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Not just about food: An Attachment Perspective on Feeding

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Dedication

To my husband Li, who supported me with love during this long journey and to my children Livio and Elena, who show me everyday how wonderful and hard being a parent is.

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Not just about food: An Attachment Perspective on Feeding

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In infancy feeding is a central part of the mother-infant relationship and contribute greatly to the creation of an emotional bond between them. The purpose of this study was to investigate the quality of mother-infant interactions during feeding through an attachment perspective and to explore the long-term effects of these interactions on children's mental health. Three main hypotheses were proposed. The first hypothesis investigated if maternal attachment representations influence mothers' behaviors during feeding and thus the quality of feeding interactions. The second hypothesis concerned the long-term effects of feeding interactions on children's later development of internalizing and externalizing symptoms. The third hypothesis implied testing mediation models predicting how maternal attachment influences maternal feeding behaviors and how these behaviors impact children's risk of internalizing and externalizing problems. To test the first hypothesis, maternal attachment representations were assessed prenatally and mother-infants feeding interactions were evaluated when the infant was 8 months old. Data were collected for 116 mother-infant dyads. The second hypothesis was tested by gathering information on children's mental health symptoms at age 7. Data for 71

children were available. The third hypothesis was tested using the data previously collected to analyze hypothesis one and two.

Mothers' representations of the relationship with their own parents during childhood, assessed prior to the baby's birth, predicted the extent to which they would develop controlling and conflicted interaction patterns with their infants. Children who experienced controlling maternal behaviors during feeding at 8 months were at risk for developing symptoms of anxious depression at age 7. On the other hand, children who engaged in feeding interactions marked by conflicts with their mothers were more likely to display symptoms of ADHD and aggression at age 7.

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Chapter One: Introduction

Feeding is a central context for the development of the mother-infant relationship, as during feeding mother and infant learn to communicate their needs and to share emotions (Ammaniti et al. 2004). Studies investigating infant's attachment in infants suffering from feeding problems support the idea that feeding difficulties mirror disruptions in the overall parent-child relationship (Valenzuela, 1990; Ward, Kessler, & Altman, 1993; Ward, Lee, & Lipper, 2000). Attachment theory offers important insights not only to understand the emotional bond that the infant gradually develops towards his /her caregiver, but also to comprehend the parent's ability to sensitively respond to his/her children (van Ijzendoorn, 1995). Maternal sensitivity is fundamental during feeding, as infants start the meal in a state of distress due to hunger and it is the caregiver's task to be attuned to this distress in order to effectively carrying on the feeding. Attachment theory poses that a caregiver's ability to be responsive to her children is influenced by the representation she has internalized concerning the way relationships work, also referred to as the Internal Working Model (Bowlby, 1980). Research indicates that maternal insecure attachment is a risk factor contributing to children's feeding problems (Valenzuela, 1990; Ward, Kessler, & Altman, 1993; Ward, Lee, & Lipper, 2000).

In order to investigate the feeding behaviors that parents engage in, Chatoor and her research group created an observational scale to assess the quality of mother-infant interactions (Chatoor et al., 1997). The researchers found that specific dysfunctional

patterns distinguish interactions between mothers and their children with feeding disorders from mother-children interactions in a control group. Further, distinct mother-child exchanges were identified according to the type of feeding disorder considered. Dysfunctional parental behaviors during feeding have been also examined in regard to older children. The researchers' attention particularly focused on parental controlling practice (Faith, Scanlon, Birch, Francis & Sherry, 2004), as they seem to be especially detrimental for their effects on children's ability to regulate their eating behaviors. However, in order to fully understand the meaning and effect of feeding practices, it is important to consider other factors, such as the overall parent-child relationship, as shown by Hughes & Schewchuk, (2012), who found that the emotions towards their children that parents experience during feeding are related to the feeding practices they engage in. Maternal mental health, and especially depression also seems to impair the caregiver's ability to be sensitive during feeding (Field, 2010), in particular when depression occurs in a caregiver with an insecure attachment history (Santona et al. 2015).

The present study suggests employing an attachment framework to investigate the quality of parent-child interaction during feeding. Building on the idea that maternal attachment influences maternal sensitivity, this work examines how maternal attachment representations affect a mother's ability to be responsive during feeding, the type of behaviors she displays during feeding and the effects on her child.

In order to comprehend the outcomes of feeding practices, it is also important to consider that feeding is instrumental for infants' developing capacity to regulate their emotion and their impulses. Research indicates that difficulties in feeding result in

children's poor self-regulation and both internalizing and externalizing behavior problems (Hemmi, Wolke, & Schneider, 2011). However, it is not clear which type of feeding difficulties are related to these specific mental health outcomes in children. The present study explores different pathways, resulting in different mental health symptoms for children during childhood.

1. Feeding and attachment

Infant attachment and feeding difficulties

From the very beginning of an infant's life, feeding is a crucial component of the relationship between caregiver and infant because during feeding mother and infant learn to communicate their needs to each other and share important affective exchanges (Ammaniti et al. 2004). For this reason, feeding greatly contributes to the development of the emotional bond between mother and child. The connection between feeding and the development of the mother-child emotional bond has been underscored by studies investigating infants' feeding problems in relation to the quality of their attachment to their mothers (Valenzuela, 1990; Ward et al., 1993; Ward et al., 2000). Valenzuela (1990) compared the quality of mother-infant's attachment in two groups of 17-21-month-old children, 43 nutritionally healthy and 42 chronically underweight children. Infant attachment was assessed using the Strange Situation Procedure (Ainsworth, Blehar, Waters & Wall, 1978); their nutritional status was established by creating a growth chart for each child. Results indicated that 93% of children in the underweight group were classified as insecurely attached[1] in comparison to the nutritionally healthy group (50%). This difference was statistically significant. Further, 32% of the children in the underweight group were placed in the Avoidant/Ambivalent Category[2], as opposed to 5 % of the children in the nutritionally healthy group.

[1] For a detailed description of the Strange Situation coding categories see Weinfield, Sroufe, Egeland & Carlson (2008).

[2] The Ambivalent/Avoidant category was created as a way to classify children showing behaviors typical of disorganized attachment.

Similar results were obtained by other two studies comparing mother-infant attachment in an ethnically and economically diverse sample of 1-2- year-old children with and without Failure-to-Thrive (Valenzuela, 1990; Ward et al., 1993; 2000). Both studies assessed infants' attachment using the Strange Situation Procedure (Ainsworth et al., 1978) and employed clinical referrals to place children in the Failure-to-Thrive group. The first study compared 26 children with Failure-to-Thrive to 28 healthy children, whereas the second study compared 83 children with Failure-to-Thrive to 130 typically growing children. Both studies found that children belonging to the Failure-To-Thrive group were significantly more likely to form an insecure attachment (either ambivalent, avoidant or disorganized) with their mother.

The studies described above suggest that disruptions in the emotional bond between mother and infant often co-occur with feeding difficulties in the infant. In other words, feeding is so important for the mother-infant relationship that difficulties during feeding (resulting in poor physical growth of the child) mirror a disrupted attachment relationship between mothers and their infants.

Mothers' attachment security and their feeding practices

The centrality of feeding for the mother-infant relationship originates in the survival value of the act of feeding in itself. When infants (and later children) feel hungry they experience an acute feeling of distress and they signal their distress to their mothers. It is the mother's task to relieve this distress by initiating and carrying on the feeding. If the mother does it in an effective and sensitive way, the infants will come to develop trust that their caregiver is able to help them regulate their distress. Since eating is a

fundamental part of a young child's life, developing the awareness that the mother can sensitivity feed when needed is crucial to establishing a healthy relationship with his/her caregiver.

Given that feeding is so vital for the survival of the child, it could trigger deeply instinctual reactions from the mother. Those reactions may originate in the mother's attachment history and in the internalization of her own relationships with her primary caregivers. According to attachment theory, in fact, repeated interactions with a caregiver become organized into Internal Working Models (IWMs), which are representational systems reflecting the individual's ideas about the self, others and the way relationships work (Bowlby, 1980). When individuals have a secure attachment representation (i.e. secure IWM), they believe that they are worthy of love and that relationships should be a source of comfort. Mothers with a secure attachment have been found to be able to understand their children's distress cues and to respond in an effective way (van Ijzendoorn, 1995). In contrast, when individuals develop an insecure attachment, they internalize an IWM of the self as not worthy of love and a view that others cannot be relied on in situations of distress. Mothers with an insecure attachment struggle to respond to their children's signals of distress in a consistent and sensitive way. Individuals with a dismissing attachment representation expect to be rejected whenever they show distress because they view negative emotions as threatening for relationships and they learn not to rely on others as a source of comfort (Hesse, 2008). For this reason, dismissing mothers tend to ignore or minimize their children's pleas for comfort or

respond or focus on their instrumental needs (e.g., driving to events, buying things) without addressing their children's psychological needs.

Individuals with a preoccupied attachment representation feel anxious about relationships and unsure about the availability of others when they need them. This uncertainty about others' support leads to a "hyperactivation" of negative emotions, which often contributes to becoming overwhelmed by feelings of distress (Main & Hesse, 1990). Finally, when individuals experience traumatic events, such as loss or abuse, they may develop an unresolved attachment representation. This type of Internal Working Model originates from the presence of dissociated memories related to attachment in the individuals' mind. At times, when something triggers those memories, individuals appear to enter into a dissociated state and may act in a frightening (although unconscious) way towards their children (Jacobvitz, Leon & Hazen, 2006; Main & Hesse, 1990). The unresolved Internal Working Model is activated only when these memories are triggered; the rest of the time the person functions according to the Internal Working Model (either secure on insecure) he/she internalized before the development of dissociated memories related to trauma. In other words, some individuals may be unresolved and also have a secure Internal Working Model. These individuals are likely to respond sensitively to their infants most of the time, but may enter a disoriented state of mind and behave in a disconnected way when their traumatic memories are activated. Other individuals may be unresolved and also have an insecure (dismissing or preoccupied) Internal Working Model. These caregivers will likely be less sensitive to their infants' needs and show dissociative symptoms when their traumatic memories are triggered.

During feeding, the infants' expression of distress stemming from hunger may activate maternal Internal Working Models concerning the way individuals' are expected to respond to others' distress. These Internal Working Models, once activated, may affect mothers' ability to accurately perceive her infant's cues and be sensitive to them. For this reason, an attachment perspective may be instrumental in understanding maternal behaviors during feeding and their effects on the child. For example, mothers with a dismissing attachment may concentrate on the concrete act of feeding without sharing much positive affect with their infants.

Mothers with a preoccupied attachment may become overly anxious when facing their infants' distress due to their own inability to cope with negative feelings and they may be more likely to use intrusive feeding practices such as pressuring their infants to eat or limiting their freedom of movements feeding as a response to their own anxiety. An unresolved attachment representation may also be associated with the use of intrusive feeding strategies, as a way for caregivers to cope with the anxiety associated with dissociated memories. When these memories are activated within the feeding context, mothers could strive to regain a sense of control by using controlling feeding practices (such as restriction and pressure to eat) with their infants.

An attachment perspective could help explain why some caregivers have difficulty recognizing their child's signals during feeding (Chatoor et al. 1997) and balancing protective behaviors (such as making sure that the child eats enough and safely) with independence-promoting behaviors (such as letting the child regulate his/her food intake). These types of maternal behaviors, in turn, may be associated with difficult

behaviors displayed by the child during feeding and with child's inability to self-regulate while eating.

Few studies have explored maternal attachment as it relates to maternal feeding behavior. Wilkinson & Scherl (2006) investigated maternal attachment style in breastfeeding and formula-feeding mothers. They found that breastfeeding mothers were more likely to score higher on a security self-report scale than formula-feeding mothers. The authors suggest that attachment security in mothers can be viewed as a protective factor helping new mothers develop the skills they need to fulfill their new role as mothers. Thus, they are more able to face the difficulties associated with breastfeeding, to persist when problems arise and to seek support. In other words, the Internal Working Model of a sensitive caregiver helps these women cope with the anxiety connected to their new role and understand their infants' needs. For women with an insecure attachment, on the other hand, feeding difficulties may cause overwhelming apprehension and prevent them from finding solutions for the problems that arise.

Studies investigating maternal characteristics in samples of infants with disordered feeding indicated that maternal insecure or unresolved attachment is significantly more common in the mothers of these infants (Benoit, Zeanah, & Barton, 1989; Ward et al., 2001). More specifically, a study compared maternal attachment representations in two groups of mothers, 25 mothers whose infants had been hospitalized due to Failure-to-Thrive and 25 mothers whose infants had been hospitalized due to other reasons. Infants', ages 1 to 13 months, in the two groups were matched for ethnicity, socioeconomic status, maternal education, infant's sex and age. Maternal

attachment representations were assessed using the *Adult Attachment Interview* (AAI; George, Kaplan & Main, 1985). The AAI is a 1-hour semi-structured interview that explores the adults' recollection and appraisal of childhood experiences with their caregivers. The interview is audio-taped and verbatim transcripts are coded according to several 9- point scales evaluating the respondent probable experience with caregivers and his/her current representation of attachment (Main, Goldwyn, & Hesse, 2003). Scoring is based not on the content of the transcript, but on the organization of the feelings and thoughts concerning attachment experiences. Transcripts are classified into the following categories: secure, insecure-dismissing, insecure-preoccupied, insecure-unresolved with respect to trauma stemming from loss and/or abuse[3]. Mothers of infants with Failure-to-Thrive were found to be significantly less likely to have a secure representation of attachment in comparison to mothers of infants without feeding disorders.

Another study used the AAI to compare the attachment in mothers (*N*=23) whose children suffered from Failure-to-Thrive and mothers (*N*=36) of nutritionally healthy children. Data support and expand the results of the study described above (Ward et al., 2001). Children's age ranged from 11 to 32 months. In line with the previous study, mothers in the Failure-to-Thrive group were less likely to be classified as having a secure attachment. Further, they were more likely to be classified as unresolved with respect to loss and/or abuse. These data suggest that maternal attachment representations concerning past experiences with their own caregivers impact mothers' ability to provide consistent and sensitive care resulting in striking feeding difficulties in the infants. In this

[3] For a detailed description of the AAI see the "Method" section.

regard, trauma and losses related to attachment figures appear to be particularly strong risk factors affecting mothers' capacity to be attuned to the infants' needs. The results of this study assume particular significance because the study's participants came from diverse socioeconomic and ethnic background.

2. Maternal feeding behaviors and quality of feeding interactions

Chatoor and her colleagues examined maternal behaviors during feeding in order to assess the quality of feeding interactions between caregivers and their infants and toddlers (Chatoor et al. 1997). The researchers created an observational scale, which allowed evaluating the mother-infant interactions along five dimensions: *Dyadic Reciprocity* (i.e. frequency of positive exchanges between the mother and her infant), *Dyadic Conflict*, (including maternal and infant's behaviors indicating conflict within the dyad), *Talk and Distraction* (i.e. the amount of distracting talk and play occurring between the mother and her infant), *Struggle for Control* (presence and intensity of maternal controlling/intrusive behaviors towards her infant and the infant's reaction), and *Maternal Non-Contingency* (maternal inappropriate behaviors due to her inability to interpret the infant's cue and the infant's reactions to these behaviors). Evidence for the validity of the Feeding Scale has been gathered through a study that involved 74 infants and toddlers with feeding disorders and 50 non clinical comparison participants (Chatoor et al. 1997). Among the infants with feeding disorders, 8 infants were diagnosed as Feeding Disorders of Homeostasis (defined as difficulty establishing regular and calm feedings and inadequate infant's food intake), 24 infants as Feeding Disorders of Attachment (defined as lack of mother-infant engagement and growth failure in the infant) and 42 infants as Infantile Anorexia (defined as infant's food refusal and marked mother-infant conflicts over autonomy issues). All the infants were videotaped for 20 minutes during a feeding interaction with their mother. Results of the study indicated that feeding interactions between infants/toddlers with feeding disorders and their mothers

were qualitatively different from the interactions between mothers and infants/toddlers without feeding disorders. Overall significant differences between feeding-disordered and control groups for Dyadic Reciprocity subscale, Dyadic Conflict subscale, Struggle for Control and Maternal Non- Contingency subscale emerged. Mothers-infant/toddlers dyads within the feeding disordered group displayed less positive exchange and more conflict, maternal controlling and non-contingent behaviors in comparison to the control group (lower scores on the Dyadic Reciprocity subscale and higher scores on the Dyadic Conflict, Struggle for Control and Maternal Non-Contingency subscales). Within the group of children with feeding disorders, infants suffering from Infantile Anorexia displayed more positive exchanges with their mothers but also higher conflict than the other infants with feeding disorders. Mothers and infants with feeding disorders of homeostasis demonstrated the most difficulty with affective engagement reflected in the lowest score on the Dyadic Reciprocity subscale. This difficulty in dyadic engagement was combined with significant Maternal Non-Contingency during feeding. Overall the results of these studies indicated that difficulty within the mother-infant interactions during feeding can result from different types of mother-infant behaviors, and these behaviors may contribute to specific feeding and self-regulatory difficulties in the children.

In regard to older children, parental feeding behaviors have been traditionally investigated in connection to children's eating behavior and physical health (Dattilo et al. 2012). Among the myriad of feeding practices, parental controlling behaviors are the ones most often examined because of their possible detrimental effects on children's

eating behavior and nutrition. This research approach defines parental controlling practices as all the parental behaviors aimed at controlling the amount and type of food children eat and the moment when they eat. Parents may attempt to control their children's eating behavior in different ways. For instance, they can directly monitor what their child eats and they can encourage him/her to choose healthy food and avoid unhealthy food. This type of parental control can be viewed as *overt* control because it implies restricting the child's food intake in a way that can be perceived by the child (Ogden, Reynolds, & Smith, 2006). There are two kinds of overt control that have been studied: 1) restriction, which involves regulating the amount and type of food children eat, in particular preventing children from eating a certain quantity/type of food (Fisher & Birch, 1999); and 2) pressure to eat, which involves pushing the child to eat even when the child states that he/she is not hungry. (Faith et. al, 2004; Joyce, & Zimmer-Gembeck, 2009).

Parents can also control their children's eating behavior by making sure that their children only have access to healthy food (i.e. avoiding places that sell unhealthy food and buying healthy food only). This type of control has been called covert control, because children may not be aware of their parents' attempt to limit their intake of unhealthy food. Most studies on the effects of parents feeding practices on children have focused on overt control (restriction and pressure to eat) based on the belief that this form of control is more detrimental for children.

Research suggests that parental controlling behaviors during feeding may inhibit children's ability to learn how to regulate their eating behavior and eat in response to

their hunger cues. These studies typically rely on data gathered from parents' report of their feeding such as the Parental Feeding Style Questionnaire (PFSQ; Wardle et al., 2002) or the Child Feeding Questionnaire (CFQ; Birch et al., 2001). Both of these self-report instruments operationalize *restriction* as the degree to which parents openly limit their child's access to food (e.g. "If I did not guide or regulate my child's eating, she would eat too many junk foods"). This can sometimes involve monitoring or supervising their child's food intake. Pressure the child to eat even though the child states that he/she is no longer hungry and parent's concern or preoccupation about the child's weight are also evaluated as part of these self-reports. Birch and her research team investigated the effects of maternal use of restrictive feeding practices on their daughters' eating behavior in the absence of hunger in a longitudinal study following 140 girls over time, at ages 5, 7 and 9 (Birch, Davison & Fisher, 2003). The results of this study show that girls exposed to higher levels of maternal food restriction at age 5 were more likely to eat in the absence of hunger at ages 7 and 9. Overall, this study indicates that parental restrictive practices contribute to girls' tendency to eat in absence of hunger and therefore restrictive practices constitute a risk factor for children's learning to regulate their eating behavior.

Factors affecting parental use of feeding practices

Feeding practices within the context of parent-child relationship

Some authors suggest that in order to understand the meaning and the effect of feeding practices it is important to examine these practices within the context of more general caregiving patterns. Some of the researchers sharing this perspective view the parent-child relationship as a context shaping the significance of feeding practices (Hughes et

al., 2011). In an effort to understand parental feeding practices within the wider framework of the overall parent-child relationship, researchers have explored how emotional components (such as parents' emotions during feeding) influence parental feeding behaviors and children's food intake. Hughes and colleagues explored the role of parents' positive and negative emotions during meals in a sample of 639 low-income families (Hughes & Schewchuk, 2012). Parents' feeding strategies, positive and negative emotions during the meal, and children's problems and behaviors were assessed using a self-report questionnaire administered to parents. Higher levels of positive emotion were correlated to parents' perceptions that their feeding strategies were more effective and their children's feeding problems were less serious. Further, child's tendency to express negative emotions was related to parents' negative emotions and parents' perceived feeding problems in their children.

Maternal Mental Health

Mothers' mental health might also influence their feeding practices. Mothers suffering from depression may be less attuned to their infants' cues and may be unable to differentiate their own emotions and those of their children (Koren-Karie, Oppenheim, Smadar, Sher & Etzion-Carasso, 2002; Quitmann, Kriston, Romer & Ramsauer, 2011; Beebe & Lachmann, 2014). This attitude may affect their caregiving skills and behaviors (Agostini, Neri, Dellabartola, Biasini & Monti, 2014; De Campora, Giromini, Larciprete, Li Volsi & Zavattini, 2014). Many studies indicated that maternal depression might impact the quality of mother-child interactions (Field, 2010). Tronick (2005) suggested that since depressed mothers are unable to understand their children's affective

communications, they fail to be attuned to them and thus negative affects become pervasive within the dyad. The child will therefore interact negatively with the mother causing a mutual amplification of negative emotions. According to this model, depressed mothers tend to be less capable of communicating and sharing positive emotions, and more vulnerable to the distress of their infants (see also Goodman et al., 2011; Beebe & Lachmann, 2014). Particularly dysfunctional behaviors seem to emerge in the interactions between mothers with depression and their children during feeding. Chatoor and colleagues found that infants whose mothers are depressed are often unable to regulate their feeding rhythm, and tend to reject feeding (Chatoor et al., 2000). When these problems occur, the dyads fails to establish the essential shared rhythm during feeding, and the children do not learn to regulate their increasing needs of autonomy and agency. The caregivers, in these situations, may behave in extreme controlling ways and may scold and criticize their infants. Children may thus experience a conflict between their need of autonomy and their mother's rigidness (Chatoor et al., 2004; Haycraft and Blissett, 2008; Ammaniti et al., 2011).

Santona and her research group (Santona et al., 2015) explored the quality of feeding interactions between mothers and their children aged 12-36 months investigating how maternal depression and attachment history influences maternal behaviors during feeding. The authors employed the Italian version of Chatoor's observational scale (Chatoor et al., 1997; Lucarelli et al. 2002) to assess the feeding interactions between 30 mothers suffering from major depression and their children and compare them with a control group. Data revealed a significant association between insecure attachment and

depression. Further, mothers who were depressed engaged in several dysfunctional interactions with their children during feeding and showed hostile and controlling behaviors. They displayed lack of attunement to their children and negative emotional involvement, characterized by emotional withdrawn, sadness and anger.

Another study (Haycraft, Farrow & Blissett, J. 2013) supported the relation between maternal psychopathology and maternal dysfunctional behaviors, in particular controlling practices, during feeding. Haycraft and colleagues investigated maternal feeding practices and symptoms of psychopathology in a non-clinical sample of 214 mothers of children aged 18-59 months. The participants completed self-report measures of feeding (restriction and pressure to eat), and symptoms of bulimia, depression, hostility and psychoticism. Mothers who suffered from symptoms of bulimia, depression, hostility and psychoticism reported a higher use of controlling practices (either restriction or pressure to eat) with their daughters. The researchers underscored that the child's gender may be an important factor to consider when examining parental feeding practices. According to them, Western culture poses more emphasis on girls' appearance than on boys' and this may make mothers more concerned about girls' weight and more prone to using controlling feeding strategies.

The studies described above suggest that parents' characteristics, such as psychopathological symptoms and attachment history, may influence parental feeding practices. It appears that the gender of the child may also interact with parental psychopathology and determine the effect that those practices will have on the children.

3. Limitations of the studies on feeding

The studies presented in the previous sections investigate the etiology of feeding disorders and underscore the centrality of feeding as a context for the development of mother-infant relationship. Some authors pointed out the prevalence of infants' insecure attachment in clinical samples of infants with feeding disorders, suggesting that feeding difficulties may mirror a disruption in the parent-child relationship (Ward et al., 2000). Other researchers explored the quality of mother-infant interactions during feeding and identified controlling and hostile maternal behaviors as practices associated to infants' feeding problems and older children's lack of self-regulatory skills while eating (Birch et al. 2003; Chatoor et al. 1997). However, in order to fully understand the meaning and the effect of parental feeding practices it is important to shed light on the factors leading a parent to employ certain feeding practices. Hughes and colleagues (Hughes & Schewchuk, 2012) found that the emotional climate of the parent-child relationship and in particular the positive and negative emotions parents experience during feeding affect parental behaviors and the effects on the children. Comprehending feeding practices within the contest of the overall parent-child relationship also implies examining the elements leading the parent to establish a certain relationship with his/her child and secondarily to employ specific feeding practices. Exploring these factors may be instrumental in order to understand the mechanism through which the effect of feeding practices takes place. From this perspective, maternal characteristics, such as psychopathology and in particular depression, as well as attachment history may play a fundamental role. Attachment researchers gathered an impressive amount of evidence

showing that maternal secure attachment is associated with greater sensitivity to children's physical and emotional needs (van Ijzendoorn, 1995). During feeding mothers need to be particularly attuned to their infants; therefore maternal attachment status may likely influence maternal feeding practices. Although maternal and infants' attachment has been investigated in relation to children's feeding difficulties (Benoit et al. 1989; Ward et al. 2001; Wilkinson & Scherl, 2006) research did not clarify how maternal attachment affects mothers' feeding practices. Maternal psychopathology, and in particular depression, also seems to affect maternal ability to be responsive during feeding (Agostini et al. 2014) and the study by Santona and colleagues (2015) highlights that depression often co-occur with insecure attachment in mothers who display dysfunctional patterns during feeding interactions with their children. To our knowledge, no study examined how specific profiles of maternal insecure attachment may uniquely contribute to different dysfunctional interactions during feeding. Delineating this mechanism may be instrumental in understanding the factors driving parental feeding behaviors and the reasons why many interventions created to change parental feeding practices do not work on the long-term. An attachment perspective suggests that interventions attempting to modify parents' specific feeding practices without addressing parental attachment issues will not be effective in the long-term because they do not address the anxiety that feeding evokes in parents.

Finally, the studies previously described examined parental feeding practices employed samples with a wide age range (from infants to preschool children). It may be particularly informative to specifically investigate the time when parental feeding

practices start to take place to identify their effect on children. Exploring feeding exchanges during the transition to a solid food based diet (around 8 months) may be extremely relevant, because this is the time when feeding practices are established and at the same time the caregiver-relationship has started to take shape (Sroufe, 1996). To our knowledge, the studies that explored feeding practices during the first year of life did not specifically focus on this transition.

4. Feeding and children's mental health

Feeding and the development of self-regulatory skills.

Feeding interactions play an important part not only because they greatly contribute to the bond between infant and caregiver, but also because they contribute to the infant's acquisition of self-regulation skills (Hemmi et al., 2011). Eating and being fed gives infants the opportunity to become aware of their physical needs and of the distress that follows when their needs are activated (i.e. when the infant is hungry). At the same time, during feeding, infants come to recognize when their physical needs have been met (when they are full) so that they can stop eating. This process represents one of the most basic forms of self-regulation and can be jeopardized when the infant interacts with a caregiver who is not sensitive to his/her cues during feeding.

In line with the view of feeding as an important context for the infant's development of self-regulatory skills, infants' feeding difficulties have been studied together with other regulatory problems (DeGangi, DiPietro, Greenspan & Porges, 1991). These authors pointed out that infants with feeding problems often display difficulties in other areas of self-regulation, such as crying and sleeping. DeGangi and his colleagues (1991) suggested that fussiness, irritability, difficulties with self-soothing, hyper-arousal, sleep and feeding can be viewed as manifestations of an underlying "regulatory disorder". More specifically, the Diagnostic Classification 0-3, a classification system that summarizes disorders of infancy and early childhood, defines a "regulatory disorder" as a disorder where there is " a clear constitutionally- or maturationally- based sensory, motor, processing, organizational or integration difficulty which is associated with the

observed maladaptive behavioral and/or emotional patterns" (ZERO TO THREE/NCCP, 1994, p.16).

Factors affecting the development of self-regulatory skills

Infant temperament

Infants' self-regulatory difficulties have been connected to the infant's temperamental predispositions (Bates, 1987; Rothbart & Posner, 1986). Temperament can be defined as infants' individual differences in the emotional, motor and attentional responsiveness to changes in the internal (for instance becoming cold/tired/hungry) or external environment (for instance meeting a stranger) (Rothbart, 2007). More specifically, infants' temperament affects the way they react to these changes, so that some infants appear more easily distressed and react more negatively. These individual differences are believed to have a biological basis and are relatively stable, but can be modified by development and by environmental factors (Rothbart, Ahadi & Evans, 2000). Temperament greatly influences infants' self-regulatory abilities because it affects the type and the intensity of the reaction that infants display to stimuli. Infants who are more sensitive may react in a more negative way to changes and have more difficulties regulating their emotions and internal states.

Relationship with caregivers

Infants' relationship with their caregivers also appears to play an important role in the association between temperament and self-regulation abilities. A recent study explored relations among infants' proneness to express negative emotions at 7 months, quality of parents-infants interactions at 15 months and children's ability to control

themselves and tolerate frustration at 25 months (Kim & Kochanska, 2012). All of these variables were assessed through observation of either structured or unstructured activities taking place either in the children's home or in the research lab. Infants who were more prone to experience negative emotions (such as anger, fussiness, distress) were less able to self-regulate when they were in unresponsive relationships with their caregivers, in comparison to highly negative infants who were in responsive relationships with their caregivers. This study suggests that the relationship with a sensitive caregiver may buffer the effect of infants' temperament as a risk factor preventing the development of adequate self-regulatory skills.

Other researchers emphasize the importance of the infant-caregiver relationship for the development of infants' self-regulatory abilities suggesting that infants acquire self-regulatory skills within the context of supportive intuitive parenting (Papousek & Hofacker, 1995). Parents help their infants develop self-regulatory skills in various contexts (such as feeding and sleeping) by intuitively perceiving their infants' cues of distress and by modifying their behaviors and the environment to support the infant's self-soothing. This parental support not only counterweights the infant's maturational limits, but also foster his/her acquisition of self-regulatory skills.

Feeding difficulties as a risk factor for the development of mental health symptoms

Given the importance of feeding for the development of self-regulation abilities, it could be expected that children's problems in regulating eating behavior may mirror their concurrent overall poor self-regulation. Support for this hypothesis derives from a cross-

sectional study with a sample of sixty-three 3 to 9 year-old children (Tan & Holub, 2011). Parents completed self-report measures assessing their children's ability to self-regulate during feeding (i.e. independently avoiding under- or over-eating) and their children's ability to control or initiate appropriate behavior when instructed to do so. Results indicate that children's ability to self-regulate during feeding was related to the child's ability to control their behavior. In other words, children's global self-regulation skills (such as tolerance to frustration) were associated to children's ability to regulate their food intake and to a decreased probability to be overweight.

This study identified an association between children's overall self-regulation skills and the ability to self-regulate in the eating/feeding context. From this perspective, early feeding difficulties could be viewed as a risk factor for the infant's difficulty with overall self-regulatory skills. Since poor self-regulation in children has been associated to later mental health problems (Carlson, Jacobvitz & Sroufe, 1995; Duggal, Carlson, Sroufe & Egeland, 2001), early feeding difficulties may be considered a risk factor for the development of behavioral and emotional problems later in childhood as a result of children's under-developed self-regulatory skills. Support for this hypothesis comes from a longitudinal study following 64 infants, ages 1 to 4 months, which investigated infants' regulatory difficulties (persistent crying, feeding and sleeping difficulties) using a 7-day parent journal (Wolke, Rizzo, & Woods, 2002). When children were between 8 and 10 years old, emotional and behavioral symptoms were reported by parents, teachers and the children themselves. Infants who displayed persistent crying and associated sleeping or feeding difficulties were more likely to exhibit pervasive hyperactivity problems (child,

parent and teacher reported) during childhood. In line with these results, a recent meta-analysis found that infants with feeding difficulties were more likely to display general behavioral problems (either internalizing or externalizing) during childhood (Hemmi et al., 2011). A limitation of this study is that the specific role played by feeding difficulties for the development of later symptoms cannot be identified because feeding difficulties were explored together with other regulatory difficulties, such as persistent crying and sleeping problems.

A study examining only feeding difficulties in infancy found a relationship between early feeding difficulties and children's later mental health. Ammaniti and his colleagues (2012) conducted a longitudinal study that explored the long-term outcomes of Infantile Anorexia. Mothers of 72 children with Infantile Anorexia and of 70 children from a non-clinical sample rated their children's emotional and behavioral symptoms at ages two, five and eight. Children with Infantile Anorexia were more likely to develop internalizing symptoms (such as anxiety and depression) and externalizing symptoms (such as rule-braking behaviors) over time. It is not clear, however, why some children developed internalizing symptoms whereas others developed externalizing symptoms. Further, given the specific nature of the feeding disorder examined, it is not possible to generalize these results to infants with other type of feeding difficulties.

Multiple pathways may lead to the development of mental health problems in childhood. Parental behaviors greatly impact the quality of feeding interactions, therefore it is possible that different types of parental behaviors may be associated with different types of infant's difficulties during feeding, thus leading to different emotional and

behavioral problems in childhood. For example, research has shown that maternal controlling behaviors during infancy tend to provoke disengagement and lead to a depressive state in the infant (Trad, 1994). Similar associations between parental overcontrol and children's internalizing problems have been detected in adolescence (Kobak, Sudler & Gamble, 1991). Adolescents whose parents were observed to be controlling with them were also more likely to display symptoms of anxiety and depression. In line with these results, the present study hypothesizes that maternal controlling feeding practices during infancy may be a risk factor for the development of internalizing problems in childhood.

A different pathway may lead children to develop externalizing problems. A longitudinal study investigated the quality of mater-infant interactions using an observation procedure when 50 infants were 8-11 weeks of age (Mäntymaa, Puura, Luoma, Salmelin, & Tamminen, 2004). When the children were 2 years old, their mothers completed the Child Behavior Checklist/2-3 (CBCL, Achenbach, 1992). Results indicated that mothers who were intrusive and hostile in their interaction with their infants were more likely to rate their toddlers higher on the externalizing and total problems subscales of the CBCL. The authors suggest that children of mothers who are hostile and intrusive may develop an avoidant strategy in order to protect themselves from their mothers' behaviors. If this strategy is not effective, they may become easily angry and frustrated, displaying externalizing symptoms. The present study proposes that a similar mechanism may be at work during feeding interactions. Mothers who behave in a hostile way during the feeding (e.g., making negative comments about the infant) may

create conflict and evoke hostile and aggressive behavior in the infant (e.g., arching, pushing away food). This hostile exchange may elevate the risk for the infant of developing externalizing symptoms later in childhood.

5. Purpose of the study

The purpose of the present study was to investigate the quality of mother-infant interactions through an attachment perspective and to examine the long-term effects of these interactions on children's mental health. With this goal, the study aimed at exploring how maternal attachment representations impacted observed mothers' behaviors during feeding interactions with their 8-month-old infants. Further, the quality of feeding interactions was examined in relation to children's emotional and behavioral symptoms at age 7. Finally, the study investigated different pathways that could explain why some feeding difficulties may result in children's displaying specific internalizing or externalizing symptoms.

6. Research Questions

RQ1: Do mothers' attachment representations influence their feeding practices with their infants?

Hypothesis 1a: Mothers with a secure attachment representation are more likely to engage in feeding interactions with their infants marked by greater attunement and lower levels of conflict and control in comparison to mothers with an insecure attachment.

Hypothesis 1b: Mothers with a preoccupied attachment are more likely to display feeding interactions with their infants marked by lower levels of attunement and greater levels of conflict and control in comparison to the other mothers.

Hypothesis 1c: Mothers with an unresolved/secure attachment engage in exchanges with their infants that show higher levels of attunements and lower levels of control and conflict in comparison to mothers with an unresolved/insecure attachment.

Rationale:

Research has shown that adult attachment representations affect individuals' ability to respond to their children's needs in a sensitive way (van Ijzendoorn, 1995). Feeding is a very important moment in the mother-infant relationship and as such may elicit anxiety in the caregiver due to the expression of their infant's distress stemming from hunger. Maternal attachment may influence a mother's ability to perceive her infant's needs and to cope with her own anxiety in order to be able to be attuned to her infant's cues. Different insecure attachment representations could influence maternal behaviors during feeding in different ways specifically linked to the type of Internal Working Model mothers internalized (Hesse, 2008). For example, a secure attachment representation may help mothers feel confident in their ability to soothe their infant's distress during feeding, thus making feeding a moment when mother and infant share positive affect. Insecure mothers, on the other hand, may have more difficulty in dealing with their infant's expression of negative feelings and may have problems accurately perceiving their infants' cues. A preoccupied and/or unresolved attachment may be a risk factor leading to the use of controlling feeding practices (such as restriction and pressure

to eat) during the feeding and resulting in mother and infant struggling to control the feeding and having conflict. Mothers with a preoccupied attachment may employ controlling practices as a way to feel in control of the interaction with their infant and to manage their own negative feelings, whereas mothers with an unresolved attachment may use controlling practices as a response to the anxiety arising from the activation of attachment-related traumatic memories.

Within the group of mothers with an unresolved attachment, mothers with unresolved/secure attachment may appear sensitive to their infant's cues for most of the feeding interaction, but may behave in a disoriented way when traumatic memories are activated (Main & Hesse, 1990). Mothers' secure attachment classification may partially buffer the effect of the activation of traumatic memories and mothers with an unresolved/secure attachment may obtain display higher levels of attunement and lower levels of control and conflict in comparison to mothers with an unresolved/insecure attachment.

RQ2: Are feeding difficulties at 8 months associated with behavioral and emotional symptoms at age 7?

Hypothesis 2a: Infants who were part of a mother-infant dyad showing higher levels of controlling behaviors during feeding are more likely to display internalizing symptoms (anxious depression, withdrawn depression and somatic complaints) at age 7.

Hypothesis 2b: Infants who were part of a mother-infant dyad exhibiting greater levels of conflict are more likely to display externalizing symptoms (ADHD and aggression) at age 7.

Rationale:

Research has shown that the way caregivers interact with their children can be a risk factor for children's later development of mental health symptoms. In particular, caregivers' controlling and hostile behaviors appear to be associated to negative outcomes in children (Kobak et al., 1991; Mäntymaa et al., 2004; Trad, 1994). These parental behaviors already emerge during infancy. For example, infants of mothers who were observed to be controlling tended to display disengagement and withdrawal (Trad, 1994). Given the centrality of feeding for the mother-infant relationship, it is likely that controlling maternal behaviors during feeding may affect infant's development of self-regulation skills and be a risk factor for the development of internalizing symptoms during childhood.

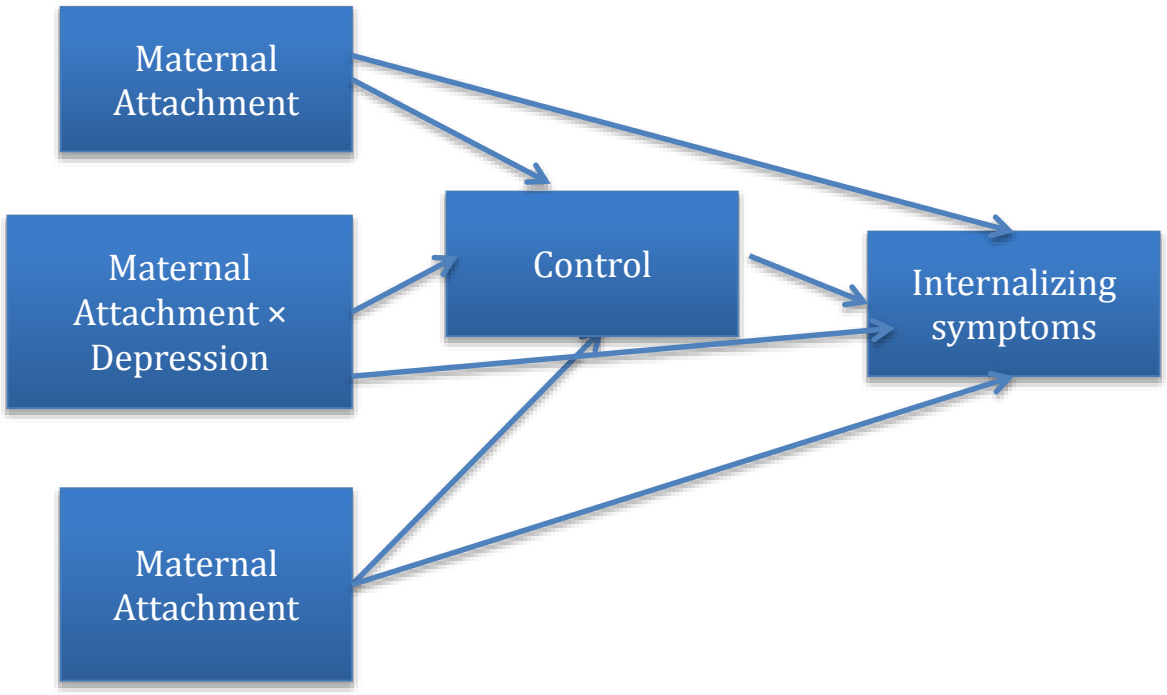
Maternal hostile behaviors in infancy have been associated to toddlers' externalizing problems at age 2 (Mäntymaa et al., 2004). It is possible that when mothers behave in an aggressive way towards their infants (either verbally or physically), they elicit similar reactions in their infants and undermine their infant's ability to self-regulate their feelings. Therefore, maternal hostility during feeding in infancy may be a long-term risk factor for the development of externalizing symptoms in children. Since research has shown evidence of the emergence of gender differences concerning the nature and course

of internalizing and externalizing symptoms (Dekker et al., 2007; Prinzie, Onghena & Hellinckx, 2006), gender was included in testing hypotheses 2a and 2b.

RQ3: Does the quality of feeding interactions mediate the influence of maternal attachment on children's behavioral and emotional symptoms at age 7?

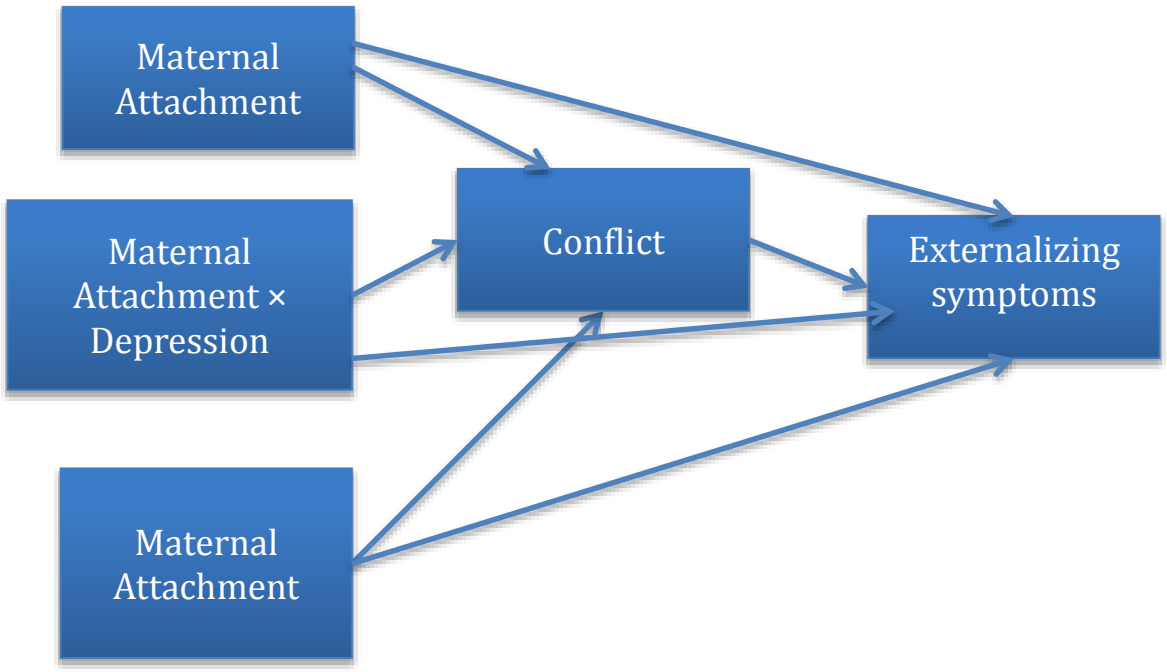
Hypothesis 3a: Mothers who have an insecure attachment (preoccupied or dismissing) and/or are depressed are more likely to experience feeding interactions with their infants marked by control. As a result, their children will be more likely to display internalizing symptoms (anxious depression, withdrawn depression and somatic complaints) at age 7. Child's gender and temperament are controlled for in the model. The figure below illustrates hypothesis 3a.

Figure 1. Model predicting the development of internalizing symptoms



Hypothesis 3b: Mothers who have an insecure attachment (preoccupied or dismissing) and/or are depressed are more likely to experience feeding interactions marked by conflict with their infants. As a result, children will be more likely to display externalizing symptoms (ADHD and aggression) at age 7. Child's gender and temperament are controlled for in the model. The figure below illustrates hypothesis 3b.

Figure 2. Model predicting externalizing symptoms



Rationale:

Feeding difficulties in infancy have been associated to different types of mental health outcomes in children (Wolke et al., 2012; Hemmi et al., 2011; Ammaniti et al., 2012). Some parental behaviors during feeding interactions, in particular controlling and hostile behaviors may influence the quality of the feeding interactions and the type of feeding difficulties observed in infants (Chatoor et al., 1997). Further, literature suggests that maternal attachment representations affect maternal ability to be sensitive to their infants' cues and to respond to their distress in an effective way (van Ijzeendoorn, 1995). When infants are hungry, they are in a state of distress and need their caregivers' support in order to self-regulate, therefore feeding interactions are likely to activate maternal

attachment representations. These representations, in turn, impact maternal ability to respond to their infants emotional and physical needs during feeding. Maternal psychopathology, in particular depression, has been identified as another parental factor influencing parental behavior during feeding and more specifically the use of controlling feeding practices (Haycraft et al., 2013).

Different pathways may lead from feeding difficulties to the development of mental health symptoms in children. Given the impact of maternal representations on maternal behaviors during feeding, the origins of feeding difficulties are hypothesized to be influenced by maternal attachment representations. Different feeding difficulties may in turn lead to the development of different mental health symptoms in children. Since maternal depression has been found to be another factor affecting maternal behavior during feeding (Haycraft et al., 2013, Santona et al., 2015) it was included as part of both pathways as a single variable and in interaction with maternal attachment. Child's gender was also included in the models.

Chapter Two: Method

1. Participants

The study started with 126 families but included 116 mother-infants dyads at the eight months visit, when the feeding was assessed. Mothers were expecting their first child and their age ranged between 16 and 41 years (*M*=29.5). Eighty-four per cent of mothers identified as Caucasian, 8% as Hispanic, 2% as African American and 6% as either Native American, Middle Eastern or Indian. Eighty-one per cent of the couples had a combined income of $30,000 or more per year and 49% had a combined income of $45,000 or more per year. Six per cent of the sample encompassed families whose combined income was less than 15,000 per year. Eighty-six per cent of the mothers had obtained at least some college education.

2. Procedure

Data were collected as part of a larger longitudinal study following 126 families over time. The families took part in 3 phases of data collection. Participants were recruited when the women were in their third trimester of pregnancy and were followed until their child was 7 year-old. Couples were recruited from birthing classes and in reward for their participation they received three $50 saving bonds for their child, a t-shirt, a tape of lullabies, a bimonthly newsletter and a videotape of their interactions with their baby. The data presented in this study were gathered when mothers were in their third trimester of pregnancy (T1), when infants were 8 months old (T2) and when children were 7 years old (T3). At T1, couples expecting their first child, living together and speaking English as their first language participated to the study. During the first session, mothers were

administered the *Adult Attachment Interview* (AAI, George, Kaplan and Main, 1985). Infants' temperament was assessed by both mothers and fathers when infants were 6 weeks old using the *Infant Behavior Questionnaire* (Rothbart, 1981). At T2, mothers were videotaped while feeding their infants for about 10/15 minutes and they were administered the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Due to attrition and technical problems, at the eight months visit data for 116 families were available, therefore the analyses concerning maternal attachment representations and feeding include 116 mother-infants dyads. When children were 7 years old, the Child Behavior Checklist (Achenbach, 1991) was administered to the children's teachers who had known them for at least 3 months. Researchers were able to collect teachers' ratings for 71 children; therefore the sample used for the analyses including data from this last phase of the study was comprised of 71 families.

3. Measures

Adult Attachment Interview (AAI; Main, Goldwyn and Hesse, 2003). The AAI is a semi-structured interview assessing adults' representations of attachment. The interviewer invites the participant to choose five adjectives to define the relationship with their parents during childhood and episodes that can support these adjectives. The participants are then asked to discuss memories of being upset, ill and hurt, and of separations, losses and abuse. Scoring is based on the coder's assessment of the participant's childhood experiences with parents, the discourse style, and the participant's ability to offer a coherent and believable account of his/her experiences. The interview is transcribed and the coding is based on two sets of scales ranging from 1 to 9: the

probable experiences of life scales and the current state of mind scales. Among the probable experiences of life scales, four assess unloving events, whereas one evaluates loving experiences with parents. The probable experience of life scales are: *Rejection, Neglect, Role reversal, Pressure to achieve* and *Love*. The current state of mind scales evaluate the speaker's current state of mind in respect to attachment. Of these scales, six measure different aspects of incoherent narrative concerning attachment and the seventh scale is an overall *Coherence of Transcript* scale. The six incoherent scales are: *Idealization, Lack of recall, Derogation, Fear of loss, Involving Anger* and *Passivity*. The score on the overall *Coherence of Transcript* scale takes into account the scores the speaker obtained on the other six scales in addition to features of coherent narrative present in the text.

Furthermore, the coder assigns a score on the *Coherence of Mind* scale, which also ranges from 1 to 9. This scale not only considers the coherence of the speaker's discourse, but it also evaluates the type of beliefs system the speaker holds in comparison to the coder's own assessment of reality. In low-risk samples, the *Coherence of Transcript* and *Coherence of Mind* scales are highly correlated. When differing from the coherence of transcript's score, the coherence of mind score reflects marked incoherence or unusual beliefs emerging in the context of the discussion of very traumatic experiences for the speaker (such as loss or abuse). For all the scales, 5 is the cut-off score. Transcripts obtaining a score lower than 5 on the incoherent scales of mind and higher than 5 on the coherence scales are classified as secure. Coherence score is considered the best proxy to an individual's security of attachment and speaker with a higher score on

the coherence scale are evaluated as having a more integrated (and secure) model of attachment.

Finally, the coder uses the scale scores to determine the participant's major classification as either secure (F; free-autonomous) or one of two insecure categories (Ds; dismissing or P; preoccupied). In addition to one of these three classifications, the participant may also be classified "unresolved" in respect to loss or trauma. Participants who receive an unresolved classification also receive a secondary classification, which can be secure or insecure (either dismissing or preoccupied). As stated above, the overall coherence of the interview is the most important scale for determining whether a participant is classified as secure or not in his/her state of mind in respect to attachment. The AAI has been used in multiple studies in the United States and in many other countries all over the world and demonstrated very good test-retest and predictive reliability (Hesse, 2008).

Feeding scale (Chatoor et al., 1997). The Feeding scale is an observational scale rated on a 20 minutes feeding interaction between mothers and their infants. The scale is comprised of 46 items, which assess mother and infant behaviors along 4 points (from 0-None-Behavior does not occur to 4-Very Much-Behavior occurs extremely often). Chatoor used the 46 items to create 5 subscales, which derive their name from the overall theme of the specific items. The first subscale is called *Dyadic Reciprocity* and assesses the frequency of positive exchanges between the mother and her infant. The second subscale is called *Dyadic Conflict*, which identifies behaviors indicating conflict within the dyad, such as food refusal and negative affect of the infant and negative comments

and affectivity of the mother. The third scale is *Talk and Distraction* and assesses the amount of distracting talk and play occurring between the mother and her infant. The *Struggle for Control* subscale rates the presence and intensity of maternal controlling behaviors towards her infant (such as forcing food into the infant's mouth) and the infant's reaction to those behaviors (such as spitting out food). The last subscale, *Maternal Non-Contingency* identifies maternal inappropriate behaviors due to her inability to interpret the infant's cue (for instance interrupting feeding causing distress to the infant) and the infant's response to those behaviors (such as crying because feeding has been interrupted).

Evidence for the validity of the Feeding Scale has been gathered through a study that involved 74 infants and toddlers with feeding disorders and 50 non clinical comparison participants (Chatoor et al. 1997). Among the infants with feeding disorders, 8 infants were diagnosed as Feeding Disorders of Homeostasis, 24 infants as Feeding Disorders of Attachment and 42 infants as Infantile Anorexia. All the infants were videotaped for 20 minutes during a feeding interaction with their mother. Two observers who were blind to the diagnostic status of the child coded the interactions independently and with an inter-rater agreement of 90%. Construct validity was examined through factor analysis, which identified a five-factors solution that led to the creation of the five subscales. Discriminant function analysis was employed to evaluate the ability of the Feeding Scale to distinguish between infants/toddlers with and without feeding disorders. Correct group classification ranged from 69% to 82% according to the subscale considered. The Talk and Distraction subscale was the scale that appeared to have less

discriminant power between the clinical and not clinical group of children and it was not clear if this dimension was meaningful. For this reason, this dimension was not used in the current study.

Chatoor and colleagues also assessed test-retest reliability of the feeding scale through a study including 40 mother-infants dyads that were videotaped during feeding for 20 minutes twice within a two-week period. (Chatoor et al. 1997). Paired *t*-tests were conducted in order to evaluate changes in the means of the five subscales between the first and the second observation. There was no statistically significant change in the means of the *Dyadic Conflict, Talk and Distraction, Struggle for Control* and *Maternal Non-Contigency* subscales. The Dyadic Reciprocity subscale displayed a one-point significant difference between the first and the second observation, which suggests that over the two-week period one of the 16 items comprising the scale changed.

For the present study, a factor analysis was conducted to confirm that the items hang together on the Dyadic Reciprocity, Conflict, Struggle for Control and Maternal Non-Contingency subscales.

Child Behavior Checklist (Achenbach, 1991). The Child Behavior Checklist evaluates symptoms of anxiety, depression, somatic complaint, ADHD and aggression in children. Teachers completed the teacher form of this scale (TRF, Achenbach, 1991). This questionnaire evaluates children behavioral and emotional symptoms from ages 4 to 18 and is comprised of 113 statements. For each statement the respondent can choose among three possible options (0= *not true,* 1= *somewhat or sometimes true,* and 2= *very true* or *often true*). Scores on the different items are then added to give an overall score

for the following symptoms subscales: Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thoughts Problems, Attention Problems, Rule Breaking Behavior, Aggressive Behavior. Other scales assess children's competence in the following areas: academic activities, social competence, school behavior and overall competence. Coding of the scale also yield a score on the following DSM-oriented scales: Affective Problems, Anxiety Problems, Somatic Problems, Attention Deficit/Hyperactivity Problems, Oppositional Defiant Problems, Conduct Problems, Internalizing Problems, Externalizing Problems and Total Problems. Scores on the scales are expressed in T-scores. A T-score of 50 indicates average functioning and every 10 points represents one standard deviation. The CBCL demonstrated very good construct validity and showed significant associations with other instruments assessing children's emotional and behavioral symptoms, such as Revised Behavior Problem Checklist (Quay & Peterson, 1993). Criterion-related validity has been supported by the CBCL's ability to distinguish between clinical and non-clinical samples (Achenbach, 1991).

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a self-report instrument assessing depressive symptoms in nonclinical samples. This scale is is widely used and well-validated (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995). The CES-D is comprised of 20 items such as "I felt depressed" and "I thought my life had become a failure". Respondent are asked to indicate how often they experienced the feelings described in each item in the previous week on a 4-point scale ranging from "*Rarely or non of the time*" to "*Most of all of the time*". The combined score for all the items create an overall score for the depression

experienced by the participant during the previous week. This scale does not yield a diagnosis of depression, but offers accurate information on the type of depressive symptoms experienced by the respondent.

I*nfant Behavior Questionnaire* (IBQ, Rothbart, 1981). The IBQ assesses temperament in infants in the first year of life. The IBQ is comprised of 91 items evaluating the following dimensions of temperament: *activity level*, *smile and laughter*, *fear to approach novel or intense stimuli*, *distress to limitations*, *soothability*, *duration of orienting*. For each item, the respondent is asked to indicate how often his/her infant exhibited a certain behavior (for example "During the past week, when being undressed, how often did your baby wave his/her arm and kick?") on a scale ranging from 1= *never* to 7=*always*. The IBQ has shown good validity and reliability (Rothbart, 1981).

Chapter Three: Results

1. Descriptives

Table 1, 2 and 3 show the distribution of attachment classifications in the sample. Table 1 illustrates the proportion of mothers classified as secure vs. insecure (preoccupied, dismissing and unresolved with respect to loss and trauma). Mothers who were classified as unresolved were considered insecure regardless of their secondary classification.

Table 1. *Distribution of secure vs. insecure attachment classifications*

Attachment Classification	Frequency	Percentage
Secure	57	45
Insecure (U, Ds, E or CC)[4]	64	51
Missing	5	4
Total	126	100

Table 2 describes the three-way (secure, dismissing and preoccupied) distribution of attachment classifications. The secondary secure, dismissing or preoccupied classification was used for mothers classified as unresolved with respect to loss and trauma.

[4] The following abbreviations may be used to identify the attachment classifications. F=secure, Ds=dismissing, E=preoccupied, U=unresolved, CC=Cannot Classify.

Table 2. *Distribution of the three attachment classifications*

Attachment Classification	Frequency	Percentage
Secure	75	60
Dismissing	28	22
Preoccupied	18	14
Missing	5	4
Total	126	100

Table 3 displays the distribution of attachment classification when the five categories (F, Ds, E , U and CC) are considered.

Table 3. *Distribution of the four attachment classifications*

Attachment Classification	Frequency	Percentage
Secure	57	45
Dismissing	22	17
Preoccupied	11	9
Unresolved	29	23
Cannot Classify	2	2
Missing	5	4
Total	126	100

Table 4 illustrates the means and standard deviation for all the continuous variables included in the study.

Table 4. *Means and standard deviation of the variables of interest*

Variables	*M*	*SD*
Maternal Depression	29.67	6.44
Feeding duration (seconds)	527.90	267.62
Temperament- Activity level	3.23	.65
Temperament- Fear and latency to approach novel stimuli	2.20	.70
Temperament- Distress to limitations	3.71	.77
Temperament- Smile and laughter	2.95	1.20
U score	3.02	2.02
Anxious Depression T-score	57.38	8.41
Withdrawn Depression-T Score	55.13	5.69
Somatic Complaints	53.70	6.26
ADHD T-score	54.46	6.57
Aggression T-score	54.54	6.43
Feeding Scale- Factor 1 Conflict	.00	.95
Feeding Scale- Factor 2 Control	.00	.95
Feeding Scale- Factor 3 Attunement	.00	.95

Covariates

In the analyses, feeding duration, maternal depression and child's gender were included as covariates. Different dimensions of the infant's temperament such as smile

and laughter, distress to limitations and fear to approach novel and/or intense stimuli were also included as covariates depending on the outcome examined.

2. Preliminary Analyses

The Adult Attachment Interview had been previously coded by two independent coders. Inter-rater reliability for the four way attachment classifications (secure, dismissing, preoccupied and unresolved) was 81 % (κ=.67). For the present study, two coders blind to all the other study variables coded the mother-infant feeding interactions. Inter-rater reliability for the Dyadic Reciprocity subscale, was α=.77, for the Conflict subscale α=.90, for the Struggle for Control subscale α=.84., for the Talk and Distraction subscale α=.77 and for the Maternal Non-Contingency subscale α=.70.

An exploratory factor analysis was conducted on the Feeding Scale scores in order to evaluate how these scores were combined in our sample. Since the factors were considered to be conceptually related, an oblique factor analysis with promax was performed. From the factor analysis, a four factors model emerged, which explained 35.9% of variance. Items that loaded higher than .5 on the factor were considered to be highly correlated to the factor. Factor 1 had an eigenvalue of 7.04 and accounted for 15.30% of the variance. Given the types of items loading on this factor, factor 1 was called “Conflict”. Factor 2, “Control” had an eigenvalue of 4.09 and explained 8.88% of variance. Factor 3, “Attunement” had an eigenvalue of 2.84 and explained 6.18% of the variance. Factor 4, “Distracting” had an eigenvalue of 2.53 and explained 5.5 % of variance. The factors were used as predictors in the subsequent analyses, instead of the feeding subscales created by Chatoor. Factors were preferred over Chatoor’s feeding

subscales because they appeared to better capture the quality of feeding interactions within our sample. In particular, behaviors that are part of Chatoor's Maternal Non-Contingency subscale occurred in our sample in the context of controlling or conflictive exchanges and not as a separate interaction pattern. For example, an item like "restricting infant's movement" had a high loading on the controlling factor, because mothers tended to restrict their infant movement while exhibiting controlling behaviors, such as forcing bottle or food in the infant's mouth. The "Distraction" factor was not included in the analyses, as Chatoor's study (Chatoor et al., 1997) underscored that this dimension had less discriminant power in distinguishing healthy mother-infant interactions from dysfunctional ones. The table with the factor loadings for the four factors model is included in the appendix.

Table 5 shows the correlations among maternal unresolved score, maternal depression, feeding factors, infants' temperament dimensions, children's symptoms at age 7 and feeding duration. As the table illustrates, since infant's tendency to be fearful of new stimuli and his/her distress to limitations were related to children's symptoms of withdrawn depression at age 7, these temperamental dimensions were included in the analyses predicting children's outcome at age 7. The length of the mother-infant feeding interaction was related to the likelihood that the dyad showed controlling behaviors; for this reason, feeding duration was included in the analyses examining the association between maternal attachment classifications and quality of the feeding interaction.

Table 5. *Correlations among the study variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Feeding Conflict	1	.41**	-.33**	.15	-.10	-.07	.33**	.23	.06	.01	.04	.06	.07	.14	.15
2.Feeding Controlling	.41**	1	-.18*	.30*	.10	.15	-.02	.01	.27**	.15	.04	.08	-.09	.18	.22*
3.Feeding Attunement	-.33**	-.18*	1	.03	.01	.13	-.20	-.07	-.06	-.08	-.15	-.08	.03	-.11	.12
4.CBCL Anxious Depression	.15	.30*	.03	1	.44**	.44**	.32**	.61**	-.03	-.04	.15	-.06	.16	.07	.13
5. CBCL Withdrawn Depression	-.10	.09	.01	.44**	1	.30**	.10	.19	-.02	.25*	.30*	-.01	-.13	.02	.15
6. CBCL Somatic Complaints	-.07	.15	.13	.44**	.30**	1	.28**	.34**	.01	.12	.02	-.02	-.10	-.11	.10
7.CBCL ADHD	.33**	-.02	-.20	.32**	.10	.28*	1	.71**	.07	-.02	-.04	-.20	-.15	.03	-.03
8.CBCL Aggression	.23	.01	-.07	.61**	.19	.36**	.71**	1	-.15	-.03	.08	-.07	.07	-.06	.05
9.AAI Unresolved Score	.06	.27**	-.06	-.03	-.02	.01	.07	-.15	1	.25	-.00	-.01	-.03	.14	.18
10.Temperament-Fear	.01	.15	-.08	-.04	.25*	.12	-.02	-.03	.26**	1	.22*	.25**	-.18	.10	.04
11.Temperament-Distress to limitations	.04	.04	-.15	.15	.30*	.10	-.04	.08	-.00	.22*	1	.37**	-.17	.01	.11
12.Temperament-Activity	.06	.08	-.08	-.06	-.01	-.02	-.20	-.07	-.01	.25	.37**	1	.03	.05	.01
13. Smile and laughter	.07	-.09	03	.16	-.13	-.09	-.15	.07	-.03	-.18	-.16	.03	1	-.10	.04
14. Maternal Depression	.14	.18	-.11	.07	.02	-.11	.03	-.06	.14	.10	.01	.05	-.10	1	.16
15. Feeding duration	.15	.22*	.12	.13	.15	.10	-.03	.04	.18	.04	.11	.01	.04	.16	1

Note. *p<.05, ** p<.01

3. Hypothesis 1a

According to hypothesis 1 a, mothers with a secure attachment were expected to show lower levels of feeding conflict and control and higher levels of attunement in comparison to mothers with an insecure attachment. In order to test this hypothesis, three regressions were performed. In the first regression, feeding conflict was regressed on maternal attachment security. Feeding duration, maternal depression, child's gender and child's distress to limitations were entered as covariates. Distress to limitations was entered as a covariate because some children tend to become unsettled when they have to be in a confined place or during caregiving activities (Gartstein & Rothbart, 2003). These children may be more likely to be involved in conflict with the caregiver or to elicit controlling behaviors in the caregiver during feeding. As shown in table 6, mothers with a secure attachment did not differ from mothers with an insecure attachment in the amount of conflict they display with their infants during feeding.

Table 6: *Regression examining the association between attachment security and feeding conflict*

Variables	*β*	B	(SE)	*p*
Intercept		-.81	.72	.27
Attachment Security	.05	.08	.18	.65
Maternal Depression	.12	.02	.01	.22
Child's gender	.03	.06	.19	.76
Distress to Limitations	-.04	-.05	.12	.67
Feeding duration	.14	.00	.00	.18

Further, feeding control was regressed on maternal attachment security vs. insecurity. The same covariates as the previous regression were entered. Feeding duration was associated with controlling behaviors during feeding (see table 7). When the feeding lasted longer, mother-infants dyads were more likely to display controlling behaviors. Mothers with a secure attachment exhibited the same amount of feeding controlling practices in comparison to mothers with an insecure attachment.

Table 7: *Regression examining the association between attachment security and feeding control*

Variables	*β*	B	(SE)	*p*
Intercept		-1.94	.77	.01
Attachment Security	.13	.26	.19	.18
Maternal Depression	.14	.02	.01	.14
Child's gender	.18	.18	.20	.36
Distress to Limitations	.05	.07	.13	.60
Feeding duration	.21*	.00	.00	.04

A third regression was performed in order to test the association between mothers' attachment security and attunement with their infant during feeding. Feeding duration, maternal depression and child's gender were entered as covariates. Mothers' rating of the infant's tendency to smile and laughter was also entered as a covariate, because infants with a happier temperament may display more positive behaviors towards their mother during feeding and this could affect the quality of the feeding interaction. No association was found between any predictor and attunement during feeding (table 8).

Mothers with a secure attachment did not appear more attuned to their infants during feeding than mothers with an insecure attachment.

Table 8: *Regression examining the association between attachment security and feeding attunement*

Variables	*β*	B	(SE)	*p*
Intercept		.29	.65	.65
Attachment Security	-.07	-.14	.19	.46
Maternal Depression	-.13	-.02	.01	.22
Child's gender	.06	.12	.19	.55
Smile and laughter	.00	.00	.08	.99
Feeding duration	.15	.00	.00	.15

Overall, data did not support hypothesis 1a and suggested that mothers with a secure attachment did not differ from mothers with an insecure attachment with respect to the amount of conflict, control and attunement they exhibited towards their infants during the feeding interactions.

4. Hypothesis 1b

Hypothesis 1b suggested that mothers with a preoccupied and/or unresolved attachment were more likely to display feeding interactions with their infants marked by lower levels of attunement and greater levels of conflict and control in comparison to the other mothers. To test hypothesis 1b, three regressions were performed whereby mothers' attachment classification was entered as a predictor of three different feeding outcomes (Conflict, Control and Attunement). Mothers' attachment classification is a categorical variable with three groups (secure, dismissing and preoccupied), therefore dismissing and

preoccupied categories were each dummy-coded and the secure group was used as the reference group.

First, feeding conflict was regressed on the attachment classification. Feeding duration, maternal depression, child's gender and child's distress to limitations were entered as covariates for the same reasons explained in hypothesis 1a. There was an association between mothers' preoccupied attachment classification and conflict behavior between mother and infant during the feeding interactions (table 9).

Table 9: *Regression examining the association between three attachment classifications and feeding conflict*

Variables	*β*	B	(SE)	*p*
Intercept		-.74	.64	.25
Preoccupied attachment (E)	.29	.79	.27	<.01
Dismissing attachment (Ds)	-.06	-.12	.21	.57
Maternal Depression	.10	.01	.01	.30
Child's gender	.03	.06	.18	.73
Distress to limitations	-.01	-.01	.11	.91
Feeding duration	.10	.00	.00	.30

Maternal control during the feeding interaction was also regressed on the three attachment classifications entering maternal depression, child's gender, child's distress to limitation and feeding duration as covariates. Mothers who were classified as preoccupied received higher scores on mother-infant controlling behavior during feeding (see table 10 below).

Table 10: *Regression examining the association between three attachment classifications and feeding control*

Variables	*β*	(SE)	B	*p*
Intercept		.70	-1.6	.02
Preoccupied attachment (E)	.26	.30	.77	.01
Dismissing attachment (Ds)	-.02	.23	-.05	.81
Maternal Depression	.12	.01	.02	.20
Child's gender	.09	.19	.19	.33
Distress to limitations	.07	.12	.09	.46
Feeding duration	.18	.00	.00	.06

Finally, attunement between mother and infant during feeding was regressed on the three maternal attachment classifications (secure, preoccupied and dismissing). Feeding duration, maternal depression, child's gender and child's smile and laughter were entered as covariates. As shown in table 11, mothers' preoccupied attachment status was inversely related to feeding attunement. When compared with secure mothers, mothers classified as preoccupied were significantly more likely to be misattuned with their infant during feeding. However, it should be noted the overall regression model was not significant (p=.10), therefore these results need to be interpreted with caution.

Table 11: *Regression examining the association between three attachment classifications and feeding attunement*

Variables	*β*	B	(SE)	*p*
Intercept		-.04	.58	.95
Preoccupied attachment (E)	-.25*	-.71	.29	.01
Dismissing attachment (Ds)	.07	.15	.22	.51
Maternal Depression	-.10	-.01	.01	.30
Child's gender	.06	.12	.19	.52
Smile and laughter	.00	.00	.07	.96
Feeding duration	.17	.00	.00	.08

Note. *$p<.05$

Results supported hypothesis 1b and indicated that mothers with a preoccupied attachment engaged in controlling and hostile interactions with their infant significantly more often than other mothers.

5. Hypothesis 1c

Hypothesis 1c proposed that mothers with an unresolved/secure attachment were expected to engage in exchanges with their infants showing higher levels of attunements and lower levels of control and conflict in comparison to mothers with an unresolved/insecure attachment. To test this hypothesis, the scores on feeding control, conflict and attunement for mothers with unresolved/secure attachment were compared to the scores of mothers with an unresolved/insecure attachment by performing three *t*-tests. No significant effect of attachment security was detected for the factors considered, possibly due to a lack of statistical power. For conflict, $t(25)=-.53$, n.s.; for control $t(25)=-.68$, n.s.; for attunement $t(25)=.39$, n.s. Mothers with unresolved and secure

attachment did not differ from mothers with unresolved and insecure attachment with respect to the amount of control, conflict and attunement displayed during feeding.

Further, the association between maternal unresolved score and quality of feeding was investigated. Three regressions were performed where unresolved score was entered as predictor and feeding conflict, control and attunement were entered as outcomes. When feeding conflict was regressed on the unresolved score, the covariates entered were feeding duration, maternal depression, child's gender and child's distress to limitations. No significant association was found between predictors and feeding conflict (table 12). Maternal unresolved attachment did not forecast mother-infant hostile interactions during feeding.

Table 12: *Regression examining the association between unresolved score and feeding conflict*

Variables	*β*	B	(SE)	*p*
Intercept		-.66	.65	.31
Unresolved Score	-.00	-.00	.05	.98
Maternal Depression	.12	.02	.01	.23
Child's gender	.03	.05	.19	.77
Distress to limitations	-.04	-.05	.12	.65
Feeding duration	.14	.00	.00	.16

Feeding control was also regressed on maternal unresolved score entering maternal depression, child's gender, child's distress to limitation and feeding duration as covariates. Maternal unresolved score was significantly associated with the likelihood of displaying controlling behaviors during feeding (table 13).

Table 13: *Regression examining the association between unresolved score and feeding control*

Variables	*β*	B	(SE)	*p*
Intercept		-1.54	.68	.03
Unresolved Score	.21	.10	.05	.04
Maternal Depression	.11	.02	.01	.27
Child's gender	.06	.13	.20	.52
Distress to limitations	.05	.06	.12	.63
Feeding duration	.18	.00	.00	.07

The association between feeding attunement and the unresolved score was also tested and feeding attunement was regressed on the unresolved score. The covariates entered were maternal depression, child's gender, child's smile and laughter and feeding duration (table 14). No association was found between unresolved score and feeding attunement.

Table 14: *Regression examining the association between unresolved score and feeding attunement*

Variables	*β*	B	(SE)	*p*
Intercept		.08	.59	.89
Unresolved Score	-.09	-.04	.05	.39
Maternal Depression	-.11	-.02	.01	.28
Child's gender	.07	.14	.20	.48
Smile and laughter	.00	-.6.96	.08	.99
Feeding duration	.16	.00	.00	.12

Data indicated that maternal unresolved attachment representation with respect to loss or trauma increased the risk that mother-infant dyads showed controlling behaviors during feeding.

6. Hypothesis 2a

According to hypothesis 2a, it was anticipated that infants who were part of a mother-infant dyad displaying higher levels of controlling behaviors during feeding were more likely to exhibit internalizing symptoms (anxious depression, withdrawn depression and somatic complaints) at age 7. To test this hypothesis, three regressions were performed where feeding control was entered as an independent variable predicting three different outcomes: symptoms of anxious depression, symptoms of withdrawn depression and somatic complaints.

Infant's gender and fear of novel stimuli were entered as covariates. The study found that infants whose mothers displayed controlling behavior during feeding at 8 months were more likely to exhibit symptoms of anxious depression at age 7 (table 15). There was no association between feeding control and children's symptoms of withdrawn depression or somatic complaints (see table 16 and 17). Infants' fearful temperament was related to children's withdrawn depression. However, the overall regression model for withdrawn depression was not significant (p=.10), therefore this result needs to be interpreted with caution.

Table 15: *Regression examining the association between feeding control and anxious depression*

Variables	*β*	B	(SE)	*p*
Intercept		62.15	4.08	.00
Feeding Control	.35	2.14	.76	<.01
Child's gender	-.16	-2.47	1.87	.19
Fear of novel stimuli	-.09	-1.00	1.31	.45

Table 16: *Regression examining the association between feeding control and withdrawn depression*

Variables	*β*	B	(SE)	*p*
Intercept		50.44	3.04	.00
Feeding Control	.07	.33	.57	.56
Child's gender	-.05	-.59	1.39	.67
Fear of novel stimuli	.29	2.24	.98	.03

Table 17: *Regression examining the association between feeding control and somatic complaints*

Variables	*β*	B	(SE)	*p*
Intercept		51.39	3.42	.00
Feeding Control	.16	.77	.64	.23
Child's gender	-.03	-.40	1.57	.80
Fear of novel stimuli	.13	1.09	1.09	.32

Hypothesis 2a was only partially confirmed, as controlling feeding interactions predicted children's symptoms of anxious depression, but not symptoms of withdrawn depression or somatic complaints.

7. Hypothesis 2b

Hypothesis 2b indicated that mothers who engaged in conflict with their infants during feeding were expected to have children with more severe symptoms of ADHD and aggression. Two regressions were performed. For both regressions mother-child conflict during feeding was entered as the predictor variable. For the first regression ADHD was the outcome variable and for the second regression, aggression was the outcome variable. In both regressions, child's gender and activity level were entered as covariates.

Data supported hypothesis 2b and indicated that infants who were involved in higher levels of conflict with their mothers during feeding were more likely to develop symptoms of ADHD and aggression at age 7 (see Tables 18 and 19). The association between mother-infant conflict during feeding and children's ADHD symptoms at age 7 did not seem to be affected by either infants' activity level or gender. With respect to aggression, gender was also independently related to symptoms of aggression, with boys more likely to exhibit these symptoms than girls.

Table 18: *Regression examining the association between feeding conflict and ADHD*

Variables	*β*	B	(SE)	*p*
Intercept		66.00	4.50	.00
Feeding Conflict	.42	2.70	.72	.00
Child's gender	-.20	-2.72	1.51	.07
Activity Level	-.22	-2.30	1.19	.06

Table 19: *Regression examining the association between feeding conflict and aggression*

Variables	*β*	B	(SE)	*p*
Intercept		59.73	4.41	.00
Feeding Conflict	.25	1.47	.71	.04
Child's gender	-.27	-3.25	1.48	.03
Activity Level	-.04	-.35	1.17	.76

8. Hypothesis 3a

Hypothesis 3a involved testing whether the controlling interaction pattern during the mother-infant feeding mediated the path from maternal attachment classification to the development of internalizing symptoms in children at age 7. Data (see hypothesis 2a, page 72) indicate that control during feeding is related to symptoms of anxious depression at age 7, but not other internalizing problems (withdrawn depression and somatic complaints). For this reason, anxious depression was chosen as the model outcome. Given that the maternal attachment variable tested in the model had three possible classifications (secure, dismissing and preoccupied), two dummy variables were entered into the model (dummy dismissing and dummy preoccupied) using the secure group as the reference. In line with the work suggesting that depression and attachment insecurity often co-occur (see Santona et al. 2015), maternal depression, two interaction factors including a dismissing maternal attachment classification by maternal depression and preoccupied maternal attachment by maternal depression were included in the model. Gender and infant fear (temperament) were also entered as covariates.

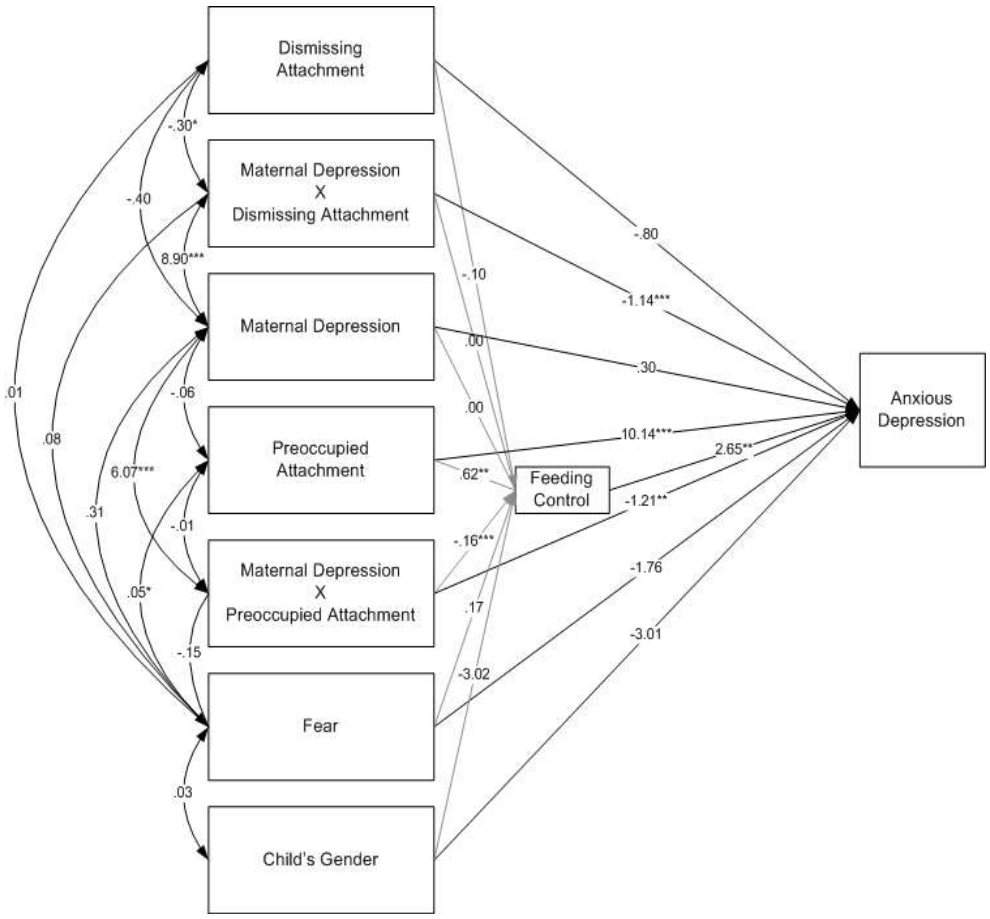
Figure 3 represents the model that was tested with AMOS statistical software and table 20 illustrates the direct, indirect, and total effects of the variables included in the model. Results suggest that maternal preoccupied attachment was related to maternal

controlling behaviors during feeding (b=.62, p=.005, β=.23) and feeding control affected children's development of anxious depression symptoms at age 7 (b=2.65, p=.009, β=.29). Further, maternal preoccupied attachment had a direct and significant effect on children's symptoms of anxious depression (b=10.14, p<.001, β=.41). The hypothesis that feeding controlling behaviors partially mediates the effect of maternal attachment on children's anxious depression symptoms was tested using the Sobel test. The Sobel test was marginally significant p=.05, therefore the hypothesis could not be supported.

Also, the interaction between maternal attachment and maternal depression had significant effects on both feeding control and children's development of anxious depression. Specifically, the interaction of preoccupied attachment and maternal depression was positively associated with controlling feeding behaviors (b=.16, p<.001, β=.43) and negatively associated with children's anxious depression symptoms (b=-1.20, p=.003, β=-.35). The interaction between mothers' dismissing attachment and their levels of depression was also negatively associated with children's anxious depression symptoms (b=-1.14, p<.001, β=.-.39).

The scatterplot in figure 4 illustrates the effect of the interaction between preoccupied attachment and maternal depression on children's anxious depression symptoms. Mothers who have a preoccupied attachment and are more depressed are significantly more likely to have children displaying anxious depression symptoms.

Figure 3: *Model linking maternal attachment, controlling feeding interactions and anxious depression*



Note.* p<.05, **p<.01, ***p<.001

Figure 4. *Scatterplot representing the effect of the interaction between preoccupied attachment and maternal depression on children's anxious depression symptoms.*

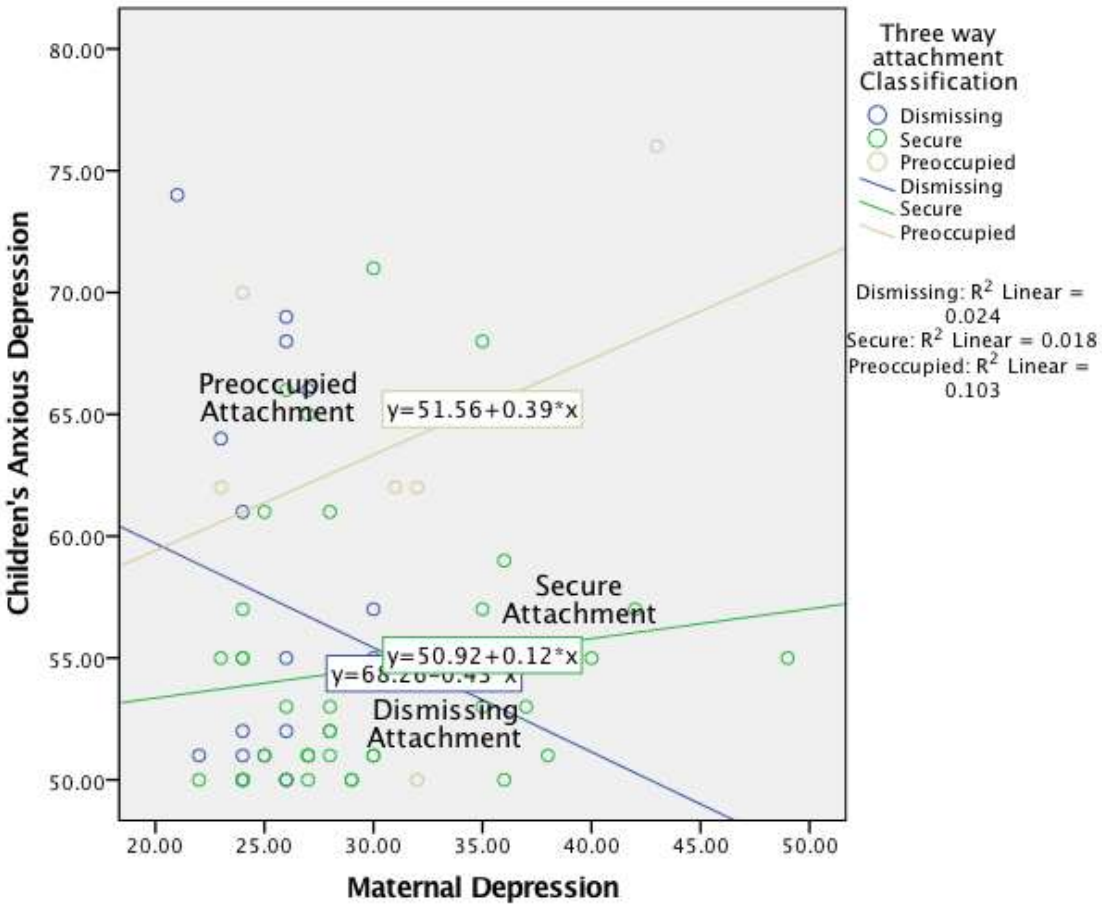


Table 20. *Direct, indirect and total effects of maternal attachment, maternal depression, feeding control, children's fear and gender on children's anxious depression symptoms.*

	Direct		Indirect		Total	
	B	β	B	β	B	β
Dismissing Attachment	-.80	-.04	-.26	-.01	-1.06	-.05
Preoccupied Attachment	10.14	.41	1.64	.07	11.78	.48
Maternal Depression	-.30	.22	-.01	-.00	.29	.21
Dismissing attachment by maternal depression	-1.14	-.39	-.00	-.00	-1.14	-.39
Preoccupied attachment by maternal depression	-1.21	-.35	.43	.12	-.78	-.22
Feeding control	2.65	.29	.00	.00	2.65	.29
Fear	-1.76	-.14	.46	.04	-1.30	-.11
Gender	-3.02	-.17	.68	.04	-2.34	-.13

9. Hypothesis 3b

It was also hypothesized that mothers' attachment security would predict the development of externalizing symptoms (ADHD and aggression) in children at age 7 and this relation was going to be mediated by an increase in conflict during mother-infant feeding interactions. Two models were tested, one in which the child's outcome was ADHD symptoms and the other predicting children's aggressive symptoms. In both models, the two maternal attachment dummy variables were entered as predictors. Maternal depression, the interaction between preoccupied maternal attachment and maternal depression, the interaction between a dismissing maternal attachment and

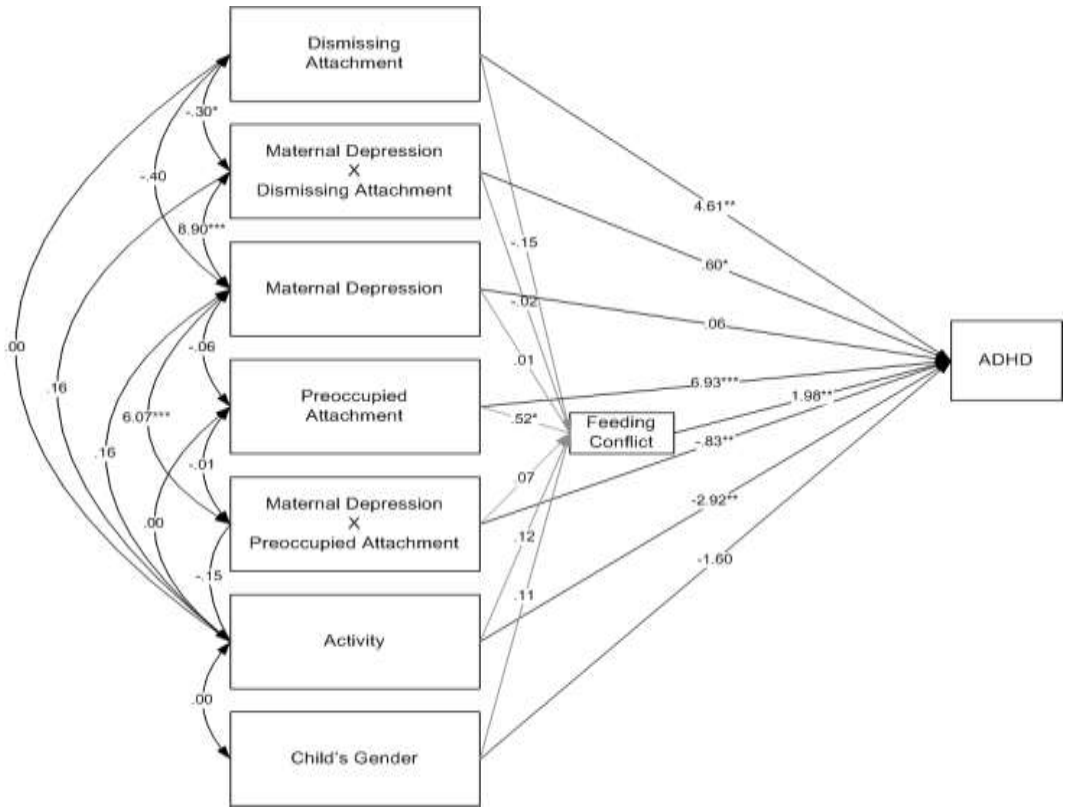
maternal depression and the duration of feeding, gender and infant's fearfulness (temperament) were entered as covariates.

Figure 5 illustrates the model with ADHD as the outcome variable using AMOS and table 21 illustrates the direct, indirect and total effects for the variables included in the model. Maternal preoccupied attachment was positively related to mothers-infant conflict behaviors during feeding (b=.52, p=.03, β=.20) and feeding conflict affected children's development of ADHD symptoms at age 7 (b=1.98, p=.006, β=.27). Moreover, maternal preoccupied attachment had a direct effect on children's ADHD symptoms (b=6.93, p<.001, β=.36). The hypothesis that feeding conflict partially mediates the effect of maternal attachment on children's ADHD symptoms was tested using the Sobel test. The Sobel test was not significant p=.08, therefore the hypothesis could not be supported.

Maternal dismissing attachment was also related to ADHD symptoms in children (b=4.61, p<.003, β=.28). A significant path linked infants' activity level to ADHD symptoms (b=-2.92, p=.003, β=-.29). The interaction between preoccupied attachment and maternal depression had a negative association to children's development of ADHD symptoms (b=-.83, p=.004, β=-.30), whereas the interaction between dismissing attachment and maternal depression appears to be positively related to children's ADHD symptoms (b=-.60, p=.003, β=.26). The scatterplot in figure 6 illustrates the effects of the interactions between maternal attachment and depression on children's ADHD symptoms. Maternal depression appears to be a risk factor for children's development of attention/hyperactivity problems particularly in the case of mothers with dismissing

attachment. Dismissing mothers who reported greater levels of depression when their infants were 8 months were significantly *more* likely to have children displaying ADHD symptoms at age 7. Interestingly, mothers with a preoccupied attachment showed an opposite trend as their children significantly exhibited greater levels of ADHD symptoms if they reported *less* depression.

Figure 5. *Model linking maternal attachment, feeding conflict and ADHD*



Note.* p<.05, **p<.01, ***p<.001

Figure 6. *Scatterplot representing the effect of the interactions between maternal attachment (preoccupied and dismissing) and maternal depression on children's ADHD symptoms.*

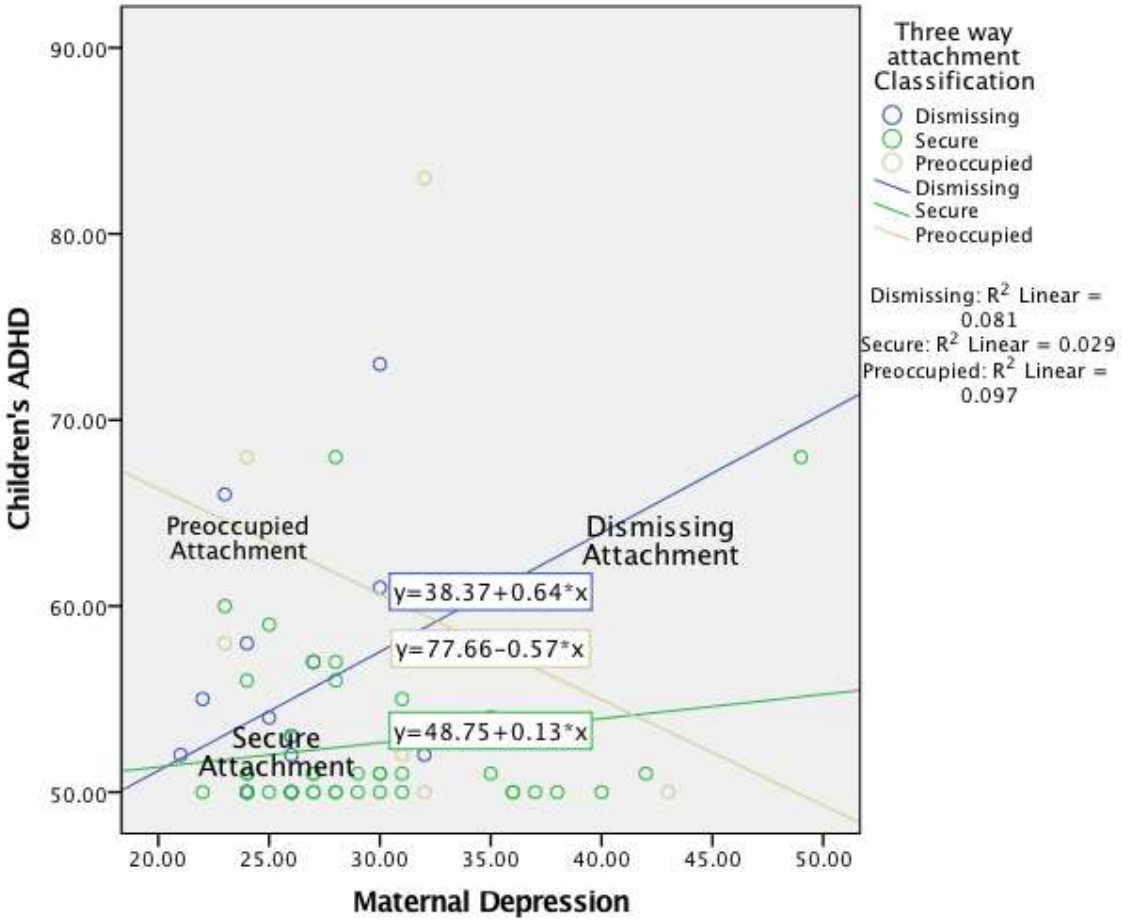


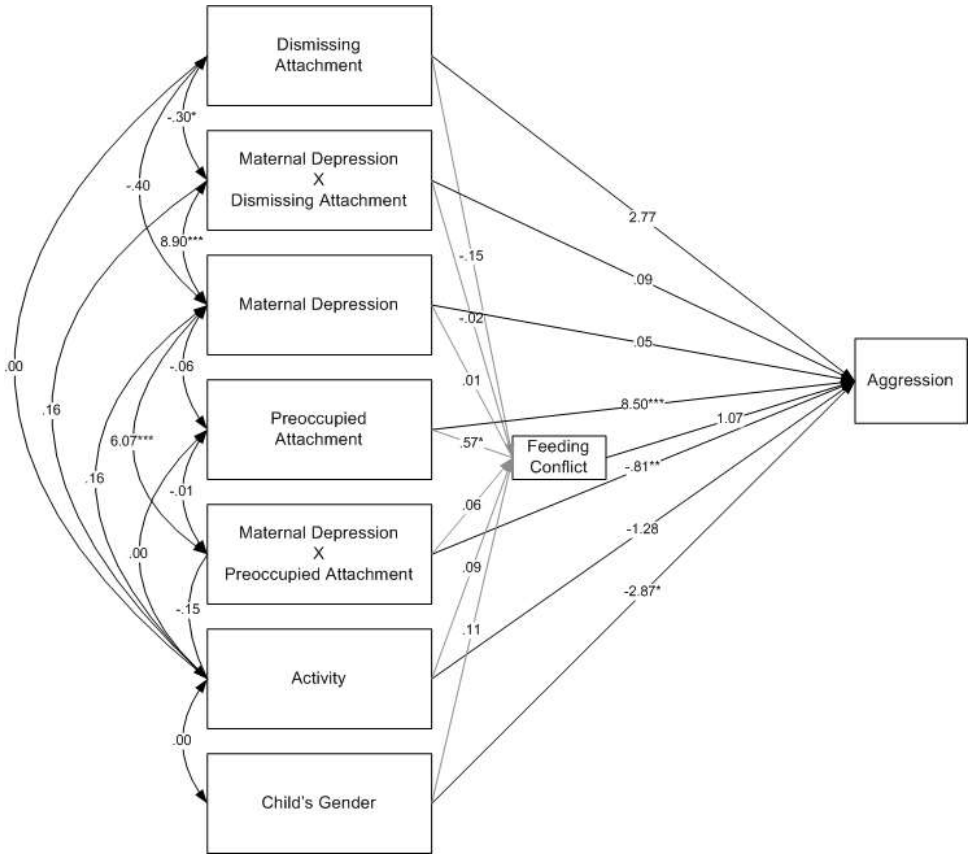
Table 21. *Direct, indirect and total effects of maternal attachment, maternal depression, feeding conflict, children's fear and gender on children's ADHD symptoms.*

	Direct		Indirect		Total	
	B	β	B	β	B	β
Dismissing Attachment	4.61	.28	-.30	-.02	4.31	.26
Preoccupied Attachment	6.93	.36	1.03	.05	7.96	.41
Maternal Depression	.06	.05	.02	.02	.08	.08
Dismissing attachment by maternal depression	.60	.26	-.05	-.02	.55	.24
Preoccupied attachment by maternal depression	-.83	-.30	.13	.05	-.70	-.25
Feeding conflict	1.98	.27	.00	.00	1.98	.27
Activity	-2.92	-.28	.24	.02	-2.68	-2.25
Gender	-1.60	-.11	.22	.02	-1.38	-.10

Figure 7 shows the model predicting aggression symptoms from maternal attachment and maternal depression, whereas table 22 displays the direct, indirect and total effects for the variable considered in the model. Maternal preoccupied attachment was positively related to feeding conflict (b=.57, p=.017, β=.21), however, feeding conflict was not related to aggression symptoms. Aggression symptoms in children were positively associated with preoccupied attachment (b=8.49, p<.001, β=.45), and negatively associated with the interaction term preoccupied attachment by maternal depression (b=-.81, p=.004, β=-.30) and with child's gender (b=-.2.87, p=.02, β=.21). Figure 8 depicts the effect of the interaction between preoccupied attachment and

maternal depression on children's aggression symptoms. Mothers with a preoccupied attachment and greater levels of depression were significantly less likely to have children displaying aggression symptoms.

Figure 7: *Model linking maternal attachment, feeding conflict and aggression*



Note.* p<.05, **p<.01, ***p<.001

Figure 8. *Scatterplot representing the effect of the interaction between preoccupied attachment and maternal depression on children's aggression symptoms.*

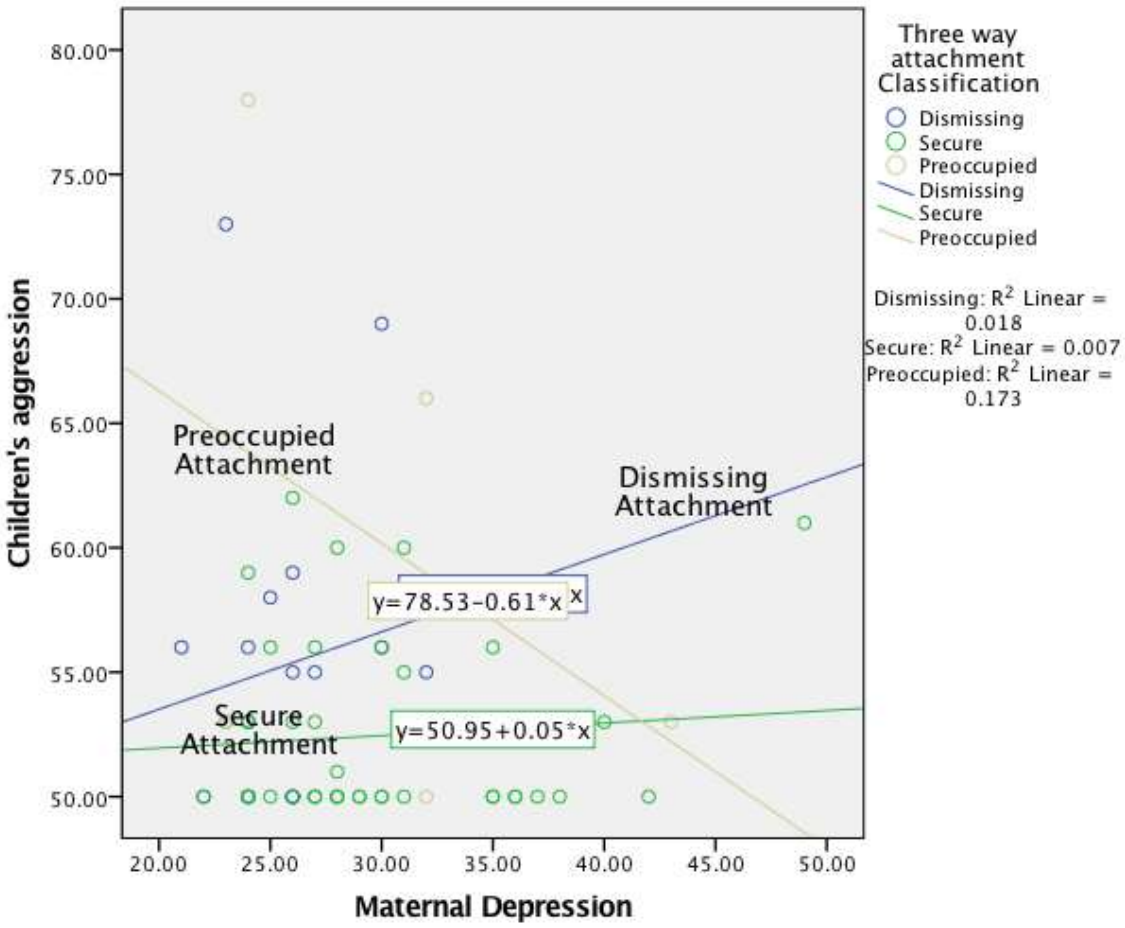


Table 22. *Direct, indirect and total effects of maternal attachment, maternal depression, feeding conflict, children's fear and gender on children's ADHD symptoms.*

	Direct		Indirect		Total	
	B	β	B	β	B	β
Dismissing Attachment	2.77	.18	-.16	-.01	2.61	.17
Preoccupied Attachment	8.50	.46	.60	.03	9.10	.49
Maternal Depression	.05	.05	.01	.01	.06	.06
Dismissing attachment by maternal depression	.09	.04	-.02	-.01	.07	.03
Preoccupied attachment by maternal depression	-.81	-.31	.06	.02	-.74	-.28
Feeding conflict	1.07	.15	.00	.00	1.07	.15
Activity	-1.28	-.13	.10	.01	-1.18	-.12
Gender	-2.87	-.21	.11	.01	-2.76	-.20

Overall, the data indicated that maternal attachment, in particular maternal preoccupied attachment was associated with greater levels of conflict during feeding and that conflict during feeding was a risk factor for children's development of ADHD symptoms. In regard to aggression symptoms, maternal attachment was significantly related to conflict during feeding, but feeding conflict was not associated with greater levels of aggression symptoms in children. The interaction between maternal depression and different profiles of insecure attachment also seem relevant for children's later mental health. Mothers who have a preoccupied attachment and are depressed are

significantly more likely to have children suffering from anxious depression symptoms problems in comparison to dismissing and secure mothers. On the other hand, data suggest that the interaction between maternal depression and preoccupied attachment contribute to prevent children's development of externalizing symptoms (ADHD and aggression). Conversely, the combination of dismissing attachment and depression seems to play a role in children's development of externalizing symptoms.

Chapter Four: Discussion

The present study is one of the first to examine the antecedents of feeding difficulties during the first year of life, observed during mother-infant interactions, and its effects on children's later mental health. This study drew on constructs from attachment theory, which combines ideas from evolutionary biology and psychoanalytic thought. Attachment theory poses that the tendency to stay close and form attachment to caregivers is part of the human evolutionary heritage, as it is crucial for infants' survival (Bowlby, 1969). Further, the quality of the attachment between the infant and the caregiver is greatly influenced by the quality of care the infant experiences and affects the child's later development. Infants who experience responsive care develop a belief that they can influence the environment, thus acquiring healthy coping skills. Infants who experience insensitive care may lack self-confidence and become isolated or aggressive when facing distress (Bowlby, 1988).

Feeding plays a central role in children's development, as food intake is necessary for infants' survival. During the first year of life, an important part of the caregivers role is to help infants take in the nourishment they need to survive and grow. Some mothers may become anxious about their ability to fulfill this role and may pressure the infants to eat without waiting for the infant's readiness to be fed. When this occurs, feeding interactions between caregiver and infant become disrupted and may create distress for both of them.

The purpose of this study was to investigate the quality of mother-infant interactions during feeding through an attachment perspective and to explore the long-

term effects of these interactions on children's mental health. Three main hypotheses were proposed. The first hypothesis investigated if maternal attachment representations influence mothers' behaviors during feeding and thus the quality of feeding interactions. The second hypothesis concerned the long-term effects of feeding interactions on children's later development of internalizing and externalizing symptoms. The third hypothesis implied testing mediation models predicting how maternal attachment influences maternal feeding behaviors and how these behaviors impact children's risk of internalizing and externalizing problems. To test the first hypothesis, maternal attachment representations were assessed prenatally and mother-infants feeding interactions were evaluated when the infant was 8 months old. Data were collected for 116 mother-infant dyads. The second hypothesis was tested by gathering information on children's mental health symptoms at age 7. Data for 71 children were available. The third hypothesis was tested using the data previously collected to analyze hypothesis one and two.

Mothers' representations of the relationship with their own parents during childhood, assessed prior to the baby's birth, predicted the extent to which they would develop controlling and conflicted interaction patterns with their infants. Children who experienced controlling maternal behaviors during feeding at 8 months were at risk for developing symptoms of anxious depression at age 7. On the other hand, children who engaged in feeding interactions marked by conflicts with their mothers, were more likely to display symptoms of ADHD and aggression at age 7.

We will begin by describing the predictors of internalizing (anxious depression) and externalizing (ADHD and aggression) problems in children as they emerge from the

study results. Special attention will be given to models delineating how feeding could mediate relations between mothers' attachment status and their children's outcomes. The implications for theory, research and clinical work of this study will also be addressed.

Predictors of children's internalizing symptoms

The study expands our understanding of the factors increasing the risk for children's internalizing symptoms, specifically anxious depression symptoms. Results suggest that the antecedents of children's anxious depression symptoms were related to the behaviors displayed by mother-infant interactions during feeding in infancy and to the quality of the caregiver's internal representation of attachment.

In regard to describing interactions that forecast anxious depression symptoms in children, this is the first study to identify maternal controlling feeding practices in infancy as a risk factor. The observational data from the study suggest that controlling feeding practices during infancy consist of behaviors in which mothers attempt to physically control the type and quantity of food their infant consumes. For instance, a controlling mother forces food into her infant's mouth, handles her infant roughly or stiffly, and positions her infant with restriction of movements. In response, the infant appears to be distressed by his/her mother's physical contact and stiffens when touched or arches from the food. This type of mother-infant pattern during feeding was associated with more severe anxious depression symptoms in children at age 7. It is important to notice that this relation was independent of children's genetic predisposition to suffer from anxiety since the effect was significant even after controlling for children's gender and temperament.

Findings are consistent with the results of a meta-analysis investigating the antecedents of children's anxiety in which parental over-control was identified as a risk factor (McLeod, Wood & Weisz, 2007). All of the works examined in the meta-analysis had samples including children of at least 2 years of age. The present study is the first to explore the effects of parental controlling behavior during feeding in infancy on children's later mental health. Feeding is one of the first moments when infants develop autonomy and learn to acknowledge their needs. When infants experience maternal control during feeding interactions, this may interfere with their ability to develop a sense of an independent self with needs that are different from what their parents and others in general expect. Further, the discrepancy between what the infants feel (their needs) and parental behaviors that force the infant to neglect these needs may be source of confusion and disorientation. The lack of self-confidence and the inability to acknowledge personal needs may explain why infants who experienced controlling mothers may develop symptoms of anxious-depression during childhood.

Interestingly, although controlling feeding interactions forecast anxious depression, they were not related to symptoms of withdrawn depression. This finding suggests that early controlling feeding interactions contribute to depressive symptoms only in combination with anxiety. Control during feeding may undermine children's self-awareness and self-esteem thus potentially contributing to withdrawn depression symptoms but it seems to promote anxiety at the same time. Children may have a negative view of the self as it happens in case of withdrawn depression symptoms, but this view might be related to their anxiety about being able to function independently

from their parents. On the other hand, controlling feeding practices were not related to somatic complaints. Children with somatic complaints may be anxious and fearful about the environment but they may not share the negative view of the self that is forecasted by parental controlling feeding practices. Studies with larger samples may be able to evaluate the different early parental behaviors (for instance rejection vs. control during feeding) that contribute to specific internalizing symptoms, differentiating withdrawn depression vs. anxious depression.

This work also gathered support for the idea that that it is important to take into account the caregiver's attachment representations in order to understand the origins and the effects of parental feeding practices on children. Caregiver's Internal Working Models of the self, of others and of the way relationships work appeared to influence the quality of the feeding interactions mothers exhibited with their infants. Mothers' Internal Working Models affected their ability to recognize their infants' signals during feeding and to respond to their infants' distress in an attuned way. Mothers with an insecure-preoccupied attachment classification were observed to be significantly more controlling towards their infants. During feeding, preoccupied caregivers may become anxious and feel overwhelmed by their infants' distress due to hunger. This occurs because individuals with a preoccupied attachment tend to experience a hyperactivation of negative emotions during moments of distress (Main & Hesse, 1990). Consequently, they may engage in controlling practices during feeding with the aim of containing the anxiety that the feeding task is provoking.

On the other hand, an insecure-dismissing attachment was not found to be a risk factor for controlling feeding behaviors. Regarding these type of behaviors, mothers with a dismissing attachment did not differ from mothers with a secure attachment. This result was contrary to expectations because researchers suggests that mothers with a dismissing attachment are less sensitive and attuned to their children in comparison to mothers with a secure attachment (Van Ijzendoorn, 1995). However, feeding might not be the best context to identify these differences. Individuals with a dismissing attachment tend to concentrate on the physical world and to emphasize concrete activities when they describe their attachment experiences (Hesse, 2008). Dismissing mothers may be able to interpret their infants' physical needs (i.e. eating) and may feel comfortable focusing on the concrete act of feeding without giving much consideration to the psychological connection with their child but without engaging in controlling interactions either.

In line with the hypotheses in this study, mothers' controlling feeding practices were also associated with maternal unresolved attachment representations with respect to loss or trauma. Feeding is an extremely salient context for the mother-infant relationship, and as such it is likely to trigger in the mother memories linked to her attachment history. If the mother did not process these experiences and has dissociated memories related to them, these memories may be activated during feeding and cause anxiety. Controlling practices during feeding may then become a coping mechanism for the mothers in order to contain the anxiety provoked by dissociated memories. It was expected that attachment security would at least partially buffer the effect of maternal unresolved state of mind on maternal behavior during feeding. However, mothers who were unresolved with respect

to loss or trauma and secure and mothers who were unresolved and insecure did not differ in the amount of controlling practices they displayed. This is particularly interesting because many of the unresolved mothers were also preoccupied so it would seem that controlling maternal behavior would differentiate unresolved/insecure mothers and those who were unresolved/secure. A lack of statistical power may have prevented from detecting these differences, as the two groups compared were numerically small. It is also possible that maternal dissociated memories became prevalent during feeding thus heavily affecting maternal behaviors and overriding maternal attachment security.

Notably, results linking attachment representation to maternal feeding behaviors remained significant even after controlling for child's individual factors, such as gender and infant temperament. Using an observational coding system, Haycraft and colleagues (2013) assessed the quality of mother-child feeding interactions in a sample of 58 mothers and their 3- and 4- year-old children. Mothers who reported greater levels of depression were observed to use more physical and verbal controlling behaviors with their children. This work did not find a correlation between maternal depression and quality of feeding interactions. Child temperament, in particular the infant's tendency to become distressed during caregiving activities or when he/she has to be confined (like when he/she has to sit and eat) may also affect the quality of the feeding interactions and for this reason was controlled for in the analyses, but did not impact the quality of feeding interactions.

Predictors of children's externalizing symptoms

This work contributes to a new perspective on feeding by investigating the effects of other aspects of the feeding interaction, specifically, mother-infant conflict on children. Whereas previous studies have focused primarily on exploring the effects of controlling practices on physical health (Dattilo et al., 2012), this study examined how conflict during feeding was associated with children's psychological development. Data from the study indicate that when mothers engage in hostile interactions with their infants during feeding, they appear unable to wait for the infant's readiness to eat, they override infant's signals during the meal, make negative remarks about the infant and display anger. As a reaction, infants turn away, push food away, and appear distressed and angry.

Results supported the hypothesis that maternal hostile interactions pose a risk for children's development of externalizing problems and highlighted the importance of considering feeding as a context where this type of interactions occurs. Some mothers who have difficulty recognizing their infants' expression of physical and emotional needs may engage in hostile interactions with their infants during feeding. This study was able to differentiate the kind of externalizing symptoms associated with maternal hostility during feeding and identify some of the other factors contributing to these symptoms.

Specifically, mother-infant interactions marked by conflict appeared to be associated with greater levels of ADHD in children at age 7, regardless of the child's gender and temperament. It is important to note that the conflict scale included interfering behaviors during feeding, which jeopardize infants' development of adequate self-regulation skills. Interfering maternal behavior during infancy has been shown to predict

ADHD symptoms in school children (Jacobvitz & Sroufe, 1987). Infants enter feeding in a state of distress stemming from hunger and the caregiver's role is to recognize their need for food and feed them for as long as it is necessary. When the caregiver is sensitive to the infant's need to eat and only interrupts or terminates the meal when the baby signals he/she is full, the infants displays a more regulated state at the end the meal. This process lays the foundation for infants' learning to acknowledge their needs and self-regulate their states of distress. In this study, mothers rated high on conflict interfered with their infants' needs during feeding and displayed hostility, thus eliciting hostility on the part of the infant as well. This pattern leads to conflict between mothers and infants and the infants' original distress stemming from hunger results in further dysregulation.

From this point of view, children's development of ADHD symptoms at age 7 can be considered as a product of their poor self-regulation skills. Previous researchers (Tan & Holub, 2011) have framed feeding difficulties within the context of infants' self-regulation abilities and pointed out that infants who displayed problematic eating patterns (such as refusing to eat or becoming extremely fussy while eating) were more likely to exhibit overall self-regulation problems.

Gender was not related to children's ADHD symptoms. As Jacobvitz and her colleagues (Carlson, Jacobvitz & Sroufe, 1995; Jacobvitz and Sroufe, 1987; Jacobvitz & Sroufe, 1989) have suggested, ADHD is a heterogeneous disorder, with multiple manifestations and multiple pathways leading to it. For some children, early genetic factors could play a role as evidenced by links between motor immaturity at 8 days and symptoms of ADHD in kindergarten; for others, it is the early caregiving interactions that

forecast ADHD (Jacobvitz & Sroufe, 1987). In these studies, however, the early caregiving interactions predicting ADHD consisted of boundary disturbances and occurred mainly for boys. The present study underscored that also mother-infant conflict during feeding can be associated with ADHD symptoms, both for boys and for girls. It is possible that experiencing conflict with caregivers may have different effects on boys and girls, thus contributing to different types of attention and hyperactivity symptoms. This study could not detect such differences, but studies with larger samples may be able to identify gender specific and ADHD related outcomes of conflict during mother-infant feeding interactions.

Conflict during feeding interactions at 8 months was also associated with aggression in children at age 7. It is possible that some children internalize maternal hostile interactions thus assuming conflict as a coping strategy and becoming aggressive towards others around them. This result is consistent with previous research (Mäntymaa et al., 2004) that found hostile interactions between mothers and their infants to be related to toddlers' externalizing symptoms. Gender was independently related to symptoms of aggression, with boys displaying more symptoms than girls. An explanation for this finding is that already at age 7 children internalized the social norms that make aggressive behaviors more acceptable in boys than girls and for this reason boys displayed more aggression than girls.

This work indicated that caregivers' attachment representations forecast infant-caregiver conflict during feeding. Mothers with an insecure-preoccupied attachment classification were observed to engage in a greater level of hostile interactions with their

infants. The difficulty in coping with infants' distress stemming from hunger, typical of individuals with a preoccupied attachment, may have triggered hostility and angry reactions towards the infants in some of the preoccupied mothers.

It is important to notice that no differences in maternal behaviors during feeding were observed when comparing mothers who were secure vs. mothers who were insecure. Security of attachment has been linked to maternal sensitivity as secure mothers display greater attunement to their children (Van Ijzendoorn, 1995). However, specific feeding behaviors such as control and conflict cannot be associated with simply a lack of sensitivity. Present data indicated that the specific profile an Internal Working Model assumed was related to the maternal feeding behaviors. Dismissing and preoccupied caregivers are both insecure attachment classifications, but only preoccupied mothers displayed significantly higher levels of control and conflict during feeding, probably due to their specific internalized way of coping with distress. From this point of view, the study underscores the importance of retaining the categorical data associated with different attachment Internal Working Models (secure, dismissing and preoccupied) instead of using the continuous coherence of transcript scale scores as a proxy for security.

Models predicting internalizing and externalizing symptoms

This work explored the developmental pathways leading to children's internalizing and externalizing symptoms. Models describing how the quality of feeding interactions mediates the association between mothers' attachment representations and their children's mental health problems were tested. Data suggest that in order to

understand the development of these symptoms in children, it is important to consider the complex interactions between biological, psychological and relational factors. The models tested support a view of psychopathology as the product of equifinality (Cicchetti, 1990; Sroufe, 1989), the principle according to which the combination of different factors can lead to the same developmental outcome.

Overall, feeding interactions do seem to play an important role within the process linking maternal attachment representations to children's anxious depression and ADHD problems. In the case of anxious depression, mothers' preoccupied attachment was a risk factor for maternal controlling behaviors during feeding and this kind of feeding practices, in turn, increased the child's risk for displaying anxious depression symptoms. However, the model tested depicted a more complex picture of the origins of anxious depression problems in children, as multiple effects on the outcome were observed. Maternal preoccupied attachment also directly predicted symptoms of anxious depression, suggesting that feeding practices could *partially* mediate the relation between preoccupied attachment and anxious depression symptoms. It is possible that mothers with a preoccupied attachment exhibit an array of behaviors, in different contexts, that contribute to children's anxious depression. Controlling practices during feeding appear to be one of these behaviors, but other circumstances may be relevant as well. For example, mothers with a preoccupied attachment may feel overly fearful when their children are sick or hurt, thus being unable to contain their children's distress and making them more vulnerable to become anxious and depressed. Although the path linking preoccupied attachment to controlling feeding and the one linking controlling feeding to

anxious depression symptoms were both significant, the study could not gather support for the partial mediation hypothesis, as the Sobel test was only marginally significant (p=05). The Sobel test is a highly conservative technique and lack of statistical power may explain this result. Studies with larger samples are needed to further test the hypothesis that controlling feeding practices partially mediate the association between preoccupied attachment and children's symptoms of anxious depression.

Since there is some evidence that depression has genetic origins (Dunn et al., 2015), we examined the role of maternal depression in the relation between mother's preoccupied attachment and the development of anxious depression in children. The combination of maternal preoccupied attachment and higher levels of depression increased children's risk of developing anxious depression symptoms. However, maternal depression alone did not predict children's anxious depression. Maternal depression may exacerbate preoccupied mothers' tendency to become overwhelmed by negative emotions when interacting with their children, particularly when their children show distress and need comfort. Their children, in turn, may over time internalize their mothers' negative emotions developing feelings of hopelessness and sadness (Tronick, 2005).

Within the model predicting ADHD symptoms, conflict during feeding was associated with increased attention problems at age 7. Maternal preoccupied attachment emerged as a risk factor for feeding mother-infant conflict. Preoccupied attachment was also directly related to ADHD symptoms, therefore a partial mediation hypothesis linking preoccupied attachment to ADHD symptoms through feeding conflict was tested. This

hypothesis was not supported, as the Sobel test was only marginally significant (p=.08), likely due to statistical power issues.

To explain the direct link between preoccupied attachment and children's ADHD concerns we can hypothesize that preoccupied attachment representations prevent caregivers from supporting their children's development of self-regulatory skills, probably because these skills are lacking within the caregivers herself. Lack of self-regulation may result, for some children, in ADHD symptoms.

Within this model, both maternal and infant individual characteristics influenced children's risk for ADHD. Attachment representations (both dismissing and preoccupied), in combination with maternal depression were related to children's attention/hyperactivity problems. Specifically, greater levels of maternal depression combined with dismissing attachment predicted more severe ADHD symptoms in children, whereas the opposite was true for preoccupied attachment. Mothers with a preoccupied attachment who reported more depression had children displaying less ADHD symptoms. It is possible that children whose mothers are depressed and preoccupied become withdrawn and develop internalizing symptoms, thus showing less attention and hyperactivity problems in the school context (where their symptoms were assessed). These findings underscore the importance of considering the interaction between caregivers' psychopathology and internalized representations in order to understand the origins of mental health symptoms in children.

Genetic factors within the child, such as his/her activity level also influenced ADHD symptoms. Children who were less active as infants were more likely to display

ADHD behavior at age 7. The activity level scale is a measure of gross motor abilities (Rothbart, 1981) and it is possible that infants who scored lower on this scale were neurologically more immature and this organic condition carried on during childhood affecting their self-regulation skills during childhood. These findings are consistent with previous studies showing that motoric immaturity when infants were 10 days old forecast ADHD symptoms in kindergarten (Jacobvitz & Sroufe, 1987).

Within the model predicting symptoms of aggression, maternal preoccupied attachment was a risk factor for the display of conflict during feeding. Feeding conflict, however, did not predict aggression at age 7. Conflict was related to children's symptoms of aggression in the regression analysis but not in the path model. The path between conflict during feeding and aggression at age 7 was no longer significant when maternal depression, mothers' attachment status and gender were included in the model. Maternal preoccupied attachment significantly increased the risk of aggression symptoms in children, but this risk was significantly lower if the mothers had a preoccupied attachment and were depressed. Caregivers who are preoccupied and depressed may forecast a negative view of the world and a sense of helplessness in their children, which would result in internalizing symptoms (see model about anxious depression) steering them away from displaying aggression. Not surprisingly, gender was also a significant predictor of aggression, in line with the studies showing that gender differences in the expression of internalizing and externalizing symptoms emerge during childhood (Dekker et al., 2007; Prinzie et al., 2006).

4. Limitations

This work is the product of a longitudinal study and employed in depth observational and interview data. As such, the sample size was somewhat limited also due to some attrition. At times, lack of statistical power prevented the author from fully testing some of the hypotheses. For example, the control and conflict dimensions during feeding were correlated but it was not possible to evaluate the effects of the interaction between these two dimensions because it would have required a much larger sample size. Further, the study aimed at exploring developmental trajectories covering a long time span (from infants' 8 months to their 7 years of age). Other factors that are not included in the study, such as life events and the quality of the parents' marriage may have also contributed to the outcomes investigated. For example, a study by Milan and colleagues (Milan, Pinderhughes and the Conduct Problem Prevention Research Group, 2006) underscored that family instability, defines as the frequent occurrence of family events such as marital/cohabitation transitions (e.g., Ackerman, Brown, D'Erama, & Izard, 2002; Capaldi & Patterson, 1991), residential moves (e.g., Eckenrode, Rowe, Laird, & Braithwaite, 1995), parent–child separations (e.g., Milan & Pinderhughes, 2000; Tennant, 1988), and job loss (e.g., Elder, Nguyen, & Caspi, 1985; McLoyd, Jayaratne, Ceballo, & Borquez, 1994) is a strong risk factor for children's development of both externalizing and internalizing symptoms. Family relationships, and in particular marital conflict and marital aggression also appear to contribute to children's internalizing and externalizing problems (Essex, Klein, Eunsuk, Kraemer, 2003; Sheikh, Cummings, Kouros, Elmore-

Staton & Buckalt, 2008), with boys more often displaying externalizing problems and girls more prone to internalizing symptoms.

With respect to the origins of maternal feeding practices, this study did not collect data on maternal eating problems, which could also influence maternal feeding practices, as suggested by Haycraft and colleagues (Haycraft et al. 2013). This study also did not include a measure of the quality of feeding interactions between mothers and children at age 7. Such a measure would have provided information on the continuity of caregiving over time. Children who experienced controlling and/or hostile feeding maternal behaviors continuously from infancy to childhood may be more exposed to develop the internalizing and externalizing outcomes described in the study in comparison to children whose mothers became more attuned over time.

Another factor that could influence children's outcomes is their attachment security. Lack of statistical power prevented from including too many variables in the models predicting children's internalizing and externalizing symptoms. Studies with larger samples could be able to examine the role of children's attachment within models predicting how maternal attachment influences feeding interactions quality and children's mental health.

This work did not explore the quality of father-infant feeding interactions, but it is likely that paternal behaviors during feeding also impact children's development of self-regulatory skills and mental health development. Data for the father-infant feeding interactions are available, and further studies may shed light on the combination of maternal and paternal behaviors during feeding and their impact on children. Finally,

research participants were predominantly Caucasian. Controlling and hostile feeding practices in infancy may look different or have different outcomes if explored within a more ethnically diverse sample.

5. Implications for theory

This work proposes a new view of feeding as a phenomenon with important psychological implications both for the caregiver and the infant. Considering the origins of parental feeding behaviors, feeding practices need to be understood in the context of the parent's attachment history and mental health. In order to comprehend the meaning of these practices, it is important to go beyond the behavioral level and take into account the representation that parents internalized about their own attachment history.

From the infant's point of view, parental feeding practices set the context for the development of self-regulation skills. Results underscore how interactions with the caregiver during meaningful moments (such as feeding) can become a risk factor for children's psychological development. The study supports a conceptualization of children's mental health symptoms as the product of "relational disorders" rather than individual factors (Rosenblum, Dayton, McDonough, 2006). This perspective identifies the child's disorder as a problem embedded within the relationship with the caregiver, rather than only due to the child's individual characteristics. The models tested in this work suggest that although individual variables and genetic predispositions certainly influence a child's psychological development, multiple factors contribute to children's mental health problems. A theory that aims at explaining the etiology of these problems

would be incomplete without considering the role of the caregiver-child interactions and of the caregiver's attachment history.

6. Implications for research

These results emphasize the relevance of caregiver-infant early interactions within the feeding context for children's later mental health. It is an empirical question whether interactions at this point in time (when infants were 8 months) affected children's development per se or if the continuity over time of parent-child interactions contributed to children's problems. Research suggests that continuity of caregiving is a better predictor of functioning than earlier isolated measurements of caregiving (Belsky & Fearon, 2002). From this perspective, data underscored the importance of conducting longitudinal studies in order to gain a full understanding of the origins and the effects of feeding practices. Many studies investigating the effects of feeding practices employed cross-sectional designs, thus missing the opportunity of evaluating the effects of feeding practices over time. This work suggested that the quality of early feeding interactions might greatly affect children's later mental development.

Further studies are needed to explore how parent-child controlling and hostile interactions during feeding evolve during childhood and the consequent effects on children's mental health.

Moreover, this study emphasizes the necessity of employing observational measures to assess the quality of feeding interactions. The great majority of the works that explored parental behaviors during feeding used self-report measures, such as the Child Feeding Questionnaire (Birch et al. 2001) as the instrument to gather information

about the feeding behaviors displayed by parents with their children. However, caregivers who are not attuned to their children during feeding may not be aware of being controlling or hostile, therefore they might not endorse behaviors describing controlling or hostile feeding practices. Observational measures allow the researcher to directly assess the caregiver's behavior while at the same time evaluate the child's reactions to these behaviors. Different children may react to parental feeding practices in a different way, thus affecting the subsequent parental behaviors. For instance, some children may rebel against controlling feeding practices and this could result in open conflict with their parents over feeding. Other children may become withdrawn as a consequence of parental controlling behaviors. Findings from this study suggest that these different dynamic might have very different effects on children's mental health.

7. Clinical Implications

Findings from this study have numerous clinical implications. First, feeding appears to be an important window on the overall relationship between infant and caregiver. Observing how caregivers behave during feeding and if they are attuned to the infant's signals provides useful information about the quality of the infant-caregiver relationship. Clinicians interested in assessing this relationship may use feeding exchanges as an effective and time efficient way to evaluate the nature of infant-caregiver interactions.

Data from this study also have implications for the interventions aiming at modifying caregivers' feeding practices. Without taking into account the caregivers' attachment representations, interventions may be only partially effective. Caregivers may

not be aware of the psychological mechanisms driving their behavior during feeding, and therefore may not be able to modify them. It may be important to help caregivers think about their own attachment history and specifically, about the types of memories activated by the feeding context.

Further, this work is relevant for researchers and clinicians who design assessment tools and interventions for children's internalizing and externalizing problems. Results suggest that parental behaviors displayed in specific contexts contribute in a distinct way to children's mental health symptoms. Assessment tools for children's symptoms may benefit from including a component that evaluates the caregiver-child interactions within meaningful contexts (such as feeding) in order to fully understand the factors contributing to the children's problems. Interventions addressing these problems are likely to be more effective if they also help caregivers understand how their own attachment histories influence their behaviors thus contributing to their children's mental health symptoms.

Appendix

Table 23. *Factor loadings for the four factors model.*

Factors	Conflict	Control	Attunement	Distracting
Maternal Behaviors				
Positions infant for reciprocal exchange	.13	-.26	.11	-.13
Talks to infant	.35	-.09	**.65**	-.15
Makes positive remarks about infant	.39	-.16	.39	-.08
Makes positive statements about infant's feeding and skills	.12	-.10	.48	-.16
Waits for infant to initiate interaction	-.41	-.25	.13	.12
Shows pleasure towards infant	-.19	.00	**.77**	.09
Appears cheerful	-.14	.02	**.74**	-.02
Appears sad	-.24	-.06	**-.54**	-.09
Appears detached	-.30	.00	-.39	.12
Position infants without needed support	.04	-.00	.11	.04
Holds infant stiffly	-.12	**.90**	.03	.08
Distract or allows infant to distract	.14	.17	.15	**.53**
Tells infant to eat, to do	**.61**	.05	.13	.21
Controls feeding by overriding	.47	.29	-.02	.00
Forces bottle or food into infant's mouth	.22	**.51**	-.05	.27
Appears concerned about messiness	.09	.20	.04	-.04
Handles infant in a rough manner	-.10	**.74**	-.02	-.05
Makes negative remarks about infant	.36	-.01	.06	-.05
Makes negative statements about infant's feeding and skills	.22	-.13	-.08	.03
Appears distressed	.08	-.01	-.09	-.07
Appears angry	**.57**	.16	-.10	-.22
Position/holds infants with restriction of movements	.12	**.53**	-.09	.08
Touches infant playfully	.03	.17	.04	.37

Factors	Conflict	Control	Attunement	Distracting
Handles infant excessively	-.11	-.03	-.30	.12
Misses infant's cues	.08	-.06	.12	-.20
Interrupts feeding causing distress	-.07	-.04	.13	-.47
Infant's behaviors				
Stiffens when touched	-.03	**.82**	.08	.09
Refuses to open mouth	**.70**	-.01	.07	.28
Turns away from food	**.62**	-.05	-.10	.32
Cries when food is offered	**.70**	.12	.08	-.05
Pushes away or throws food	.42	-.20	.23	.04
Arches from food	.30	.46	-.03	.04
Appears distressed	**.50**	.15	.08	-.29
Appears angry	.40	.05	-.04	-.10
Looks at mother	-.12	.04	**.61**	.07
Smiles at mother	-.01	-.03	.44	.32
Appears cheerful	-.33	.00	.43	.25
Avoids gaze	.38	-.34	-.38	.34
Falls asleep and stop feeding	.01	.01	-.08	-.04
Appears easily distracted	.13	.02	.09	**.58**
Vocalizes to mother	**.70**	.02	.12	.01
Holds food in mouth	-.05	-.02	.11	.01
Spits food out	.14	.28	-.05	.06
Thrusts tongue rhythmically	.23	-.11	.19	.12
Cries when bottle or food is taken away	.09	-.03	.12	**-.60**
Vomits or ruminate	-.01	.03	.11	-.09

Note. Factor loadings >.50 are in boldface.

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