothers belonging to the control group.

Parental discipline strategies

Table 9

Descriptive Statistics Regarding to the Parental Discipline Strategies (pre- and post-intervention)

	GROUP	N	PRE TEST		POST TEST	
			M	***SD***	***M***	***SD***
PS Laxness	CONTROL	14	3.53	0.84	3.71	0.75
	VIPP-SD	12	3.34	0.50	3.51	0.77
PS Overreactivity	CONTROL	14	3.11	0.78	3.06	0.69
	VIPP-SD	12	3.17	0.77	2.63	0.85
PS Hostility	CONTROL	14	2.10	1.04	2.04	1.23
	VIPP-SD	12	2.41	0.70	2.08	0.92

PS Total	CONTROL	14	3.62	0.49	3.70	0.44
	VIPP-SD	12	3.52	0.42	3.50	0.36

In order to examine the effect of the VIPP-SD intervention on parental discipline strategies of mothers (Laxness, Over-reactivity and Hostility subscales of Parenting Style scale), We employed ANCOVA with intervention condition as a between-subject factor (VIPP-SD vs. Control) and time as a within-subjects factor (pre-and post-intervention. It is worth to highlight that higher scores indicate a low level of parental discipline strategies (laxness, overreaction, hostility).

There was a significant interaction effect between time and intervention group on mothers' overreactivity (F (1, 22) = 7.33, p = .01, η^2_p = 0.25). Mothers who received the VIPP-SD intervention showed better parental discipline strategies (F (1, 11) = 8.80, p = .01, η^2_p = 0.44) from pre-intervention to post-intervention (see Table 9 and Figure 2). On the other hand, we did not observe similar results in the control group (F (1, 13) = 0.07, p = .79, η^2_p = 0.01).

Regarding the Laxness scale, neither main effects (time: F (1, 22) = 0.55, p = .46, η^2_p = 0.03; intervention: F (1, 22) = 1.04, p = 31, η^2_p = 0.05), nor interaction effect (F (1, 22) = 0.04, p = .85, η^2_p = 0.002) were observed along the two time points (T1 and T2). Moreover, once again, no interaction effect (F (1, 22) = 0.49, p = .49, η^2_p = 0.02) and no main effects (time: F (1, 22) = 0.61, p = .44, η^2_p = 0.03; intervention: F (1, 22) = 0.93, p = .35, η^2_p = 0.04) were found for the Hostility subscale of the KAP survey.

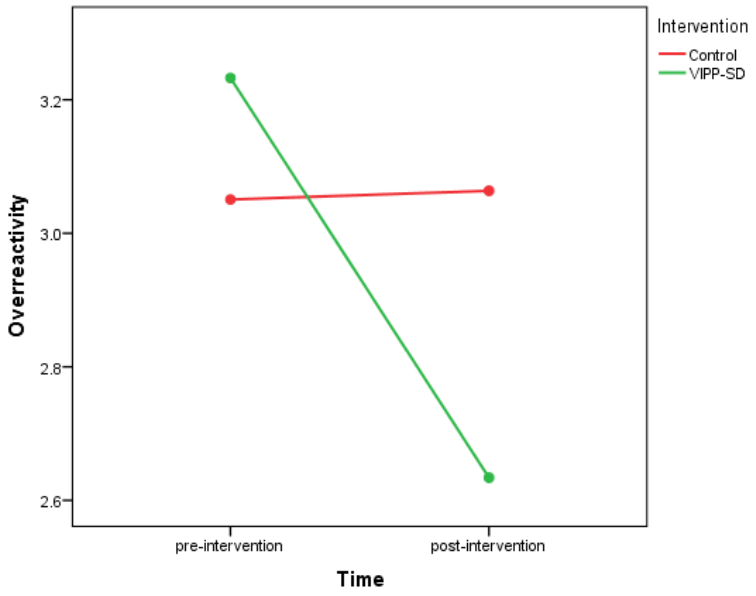

Figure 2. Over-Reactivity Scores of the Parenting Style Scale. Graphical Representation of the Comparison Between Mothers who Received the VIPP-SD Intervention and Mothers Belonging to the Control Group.

Maternal Sensitivity

Table 10
Descriptive Statistics Regarding Maternal Sensitivity (pre- and post-intervention)

	GROUP	N	PRE TEST		POST TEST	
			M	***SD***	***M***	***SD***
Maternal Sensitivity	CONTROL	14	0.59	0.19	0.51	0.30
	VIPP-SD	12	0.47	0.20	0.70	0.09

We employed ANCOVA with intervention condition as a between-subject factor (VIPP-SD vs. Control) and time as a within-subjects factor (pre-and post-intervention). Age and gender of children were included as covariates to investigate their influence on sensitivity. There was a significant interaction effect (F (1, 22) = 7.65, p = .01, η^2_p = 0.26). Mothers who received the VIPP-SD intervention showed an increase in their sensitivity (F (1, 11) = 7.38, p = .02, η^2_p = 0.40)

from pre-intervention to post-intervention (see Table 10 and Figure 3). On the other hand, we did not observe an increase significant in the control group (F (1, 13) = 1.73, p = .21, η^2_p = 0.12. As shown (figure 3), mothers who received the VIPP-SD intervention showed significant increases in sensitivity whereas mothers in the control group did not show such (strong) improvement.

We also, calculated the effect size by the mothers sensitivity, between VIPP-SD and Control groups. (Cohen's d), $d = (M2 - M1) / SD$ pooled, SD$pooled = \sqrt{((SD1^2 + SD2^2) / 2}$

Cohen's d = (0.7 - 0.51) / 0.221472 = 0.85, the result confirm the significant effect the VIPP-SD intervention in the increase of mothers sensitivity in a rural context.

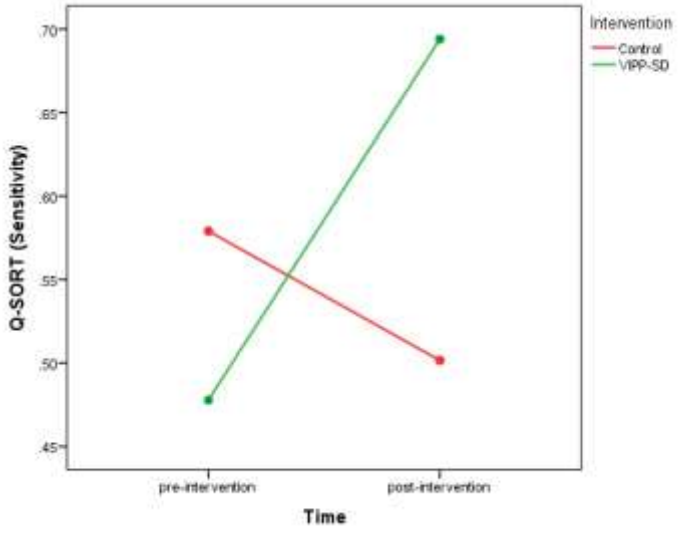

Figure 3. Mother's sensitivity scores of the parenting style scale. Graphical representation of the comparison between mothers who received the VIPP-SD intervention and mothers belonging to the control group.

4.1.4 Discussion

The main aim of this study was to test the changes in mothers´ outcomes from pre-test (T1) to post-intervention (T2). Specifically, we focused on the food habits, parental discipline strategies and mother´s sensitivity.

We hypothesized that compared to the mothers in the control group, mothers completing the VIPP-SD intervention and socio educative program on food habits would show significantly greater increases in the food habits, greater reductions in the parental discipline strategies and greater increases in their maternal sensitivity.

The results of this randomized controlled trial support the notion that an intervention aimed at enhancing maternal sensitivity and sensitive discipline is effective in decreasing mothers' over-reactivity as parental discipline strategies (Yagmur et al., 2014). We found that the over-reactivity of mothers who received the VIPP-SD intervention decreased the most; the over-reactivity scores at post-intervention were lower than the over-reactivity scores at pre-intervention. In other words, in our sample, mothers attending the VIPP-SD intervention showed improvement from the beginning to the end of the intervention, regardless of age and gender of a child. The factors of Laxity and Over-reactivity are consistent with the permissive and authoritarian styles of parenting described by Baumrind & Black, (1967). These types of disciplinary strategies are among those clearly involved in the development and maintenance of behavioural disorders of child externalization (Arnold, O'Leary, Wolff, & Acker, 1993). Early studies of parenting repeatedly identified associations between retrospective reports of an inconsistent, harsh and excessively lax parent discipline and problematic outcomes in children, especially aggression (Bandura & Walters, 1959). The study showed that sensitive discipline does occur in the rural mothers specifically in the reduction on over-reactive discipline. Thus, the focus of VIPP-SD on sensitive discipline strategies does appear to fit the cultural context of Colombian rural mothers and indicate that VIPP-SD can be effective at various ages, and in different settings, problem areas, and cultures (Balldin, Fisher & Wirtberg, 2016).

The present study demonstrated that the efficacy of the component of the sensitive discipline in the VIPP-SD is based on the work of hampering coercive cycles repetition in families involved in the intervention (Patterson 1982, cited in Juffer, Struis, Werner & Bakermans-Kranenburg, 2017). Beyond childhood, parents must not only respond sensitively to the needs of their children but also teach their children the rules and limits in an effective manner. The VIPP-SD integrated Patterson's ideas on parental discipline (Juffer, Struis, Werner & Bakermans-Kranenburg, 2017), and expanded this component with constructs from Hoffman's (2000) work on inductive discipline and empathy. Hoffman (2000) argued that children learn more from inductive discipline than from authoritative discipline styles, show that a lack of sensitivity in infancy predicts harsh discipline in toddlerhood. We have also highlighted the similarities between the social information processing model of abusive parenting and the sensitivity hypothesis in attachment theory (Joosen, Mesman, Bakermans-Kranenburg, & van IJzendoorn, 2012).

The VIPP-SD proved to be effective in enhancing the on maternal sensitivity (Juffer et al, 2005; Klein Velderman et al., 2006); Bakermans et al., 2008; Kalinauskiene et al., 2009; Yagmur et al., 2014; Cassibba et al.; 2015; Werner et al. 2016; Barone et al., 2018), however, they all evolved in the expected direction, with higher posttest scores than pretest scores in the experimental group (T1-T2) $\eta^2_p = 0.40$, and effect size Cohen's d = 0.85, this results is in direction to the studies in VIPP, that involved samples with parents at risk (e.g., insecure, ethnic minority, or poverty samples) The combined effect size for these six studies was d = 0.54 ($p < .001$; 95% CI = 0.33-0.74) (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2017. Significant improvement on maternal sensitivity in the rural context was found by the VIPP-SD intervention.

In relation to the control group, we found that changes in sensitivity were in the opposite direction, decreased from (T1) to (T2), which shows that the sensitive maternal response can be

affected in rural families with low SES, when the child grows up and are not accompanied by programs aimed at supporting and improving parenting.

None of the families in our study was receiving assistance in terms of social-emotional stressors for which they clearly needed support, this is a central point of parenting in low SES (Bornstein, 2010) . Thus, in a context of no support and assistance (other than material), it seems that the quality of parenting deteriorates in highrisk families, what strongly emphasizes the need for intervention efforts to stop the downward spiral of negative parent-child interactions.

Finally, we found an increase in food habits in relation to attitudes. The results obtained show that mothers in VIPP group enhanced in the attitude scores regarding food habits from pre-intervention to post-intervention. These results demonstrate that food habits are better if the mother's sensitivity increase. In relation to knowledge and practices, we found the need of further research considering other possible factors, such as the evaluation of the response of the mothers in the interaction of the moment of feeding and not in food habits. It is important to note that parents rated the intervention as a significant impact on their understanding of their children's thoughts and feelings, and improved their communication and relationship with their child. Flexibility to conduct sessions at home (or parents' workplaces) and flexibility at the time of the sessions was identified as critical to a successful delivery.

The results of this study found that maternal sensitivity can affect the improvement of eating habits in relation to attitude taking into account that the attitudes are emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behavior or practice of an individual (De Landsheere, 1983). For this reason, the future investigation can explain if the mother sensitivity response can better the attitudes, influence future behavior the individual’s knowledge, and help explain why an individual adopts better practices in food habits.

In relation to the effects of intervention in VIPP-SD in rural families, take into account the characteristics of participants in relation to low SES and the quality of the relationship between participant and intervener. Our process evaluation demonstrated that alliance, highlighted as an essential element in the intervention processes (Martin et al., 2000), is also of some importance in early childhood parenting interventions (Stolk, et al.,2008).

Strengths of the present study include the randomized control pretest-posttest design, the use of standardized observational to measure the mother´s sensitivity , and the sample in terms of the rural mother low SES.

The limitations of the study were the small sample size that may have limited the statistical power to detect significant changes in some specific areas of parenting, also the lack of validity of the instruments KAP and PS in the context and finally the multiple teststing could be a error type I.

Future research with larger samples is required to clarify whether the program can be effective in improving knowledge and practice in relation to dietary habits. The low internal consistency of the scale of parenting scale and the validity of the test of food habits, require a better validation with larger samples in the rural context. The long-term follow-up study should also be conducted to see if the effects of the intervention are maintained over time in rural contexts; It should also deepen the understanding of the processes and components of the VIPP-SD program for rural mothers, which allow to contribute and better explain its effect. Finally, to better understand the effect of VIPP-SD, the safety response of infant attachment and the sensitive maternal response in the moments of food interaction should be studied. Further work is needed to fully understand other factors taht incide in the food habis, such as the parental feeding styles and practices associated with control of child feeding and this could explain why a positive

relationship in the mealtime will predicted by the mother sensitivity

In conclusion, the current study suggests that the VIPP-SD is a valuable program to improve the sensitivity of the mother in the rural context of Altoaldino in Colombia with low SES. Positive effects of VIPP-SD were found, combined with intervention in food habits, in relation to the improvement of attitudes towards infant feeding, however in relation to knowledge and practices there was no significant effect. Finally, the VIPP-SD, in the sample evidenced a reduction in hyperreactive behavior. This supports evidence of intervention for the quality of parenting in social contexts at risk.

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Chapter 5

General Conclusion

The present work has investigated mainly the effect that the increase of the maternal sensitivity and its influence in the improvement of the alimentary habits has, in relation to the knowledge, attitudes and practices, in a group of mothers that lives in a alto-andino Colombian context.

The main objective of the study was to analyze the intervention of a positive parenting program based on evidence (Video Intervention to Promotion Positive parenting and sensitive discipline, VIPP-SD). Methodologically, an RCT study was carried out when two groups of mothers and their children were compared (experimental group N = 12 and control group N = 15).

There were two main aspects of the study: the increase in maternal sensitivity due to the intervention of VIPP-SD, and the improvement of eating habits through a socio-educational intervention. Having discussed the results previously, highlighting the limits and indicating future research directions, in the individual studies, we present only a summary of the subject.

The first part (CHAPTER 1), was focused on the theoretical sustenance of the research, as well as the description of the context, finding low socioeconomic and educational level in the families of the municipality of Soracá, being the majority of its population in the rural area. The first two studies (CHAPTER 2) provided the sociodemographic data of the mothers, parental strategies, food habits and maternal sensitivity, with some preliminary descriptive results; then, the assignment of the control and VIPP groups was continued, through the random-number generation.

In relation to maternal sensitivity, we found results in comparison to the other studies in urban

and rural samples of low SES, evidencing a tendency of positive sensitive responses in the interactions with their children. Regarding the parental strategies, higher scores were founds in laxness and hyperreactivity and hostility, showing results with a tendency to have ineffective strategies. Finally, in relation to food habits, the mothers have knowledge about the nutrition of children, however we found that the low access, disposition and consumption of some foods as fruits, meal, fish and vegetables, affect attitudes and practices being determined by the socioeconomic conditions of families.

The research has also shown that the generalized assumptions about the low socioeconomic contexts and low educational levels results in not sensitive responses with the children and little knowledge about eating habits, does not apply for our study, for this reason is important taking into account more variables for the evaluation of the aspects that affect or not the sensitive response in rural mothers and in child development.

The second study (CHAPTER 2) was focused on a comparison analysis of means of the control and VIPP groups, of the variables studied, the main objective was to explore the results between the two groups; we established that were not existed differences statistically significant between groups means, using the t-student test.

The last part, (CHAPTER 3), present the results and analysis of the (post test), where the effect of VIPP-SD was evaluated, in the increase of the maternal sensitivity compared to the control group and its effect on the improvement of eating habits, through the ANOVA, one of the more significant findings to emerge from this study is that evidenced the increase of the variables maternal sensitivity, attitudes in the feeding and reduction of hyperreactivity in the VIPP group.

The study provide evidence to support the growing body of literature on the effect of VIPP-SD in improving positive interactions between parents and children, specifically in rural families,

we found that the intervention improves the maternal sensitive response and reduces hyperreactivity, with a new component related to the combined effect with socio-educational intervention that allows enhancement in the attitudes around children's nutrition.

The second major finding was that the VIPP-SD intervention, through the video feedback approach, is not only applicable in the majority European families, but it is also useful and effective in rural Latin American families, with low educational and socio-educational levels. With this study, the discussion is opens up for opportunities to adapt VIPP-SD to other cultural groups, and may encourage others to broaden the scope of such interventions beyond most of the European context, where the number of trained people has grown.

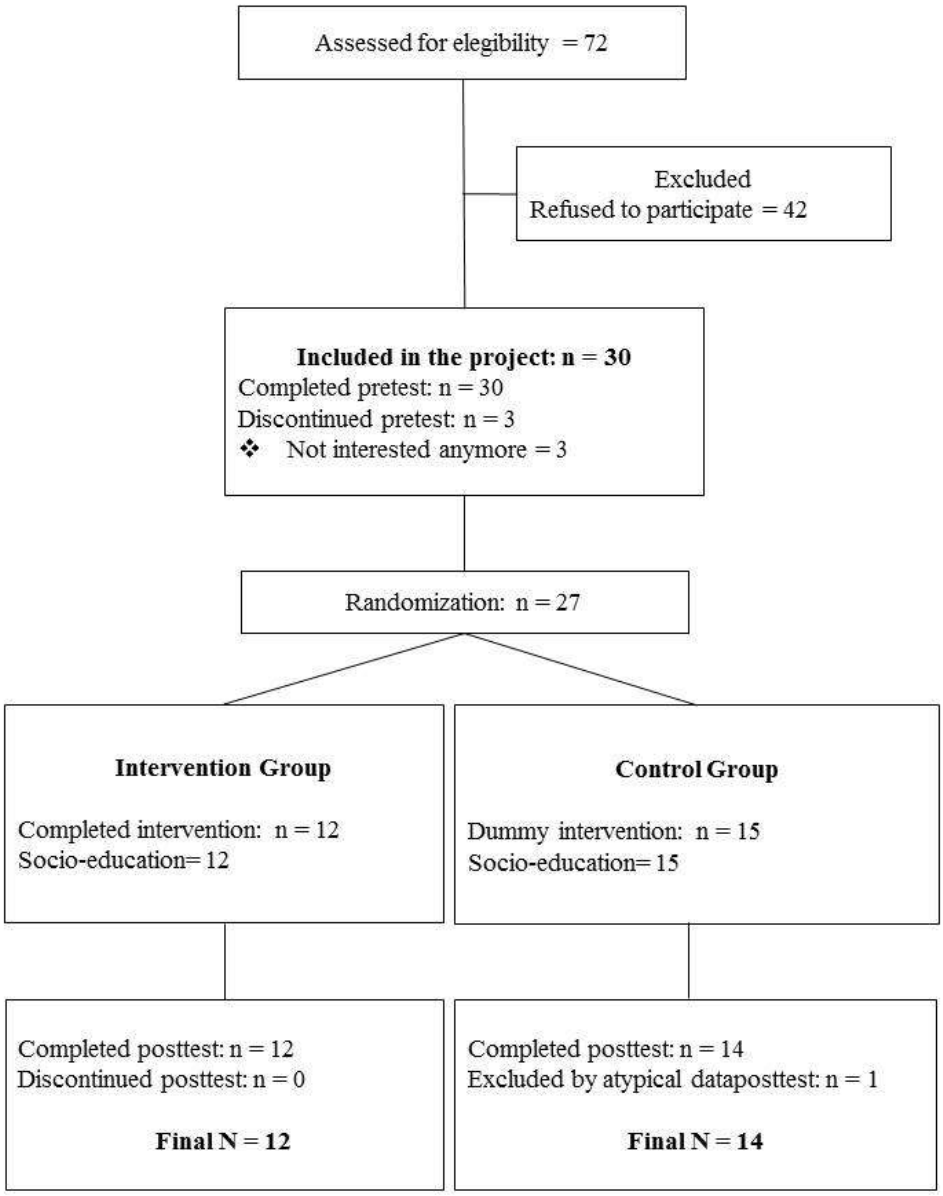
One of the strengths of the study is that, despite the small number of participants, the initial process of randomization achieved a balanced distribution between the intervention and control groups, both in terms of sociodemographic characteristics and in terms of maternal sensitivity and strategies. Further strengths are our assessment of sensitivity based on somewhat more extended observation sessions and the independence of the team assessing the participants sensitivity levels, which contributed to the avoidance of biased results

Future research with larger samples is required to clarify whether the program can also be effective in improving other dimensions of mother-child interaction, in addition to the relatively low internal consistency of the parenting scale; it also requires a replica of the study with a larger sample. The understanding of the processes and components of the VIPP-SD Program in rural contexts with low socioeconomic status should be deepened.

Our study suggests that the VIPP-SD is a valuable program, to be combined with programs aimed at improving child development, in our case, the socio educational intervention in food habits, however the social determinants of nutrition go beyond the sensitive response of the

mothers, for which other moderating aspects should be studied for a better understanding of child nutrition in rural contexts.

APPENDIX A: Details number for mothers (dis)engagement and participation in the study



APPENDIX B: General results (T1) and (T2) VIPP and Control groups

Q-sort, Parenting Scale and KAP.

Q-SORT					
MOTHER´S	VIPP		MOTHER´S	CONTROL	
	PRETEST	POSTTEST		PRETEST	POSTTEST
M05	0,54	0,64	M01	0,65	0,70
M06	0,49	0,50	M02	0,79	0,71
M08	0,60	0,75	M03	-0,44	0,63*
M09	0,64	0,69	M04	0,48	0,46
M10	-0,06	0,71	M07	0,79	0,65
M12	0,75	0,79	M11	0,18	0,12
M13	0,49	0,61	M15	0,73	0,72
M14	-0,03	0,71	M17	0,54	-0,09
M16	0,15	0,62	M19	0,69	0,62
M18	0,78	0,76	M21	0,69	0,73
M20	0,76	0,83	M22	0,41	0,73
M25	0,53	0,66	M23	0,29	-0,12
			M24	0,47	0,61
			M26	0,72	0,55
			M27	0,77	0,69

Note. *This result was delete for the general date in T2, because is an atypical date.

CONTROL GROUP	KAP - MODULO 1 (AN): Feeding children (18)					
	KNOWDLEDGE (6)		ATTITUDES (10)		PRACTICES (2)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M01	3	3	8	9	1	2
M02	5	5	9	10	1	2
M03	2	4*	8	8*	2	2*
M04	4	5	8	8	2	2
M07	2	5	9	8	1	2
M11	4	5	9	9	1	2
M15	4	5	7	9	2	2
M17	3	3	9	9	2	2
M19	3	5	10	8	1	2
M21	3	4	8	8	2	2
M22	4	5	5	8	2	2
M23	4	5	8	8	1	2
M24	3	5	10	10	1	2
M26	3	4	10	10	2	2
M27	4	4	10	8	1	2

VIPP GROUP	KAP - MODULO 1 (AN): Feeding children (18)					
	KNOWDLEDGE (6)		ATTITUDES (10)		PRACTICES (2)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M05	5	5	9	10	1	2
M06	2	4	8	9	1	2
M08	3	4	6	8	0	2
M09	3	5	9	9	2	2
M10	5	6	9	9	1	2
M12	4	5	8	10	1	2
M13	2	4	8	10	1	2
M14	6	6	10	10	1	2
M16	3	4	8	10	1	2
M18	2	4	7	10	1	2
M20	5	5	9	9	2	2
M25	5	5	10	10	1	2

CONTROL	KAP - MODULO 5 (D): DESNUTRICIÓN (8)			
	KNOWDLEDGE (6)		ATTITUDES (2)	
	PRE TEST	POST TEST	PRE TEST	POST TEST
M01	5	5	1	1
M02	2	3	1	1
M03	4	5*	1	1*
M04	5	6	2	2
M07	4	5	2	2
M11	4	5	2	2
M15	3	5	1	1
M17	5	4	2	2
M19	5	4	2	2
M21	4	5	1	2
M22	2	3	2	2
M23	3	5	2	1
M24	3	4	2	2
M26	5	4	2	2
M27	5	5	1	2

VIPP	KAP - MODULO 5 (D): DESNUTRICIÓN (8)	
	KNOWDLEDGE (6)	ATTITUDES (2)

	PRE TEST	POST TEST	PRE TEST	POST TEST
M05	4	4	1	2
M06	4	5	2	2
M08	2	4	1	2
M09	3	5	2	2
M10	3	5	0	2
M12	5	6	1	2
M13	4	5	2	2
M14	4	5	0	1
M16	1	3	2	2
M18	4	4	1	2
M20	4	5	2	2
M25	4	6	1	2

MAMÁS CONTROL	KAP - MODULO 10 (PH): HIGIENE PREPARAR ALIMENTOS (8)					
	KNOWDLEDGE (2)		ATTITUDES (5)		PRACTICES (1)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M01	2	2	5	4	1	1
M02	1	2	4	5	1	1
M03	2	2*	3	5*	1	1*
M04	2	2	5	5	1	1
M07	2	2	5	5	1	1
M11	1	2	5	5	1	1
M15	1	2	5	5	1	1
M17	1	1	5	5	1	1
M19	1	2	5	5	1	1
M21	1	1	5	5	1	1
M22	2	1	3	4	1	1
M23	2	2	4	5	1	1
M24	1	2	5	5	1	1
M26	1	2	4	5	1	1
M27	2	2	5	5	1	1

MAMÁS INTERVENCION	MODULO 10 (PH): HIGIENE PREPARAR ALIMENTOS (8)					
	KNOWDLEDGE (2)		ATTITUDES (5)		PRACTICES (1)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M05	2	2	5	5	1	1
M06	1	2	5	5	1	1
M08	1	2	4	5	1	1
M09	2	2	5	5	1	1
M10	1	1	4	5	1	1
M12	1	2	5	5	1	1
M13	2	2	5	5	1	1
M14	1	2	5	5	1	1
M16	2	2	5	5	1	1
M18	2	2	4	5	1	1
M20	1	2	5	5	1	1
M25	1	2	5	5	1	1

MAMÁS CONTROL	MODULO 11 (AS): AGUA Y SANEAMIENTO (15)					
	KNOWDLEDGE (1)		ATTITUDES (5)		PRACTICES (9)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M01	0	1	5	5	2	1
M02	0	1	4	4	6	6
M03	0	1*	3	5*	6	5*
M04	0	1	5	5	4	7
M07	0	1	5	5	5	6
M11	0	1	5	5	6	7
M15	0	1	5	5	4	4
M17	0	1	5	5	4	6
M19	0	1	5	5	4	4
M21	0	1	4	5	2	4
M22	0	1	5	5	4	4
M23	0	1	5	5	8	6
M24	0	1	5	5	5	5
M26	0	1	5	5	4	5
M27	0	1	5	5	2	4

MAMÁS INTERVENCION	MODULO 11 (AS): AGUA Y SANEAMIENTO (15)					
	KNOWDLEDGE (1)		ATTITUDES (5)		PRACTICES (9)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M05	0	1	5	5	7	8
M06	0	1	5	5	4	6
M08	0	1	5	5	4	6
M09	0	1	5	5	5	5
M10	0	1	5	5	4	5
M12	0	1	5	5	5	6
M13	0	1	5	5	4	6
M14	0	1	5	5	4	7
M16	0	1	5	5	8	8
M18	0	1	4	5	8	8
M20	0	1	5	5	6	6
M25	0	1	5	5	4	6

MAMÁS CONTROL	TOTAL GLOBAL (49)					
	KNOWDLEDGE (17)		ATTITUDES (22)		PRACTICES (13)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M01	10	11	19	19	4	4
M02	8	11	18	20	8	9
M03	8	12*	15	19*	9	8*
M04	11	14	20	20	7	10
M07	8	13	21	20	7	9
M11	9	13	21	21	8	10
M15	8	13	18	20	7	7
M17	9	9	21	21	7	9
M19	9	12	22	20	6	7
M21	8	11	19	20	5	7
M22	8	10	15	19	7	7
M23	9	13	18	19	10	9
M24	7	12	22	22	7	8
M26	9	11	21	22	7	8
M27	11	12	22	20	4	7

MAMÁS INTERVENCION	TOTAL GLOBAL (49)					
	KNOWDLEDGE (17)		ATTITUDES (22)		PRACTICES (13)	
	PRE TEST	POST TEST	PRE TEST	POST TEST	PRE TEST	POST TEST
M05	11	12	21	22	9	11
M06	7	12	20	21	6	9
M08	6	11	17	20	5	9
M09	8	13	21	21	8	8
M10	9	13	20	22	6	8
M12	10	14	20	22	7	9
M13	8	12	20	22	6	9
M14	11	14	21	21	6	10
M16	6	10	20	22	10	11
M18	8	11	17	22	10	11
M20	10	13	21	21	9	9
M25	10	14	22	22	6	9

KAP TOTAL					
MOTHER´S	VIPP		MOTHER´S	CONTROL	
	PRE	POST		PRE	POST
M05	40	45	M01	33	34
M06	33	42	M02	34	40
M08	27	40	M03	32	39*
M09	37	42	M04	38	44
M10	33	43	M07	36	42
M12	36	45	M11	38	44
M13	34	43	M15	33	40
M14	37	45	M17	37	39
M16	36	43	M19	37	39
M18	34	44	M21	31	38
M20	40	43	M22	30	36
M25	37	45	M23	38	41
			M24	36	42
			M26	37	41
			M27	36	39

PARENTING SCALE TOTAL					
MOTHER´S	**VIPP**		**MOTHER´S**	**CONTROL**	
	PRE	**POST**		**PRE**	**POST**
M05	4,2	3,8	M01	3,4	3,4
M06	3,8	2,9	M02	3,3	3,3
M08	3,6	2,2	M03	3,1	4,1*
M09	2,7	4,2	M04	4,1	4,2
M10	3,2	5,6	M07	2,9	4,0
M12	3,8	3,0	M11	2,8	3,1
M13	3,4	4,6	M15	3,6	3,1
M14	3,6	3,8	M17	3,4	3,2
M16	3,1	3,4	M19	3,9	3,9
M18	3,2	3,9	M21	3,5	3,6
M20	3,7	3,5	M22	3,6	4,2
M25	3,7	3,7	M23	4,2	4,1
			M24	4,1	4,4
			M26	4,6	3,6
			M27	3,3	3,7

PARENTING SCALE (LAXNESS)					
MOTHER´S	VIPP		MOTHER´S	CONTROL	
	PRE	POST		PRE	POST
M05	4,1	3,5	M01	3,4	3,4
M06	3,5	2,5	M02	4,5	4,5
M08	3,1	3,5	M03	1,6	3,5*
M09	3,5	3,2	M04	3,5	4,1
M10	3,2	3,7	M07	2,5	3,1
M12	3,7	3,0	M11	2,6	3,4
M13	3,0	3,5	M15	3,7	2,3
M14	3,5	3,7	M17	2,6	2,8
M16	2,3	2,6	M19	5,3	5,3
M18	2,8	5,3	M21	3,1	3,7
M20	4,0	3,1	M22	3,7	3,6
M25	3,4	4,5	M23	3,6	3,9
			M24	3,9	4,5
			M26	4,5	3,9
			M27	2,5	3,4

PARENTING SCALE (HYPERREACTIVITY)					
MOTHER´S	VIPP		MOTHER´S	CONTROL	
	PRE	POST		PRE	POST
M05	4,1	3,6	M01	3,2	3,0
M06	3,2	2,2	M02	1,9	1,9
M08	4,2	3,0	M03	4,1	4,7*
M09	2,8	2,6	M04	3,9	4,4
M10	2,1	2,3	M07	1,4	2,5
M12	2,5	1,6	M11	2,6	2,7
M13	3,7	2,9	M15	3,1	3,0
M14	2,8	2,6	M17	3,5	2,7
M16	2,9	2,3	M19	2,6	3,1
M18	2,6	3,6	M21	3,0	3,0
M20	2,6	2,3	M22	2,9	2,8
M25	4,5	4,3	M23	4,1	4,0
			M24	3,7	2,5
			M26	4,0	4,2
			M27	3,6	3,1

PARENTING SCALE (HOSTILITY)					
MOTHER´S	VIPP		MOTHER´S	CONTROL	
	PRE	POST		PRE	POST
M05	2,3	1,0	M01	1,7	1.7
M06	2,3	2.0	M02	1,3	1,0
M08	4,3	1,3	M03	1,7	1.7*
M09	2,7	1,3	M04	2,0	1.7
M10	2.0	3,0	M07	1,7	1,0
M12	1.7	1,3	M11	1,0	1.3
M13	2,3	2,3	M15	2.3	1.3
M14	2,3	1,7	M17	3,0	2,0
M16	1.7	1,7	M19	1,3	1,3
M18	3.0	3,7	M21	1,0	5,3
M20	2.0	3,7	M22	2,0	1,7
M25	2,0	2,0	M23	2,7	3,3
			M24	3,3	3,7
			M26	4,7	1,3
			M27	1,3	2,0