

THE ASSOCIATIONS BETWEEN COMPLEMENTARITY, NON-  
COMPLEMENTARITY, AND ATTACHMENT STYLE

by

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## DISSERTATION ABSTRACT

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Title: The Associations between Complementarity, Non-Complementarity, and Attachment Style

Attachment Theory posits that the caregiver has primary responsibility in fostering attachment security; however, children play increasingly active roles in shaping the quality of interactions as they grow beyond infancy (Bowlby, 1969). There has been limited research on transactional relationships between caregivers and children and their associations with attachment. While Interpersonal Theory has historically been utilized to understand adult interpersonal interactions and their associations with relationship quality, it may provide an avenue to explore parent-child transactional processes. Within Interpersonal Theory, interactions can be categorized as complementary and non-complementary. Yet, these unidimensional constructs make it impossible to determine the relative effects of when complementarity and non-complementarity have positive or negative valences. As such, this study investigated 143 mother-preschooler dyads (64 Child Maltreatment [CM] dyads and 79 non-CM dyads) to examine the associations between variations in two novel types complementarity and non-complementarity and attachment security. *Positive complementarity* included interactions that were warm and affiliative that elicited the same responses in return. *Negative complementarity* included interactions that were hostile and aversive that elicited those same responses in return. *Positive non-*

*complementarity* was characterized by warm and affiliative parent behaviors and child hostile and rejecting behaviors. *Negative non-complementarity* was characterized by disaffiliative and hostile parent behaviors and warm and affiliative child behaviors. Separate logistic regression analyses revealed that positive complementarity and positive non-complementarity were significantly associated with an increased likelihood of secure attachment. Negative complementarity and negative non-complementarity were not significantly associated with an increased likelihood of insecure attachment. Results suggest that the positive valences of complementarity and non-complementarity are associated with attachment security, such that children in dyads where mothers maintained warm and affiliative behaviors with their child, whether the child was connecting and trusting the mother or withdrawing and sulking, were more likely to be securely attached. Thus, a mother's ability to display positive and sensitive behaviors during moment-to-moment interactions with their child regardless of child's response is important to a child's attachment security.

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## CHAPTER I

### INTRODUCTION

Theorists describe attachment as the mechanism by which a child uses the primary caregiver as a source of safety and comfort, and a secure base from which to explore the world (Ainsworth, 1973; Bowlby, 1980; Bretherton, 1992). Children's attachment security is fostered by sensitive caregiver interactions and maintained primarily through a caregiver's parenting style, with far-reaching implications for children's socioemotional development (Ainsworth, 1973; Bowlby, 1980; Cohn, 1990; Karavasilis, Doyle, & Markieqicz, 2003; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). More specifically, children who have secure attachments are more likely to exhibit adaptive, pro-social behaviors and better self-regulation capacities, and experience more positive long- and short-term outcomes, such as greater academic success, fewer mental health issues like depression and anxiety, and higher self-esteem (Cohn, 1990; Pierrehumbert, Miljkovitch, Plancherel, Halfon, & Ansermet, 2000). Caregiver behaviors that foster secure attachment styles are important to positive child development outcomes; however, there remains limited research exploring how transactional behaviors within parent-child interactions relate to attachment security.

While Attachment Theory posits that the primary caregiver has the main responsibility in fostering attachment security during infancy, children themselves play an increasingly active role in shaping the quality of interactions as they grow beyond infancy (Bowlby, 1969). In toddlerhood and beyond, they have increased insight and ability to make choices about their behaviors, actions, and interactions with their mothers (Bowlby, 1969; Harrist & Waugh, 2002). These behaviors and actions may have evocative effects on

the caregiver that influence their response and future reactions to their child (Kerr & Bowen, 1988; Masten & Cicchetti, 2010; Paschall & Mastergeorge, 2016). In addition, these evocative effects may co-create relationship transactions that distinctly relate to secure and insecure attachments styles. Understanding bidirectional interactions between mothers and preschool-age children can provide more insight into how children and their parents may co-create and shape the differences in the quality of relationships that characterize secure versus insecure attachment patterns in children.

As mentioned above, there has been limited research on transactional relationships between parents and children and their associations with attachment. While Interpersonal Theory has historically been utilized to understand adult interpersonal interactions, it may provide an avenue to explore parent-child transactional processes in a unique way by specifically focusing on the behavioral aspects of these interactions. Within Interpersonal Theory, interactions can be categorized as complementary and non-complementary. Complementarity is defined as interpersonal reciprocity, such that interpersonal behaviors elicit reciprocal behaviors from others (Carson, 1969; Leary, 1957; Sullivan, 1953; Wish, Deutsch, & Kaplan, 1976). More specifically, complementarity encompasses interactions that are matched between individuals; such that a loving behavior would be matched with a loving response, and a hateful behavior with a hateful response. Over time, these complementary behaviors create expectations and an organizational framework to the dyadic exchange, and in turn, the relationship. Non-complementarity includes interactions that are not reciprocal and have uncoordinated and mismatched states of affiliation (i.e., behaviors that are friendly and loving versus hostile and attacking; Kiesler, 1983). Within this construct, a loving behavior may be met with a mismatched response of hate or

dismissal. Because it shares a dyadic frame of analysis, the concepts of complementarity and non-complementarity may provide new understandings when applied to the study of attachment security.

Further understanding of the associations between complementarity and attachment security and non-complementarity and attachment security can provide insight into which interpersonal interactions are associated with positive quality of relationship and attachment security between primary caregivers and their children. The aim of this study was to examine a set of bidirectional transactions between children and mothers and their associations with security of attachment in a high-risk sample of preschool children. Specifically, this study examined whether levels of positive complementarity (warm and affiliative) and negative complementarity (hostile and aversive) in mother-child interactions were associated with attachment security in children as measured by the Strange Situation Procedure adapted for preschool ages using Cassidy and Marvin's (1992) coding guidelines. Additionally, the purpose of this study was to provide empirical support for distinguishing different presentations of complementarity and non-complementarity by dividing them into novel subgroupings of positive complementarity and negative complementarity, as well as positive non-complementarity and negative non-complementarity. These novel types of interactive non-complementarity were examined and their relationship with children's attachment security explored.

### **Background and Rationale for Study**

Attachment Theory has established that repeated daily experiences with one's primary caregiver contribute to an infant's developing internal representation or "working model" of the caregiver (Bowlby, 1969). Through this "working model" of caregiver

behaviors, children develop different schemas that coalesce into identifiable patterns and behaviors in response to their caregivers (Shorey & Snyder, 2006). These predictable patterns are considered attachment behaviors, which encapsulate how children act and react to their caregivers (Bowlby, 1969).

Securely attached children have a relationship with their caregiver in which their emotional needs are satisfied and the attachment figure is responsive and accessible (Bretherton, 1985). Children who are securely attached are parented by caregivers who display positive, responsive, and sensitive communication patterns to the child's needs and express disappointment and discipline in loving and affectionate manners. More specifically, sensitive communication is characterized by a caregiver's ability and willingness to respond promptly and appropriately to their child's needs (Karavasilis et al., 2003). Thus, children develop secure attachments when their caregivers act in comforting and reassuring ways, which enables kids to develop the worldview that their caregivers are safe and can be approached in moments of distress (Bretherton, 1992).

In contrast, children who have insecure attachments are less likely to perceive their primary caregiver as a secure and warmly responsive. Caregivers of insecurely attached children may interact with their children in rejecting, disengaging, insensitive, and unpredictable ways (Ainsworth, 1973; Karavasilis et al., 2003). In response to these parenting styles, children who are insecurely attached may display more hostile, isolated, or hyperemotional behaviors (Ainsworth, 1973; Erickson, Sroufe, & Egeland, 1985).

Because insecure children may be primed to anticipate rejection or unpredictable behaviors from others, they may be quicker to display hostile, impulsive, and aggressive interactions and have a harder time building trusting and supportive relationships with

others (Cohn, 1990, Pierrehumbert et al., 2000). Conversely, research has demonstrated more positive academic, behavioral, and social outcomes for children with secure attachment styles as compared to children with insecure attachment styles (Waters et al., 2000). Therefore, understanding the various ways in which caregivers and their children can develop secure attachments is essential to the positive socio-emotional development of a child.

### **Bidirectional Transactions and Attachment**

As previously discussed, the attachment figure's behaviors and sensitivity to the infant's signals influences proximity-seeking behaviors and the sense of security within infants (Bowlby, 1969). However, as the child grows older, they also play a role in the development of these attachment patterns. While there continue to be limitations in methodological approaches to ascertain the direction and strength of maternal effects on the child and child effects on the mother (Paschall & Mastergeorge, 2016), research suggests that bidirectional effects exist within the caregiver-child relationship. While attachment security is heavily influenced by caregiver parenting styles during infant years, a caregiver's interactions reorganize when the child attains more insight into the caregiver's motives and plans during toddlerhood and beyond (Bretherton, 1992). This insight influences children to respond in intentional ways that, in turn, influence the way the caregiver responds, thereby making the attachment system a more bidirectional process. Research demonstrates that as children get older, children can hold conversations, discuss their emotions, and display behaviors that impact their caregiver's responses to child's needs, which, in turn, influences the overall parent-child relationship quality (Bretherton, 1990; Cassidy, 1994; Main, Kaplan, & Cassidy, 1985). For example, a child who is



throwing a temper tantrum is going to elicit a different reaction from a caregiver than a child who playfully interacts.

Similarly, numerous experimental and longitudinal studies have demonstrated evidence for bidirectional effects and shown that parents react to children's characteristics and adjust their own behavior accordingly (Anderson, Lytton, & Romney, 1986; Rubin, Nelson, Hastings, & Asendorpf, 1999; Kochanska, 1998; Lytton, 1990, 2000; Stice & Barrera, 1995). Pardini (2008) used a longitudinal sample of boys across a developmental period spanning from childhood to adolescence to examine the associations between child conduct problems and parenting behaviors and found that the influence of disruptive child behaviors on changes in parenting appeared as strong as the influence of parenting behavior, such as harsh parenting, on changes in child behavior over time. Similarly, in another longitudinal study examining the bidirectional relations between parenting and girls' behavior over a six-year period (child ages 7-12 years), researchers found that both child and parent behaviors had unique impacts on future behavior changes (Hipwell, Keenan, Kasza, Loeber, Stouthamer-Loeber, & Bean, 2008). Parenting behaviors of low parental warmth and harsh parenting predicted increases in depressed mood and conduct problems, while child behaviors related to conduct problems and depressed predicted decreases in parental warmth and increases in harsh punishment (Hipwell et al., 2008). These transactional findings suggest that both children and parents co-create their interaction patterns that influence the relationship

The notion that parents and children have bidirectional impacts on one another is critical to the current study, given that this study aims to understand bidirectional transactions between mother-child dyads and their associations with attachment security.

Further understanding of the bidirectional influence of children and caregivers on attachment security can be addressed through a micro-analytic examination of the behavioral interactions between children and their caregivers. Understanding how attachment is associated with the complementary and non-complementary interactions between a caregiver and their child provides an avenue to explore how the quality of mother-child relationships is established.

### **Complementarity**

Research has demonstrated that relationship quality between dyads is enhanced through supportive, synchronous, or complementary, interactions. Using the framework of Interpersonal Theory, Kiesler (1983) stated that interpersonal behavior is not purely random, but contingent upon the stimulus or preceding interpersonal behavior of the other person in an interaction. Essentially, a person's interpersonal actions tend to initiate, invite, or evoke from an interactant complementary responses that lead to a repetition of the person's original actions (Kiesler, 1983). This theory posits that the behaviors of two people in an interaction "fit" one another or are complementary (Sullivan, 1953; Leary, 1957; Winch, 1958; Carson, 1969).

In other words, *complementarity* can be defined as interpersonal reciprocity, such that complementarity includes interpersonal behaviors that elicit reciprocal behaviors from others, which over time, create anticipated patterns of responses (Sullivan, 1953). These "action-reaction" sequences lead to stable patterns of relating (Gurtman, 2001; Kiesler, 1983; Leary 1957). Therefore, when engaging in complementarity, interactants are drawing, enticing, eliciting, and inviting a "restricted class" of reactions from the other (Kiesler, 1983). These reactions are "restricted" due to the fact that within complementary

interactions, individuals respond to interactions in a manner that matches the tone, behavior, or speech of the other person. This sentiment was expanded upon by Leary (1957), who highlighted that complementarity of interactions meant that communication (including behaviors and speech) invited reciprocal interpersonal responses from the other person that led to the repetition of the original type of communication.

Because complementarity appears in steady patterns, it sets expectations and provides an organizational framework to the dyadic exchange, and in turn, the relationship (Dietzel & Abeles, 1975; Henry, 1986; Kiesler, 1983; Sadler, Ethier, & Woody, 2011). Carson (1969) stated that a complementary interaction can be mutually rewarding by providing predictability to the interaction and thereby enhancing the security of both participants. During adult interactions, these interpersonal interactions can be depicted in terms of dominance (control, agency, or status), and love (affiliation, togetherness, and friendliness), and complementary interactions are reciprocal within these terms (Gurtman, 2001). Thus, complementary interactions are those in which friendliness pulls for friendliness and love pulls for a love response (Gurtman, 2001; Leary, 1957). Likewise, hate elicits hate and hostility pulls for hostility (Gurtman, 2001; Leary, 1957; Orford, 1986). Jackson (1959) asserted that because interactions are reciprocal and matched, the relationship quality is better. Additionally, after reviewing 21 studies that empirically tested the theory of interpersonal complementarity, Kiesler (1983) concluded that empirical research supported the notion that complementarity interactions were associated with positive relationship quality. In fact, research has shown that adult dyads engaging in complementary interactions performed better on cooperative tasks, like a jigsaw puzzle and word generation task, than dyads engaging in non-complementary interactions, indicating

that they are better able to work together and handle challenges (Estroff & Nowicki, 1992).

A construct similar to complementarity that has been applied to the study of parent-child relationships is positive interactive synchrony. Positive interactive synchrony in early childhood is exhibited in diverse ways, including periods of mutual attention as well as matching activity levels of facial expressions, vocal tone and pitch, and behavior. Research provides evidence that as children grow and develop beyond infancy, they become more active interactional partners, can assert their own needs, and contribute to the quality of interactions with their caregiver (Harrist & Waugh, 2002). Therefore, toddlers who experience greater synchrony with their caregivers can learn to strike a balance between compliance with their maternal demands and engage in self-control (Rescorl & Fechany, 1996). There is some evidence that more positive interactive synchrony is observed in securely attached parent-child dyads and is associated with greater autonomy and self-discovery in early childhood (Crandell, Fitzgerald, & Whipple, 1997; Crowell & Feldman, 1989; Isabella & Belsky, 1991). In sum, research has demonstrated that affiliative, synchronous interactions can enhance a mother-child relationship.

Although interactive synchrony is the more commonly used term in parent-child literature, complementarity is a similar construct that attends to the precise behavioral aspects of interactions, specifically focusing on interdependence, which includes behaviors that are independent and differentiated versus interdependent and undifferentiated, and affiliation, which encapsulates behaviors that are friendly and loving versus hostile and attacking. One widely used model to code parent-child interactions is the Structural Analysis of Social Behavior (SASB; Benjamin, 1996; Benjamin & Cushing, 2000; Florsheim, Tolan, & Gorman-Smith 1996; Skowron, Kozlowski, & Pincus, 2010). In the

SASB complex, complementary behaviors appear in similar positions on the circumplex (Benjamin, 1974). For example, a child behavior of submitting would complement a parent behavior of dominating; thus, dominate and submit are in similar positions on the complex. Specifying complementary behaviors has been an important part of understanding reciprocity involved in parent-child interactions. Benjamin (1974) defined complementarity as either a momentary or enduring pattern of interaction between two or more people that is characterized by parallel attitudes, feelings, and actions, which provides an avenue to related parent behavior in the moment with the child's experience and vice versa. She also described behaviors on the affiliation axis as attachment group behaviors (Benjamin, 1986). Thus, Benjamin (1986) described the more positive behaviors of nurturing, approaching, and enjoying as secure attachment behaviors. Benjamin (1986) asserted that interactions on the opposite end of her SASB circumplex, that include attacking and rejecting as reciprocal behaviors between a mother and child, were disrupted attachment group behaviors and therefore would disrupt attachment security.

Complementarity provides an avenue for individuals to understand what they can expect from others and predict for future interactions due to the reciprocal nature of interactions that are characterized by matching on degree of affiliation and reciprocity on the dimension of interdependence (Benjamin, 1974; Kiesler, 1983; Leary, 1957). With regards to the dimension of interdependence, complementary actions are those in which dominance or control elicit submission and submission pulls for dominance (Benjamin, 1974; Kiesler, 1984; Leary, 1957). Likewise, autonomy-granting or love transactions pull for the other to act autonomously and warmly (Benjamin, 1974; Kiesler, 1983).

Positive complementarity, like positive interactive synchrony, may be beneficial for

both child development and quality of the caregiver-child relationship through positive communication patterns (Isabella & Belsky, 1991; Harrist & Waugh, 2002). In these *positive complementary* interactions, the mother and child are both engaging on the affiliation axis, with transactional patterns of love, warmth, and support (Benjamin, 1986). With these affiliative interactive patterns, mothers and children are displaying more positive, responsive, and sensitive communication patterns towards one another which are associated with secure attachments (Karavasilis, Doyle, & Markiewicz, 2003). When children and their caregivers engage in complementary affiliative interactions, they co-create predictable patterns of loving and warm responses that establish security within the relationship (Karavasilis et al., 2003).

Within Interpersonal Theory, complementarity has generally been seen as integral to the development and maintenance of positive relationships between two individuals, because complementary interactions include consistent and congruent behaviors within dyads. However, Interpersonal Theory has failed to address that not all complementary interactions that are matched and reciprocal are positive, thereby neglecting to differentiate between positive and negative types of complementarity. *Negative complementarity* can be defined as transactional processes marked by reciprocal interactions of hostility and disaffiliation. When both partners engage in matched negative interactions, the child and caregiver are engaging in reciprocal exchanges; however, these interactions include dismissive or withdrawing behaviors that do not return to the mutual positive behaviors encompassed within positive complementarity (Snyder, Edwards, McGraw, Kilgore, & Hotlon, 1994). Therefore, these matched negative behaviors can be detrimental to the quality of the dyadic relationship (Orford, 1986).

Within this current study, negative complementarity includes communication patterns between a mother and child that are hostile or dismissive. These interactions may promote an insecure attachment style (Harrist & Wagh, 2002). As noted earlier, attacking and rejecting reciprocal behaviors disrupt attachment security and have been observed more frequently in insecurely attached children (Benjamin, 1986). A study by Isabella & Belsky (1991) examined associations between attachment patterns within mother-infant dyads. Results demonstrated that dyads with insecure attachment included mothers who displayed insensitive and dismissive interactions that were contingent upon the infant's behaviors. These interactions were characterized by insensitive maternal behaviors followed by infants "shutting down" in response to their unresponsive mothers. These findings suggest that not all complementarity promotes a healthy and positive dynamic between a mother and child. While research addresses the associations between positive complementary interactions and attachment patterns, this study empirically tested the impacts of negative complementarity on attachment security.

### **Non-complementarity**

Non-complementarity is another interpersonal process that may have associations with attachment security. Interactions are at times non-synchronous, in which parents and children have uncoordinated and mismatched states of affiliation, referred to as interactive mismatch within parent-child literature (Tronick & Cohn, 1989) or non-complementarity within the Interpersonal Theory framework (Kiesler, 1983). In these non-complementary instances, one member of the dyad may be affiliative, whereas the other is disaffiliative; therefore, interactions are no longer reciprocal and matched (Kiesler, 1983; Tronick & Cohn, 1989). In non-complementary interactions, dyads are not matched in affiliation and

interdependence; instead, one member of the dyad may be approaching and kind, while the other is dismissive and detached (Kiesler, 1983).

Research on non-complementarity has highlighted its negative consequences in promoting poor relationship quality within adult dyads (Henry, Schacht, & Strupp, 1986; Kiesler, 1983; Orford, 1986). It has been theorized that non-complementary interactions induce excess anxiety and mistrust within the relationship (Henry et al., 1986; Swensen, 1967). The concept of non-complementarity has been studied in relation to therapeutic alliance within the adult therapist-client relationship in psychotherapy, and studies suggest that clients who experience more non-complementary interactions with their therapist report more anger and confusion (Tasca & McMullen, 1993; Tracey, 1993). For example, at the beginning of therapy, clients experience more positive working alliances with their therapists when they engage in more complementary interactions than non-complementary interactions (Tracey, 1993). These adult therapeutic studies, while not directly investigated within the context of parent-child interactions, suggest that non-complementarity in parent-child relationships may be associated with distrust and insecurity within children.

Parent-child literature on interactive mismatch, a construct similar to non-complementarity, suggests that mismatched interactions do not promote security of attachment and the positive development of the child (Tronick & Cohn, 1989). In these situations, mothers may be interacting to their children in dismissive and unloving ways which are more likely to be observed in insecurely attached mother-child dyads (Bretherton, 1992; Tronick & Cohn, 1989). Thus, negative non-complementarity can be characterized by disaffiliative, hostile parent behaviors that are responded to by children in non-reciprocal warm and affiliative ways. Research has not examined how these negative



non-complementary interactions may be associated with insecure attachment.

Although research on non-complementarity (and interactive mismatch) has emphasized non-complementarity as detrimental to the quality of the dyadic relationship, it is not clear that all forms of non-complementarity are indicative of poor quality of relationship. For example, research suggests that the most successful therapy dyads include non-complementary interactions during the middle phase of therapy (Friedlander, 1993). During this phase, therapists can help clients make the most change and avoid common maladaptive relational patterns by responding to their clients in non-complementary ways (Friedlander, 1993; Pincus & Cain, 2008). The middle phase of therapy tends to be where clients are beginning their change process, starting to meet goals, and/or increasing self-awareness, which can bring about feelings of anger, apathy, and resistance within clients. Clients may react to therapists with hostility and anger during this time of change; however, research has demonstrated that when therapists respond to this hostility with friendliness and warmth, they help clients feel supported to make progress towards their goals (Friedlander, 1993; Pincus et al., 2008). While these non-complementary interactions may at first create distress in the client, the client will make progress towards treatment goals and thus experience a more positive working alliance with their therapist (Pincus et al., 2008).

These disparate non-complementarity findings within therapeutic literature suggest that there may be instances where non-complementarity is beneficial in other relationships, such as the parent-child relationship. The novel term of *positive non-complementarity*, characterized by warm and affiliative parenting behaviors and mismatched child negative and aversive behaviors, may signify a healthy, adaptive parent-child relationship. Often

times, when parent and child responses are not reciprocal with one another, children may be asserting age-appropriate autonomy and independence from their parents. In these relationships, parents may consistently provide warmth and attention in order for children to feel comfortable separating and engaging in disaffiliative interactions. By feeling safe and secure with their caregiver, infants can feel comfortable separating and exploring their environment (Bowlby, 1969; Mahler, Pine, & Bergman, 1975). In response, children may assert their autonomy through disaffiliative responses but feel secure in knowing that their primary caregiver will care for and be present for them (Bowlby, 1969; Bretherton, 1992). This experience of positive non-complementarity in moment-to-moment interactions between a mother and child may more likely be observed in dyads where children are securely attached.

Thus, the effect of non-complementary interactions on children's development may depend on the particular *type* of non-complementarity in question. For the purposes of this study, two novel kinds of non-complementarity were identified and examined. *Positive non-complementarity* was characterized by warm and affiliative parent behaviors that are responded to by children in non-reciprocal hostile and rejecting ways. *Negative non-complementarity*, which may produce similar outcomes to relationship quality as the original unidimensional construct of non-complementarity, was characterized by disaffiliative and hostile parent behaviors and mismatched child warm and affiliative behaviors. Research has failed to identify and study these differences in non-complementarity that may have varied associations with attachment security.

### **Current Study**

The current study examined associations between four types of parent-child

interactions (positive and negative complementarity and positive and negative non-complementarity) and security of attachment. Namely, this study distinguished between positive and negative types of complementarity and non-complementarity in order to provide theoretically informed subdivisions of these previously unidimensional constructs. Furthermore, this study explored whether these specific types of interactions were associated with secure or insecure attachments, providing a deeper understanding of how attachment security is potentially maintained through a focus on bidirectional interactions between a parent (specifically the mother) and child.

Attachment security is essential for the healthy social, emotional, academic, and behavioral development of a child and much is known about how parents influence and shape their children's attachment (Harrist & Waugh; Karavasilis et al., 2003; Waters et al., 2000). However, research has not explored how children and their caregivers co-create secure or insecure attachment styles through their behavioral interactions. Although some research has focused on positive complementarity within therapeutic or adult populations, little research has been conducted on these associations within parent-child interactions. Additionally, current research focused on complementarity has neglected to focus on negative complementarity. The current study will fill these research gaps by exploring positive and negative complementarity as they relate to attachment security. Furthermore, the two valences of non-complementarity have not been studied within the parent-child literature. This present study provides an extension to current Interpersonal Theory, suggesting that different types non-complementarity could be beneficial or maladaptive depending on the circumstances. While negative non-complementarity (i.e., a mother behaves in disaffiliative ways and a child is warm and responsive) is likely maladaptive to

an interpersonal relationship, positive complementarity (i.e., a mother is warm and responsive and a child behaves in hostile and rejecting ways) may be adaptive and developmentally appropriate. Because positive and negative non-complementarity have not been investigated in relation to attachment security, this study seeks fill this important gap in the interpersonal and attachment literature. By focusing on the types of interactive patterns that are associated with attachment quality, this study may provide insight for interventions that target specific parent-child interactions and attachment patterns.

There are four main research questions (Q) and associated hypotheses (H) in this study. Q1: Is positive complementarity in mother-child dyads associated with secure attachment styles? H1: Based on existing research, children in dyads that display greater positive complementarity during a laboratory observation are more likely to be securely attached. Q2: Is negative complementarity in mother-child dyads associated with insecure attachment styles in children? H2: Children in dyads that display greater negative complementarity during a laboratory observation are more likely to be insecurely attached to their mothers. Q3: Is positive non-complementarity, where mothers are interacting with their children in warm and affiliative ways, while a child is responding in disaffiliative ways, associated with secure attachment styles in children? H3: Children in mother-child dyads that display greater positive non-complementarity during a laboratory observation are more likely to be securely attached. Q4: Is negative non-complementarity, where mothers are interacting with their children in harsh and/or controlling ways while a child is responding in affiliative and loving ways, associated with insecure attachment? H4: Children in mother-child dyads that display greater negative non-complementarity are more likely to be insecurely attached.

## CHAPTER II

### METHODS

This chapter outlines methods used for the study, including a description of study participants, procedures, measures, and the data analytic plan. This project was supported by the National Institutes of Health Research grant R01 MH079328 (P.I., Elizabeth A. Skowron, Ph.D.) and funded by the National Institute of Mental Health and Administration for Children and Families/Children's Bureau of the Administration on Children, Youth, and Families as part of the Federal Neglect Research Consortium.

#### **Participants**

143 mother–preschooler dyads (64 child maltreatment [CM] dyads and 79 non-CM dyads) were included in this study. Initial recruitment efforts targeted families involved in five Child Protective Services (CPS) agencies within a central, Mid-Atlantic state, specifically mothers who had documentation as perpetrators of CM. For comparison with the CM group, a sociodemographically similar sample of low-income, non-CM mothers was recruited from public welfare agencies and through locally published birth announcements. Non-CM mothers consented to verification that their family was free of CPS records. Child participants ranged in age from 3 to 5 years ( $M = 3.80 \pm 0.75$  years), 43.5% were girls, and the majority (85.9%) were from non-Hispanic White racial backgrounds. To be eligible to participate, mothers had to be  $\geq 18$  years of age, speak fluent English, and live with their participating preschooler.

#### **Procedure**

All procedures were approved and monitored by the Office for Research Protections. Mother–child dyads completed a three-visit study protocol over a 2-3-week

period conducted by two trained experimenters, comprised of two home visits and a 2.5-hour laboratory session. Families were paid \$150 to complete the three interviews, provided transportation, snacks, and children's small toys/gifts. Only the lab procedures relevant to the current study are summarized here. Mother-child interactions were observationally-coded during a moderately challenging joint puzzle task (Hoffman, Crnic, & Baker, 2006) using the SASB coding model (Benjamin, 1974). Mother and child were seated together at a small table, and the dyad was given a challenging 3-dimensional puzzle consisting of 11 assembled Duplo blocks and 12 disassembled blocks with which to re-create the presented model. Mothers were instructed to verbally help their children complete the puzzle without themselves touching the puzzle pieces. The task ranged from 3 to 5 min, depending on whether and how quickly the dyad completed the puzzle.

## **Measures**

**Demographics.** Participants completed a brief self-report demographic questionnaire to assess: family income, age, sex, and race/ethnic background.

**Attachment classification (Preschool Strange Situation Procedure).** The Preschool Strange Situation Procedure (SSP; Cassidy & Marvin, 1992) was administered at the onset of the lab visit. While the Strange Situation (Ainsworth, 1978) is a standardized laboratory procedure that was initially developed to determine attachment classification during infancy, research has demonstrated that attachment patterns tend to remain stable from infancy to age six, making the Strange Situation Procedure applicable to the current sample age group (Main & Cassidy, 1988; Wartner, Grossman, & Suess, 1994).

Additionally, two trained graduate student coders and one expert coder classified children from videotapes of the SSP by using Cassidy and Marvin's coding system, which was

developed for use in coding attachment security in preschool aged children (Cassidy & Marvin, 1992). Taking into account the child's pattern of response upon reunion with the caregiver, children were then assigned into one of four attachment classifications: (1) secure; (2) insecure-avoidant; (3) insecure-resistant; or (4) insecure-disorganized. The expert coder was also employed to determine initial reliability of the graduate student coders. Biweekly meetings were convened to counter drift in interrater reliability. Intraclass correlation coefficients revealed agreement on primary attachment classifications (weighted kappa coefficient = .80) from a random sample of 28 (20%) double-coded tapes.

**Observational coding of mother-child interactions.** A focus of this study was to examine variation in the level of positive and negative complementarity and non-complementarity within mother-child dyads over the course of the joint puzzle task. Observational data from the mother-child joint Duplo task were coded using the Structural Analysis of Social Behavior (SASB) coding system (Benjamin, 1996; Benjamin & Cushing, 2000), a micro-social coding system used to code parent-child dyadic interactions (e.g., Florsheim, Tolan, & Gorman-Smith, 1996; Skowron, Kozlowski, & Pincus, 2010). Using videotapes and transcripts together, SASB can capture moment-by-moment interactions (verbal, non-verbal, and paralinguistic information) in the speaking turns of two or more interactive partners. There are 16 possible interactional codes characterized along two dimensions of affiliation (love-hate) and interdependence (control/submit to emancipate/separate), distributed by focus on transitive (behavior focused on the other) and intransitive (behavior focused on the self; See Figure 1).

The SASB coders were trained for over 60 hours, worked with practice tapes to achieve sufficient inter-rater reliability (weighted kappa coefficients ranging from .73 to

.84;  $M = .74$ ), and were blind to families' CM status. Trained SASB coders simultaneously watched the 5-minute video observations and identified "speaking turns" from a transcribed verbatim script (including descriptions of non-verbal behaviors when applicable) and then rated each speaking term on three domains, (1) focus on self or other, (2) degree of warmth/affiliation, and (3) degree of interdependence (from autonomy/independence to control/submit) using the script while viewing the videotaped interaction. These three domains combine to be classified into 16 behavioral codes reflected in eight clusters of matching transitive (focus on other) and intransitive (focus on self in relation to other) behaviors. SASB Clusters 2, 3, and 4 represent warm, affiliative behaviors (transitive, intransitive): (2) Affirm/Understand, Disclose/Express; (3) Love/Approach, Joyfully Connect; and (4) Nurture/Protect, Trust/Rely. SASB Clusters 6, 7, and 8 represent negative behaviors: (6) Blame/Criticize, Sulk/Appease; (7) Attack/Reject, Protest/Recoil; and (8) Ignore/Neglect, Wall-off/Avoid. Clusters 1, 2, and 8 represent autonomous behaviors ((1): Free/Emancipate, Separate), and clusters 4, 5, and 6 represent interdependent behaviors ((5) Control/Manage, Defer/Submit). Proportionate scores were calculated for each of the eight clusters for the mother (e.g., the parent initiated or responded with nurturing/protecting behaviors in 48.6% of speaking turns), which were calculated based on the amount of maternal communications coded within a particular SASB cluster, divided by the total number of mother's speaking turns. This same process was used to calculate children's proportionate scores for the eight clusters.

Next, mother-child interaction or child-mother sequences of interest were used and indexed by lag-1 conditional probabilities. Lag-1 probabilities represent the likelihood that a mother will respond to child with a certain response or the likelihood that the child will



respond to their mother with a certain response. With regards to the lag-1 probabilities, a probability score ranging between 0 and 1 was computed for each dyad, which encompassed both an antecedent child behavior and a subsequent child behavior. For example, this score represented the probability that when a child sought connection, the mother would respond in a loving manner, and when a mother lovingly guided, a child would lovingly follow. In order to capture the cumulative effect of all of the child's antecedent behaviors on the mother's behaviors and vice versa, these lag-1 conditional probabilities were summed to create the four predictor variables of interest, thereby giving these variables of interest a range of scores between 0-8. These variables of interest included: (a) *positive complementarity* defined as the proportion of mother and child Affirm/Understand, Disclose/Express; Love/Approach, Joyfully Connect; and Nurture/Protect, Trust/Rely responses [ $P((2-2, 3, 4) + (3-2, 3, 4) + (4-2, 3, 4))$ ]; (b) *negative complementarity* reflected proportion of probabilities of mother and child Blame/Criticize, Sulk/Appease; Attack/Reject, Protest/Recoil; and Ignore/Neglect, Wall-off/Avoid responses [ $P((6-6, 7, 8) + (7-6, 7, 8) + (8-6, 7, 8))$ ]; (c) *positive non-complementarity* is the proportion of mom Affirm/Understand, Love/Approach, and Nurture/Protect responses with child Sulk/Appease, Protest/Recoil, and Wall-off/Avoid responses [ $P((2-6, 7, 8) + (3-6, 7, 8) + (4-6, 7, 8))$ ]; and (d) *negative non-complementarity* is the proportion of mother Blame/Criticize, Attack/Reject, and Ignore/Neglect responses with child Disclose/Express, Joyfully Connect, and Trust/Rely responses [ $P((6-2, 3, 4) + (7-2, 3, 4) + (8-2, 3, 4))$ ].

For the purposes of this study, *positive complementarity* included interactions where mothers and children were in SASB clusters 2, 3, and 4 since these clusters represent positive affiliative behaviors. Higher scores indicated higher proportion of positive

complementarity. *Negative complementarity* included interactions where mothers and children were in clusters 6, 7, and 8 since these clusters represent hostile and rejecting behaviors. Higher scores indicated higher proportion of negative complementarity. *Positive non-complementarity* included interactions when mothers were in clusters 2, 3, 4 and children were in clusters 6, 7, and 8. *Negative non-complementarity* included interactions when mothers were interacting with their children in clusters 6, 7, and 8, and children were associating with their mothers by engaging in clusters 2, 3, and 4. Higher scores on both variables indicate more mismatched interactions between the mother and child.

## **Analysis**

**Preliminary analysis.** To account for the possibility of Type I error, all statistical tests in the study reflect  $\alpha = .05$ . All data were screened for missing data and outliers. Descriptive statistics (*M*, *SD*, skew, and kurtosis) were examined for all study variables, as well as the tenability of assumptions required for the statistical analyses of interest.

Three of the four predictor variables, negative complementarity, positive non-complementarity, and negative non-complementarity were examined, and floor effects were detected (the variable, positive complementarity, did not have floor effects with 18.2% of mother-child dyads having zero occurrence of positive complementarity). Indicators for floor effects included 81.0% of mother-child dyads having zero occurrence of negative complementarity, 62.0% of dyads having zero occurrence of positive non-complementarity, and 83.2% of dyads having zero occurrence of negative non-complementarity. Such low proportions of various predictor variables restricted variance, thus clustering values at the low end of the S-curve upon which logistic regressions depend. By centering the four predictor variables (i.e., moving them off the zero) and then log transforming them, the

variables were put on a scale that was more interpretable and compatible with the outcome variable (Keene, 1995). The resulting transformation allowed for exploration of meaningful variance associated with the four different predictors of interest. Descriptive statistics for the four original and transformed predictor variables are presented in Table 1.

Table 1.

*Descriptive Statistics for Four Predictor Variables*

Predictor variables	Not transformed				Transformed			
	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Positive complementarity	141	2.28	1.52	0.00-5.61	141	0.63	0.17	0.36-0.90
Negative complementarity	141	0.15	0.34	0.00-1.15	141	-0.68	0.31	-0.83-0.11
Positive non-complementarity	141	0.40	0.71	0.00-4.65	141	-0.20	0.28	-0.40-0.70
Negative non-complementarity	141	0.10	0.26	0.00-1.34	141	-0.89	0.31	-1.02-0.16

Bivariate correlations were examined prior to main analyses to assess associations among predictor variables, potential covariates (i.e., child sex (female = 0 and male = 1), child maltreatment (non-maltreatment = 0, maltreatment = 1), child age, and mother’s years of education, and outcome variable. Additionally, preliminary tests for attachment group differences were conducted on sample demographics using ANOVA and chi-square tests.

**Main analyses.** To facilitate binary logistic regression, dummy codes were prepared for the outcome of interest, attachment group, such that insecure = 0, secure = 1.

Attachment group was regressed onto four distinct hypothesized continuous predictors: positive complementarity, negative complementarity, positive non-complementarity, and

negative non-complementarity. Each regression model in this study is considered binary due to the dichotomous nature of the outcome variable. Unlike the general linear model, logistic regression analysis does not depend upon assumptions of linearity, normality, or homogeneity of variance for independent variables (Pampel, 2000). Logistic regression uses maximum likelihood estimation to compute coefficients, which are typically expressed as exponentiated betas and/or odds ratios (Pampel, 2000).

In logistic regression, an overall model chi-square is used to assess the presence of a relation between predictor variables and a dichotomous outcome. This analytical approach produces a Wald statistic, which can be used to assess the extent of the relations between predictor variables and an outcome, but the Wald statistic is not an indicator on its own of significance. The beta coefficient (log value) indicates that a one-unit change in the predictor variable associates with an increased or decreased probability of belonging to the target group. The odds ratio (OR) is the transformed log value that represents the relative probability of belonging to the target group based on these increased or decreased odds. An odds ratio  $> 1$  represents an increased likelihood of belonging to the target group; an odds ratio  $< 1$  indicates a decreased likelihood of belonging. In this study, the target group is considered the group coded as “1.” To achieve adequate power in logistic regression, the minimum recommended ratio of participants to variables is 10:1 (Hosmer, Lemeshow, & Sturdivant, 2013). The current study exceeded that threshold for all four binary logistic regressions.

For each regression model, covariates and predictors variables were entered block-wise into the model. Interaction terms of predictor variables (i.e., positive complementarity, negative complementarity, positive non-complementarity, negative complementarity) X

child sex were tested to assess for possible moderating effects that could affect interpretation of main effect results. If interaction effects were not significant, the main effects model block was interpreted.

## CHAPTER III

### RESULTS

As mentioned above, three of the four predictor variables, negative complementarity, positive non-complementarity, and negative non-complementarity, were examined, and floor effects were detected (the variable, positive complementarity, did not have floor effects). 81.8% of mother-child dyads had incidents of positive complementarity. 38.0% of dyads displayed any positive non-complementarity, and only 19% of mother-child dyads displayed any negative complementarity and 16.8% of dyads displayed any negative non-complementarity. Thus, all four variables were transformed, and the resulting transformed variables were used for preliminary and main analyses within this study (see Table 1 for descriptive statistics for the four original and transformed predictor variables).

Table 2 presents Spearman's bivariate correlations for all variables. With respect to the predictor variables, child age, mother's years of education, and child maltreatment did not associate significantly with dyad's scores on positive complementarity, negative complementarity, positive non-complementarity, and negative non-complementarity,  $p > .05$ . Attachment correlated significantly and negatively with positive complementarity scores ( $r = -.34, p < .05$ ), indicating that insecurely attached dyads displayed less positive non-complementarity. Child sex correlated negatively with positive non-complementarity scores ( $r = -.17, p < .05$ ), such that dyads with female children within the sample displayed greater positive non-complementarity than dyads with male peers. Positive non-complementarity scores correlated positively with negative complementarity scores ( $r = .29, p < .01$ ) as did negative non-complementarity scores with negative complementarity scores ( $r = .26, p < .01$ ), indicating that dyads displaying greater negative complementarity

also displayed greater positive non-complementarity and negative non-complementarity.

Table 2.

*Spearman's r Correlations*

Variable	1	2	3	4	5	6	7	8	9
1. Attachment (0, 1)	1.00								
2. Positive complementarity	-.34*	1.00							
3. Negative complementarity	-.07	.02	1.00						
4. Positive non-complementarity	-.13	.16	.29**	1.00					
5. Negative non-complementarity	.08	.04	.26**	.14	1.00				
6. Child sex (0,1)	.18*	-.14	-.10	-.17*	-.03	1.00			
7. Child age	.04	-.11	-.05	.00	.05	.02	1.00		
8. Maternal years of education	-.03	.00	-.04	.05	.07	-.11	.10	1.00	
9. Child maltreatment (0, 1)	.10	-.11	.09	-.06	-.06	.11	.02	.08	1.00

\* $p < .05$ ; \*\* $p < .01$

As shown in Table 3, no differences were observed in children's age,  $F(1, 142) = 0.28, p > .05$  maternal years of education,  $F(1, 136) = 3.82, p > .05$ , or child maltreatment [CM] status,  $\chi^2(1) = 1.41, p > .05$ , between the secure and insecure attachment groups.

Significant differences were observed between attachment groups in children's sex,  $\chi^2(1) = 4.41, p < .05$ . A significantly higher percentage of girls displayed secure attachment and a significantly higher percentage of boys showed insecure attachment. Hence, child sex was retained as a covariate in further analyses.

Table 3.

*Sample Characteristics by Attachment Group*

Variable name	Secure ( $n = 63$ ; 44.06%)	Insecure ( $n = 80$ ; 55.94%)	Test statistic
Child age	3.70 (0.69)	3.76 (0.75)	$F(1, 142) = 0.28$

Child sex (% female)	51.90%	48.10%	$\chi^2(1) = 4.41^*$
Mother's education	12.75 (2.15)	12.62 (1.80)	$F(1, 141) = 3.82$
Child Maltreatment			$\chi^2(1) = 1.41$
Non-CM	48.68%	51.32%	
CM	38.81%	55.94%	

\* $p < .05$

Note. Sample characteristics are reported as  $M (SD)$

### Logistic Regression Analyses

Binary logistic regression was used to test each hypothesis, regressing attachment security on complementarity variables. For all four regressions, interaction effects were not significant; therefore, main effects were interpreted and are presented per research question.

**Positive complementarity.** This model (see Table 4) tested Hypothesis 1, which stated that positive complementarity would be associated with attachment security, with higher incidence of positive complementarity linked to an increased likelihood of children having secure attachments to their mothers. With attachment security regressed onto positive complementarity and child sex entered as a control variable, positive complementarity was significantly associated with attachment security,  $B = 4.63$ ,  $OR = 102.60$ ,  $p < .05$ . Thus, for every one-unit increase in positive complementarity score, the odds of children in dyads being securely attached would increase 102.60 times. These large effects can be attributed to the high rates of positive interactions within the sample.

Table 4.

*Logistic Regression of Positive Complementarity Predicting Attachment Security*

Variable	$B$	$SE$	$OR$	$CI$
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Child sex	0.60	0.38	1.82	0.87, 3.78
Positive complementarity	4.63	1.24	102.60*	9.05, 1163.16

\* $p < .05$ .

Note. OR = Odds ratio; CI = Confidence interval

**Negative complementarity.** This model (see Table 5) tested Hypothesis 2, which predicted that negative complementarity would be associated with attachment insecurity with higher incidents of negative complementarity linked to an increased likelihood of children having insecure attachments to their mothers. With attachment security regressed onto negative complementarity and child sex entered as a control variable, negative complementarity did not associate with a statistically significant increase in likelihood of insecure attachment,  $B = 0.42$ ,  $OR = 1.52$ ,  $p > .05$ . With attachment security regressed onto child sex and negative complementarity entered as a control variable, child sex associated significantly with attachment security, where boys were slightly more likely to be securely attached than girls,  $B = 0.71$ ,  $OR = 2.04$ ,  $p < .05$ .

Table 5.

*Logistic Regression of Negative Complementarity Predicting Attachment Security*

Variable	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Child sex	0.71	0.35	2.04*	1.02, 4.07
Negative complementarity	0.42	0.56	1.52	0.51, 4.60

\* $p < .05$ .

Note. OR = Odds ratio; CI = Confidence interval

**Positive non-complementarity.** This model (see Table 6) tested Hypothesis 3,

which stated that positive non-complementarity would be associated with attachment security with higher incidence of positive non-complementarity linked to an increased likelihood of children having secure attachments to their mothers. With attachment security regressed onto positive non-complementarity and child sex entered as a control variable, positive non-complementarity was significantly associated with attachment security,  $B = 1.42$ ,  $OR = 4.13$ ,  $p < .05$ . Thus, for every one-unit increase in or incidence of positive non-complementarity, the odds of children in mother-child dyads being securely attached increased 4.13 times.

Table 6.

*Logistic Regression of Positive Non-Complementarity Predicting Attachment Security*

Variable	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Child sex	0.58	0.36	1.79	0.88, 3.65
Positive non-complementarity	1.42	0.66	4.13*	1.13, 15.01

\* $p < .05$ .

*Note.* OR = Odds ratio; CI = Confidence interval

**Negative non-complementarity.** This model (see Table 7) tested Hypothesis 4, which predicted that negative non-complementarity would be associated with attachment insecurity with higher incidents of negative non-complementarity linked to an increased likelihood of children having insecure attachments to their mothers. With attachment security regressed onto negative non-complementarity and child sex entered as a control variable, negative non-complementarity did not associate with a statistically significant increase in likelihood of insecure attachment,  $B = -0.58$ ,  $OR = 0.56$ ,  $p > .05$ . With

attachment security regressed onto child sex and negative non-complementarity entered as a control variable, child sex associated significantly with attachment security, where boys were slightly more likely to be securely attached than girls,  $B = 0.71$ ,  $OR = 2.04$ ,  $p < .05$ .

Table 7.

*Logistic Regression of Negative Non-Complementarity Predicting Attachment Security*

Variable	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Child sex	0.74	0.35	2.10*	1.05, 4.21
Negative non-complementarity	-0.58	0.59	0.56	0.18, 1.77

\* $p < .05$

*Note.* OR = Odds ratio; CI = Confidence interval

## CHAPTER IV

### DISCUSSION

This chapter provides a review of the material presented in this dissertation. First, an overview of the study will be provided, and the analytic findings interpreted. Next, clinical implications will be discussed. Finally, strengths and limitations of the study will be addressed, along with suggested future directions for research.

#### **Overview of the Study**

The purpose of this study was to contribute to Interpersonal theory by distinguishing positive and negative valences of the theoretical constructs of complementarity and non-complementarity. Additionally, the goal of this study was to understand whether differences in the quality of dyadic interactions exist between securely and insecurely attached children and their mothers. More specifically, this study tested associations between four types of interpersonal interactions (positive and negative complementarity and positive and negative non-complementarity) and security of preschooler attachment.

Research to date grounded in Interpersonal Theory has focused on the positive impacts of complementary dyadic interactions and the negative impacts of non-complementary dyadic interactions on adult relationships (Dietzel & Abeles, 1975; Henry, 1986; Kiesler, 1983; Orford, 1986). However, this body of research has not been applied to the study of parent-child relationships. Additionally, the differing impacts that negative complementarity (where both individuals are engaging in matched hostile, negative, and disaffiliative behaviors) and positive non-complementarity (where one individual is maintaining warm and affiliative behaviors in response to a person who is acting in withdrawing or hostile ways) may have on relationship quality have not been identified or

empirically tested. Thus, this study sought to fill these research gaps by exploring whether positive and negative complementarity and positive and negative non-complementarity are associated with attachment security in mother-preschooler dyads.

### **Positive Complementarity and Non-Complementarity**

Logistic regression analysis supported my hypothesis and revealed that children in dyads that displayed positive complementarity were more likely to be securely attached when compared to insecurely attached, after controlling for child sex, which is consistent with previous research findings (Estroff & Nowicki, 1992; Gurtman, 2001; Kiesler, 1983; Leary 1957). Positive complementarity was significantly associated with secure attachment, demonstrating more than a 100 times increased likelihood of secure attachment. These results suggest that mother-child dyads in which greater positive complementarity is observed, where both individuals interact in positive, affiliative, and reciprocal ways, show much higher odds of children being securely attached to their mothers. Thus, mother-child dyads, engaging in reciprocal supportive and warm interactions is a significant marker for secure attachment, which is a predictor of adaptive social, behavioral, and emotional development in children (Cohn, 1990, Pierrehumbert et al., 2000). By interacting in responsive and sensitive communication patterns, mothers and their children engage in complementary affiliative interactions in which they co-create patterns of loving and warm responses that establish security within the relationship (Karavasilis et al., 2003). Furthermore, transactional patterns of love, warmth, and support enable children to trust that their mothers will respond to them in positive ways and ensure that their mothers are a safe base for which to rely on, which is indicative of attachment security (Ainsworth, 1973; Bowlby, 1980).

Results demonstrating that dyads with securely attached children exhibited more positive complementarity is similar to previous research by Isabella & Belsky (1991), which found that the interactions of secure dyads are characterized by mutual reciprocity, moderation, and supportive interactions. These findings are consistent with Interpersonal Theory, which suggests that complementary interactions are matched and reciprocal which provides an organizational framework to the dyadic exchange, and in turn the security of the relationship (Carson, 1969; Dietzel & Abeles, 1975; Henry, 1986; Kiesler, 1983). Significant research has demonstrated the positive impacts of complementarity on adult romantic and therapeutic relationships. Studies have found that when adult romantic or therapeutic dyads mutually engage in friendly, trusting, and warm interactions, they are more likely to have positive relationship and treatment outcomes (Estroff & Nowicki, 1992; Dietzel & Ables, 1975; Henry, Schacht, & Strupp, 1986; Svartberg & Stiles, 1992; Tracy, Sherry, & Albright, 1999). The current study expands on these various adult dyad findings by documenting links between children's attachment security and quality of parent-child reciprocal transactions.

Turning to the phenomenon of positive non-complementarity in mother-child dyads, this study found that a novel form of non-complementarity, positive non-complementarity (i.e., mothers engage in warm and affiliative behaviors and children engage in hostile or withdrawn behaviors), was indicative of a child's secure attachment and positive mother-child relationship. Results of a logistic regression supported my hypothesis and demonstrated that children in dyads that displayed positive non-complementarity were more likely to be securely attached when compared to insecurely attached, after controlling for child sex. Higher rates of positive non-complementarity predicted a more than 4.13

times increased likelihood of secure attachment between children and their mothers. More specifically, for every one-unit increase of positive non-complementarity (i.e., a single mother-child transaction), the odds of children in those dyads being securely attached increased by more than 100 percent.

These findings on positive non-complementarity differ from traditional theoretical understandings of non-complementarity but are consistent with findings on the adaptive role of non-complementarity in effective adult psychotherapy (e.g., Constantino, 2000; Friedlander, 1993; Talley, Strupp, & Morey, 1990). Interpersonal Theory suggests that non-complementary interactions, where one member of the dyad is affiliative and the other is disaffiliative, tend to have negative consequences on dyadic relationship quality (Kiesler, 1983). Furthermore, research on non-complementarity within adult relationships has demonstrated that because these interactive patterns are unmatched, non-complementary interactions create anxiety and mistrust within individuals in the relationship (Henry et al., 1986; Swensen, 1967).

While non-complementarity has generally been shown to be negative for adult romantic relationships, research has demonstrated that, at certain points, successful adult therapist-client dyads engage in discernable non-complementary interactions (Constantino, 2000; Friedlander, 1993; Talley, Strupp, & Morey, 1990). For example, clients are likely to experience challenges and failures during therapy. Therefore, a client might react to this perceived failure by sulking. Rather than matching this sulking behavior, the productive therapeutic response might be if the therapist responds in a non-complementary way of affirming and understanding (Constantino, 2000). By responding in this way, the therapist would be inviting the client to respond to their affirming behavior in a complementary way,

thereby gradually bringing the client around to positive complementarity and assisting them to remain engaged in therapy. Benjamin (1984) termed this phenomenon the Shaurette principle, which implies that in order to connect interpersonally with another person who is acting in hostile or disaffiliative ways, an individual must use complementary responses to guide the other person to match their positive behaviors. These findings demonstrate that there are positive effects of non-complementary interactions on adult relationships, particularly those I classify as positive non-complementary, with the theoretical understanding that when an individual behaves in warm, understanding, and affirming ways, they are gradually guiding the other person who is acting in hostile or disaffiliative ways towards positive complementarity.

The findings here linking positive non-complementarity with positive relationship outcomes align with a similar construct of interactive mismatch within the parent-child literature. Recall that interactive mismatch includes interactions where parent-child dyads have miscoordinated, mismatched states of affiliation where these dyads are not matched in behaviors and/or affect (Tronick & Cohn, 1989). Similar to non-complementary interactions, interactive mismatch is marked by interactions that are unmatched and not reciprocal. Research on interactive mismatch has demonstrated that these interactions are unpredictable and can create anxiety for the child (Tronick & Gianino, 1986). However, research has also shown that when a parent and child are able to repair interactive mismatch, they can move back to having matched, coordinated interactions with each other (i.e., positive synchrony). The ability to fix interactive conflicts may foster the development of interactive skills and lead to understanding of the rules of interaction, which is beneficial for the future social and behavioral development of children (Tronick & Cohn, 1989).



These research findings about the adaptive quality of repairing interactions back to coordinated states are similar to results found in a study by Skowron, Kozlowski, and Pincus (2010). Skowron et al. (2010) found that within positive mother-child relationships, mothers were more likely to initiate repairs and took the responsibility to ensure they maintained positive behaviors with their children compared to mother-child dyads that were identified as having negative relationships (i.e., whether maltreatment was likely). This process of repair is similar to the previously mentioned Shaurette principle (Benjamin, 1984), where the quality of a relationship is improved when one individual remains positive in order to guide the other individual engaging in negative behaviors towards positive complementarity.

These theoretical understandings about the importance of one individual remaining warm, understanding, and loving in order to guide their partners into positive interactions can be translated to the results of this current study. Study findings demonstrated that mothers' positive behaviors were critical for attachment security, and positive non-complementarity was associated with adaptive mother-child relationships. These outcomes suggest that perhaps when mothers maintain affiliative and warm behaviors in the face of negative child behavior they are attempting to lead children to follow-suit.

Taken together, results related to positive complementarity and non-complementarity demonstrate that positive parental transactions are consistently associated with greater attachment security. As stated earlier, children in dyads that displayed positive complementarity and positive non-complementarity were more likely to be securely attached. Critical within these findings is the maintenance of the mother's warmth and affiliation in response to children's affiliative or disaffiliative responses. In these

relationships, mothers may consistently provide warmth and attention in order for children to feel comfortable separating and engaging in both positive and negative behaviors. By feeling safe and secure with their caregiver, infants can feel comfortable separating and exploring their environment (Bowlby, 1969; Mahler, Pine, & Bergman, 1975). In response, children may assert their autonomy through either affiliative (i.e., paying attention to, joining, and comfort-seeking) or disaffiliative (i.e., sulking, whining, protesting) responses and feel secure in knowing that their primary caregiver will care for and be present for them (Bowlby, 1969; Bretherton, 1992). These positive complementary and positive non-complementary interactions between a mother and child are associated with greater likelihood of secure attachments within mother-child dyads. Furthermore, these results suggest that mothers' behaviors are critical to the maintenance of positive relationship quality with their children. In these situations, mothers may adjust their own needs to remain calm and positive in order to meet their child's needs and return to or maintain a state of positive transactional patterns.

### **Negative Complementarity and Non-Complementarity**

With regards to negatively valenced complementarity (i.e., matched and reciprocal hostile, dismissive, and disaffiliative behaviors) and negative non-complementarity (i.e., disaffiliative, hostile mother behaviors in response to children acting in non-reciprocal warm and affiliative ways), I predicted that each would be associated with insecure attachment. Contrary to hypotheses, neither negative complementarity nor negative non-complementarity were associated with insecure attachment. These findings suggest that within this sample of mothers and preschool children, the extent of matching between mother and child on negative, disaffiliative behaviors, or the pattern of negative,

disaffiliative maternal behavior matched by positive, affiliative child behaviors, each/both were unrelated to children's security of attachment.

One interpretation of these findings is that this sample includes children who have been exposed to negative life experiences, including violence in the home, divorce, death, moving, amongst others. Additionally, the sample includes dyads where child maltreatment is present. These negative experiences may have greater impacts on children developing insecure attachments to their mothers as compared to the negative moment-to-moment interactions with their caregiver explored within this study. While children in this sample are exposed to family stressors, the mothers in this sample are also experiencing stressors and negative life experiences related to poverty, parenting, and major life events. A wealth of research has demonstrated that parents reporting greater levels of parenting stress have been found to be less involved with their children and have difficulty regulating their emotions and behaviors while parenting (Crnic, Gaze, & Hoffman, 2005; Deater-Deckard & Scarr, 1996; Hauser-Cram, Warfield, & Krauss, 2001; McBride & Mills, 1994). The connections between parenting/life stressors and insecure attachment styles are unsurprising, considering that the primary function of attachment is to promote the protection of young and such protection is compromised in these cases (Carlson, Cicchetti, Barnett, & Braunwald, 1989). More specifically, when parents are unavailable, abusive, or contribute to a hostile or stressful home environment, children may develop an insecure attachment style, because attempts to seek out attachment figures do not provide relief from stress or fear (Mikulincer, Shaver, & Pereg, 2003). Given the existing research on the impacts of these negative processes on attachment insecurity, it may be possible that within the current study, negative complementarity and negative non-complementarity are less

important to developing attachment quality in mother-child dyads. In sum, the negative life experiences of these mother-child dyads might make negative moment-to-moment interactions less important within this sample.

Furthermore, these findings may be related to low base rates of negative complementary and non-complementary interactional patterns. Within this sample, 81.8% of mother-child dyads had incidents of positive complementarity and 38.0% of dyads had incidents of positive non-complementarity. However, only 19% of mother-child dyads displayed any negative complementarity and 16.8% of dyads displayed any negative non-complementarity. These percentages, demonstrating higher rates of positive behaviors, are similar to previous studies that examined rates of positive and negative interactions within dyads. Results revealed that within dyads, cases tend to be most heavily concentrated near the positive affiliation pole, in line with known positive base-rate effects for positive, affiliative behavior in typical social interactions (Gurtman, 2001). As expected, the current study sample consisted of dyads engaging in generally high rates of positive complementary interactions, where mother-child dyads interacted in reciprocal, positive, and affiliative ways. Having low rates of negative exchanges may have contributed to the lack of statistical significant findings related to the negative valences of complementarity, non-complementarity, and attachment security.

Overall, results of this study suggest that the most critical dyadic transaction patterns associated with attachment security seem to involve mothers remaining warm and affiliative towards their children, regardless of whether the child reciprocates with warm affiliation or responds with negativity. Previous research indicates that in mother-child dyads, where children had secure attachments to their mother, the mothers had warm and

responsive interactions with their child, which were distinct from the inconsistent and controlling interactions mothers had with their child who were insecurely attached (Crowell & Feldman, 1989). Thus, when mothers display positive, responsive, and sensitive communication patterns towards their children, they are creating an environment in which their children feel safe and cared for (Bretherton, 1992; Karavasilis, Doyle, & Markiewicz, 2003). Furthermore, when mothers consistently maintain these warm and sensitive behaviors regardless of the child's behaviors, children experience predictable and stable responses from their mothers that are linked to attachment security (Isabella & Belsky, 1991).

### **Clinical Implications**

Results of this study suggest that the maintenance of sensitive and nurturing parenting transactions, regardless of the child's behavior, are important to a child's attachment security. Therefore, clinical interventions that target positive parenting interactions are especially fruitful for improving relationship quality between caregivers and children and increasing attachment security (Hollenstein, Granic, Stoolmiller, & Snyder, 2004). Children who are securely attached to their caregiver experience more positive peer interactions, have higher self-esteem, behave in less hostile manners, have fewer mental health problems, amongst others, when compared to insecurely attached children (Cohn, 1990; Pierrehumbert, et al., 2000). While there are several factors that may contribute to attachment security, this study specifically focused on moment-by-moment behavioral interactions between a mother and child and suggests that increasing warm and affiliative mother-child interactions is associated with an increased likelihood of secure attachment. Since these findings are correlational, it is possible that an increase in

attachment security can also be associated with an increased likelihood of positive complementarity and positive non-complementarity. Attachment research has indicated that securely attached children generally have positive interactions with their mothers who are responsive, attentive, and loving towards their children (Belsky, Woodworth, & Crnic, 1996; Bretherton, 1992). Therefore, an increase in attachment security would inherently be associated with an increase in positive complementarity, regardless of the child's behavior. Whatever the direction of these findings, it is apparent that positive maternal behaviors are relevant to a child's attachment security, which indicates that interventions that target mothers' abilities to maintain positive interactions with their children are warranted. It is critical for mothers to mirror their children when they're engaging in prosocial behaviors, as well as self-regulate and maintain positive responses when interacting with children who display negative, hostile, or withdrawing behaviors. Interventions that focus on helping mothers maintain their calm in the face of difficult child behaviors may be beneficial to helping mothers maintain positive behaviors and avoid negative interchanges that unfold in moment-to-moment interactions between mothers and their children (Sanders & Mazzucchelli, 2013).

The findings of this study suggest that for every one-unit standard increase of positive complementarity (i.e., a single mother-child transaction), there is an increase in the likelihood of odds of attachment security by more than 100%. More specifically, within a five-minute period of interactions, when a mother and child increase the frequency in which they behave or respond each other with kindness and warmth, there is an increased likelihood of a child being securely attached. Additionally, findings suggest that every one-unit increase in positive non-complementarity, is associated with an increased likelihood of

the odds of attachment security by more than 100%. More specifically, within a five-minute period of interactions, if a mother behaves or responds to her child that is withdrawing or throwing a tantrum with affiliative and warm responses, there is an increased likelihood of her child being securely attached. Therefore, clinical interventions that focus on how to increase the frequency of maternal positive responses within a given interactional time period is important for the relationship quality of a mother and her child.

Parenting interventions, such as Parent-Child Interaction Therapy (PCIT; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993), Attachment and Behavioral Catch-Up (ABC; Dozier, Higley, & Albus, 2002) and Child-Parent Psychotherapy (CPP; Lieberman, Ghosh Ippen, & Van Horn, 2006) have all demonstrated substantial impact on improving parent-child interactions, with the understanding that interactions within the family can lead to difficulty or stability in the parent-child relationship . All three interventions have demonstrated efficacy for children in the toddler and preschool age range with far-reaching implications for children exposed to trauma. Additionally, these three interventions include both the parent and child in the intervention, allowing parents to practice learned skills with their child in front of the trainer/therapist. Strong efficacy of PCIT has been linked to observed changes in parent-child interactions, where parents are assisted to alter his or her behavior (i.e., praising more, criticizing less, and following their child's lead) through coaching strategies in order to increase positive interactions within the parent-child dyad and reinforce positive child behaviors (Thomas & Zimmer-Gembeck, 2007). ABC has shown the most efficacy in improvement of attachment patterns with foster care and adopted children who were not given the opportunity to form a secure attachment with their primary caregiver and tend have disorganized attachments (Bernard et al., 2012;

Dozier et al., 2009). Like, PCIT, Attachment and Behavioral Catch-Up provides parenting skills focused on changing parenting behaviors to be sensitive, warm, and attentive. Additionally in ABC, parents are taught the importance of providing nurturance, through psychoeducation, even if their child is pushing them away or difficult to soothe, while also helping parents recognize their own issues and experiences with their caregivers that may impact their abilities to provide nurturance or instinctually respond with positive parenting behaviors (Bernard et al., 2012). Finally, CCP is a family intervention that has been efficacious for children, who have experienced trauma, through the improvement of parent-child interactions and use of child's free play selected to elicit trauma play and foster social interaction (Lieberman et al., 2006). While this intervention primarily focuses on assisting the child in coping with trauma and engaging in developmentally appropriate interactions with peers and adults, the intervention includes components of parent training to reduce critical and punitive parenting and increase sensitive and nurturing parenting behaviors (Lieberman et al., 2006). These interventions highlight the importance of improving interaction patterns between parents and their children by focusing on changing parenting behaviors (i.e., responding to children with warmth, sensitivity, and praise), helping parents interact with their children in friendly and loving ways, and providing tools for dealing with whining, sulking, or hostile child behaviors.

While the above-mentioned interventions highlight various aspects of parenting, such as playfully and positively interacting with the child, reinforcing positive behaviors of the child, and managing/changing negative child behaviors, , this current study suggests that a parent's positive behaviors in moment-to-moment interactions towards his or her child, regardless of the child's behavior, is of utmost importance. While considering the



various intervention strategies mentioned above and current study findings, what may be most useful for improving attachment patterns, is focusing on positive parenting behaviors in order for parents to behave in understanding, loving, approaching, nurturing, and protecting ways towards their children. Therefore, using strategies such as increasing praise, highlighting the importance of nurturing and sensitive parenting, and reducing critical parenting behaviors in dyadic interactions are especially fruitful. Furthermore, parents must learn the importance of continuing to behave in approaching and nurturing ways even when the child is behaving in ways that do not demonstrate that they are seeking connection and love from their parent. As stated earlier, the Attachment and Behavioral Catch-Up intervention incorporates psychoeducation and video observations of nurturing parenting that helps parents understand the importance of consistently behaving in nurturing ways (despite the child's behavior) while also asking parents to reflect on why it may be hard for them to act in this way. In addition to positive behavior training, perhaps this aspect of the ABC intervention can be incorporated in other parent-child interventions to facilitate the process of helping parents react with and maintain nurturing and warm interactions with their child.

While teaching positive parenting behaviors is critical to enhancing parent-child interactions and improving attachment patterns, findings from the current study also suggest that skills training that helps mothers remain calm and respond to their children in positive and nurturing ways, rather than in critical and disengaged ways, when dealing with their children who are throwing tantrums or withdrawing, may be beneficial to enhancing child attachment security. Focus on maternal self-regulation strategies, such as mindfulness, understanding personal triggers and coping strategies, and planned decision

making, may facilitate the mother's ability to remain behaviorally and emotionally regulated in stressful situations, where their children are acting in dysregulated ways (Martin, Roos, Zalewski, Cummins, 2017; Sanders & Mazzucchelli, 2013). Support for the dissemination of these various treatment programs at the local, state, and federal level could lead to significant improvements in the relationship quality of mothers and their children, and in turn child development outcomes.

### **Strengths and Limitations**

Strengths of this study include contribution to Interpersonal Theory research, measures used, and the sample. Most importantly, this study adds to our understanding of Interpersonal Theory by differentiating the previously unidimensional constructs of complementarity and non-complementarity into negative and positive forms in order to better understand their specific associations with attachment security through empirical testing. Additionally, the measures of this study are observational, not self-report, thereby eliminating susceptibility to self-report bias, social desirability bias, and inaccuracy of information provided. As discussed in the methods section, these observational measures are well researched and have high interrater-reliability, thereby enabling us to interpret and trust the data collected. Finally, this study uses a unique sample of mother-child dyads that are low-income and with almost half of the dyads with a history of child maltreatment and DHS involvement, which contributes to our understanding of how interactional patterns are associated with attachment security within a high-risk sample.

While this study has several strengths, this study is not without limitations. Mother-child dyads were observed for five minutes. Having a short time frame may have limited the number of negative and positive interactions accounted for; therefore, observing

mother-child dyads for longer periods of time or within their home habitats may provide for more opportunities to observe positive and negative interactions. It must be noted that while a longer observation period would lead to a greater number of interactions, the ratio of positive to negative interactions may continue to be unevenly distributed. As discussed earlier, Gurtman (2001) determined that within dyads, interactions tend to be more positive than negative, thereby limiting the number of negative interactions observed. While it may be beneficial to have a longer time period in order to capture a larger number of negative interactions, it is likely that the ratio of positive to negative interactions would not change.

Additionally, this study is cross-sectional, and as such, causal claims cannot be drawn about the relationship between the predictor and outcome variables within the study. Thus, we cannot say that mothers and children engaging in positive complementarity (i.e., mothers and children engaging with one another with warmth and affiliation) and positive non-complementarity (i.e., mothers engaging in trusting and warm behaviors and children engaging in hostile and sulking behaviors) *causes* attachment security, or vice-versa. Understanding directionality and causality of these associations can influence the way we understand and examine the relationship between interactional quality within mother-child dyads and attachment security.

Related to attachment security, one limitation of the study involves the combined nature of the insecure attachment types due to the limited sample size and associated statistical power limitations, which did not allow for an examination of which type of insecure attachment (i.e., avoidant, resistant, or disorganized) would be associated with negative complementarity or negative non-complementarity. Despite research demonstrating general negative effects of insecure attachment on child outcomes, research

indicates that subtype of insecure attachments has unique implications for caregiver and child patterns of behavior (Ainsworth, 1973; Bowlby, 1980; Bretherton, 1992).

investigating various forms of insecure attachment may more powerfully detect relationships and better represent the reality of the experience of complementary and non-complementary interactions across the spectrum.

Finally, both mothers and fathers impact a child's attachment security; however, this current study only explored the associations between various mother-child interactions and attachment quality and did not include father-child dyads. Research has demonstrated that children form attachments to their fathers, whether their father is the sole caregiver or co-parent (Brown, Mangelsdorf, & Neff, 2012; Grossman et al., 2002; Seuss, Grossman, & Sroufe, 1992). Grossman et al. (2002) suggested that within two-parent households, fathers may provide a unique contribution to the child's security by offering sensitive support during times of explorative play, while mothers are relied upon to provide sensitive support during times of child distress. Additionally, studies have found that children are most securely attached to fathers who are sensitive, or attentive and responsive to their child's needs, as well as involved, or accessible and responsible, for the care to their child's welfare (Brown et al., 2012). Caregiver behaviors associated with sensitivity include connecting, responding to the child, and loving, which can be characterized within the constructs of positive complementarity and positive non-complementarity. Given the importance of fathers behaving in sensitive and attentive ways to child security, perhaps the results found in this current study would be similar if the sample include father-child dyads. However, it remains important to test the associations between the interactional constructs and attachment security within both mother-child dyads and father-child dyads to enhance

our understanding about how father, mother, and child behaviors impact relationship quality.

### **Recommendations for Future Research**

Directions for future research includes analyzing the micro-analytic underpinnings of these various mother-child interactions in order to elucidate our understanding of how these constructs operate and influence the associations between positive complementarity and non-complementarity and secure attachment. While results from this study indicate that when mothers' positive and warm behaviors are associated with an increased likelihood of attachment security, this study cannot determine the specific underlying cause for these results. Future research can examine whether mothers are initiating repairs and resolving conflict with their child when engaging in positive complementary and positive non-complementary interactions. The Shaurette principle (Benjamin, 1984), provides a useful lens for interpreting findings in this study and whether repairs are occurring. The Shaurette principle states that in order to connect interpersonally with another person who is acting in hostile or disaffiliative ways, an individual must use complementary responses to guide the other person to match their positive behaviors. Therefore, it seems likely that positive non-complementarity has associations with attachment security because the mother is in the process of bringing her child to a state of positive complementarity by remaining warm, loving, and kind. By gradually moving the child towards positive complementarity, the mother is essentially repairing the mismatched interaction and resolving conflict within the dyadic interaction. Given the results of this current study demonstrating overwhelmingly large effects of positive complementarity on attachment security, it appears that any such movement towards positive complementarity would be beneficial for the mother-child

relationship. While this rationale may have theoretical legitimacy, the current study cannot empirically support these ideas. Future research examining these interactions and relationships unfolding over a longer period of time can better understand whether conflict resolution, where mothers are facilitating repairs during interactions with their children, are contributing to the significant associations between positive complementarity and positive non-complementarity and secure attachment. Alternatively, future studies can also aim to understand whether instances where negative complementarity and negative non-complementarity includes interactions where mothers are not repairing conflict. Exploring the underlying mechanisms that create complementarity (positive and negative) and non-complementarity (positive and negative) can provide both an understanding of what these constructs look like as well as contribute to our understanding of why these constructs are/are not related to attachment security.

Future research can also explore whether positive complementarity and non-complementarity cause attachment security or whether the reverse is true. This study provides an understanding into the associations between complementarity, non-complementarity, and attachment security. Understanding whether complementarity leads to the attachment security, or vice versa, can further assist in our understanding of the implications of Interpersonal Theory on the relationship quality between mothers and their children. Additionally, this understanding can elucidate points of parenting/family interventions and mechanisms of change within the intervention.

Finally, given that this study was the first to identify and experimentally study the positive and negative valences of complementarity and non-complementarity and its associations with attachment security, future research can explore these multi-dimensional

constructs when applied to other parent-child relationships. Studies can investigate whether similar outcomes are found in mother-child relationships or father-child relationships with older children (i.e., elementary or adolescent ages). Understanding the nuances of complementarity and non-complementarity enables us to have a clearer understanding of how interactional transactions between caregivers and children are integral to their relationship. Additionally, future studies can ascertain whether engaging in these various multidimensional constructs of complementarity and non-complementarity with their parents translates to how children interact with other authority figures, such as teachers or coaches, or peers. These studies can help elucidate and provide insight into whether or not the associations between these transactional processes and attachment security has implications for children's future social development and functioning.

## **Conclusion**

The primary goal of this study was to expand the understanding of complementarity and non-complementarity by identifying and empirically studying their positive and negative valences of each and its associations with attachment security. Findings revealed that children in dyads that displayed positive complementarity were more likely to be securely attached when compared to insecurely attached, after controlling for child sex. Additionally, results demonstrated that children in dyads that displayed positive non-complementarity, where mothers maintained positive and affiliative behaviors in response to their children's withdrawing, and disaffiliative behaviors, were more likely to be securely attached. Results also demonstrated that negative complementarity and negative non-complementarity were not significantly associated with attachment quality. Study findings indicate that the positive valence of complementarity and non-complementarity

have distinct impacts on attachment security, thereby confirming the need to distinguish the unidimensional constructs of complementarity and non-complementarity, in order to truly capture the unique associations between parent-child interactions and attachment security. Furthermore, results suggest that positive maternal transactions appear to be predictive of attachment security. More specifically, when mothers remain positive and warm with their children, who are acting in affiliative or disaffiliative ways, their positive maternal interactions are critical to attachment security. These findings suggest that the mechanism underlying improvements in mother-child relationships hinge on the mother's ability to remain warm, sensitive, and positive towards her child, regardless of the child's behavior, within moment-to-moment interactions. While research has demonstrated that when parents engage in positive parenting broadly, the child benefits in terms of their social, emotional, and behavioral development, current study findings suggest that the moment-to-moment interactions between a parent and a child are associated with attachment security (Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005). Within this study, children in dyads where mothers maintain warm and affiliative behaviors with their child, whether the child is connecting and trusting the mother or withdrawing and sulking, are more likely to be securely attached. By engaging in these type of interactions, the mother is facilitating a process in which children feel more connected to their mothers, less anxious in their relationships with their mothers, and more securely attached to their mothers



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