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Capturing Early Family Factors and Later Children's Emotional Regulation in a Latent Profile Analysis of Family Functioning

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Yeon Soo Yoo
University of Connecticut, 2014

Abstract

Young children develop emotional regulation within the family context, and they learn how to appropriately and effectively regulate their emotional responses, in part, through their family interaction. Researchers have emphasized that the patterns of family functioning should be examined in relationship to children’s adjustment. Person-centered approaches attempt to capture the patterns of relationship quality across family systems and the richness of the qualitative descriptions. This study specifically examined the importance of particular patterns of family functioning using a person-centered approach — latent profile analysis approach (LPA) — for children’s emerging emotional regulation in early childhood, as well as the interplay of family factors that contribute to functioning within family systems in a sample of 290 children and their parents. This study is designed to investigate: (1) the pattern of family interaction quality; (2) the pattern of family emotional climate reflected by family-related factors; (3) the association between the patterns of family emotional climate and children’s emotional regulations as outcomes; and (4) the profile changes that emerged between family interaction and family emotional climate. First, family interaction was observed at dinnertime and coded live based on 15 dimensions, reduced to three: family harmony, control, and conflict. At the onset, I identified three patterns of family interaction: (a) cohesive; (b) disengaged; and (c) hostile. The second analysis indicated four types of family emotional climate as follows: (a) harmonious; (b) control-oriented; (c) preoccupied with conflict; and (d) distressed. I found that the profile groups across the steps did not appear equivalent. Concerning the children’s emotional regulation associated with the types of family emotional climate, children in harmonious families exhibited a higher level of narrative coherence than those in control-oriented families. Additionally, children in harmonious families less frequently displayed dysregulated aggression than those in control-
oriented and preoccupied with conflict families. Unexpectedly, distressed families did not show any significant results in children’s emotional regulation. In general, these findings underscore that children in harmonious families demonstrate emotional regulation that may be associated with children’s adjustment not only within the family context but also in schools and community. These results support the practice of assessing and intervening to promote harmonious family functioning defined by multiple factors, eventually encouraging children’s emotional regulation.
Capturing Early Family Factors and Later Children’s Emotional Regulation
in a Latent Profile Analysis of Family Functioning

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Approval Page

Doctor of Philosophy Dissertation

Capturing Early Family Factors and Later Children’s Emotional Regulation
in a Latent Profile Analysis of Family Functioning

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CHAPTER ONE: INTRODUCTION

Children’s ability to regulate emotions has received increasing attention in the recent literature (Eisenberg, Champion, & Ma, 2004). Emotional regulation is important, in part, because research and theory suggest that children’s emotional regulation contributes to their successful adjustment (e.g., Eisenberg, Spinrad, & Morris, 2002; Morris, Silk, Steinberg, Myers, & Robinson, 2007). Emotional regulation is influenced by the culture in which a person lives (Mesquita & Frijda, 1992). Young children develop emotional regulation within the family context, and they learn how to appropriately and effectively regulate their emotional responses, in part, through their family interaction (Snyder, Schrepferman, & Peter, 1997; Tronick, 1989).

The family is a fundamental locus for understanding the complex dynamics of interconnectedness among individuals. The individual in the family can influence or be influenced by family functioning, which comprises the patterns of family relations or processes over time (Minuchin, 1974; Winek, 2010). Researchers have emphasized that the patterns of family functioning should be examined in relationship to children’s adjustment (Cowan, 1991; Cowan, Cowan, Ablow, Johnson, & Measelle, 2005; Fiese & Marjinsky, 1999; Minuchin, 1985; Perry & Weinstein, 1998; Pettit, Bates, & Dodge, 1993). For example, well-functioning families may promote children’s successful adjustment across multiple domains of developmental functioning, whereas dysfunctional families may undermine children’s developmental adaptation.

In recent decades, family systems theory has gained popularity as a theoretical framework for understanding family functioning. Family systems researchers examine not only each family member and dyads within the family but also the entire family (von Bertalanffy & Rapoport, 1957; Whitchurch & Constantine, 1993). According to family systems theorists,
family functioning is reflected in the patterns of family relations or processes over time (Minuchin, 1974; Winek, 2010). Research has underscored the need to identify both the sources and the patterns of effective family functioning. Recent interest has focused on the family factors that impact family functioning, which affects children’s development of emotional regulation. To date, such investigations are rare.

However, the majority of studies have relied on variable-centered approaches (e.g., multiple regression and structural equation modeling) that synthesize relationships observed among all of the participants in the studies to characterize family functioning. The results from the variable-centered approaches ignore the likelihood that these relationships may qualitatively differ among the subgroups of participants. Instead, person-centered approaches attempt to capture the patterns of relationship quality across family systems and the richness of the qualitative descriptions (Belsky & Feason, 2004; Davies, Cummings, & Winter, 2004; Johnson, 2003; Sturge-Apple, Davies, & Cummings, 2010).

The goal of this study was to advance the understanding of family functioning by identifying family typologies across multiple family contexts using person-centered approaches. Typologies can help to categorize individuals more accurately into distinct profiles (Bailey, 1994; Bergman & El-Khoury, 2001; Magnusson, 1998). In particular, the present study emphasized the importance of family typology that links the interplay of early family factors and children’s emerging emotional regulation that contribute to functioning within family systems. The study estimated how many and what characteristic profiles of family interaction were found in a particular sample using three dimensions of a family dinnertime observation scale. Additionally, the study explored each family member’s characteristics as well as dyadic
relationships as predictors, which played potential roles in the profiles, and subsequently were associated with children’s emotional regulation as outcomes of the family typology.

CHAPTER TWO: LITERATURE REVIEW

The literature review begins with a description of the children’s emotional regulation. The study of children’s emotional regulation has recently captured increased attention due to literature regarding its development with a variety of positive emotional and social outcomes. This study focuses on families, who play a critical role in providing a foundation for children’s emotional adjustment (Lunkheimeir, Shields, & Cortina, 2007). Despite the acknowledged importance of children’s early experiences on their development of emotional regulatory abilities in family contexts, there is a lack of empirical research that examines how family functioning patterns connect with the emerging capacity for emotional regulation.

Family functioning can change or be changed in response to experiences among family members (Bowen, 1978). The family system is an important context for understanding children’s adjustment. Changes may occur within the family system by reason of individual or dyadic characteristics. As a theoretical framework, family systems theory provides sound groundwork for understanding family functioning in terms of transactional processes within the family.

This study aimed to utilize a person-centered approach to identify distinct profiles of family interactions characterized by harmony, control and conflict. Then, I classified distinct profiles of family emotional climate by including early family factors (e.g., child temperament, marital satisfaction, maternal perception of parenting attitudes, child representations of their parents) in the model. Finally, the profiles of family emotional climate across multiple family contexts were linked to children’s outcomes in emotional regulation to test family functioning.
Children’s Emotional Regulation

Individuals must learn how to regulate emotional responses in socially appropriate ways to function well in society (Denham, 2003; Eisenberg, Spinrad, & Morris, 2002; Halberstadt, Denham, & Dunsmore, 2001). *Emotional regulation* refers to an individual’s capacity to transform and manage emotions in socially accepted ways within a given demanding situation (Eisenberg & Spinrad, 2004). In contrast, *emotional dysregulation* involves emotional responses that are characterized by low emotional tolerance and ineffective regulatory attempts and emotions that change either suddenly or slowly and interfere with appropriate behavior (Cole & Hall, 2008). Emotional regulation, dynamic internal and external processes that involve monitoring, evaluating, and adjusting emotional reactions, has been identified as a contributor to psychosocial functioning in children (Calkins & Hill, 2007; Gross & Thompson, 2007; Thompson, 1994). For example, well-regulated children are more socially skilled and better accepted by their peers, whereas poor-regulated children exhibit externalizing behaviors (Stifter, Spinrad, & Braungart-Rieker, 1999; Eisenberg et al., 2001).

Children can express their internal experience through verbal and non-verbal ways. Children’s narratives contain meaningful messages and internal representations to describe particular experiences that they have personally encountered (Oppenheim, 2006). Research suggests that children are able to express their emotions using words to regulate their own feelings (Dunn & Brown, 1991). Prior research examined children’s emotional regulation by using children’s narratives, such as the MacArthur Story Stem Battery (MSSB, Bretherton, Oppenheim, Buchsbaum, Emde, & the Mac Arthur Narrative Group, 1990) (Dunn, 1993; Harris, 1994; Oppenheim, Nir, Warren, & Emde, 1997; Thompson, 1994). The MSSB has been widely used to elicit young children’s emotional regulation (Oppenheim, 2006; Oppenheim & Waters,
Children are asked to complete the emotionally challenging stories by verbalizing and manipulating dolls and props. In this situation, children exhibit their emotional regulation and how they organize their feelings and thoughts when they tell an emotionally coherent story about their experiences and express positive, negative, and mixed emotions (Bretherton & Oppenheim, 1994; Oppenheim, Emde, & Warren, 1997; Warren, Oppenheim, & Emde, 1996).

Studies examining children’s emotional regulation through their narratives have been conducted. Oppenheim et al. (1997) found that narrative coherence, prosocial and aggressive themes were related to emotional regulation. A coherent narrative required children to consistently maintain emotional organization and resolve emotional challenges through coping. Aggressive themes and prosocial themes (e.g., empathy) incited children’s regulated or dysregulated resolution in their narratives to handle the challenges in the story stems. In sum, children who successfully regulate difficult emotions presented coherent narratives, more prosocial themes, and fewer aggressive themes (Schechter et al., 2007; Shields, Ryan, & Cicchetti, 2001). Similarly, affect regulation was negatively correlated with aggressive themes in typically developing children (Clyman, 2003; Oppenheim et al., 1997; Oppenheim & Waters, 1995). In contrast, at-risk children with adverse experiences displayed difficulties in emotion regulation when the narratives involved stressful and traumatic themes, such as often pausing and interrupting themselves (Cassidy, 1988), or demonstrating fantasy proneness and intrusions of traumatic events (Macfie, Cicchetti, & Toth, 2001), indicating avoidance and dissociation. Hence, children’s emotional regulation and dysregulation processes are reflected in children’s narratives by themes of narrative coherence, affect regulation, empathic schemes, avoidance/dissociation, and dysregulated aggression. Altogether, there is strong evidence that
children’s narratives offer a window into the children’s regulation in their emotions during the process of narrating and completing challenging stories.

Fonagy (2001) postulated that emotional experiences and mental states (e.g., thoughts and feelings, beliefs and desires) anticipating each other’s actions in family relationships play an important role in children’s emotional regulation strategies. Young children actively explore the social world around them, and they learn about emotions and how to socialize. They observe parents’ emotional reactions of others, and they learn specific expressions (Denham et al., 1997). For example, parents who displayed appropriate and open emotions had children who understand emotions better (Denham et al., 1997). Notably, family relationships create an environment that becomes an important source of children’s internal working models and influences, as well as how children regulate. Considerable research on children’s emotional regulation has focused primarily on parent-child relationships, specifically on how well the children live up to the parents’ expectations and how well the children organize and regulate their emotions in given situations (Bowlby, 1988; Main, Kaplan, & Cassidy, 1985; Morris et al., 2007; Oppenheim et al., 1997). However, few studies have looked at the influence of qualities of family functioning beyond the mother-child relationship as linked to children’s emotional regulation. Thus, important questions remain about the interplay in broader subsystems of the family that consider variation in children’s emotional regulation beyond what is explained by dyadic (e.g., parent-child) relationships and their associated interactions. Although scant research has examined the association between family functioning and emotional regulation, several studies suggest that the difficulty building emotional connectedness within some families may be related to difficulties in emotional regulation (McKeown et al., 1997; Morris et al., 2007; Yap, Allen, & Sheeber, 2007).
Family Interaction at Dinnertime

Family dinnertime is one of the primary contexts in which all of the family members get together and interact with one another. An obvious function of dinnertime is to share eating a meal and engaging in conversation together; however, according to Dreyer and Dreyer (1973), dinnertime also involves various components of family interaction that evolve over time, including rules, roles, affective involvement, and cognitive styles. According to Lewis and Feiring (1982), family dinnertime includes the gathering of multiple family members on a regular basis to exchange information and establish the family’s particular patterns of interaction. For example, parents and children eat food, talk about table manners, and share daily life at school and work. During the dinnertime, family members may communicate with each other to demonstrate support and respect for autonomy and set limits. Accordingly, family dinnertime is a unique context for observing the affective relationships regarding how family members interact with one another. Family interaction at dinnertime provides a vital clue to evaluate the presence of negative and positive family affect (Fiese & Marjinsky, 1999) and understand the transactions among family members (Eyberg & Robinson, 1982). Empirical studies have documented that family interactions at dinnertime provide implicit meanings of family functioning in terms of promoting cohesiveness and decreasing conflict and responding to family stress and family rules (Fiese, Hooker, Kotary, & Schwagler, 1993; Fiese & Marjinsky, 1999).

A large body of literature emphasizes the association between family interaction quality directly observed during family dinnertime and children’s successful or poor adjustment (Fiese, Foley, & Spagnola, 2006; Hofferth & Sandberg, 2001; Kreppner, 2002; Patrick & Nicklas, 2005). For example, a supportive and collaborative family interaction contributes to positive psychological adjustment in children (Kernis, Brown, & Brody, 2000) and fewer behavioral
problems (Fiese & Marjinsky, 1999; Fiese & Sameroff, 1999); on the contrary, Patterson and colleagues found coercive family interaction was related to antisocial behavior in childhood through adulthood (Dishion, French, & Patterson, 1995; Patterson, 1982). Specific family interaction qualities have been related to a child’s ability to regulate his or her emotions (Fiese & Marjinsky, 1999; Hooven, Gottman, & Katz, 1995). Children are exposed to a wide range of affect during the narrative process in family dinnertime; at the same time, they may observe the affect regulation and learn to manage their own affect in family relationships. For example, families displaying supportive communication and cohesive interaction tend to present higher levels of emotional understanding and affect regulation, which may foster regulation and adjustment in children (Fivush, Haden, & Reese, 2006; Houlberg, Henry, & Morris, 2012; Morris et al., 2007). Thus, the patterns and quality of family interaction around the dinner table may offer meaningful evidence for understanding the development of children’s adjustment, especially their ability to regulate emotion.

However, the verbal and nonverbal interactions observed in father-involved family relationships, such as at family dinnertime, may not be the same as those present in dyadic mother-child relationships (Bohanek et al., 2009; van Ijzendoorn & De Wolff, 1997; von Klitzing, Simoni, Amsler, & Burgin, 1999). From the perspective of differences between mothers and fathers in family relationships, studies have found that mothers used more gentle guidance (e.g., polite requests, positive comments, and suggestions) (Volling, Blandon, & Gorvine, 2006), more autonomy support and less control (Power, McGrath, Hughes, & Manire, 1994; Volling et al., 2006) toward children compared to fathers when both parents were present. Similarly, Fiese and Marjinsky (1999) found that mothers brought to the dinnertime a charge to regulate positive affect, whereas fathers tended to be more involved in the regulation of negative
affect. These different aspects between mothers’ and fathers’ responses to their children may be similarly or differently reflected in the patterns of family interactions when only one parent is present or when both parents are involved in the family interactions. Parke and Steams (1993) revealed that both mothers and fathers tended to show more positive emotion toward their children when they are together than when they are by themselves. Johnson (2001) found that parents’ responses to their children were inconsistent when both parents were present (i.e., father-mother-child) compared to when only the mothers were present (i.e., mother-child). According to Johnson (2001), mothers showed less negative affect and more structuring when fathers were present; however, Johnson’s study observed that there was no difference in warmth and responsiveness. The present study systematically identified the patterns of family interactions at dinnertime to investigate the family functioning in regard to children’s emotional regulation as an outcome.

**Emotional Climate of the Family**

One of the primary tasks of family systems is to manage the emotional climate of the family, which is reflected in providing nurturance and dealing with conflict. How nurturance and conflict are habitually regulated creates an emotional climate that influences the emotional and psychological well-being of members within the family system (Epstein et al., 2003; Anderson & Sabatelli, 2011; Sabatelli & Bartle, 1995). According to Darling and Steinberg (1993), family emotional climate is reflective of relationship qualities (e.g., attachment, marital relationship, and parenting styles) and emotions (e.g., positive and negative) that are displayed among family members. Although it is a broad concept, the scope of family emotional climate is narrowed in this study as “patterns of how parents manage their interactions with their children”. For example, supportive parenting describes a family characterized by a cohesive family emotional
climate (Kitzmann, 2000; Kolak & Volling, 2007). The family emotional climate is influenced by a variety of intrafamilial factors, such as the individual-, dyadic-, and familial-level of characteristics. Details are described in the following section. The family emotional climate that parents and children experience daily plays an important role in children’s development. Many studies have found evidence suggesting that family emotional climate is another contributing factor toward the overall children’s adjustment (Garner, 1995; Lindhal & Malik, 1999; Schoppe, Mangelsdorf, & Frosch, 2001) and emotional regulation (Morris et al., 2007). For example, Baumrind (1971) suggested that children with parents who demonstrate high control and low warmth were likely to have less autonomy and fewer opportunities for negotiating decisions. Cummings and Davies (1996) found that family coerciveness and low cohesion were important predictors of children’s dysregulation. In contrast, children with parents who establish clear limits and provide responsiveness to encourage their children tended to regulate themselves via sensitive communication (Maccoby & Martin, 1983). However, the majority of the extant research has not examined the multiple factors that contribute to the family emotional climate. In the present study, the distinctive patterns of family emotional climate are identified by multifactorial determinants, such as individual personality, maternal perception on parenting, and children’s representations of parents in addition to the family-level interaction. The strategies of regulating the emotional climate of family systems contribute important insight into the level of family functioning. Questions remain concerning children’s emotional regulation in relation to the patterns of family emotional climate as an outcome.

**Family Factors Contributing to Family Emotional Climate**

The emotional climate within a family system is influenced by individual, interpersonal and broader contextual factors. Family emotional climate influenced by multiple factors across
family members has been found to contribute to children’s development. This family system process to manage family emotional climate may subsequently restructure family functioning patterns (Belsky, Woodworth, & Crnic, 1996; Jacobvitz, Hazen, Curran, & Hitchens, 2004; Johnson, Cowan, & Cowan, 1999; McHale & Rasmussen, 1998). In the present study, several individual-level (e.g., child’s temperament, mother’s and father’s personalities), dyadic-level (e.g., parent’s marital satisfaction, maternal perceptions of parenting attitudes), and family-level variables (e.g., child’s representations of relationships with parents, observed family harmony, control and conflict) are hypothesized to influence family emotional climate, further contributing to the larger family functioning with regard to children’s emotional regulation.

The Individual Level

Child temperament and parent personality are among two of the factors that influence interaction patterns found within families (Belsky, Gilstrap, & Rovine, 1984). These early individual differences elicit various forms of family emotional climate (Crockenberg, 1986). In the present study, I included emotionality and soothability for children’s temperament as well as neuroticism for mothers’ and fathers’ personality.

Child Temperament. Temperament refers to individual differences and behavioral traits in emotional, motor, and attentional reactivity (Rothbart, 2007) that emerge early in life and are stable over one’s life span (Bates, 1986; Buss & Plomin, 1975). Thomas and Chess (1977) defined temperament as stylistic qualities of behaviors and personalities. They described three broad patterns of temperament: (a) easy, (b) difficult, and (c) slow-to-warm-up. Easy temperament “comprises a combination of regularity, positive approach responses to new stimuli, quick adaptability to change, mildly or moderately intense mood that is preponderantly positive.” Difficult temperament “comprises irregularity in biological functions, negative
responses to new stimuli or people, slow adaptability to change, and intense mood that is frequently negative.” Slow-to-warm-up temperament “comprises negative responses of mild intensity to the new, with slow adaptability after repeated contact” (Thomas & Chess, 1996; p.17).

Buss and Plomin (1975) suggested a broad personality disposition including three dimensions of temperament: (a) emotionality, (b) activity, and (c) sociability. Emotionality measures the intensity of emotional reactivity. Children who are high in emotionality become easily frightened and quickly angry. Activity, which represents a child’s general level of energy output and speed of actions, is measured by rating verbal and nonverbal behaviors. Children who are high in activity do not sit still long and they tend to move constantly and keep busy. Sociability refers to one’s tendency to affiliate and interact with others. Children who are high in sociability seek out others and enjoy their company. The revised measure contains 30 statements concerning the temperament dimensions of emotionality, activity, sociability, shyness, persistence, and soothability (Buss & Plomin, 1984). Buss and Plomin (1986) described that the difficult child tends to display an extreme level of emotionality and activity, whereas the easy child exhibits a high level of soothability and relatively normal levels of activity and emotional reactivity. Easy temperament is captured especially by subcomponents, such as a low level of emotionality and a high level of soothability. Several studies have suggested that the temperament measured by laboratory observation or parental report is likely to be stable throughout early childhood (Putnam & Stifter, 2005; Putnam, Garstein, & Rothbart, 2006; Zentner & Bates, 2008).

Several studies suggest that child temperament may directly or indirectly influence the emotional climate within families. Specifically, a difficult temperament, especially in infancy,
can disrupt a favorable family climate (Belsky, Fish, & Isabella, 1991; Eriksson & Pehrsson, 2003; Goldsmith, 1990; Sheeber & Johnson, 1992). Having a child with a difficult temperament is predictive of high family conflict, whereas having a child with an easy temperament is associated with fewer family functioning problems (Crawford, Schrock, & Woodruff-Borden, 2011; Stoneman, Brody, & Burke, 1989; Tschann, Kaiser, Chesney, Alkon, & Boyce, 1996). Stoneman, Brody and Burke (1989) found a strong association between children’s difficult temperament and less optimal family emotional climate.

**Parental Personality.** Parental personality is thought to affect the context in which family relationships are directly and indirectly embedded. The term *personality* encompasses multiple parent variables, including characteristics associated with stable personality traits (e.g., extraversion and neuroticism) (Belsky, 1984) that are associated with social interactional behaviors (Asendorpf & Wilpers, 1998; Bolger & Zuckerman, 1995, Cote & Moskowitz, 1998). Eysenck and Eysenck (1975) conceptualized personality based on three dimensions: (a) extraversion, (b) neuroticism, and (c) psychoticism. Extraversion is characterized by outgoing, sociable, and expressiveness in positive affect. Neuroticism reflects high levels of negative affect, such as anxiety, depression, and emotional instability. Psychoticism is characterized by egocentric and manipulative behavior, inconsideration, and aggression.

Neuroticism is a personality trait that ranges from emotional stability to instability, with the high end of the dimension reflecting negative emotionality (e.g., fear, worry, sadness, guilt, and irritability). Studies found that parental traits, such as neuroticism, have been linked to negative family emotional climate (e.g., less active and involved, and more negative, intrusive, and over-controlling interpersonal behaviors) (Belsky, Crnic, & Woodworth, 1995; Connor-Smith & Flachsbart., 2007; Kochanska, Aksan, & Nichols, 2003). Parental negative emotionality
has been associated with authoritarian, permissive, and emotionally detached relationships with their children (Metsäpelto & Pulkkinen, 2003). Kochanska, Clark, and Goldman (1997) found parents who were high in neuroticism displayed more negative affect towards their child and were observed to be less nurturing with their child. Similarly, Crawford, Schrock & Woodruff-Borden (2011) stated that parental traits, such as neuroticism, have been associated with more controlling and hostile parenting and interaction styles.

**The Dyadic Level**

The present study included interparental and parent-child processes to test the family emotional climate. Marital satisfaction, parental perception of parenting attitudes, and children’s representations of their parents were utilized to provide broader indicators of the family emotional climate.

**Marital Satisfaction.** Marital satisfaction is the state of nondistressed relationship and being content with the interactions and expectations of marital life (Bradbury, Fincham, & Beach, 2000; Kinnunen & Feldt, 2004; Ward, Lundberg, Zabriskie, & Berrett, 2009). Spanier (1976) established a framework and the task of measuring marital satisfaction. Spanier (1976) defined dyadic adjustment as “a process, the outcome of which is determined by the degree of: (1) troublesome dyadic differences; (2) interpersonal tensions and personal anxiety; (3) dyadic satisfaction; (4) dyadic cohesion; and (5) consensus on matters of importance to dyadic functioning” (p. 17). Spanier proposed the following four factors that constituted dyadic adjustment: dyadic consensus, dyadic satisfaction, dyadic cohesion, and affectional expression. Many researchers have used the Dyadic Adjustment Scale (DAS) and combined the four factors to represent marital satisfaction.
How parents relate to one another as well as the qualities and satisfactions associated with these relationships influence the emotional climate of the family. However, the period after a child’s birth may accelerate changes in marital satisfaction (Belsky & Kelly, 1994; Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008) which, by extension, influence the broader aspects of family emotional climate (Lawrence et al., 2008; Pancer, Pratt, Hunsberger, & Gallant, 2000). In particular, researchers have found that high marital satisfaction is associated with family emotional climate that is responsive, warm, and accepting (Cowan & Cowan, 2002; Goldberg & Easterbrooks, 1984). In contrast, high marital conflict and dissatisfaction disrupt positive emotional climate (e.g., DeVito & Hopkins, 2001; Fauber & Long, 1991). Easterbrooks and Emde (1988) suggested that parents who were satisfied with their marital relations were more available and sensitive to their child’s needs. These findings suggest that parents’ marital satisfaction can contribute to the levels of vulnerability and resilience reflected in the family emotional climate. In the present study, parental rating of marital satisfaction, which comprised the total of dyadic consensus, cohesion, satisfaction and affectional expression, is explored as an indicator of family emotional climate.

**Parental Perceptions of Parenting.** Parents have expectations and values regarding their own parenting attitudes and the relationships with their child. The majority of research has addressed the issue that parental perceptions of parenting can be closely tied to family emotional climate. Parental attitudes are important to understanding the functioning of the parent-child relationship because parental attitudes likely affect parenting goals and expectations and accordingly may influence parents’ behaviors regarding how they interact with their children (Mauro & Harris, 2000; Zayas, Jankowski, & McKee, 2005). *Parental attitudes toward childrearing* generally encompass variation in their perceived responsiveness and demands
(Holden & Edwards, 1989) and reflect beliefs about childrearing practices or expectations about their child (Goldberg & Easterbrooks, 1984).

Several studies have emphasized that self-reports on parental attitudes toward childrearing were used to assess the parental self-perception of their own parenting (Holden & Edwards, 1989). According to Holden and Edwards (1989), self-perceptions consist of parents’ own reactions or feelings about childrearing, reactions to the parenting role, or views about their relationships with their children (e.g., “I find some of my greatest satisfactions in my child. I tend to spoil my child.”). Parents’ self-perceptions bear a strong relationship to their actual behavior toward the child. For example, parents who believe in the value of strict limit-setting (Maccoby & Martin, 1983) or corporal punishment as an effective disciplinary method (Simons, Beaman, Conger, & Chao, 1993) are more apt to set rigid rules and use harsh discipline.

Parental perception of their own negative parenting (e.g., high levels of conflict and anger) may lead to difficulty in creating a positive emotional climate in family relationships. In this study, the parents’ self-perceptions of parenting are expected to contribute to the patterns of family emotional climate. This study investigated how mothers’ self-perceptions of parenting toward their children, such as warmth, strictness, and conflict and anger, contributed to the patterns of family emotional climate.

**Children’s Representations of Parent-Child Relationship.** Children develop beliefs and expectations about parent-child relationships through daily interactions with their parents (Oppenheim & Waters, 1995; Waters, Rodrigues, & Ridgeway, 1998). Children’s representations of their relationship with parents emerge as they make meaning of the relationship-building experiences (Fonagy, Gergely, Jurist, & Target, 2002). Children’s internal representations of how parents do and say something in the past, present or future are theorized...
to account for the context of family relationships. Such internal working models include children’s ideas and expectations about parental roles as positive, negative or disciplinary. As early as the preschool years, children are able to convey these representations through story stem narrative portrayals of their experience (Oppenheim, 2006).

Children’s narratives in which they represent the relationship with their parents are reflective of family emotional climate, including their positive or negative emotions (Prêteur, Lescarret, & de Léonardis, 1998). Research has shown that young children are able to express their view of the parent-child relationship through play narratives that reflect internal working models of what actually happens in the child’s life (Macfie & Swan, 2009; Oppenheim, Emde, & Warren, 1997). Oppenheim et al. (1997) found that children’s view of parenting and family emotional climate was mirrored in children’s representations of their parents as respectively positive (love), negative (punishment), or disciplinary (demanding). Thus, children’s narratives offer a window into how they make meaning of their experiences and emotions of the relationships with their parents (Jacobvitz & Hazen, 1999; Shamir, Schudlich, & Cummings, 2001; Sroufe & Fleeson, 1986). The present study proposes that children’s positive, negative, and disciplinary representations of their parents reflect the family relationship as a component of family emotional climate. Children’s representations of parenting were assessed using the MSSB. This tool encourages and prompts children to complete the challenging stories using dolls and props to describe a range of emotions in parent-child interactions.

**Family Functioning and Family Systems Theory**

Family functioning reflects the transactional associations among the family members in dyadic, triadic, and larger groups. These transactions include the emotions, goals, and beliefs maintained by family members as well as communication across family members (McHale,
Family functioning has been generally defined using several different family systems frameworks, such as the Circumplex Model (Olson, Sprenkle, & Russell, 1979) and the McMaster Model (Epstein, Baldwin, & Bishop, 1983). Family functioning is defined as the manner in which the family members interact with other family members; family functioning refers to family system processes that emerge from the interactions of two or more individuals and change over time and include variables within the family, such as communication, cohesion, flexibility, structure, relation quality, conflict, and problem solving, which collectively provide for the development and maintenance of family members (Anderson, Sabatelli, & Kosutic, 2013; Epstein, Bishop, & Levin, 1978; Olson & Gorall, 2003; Winek, 2010). The family system as a whole adjusts and changes the manner in which it functions when a family experiences distress, adverse and traumatic events, or positive or negative life changes (Olson & Gorall, 2003). Specifically, positive or negative family functioning is defined through emotional qualities, family rules, family characteristics, and intra-familial relationships (Epstein, Bishop, & Levin, 1978; Morris et al., 2007). For example, positive family functioning is characterized by emotional closeness, warmth, and support; effective governance; good fit of family characteristics; and high-quality relationships among all family members. In assessing the constructs of family functioning, the key defining features inclusive of family system tasks should be developed and elaborated in a theoretically meaningful way (Sabatelli & Bartle, 1995). According to Sabatelli and Bartle (1995), family functioning is defined through identity tasks, boundary tasks, emotional climate management, maintenance tasks, and system stress management. Although research on family functioning has often focused on the interactions of mother-child or father-child only, it is important when examining families to consider the larger
family system. Family systems theory suggests that families should be considered as a whole, rather than separate parts (McHale, Kuersten, & Lauretti, 1996).

A systems perspective proposed that the level of functioning within the family as a whole can substantially influence children’s development and adjustment (Cummings, Neff, & Husaini, 2003; Sroufe & Fleeson, 1988). However, early research examining family functioning and child outcomes focused exclusively on parent-child interactions and parenting behaviors (Belsky, 1984; Parke & O’Leary, 1976). In the 1980s, Cummings and his colleagues argued that children’s developmental adjustment was a response to interparental conflict (Cummings & Davies, 1996). Similarly, many investigators of children’s development of emotional regulation focused their research on the relationship quality in the pair of mother-child (Fonagy, Gergley, Jurist, & Target, 2002; Fonagy & Target, 1998). However, more recently, researchers have begun to examine the association between whole-family transactional processes and a variety of child adjustment issues (McHale & Rasmussen, 1998; Sturge-Apple et al., 2010). For example, research has shown that mothers and fathers with satisfying marital relationships were more sensitive to and supportive of their children. In turn, warm and well-structured parent-child interactions were related to better adjustment and fewer problems among children. In contrast, mothers and fathers facing marital discord were likely to have conflictual and complaining interactions with their children, and these types of relationships were likely to affect children and result in poorer adjustment and more problematic behaviors in children (Cummings & Davies, 2002; Davies & Cummings, 1994; El-Sheikh & Elmore-Staton, 2004). Thus, the adjustment of individual family members, especially children, is considered within the emotional climate of the larger family system by mutual influence among multiple subsystems in the family (e.g., the marital relationship and the parent-child relationship) (Cox & Paley, 2003; Minuchin, 1985).
These studies captured the nature of family patterns and highlighted the adaptive and maladaptive aspects of children’s developmental outcomes.

In general, these ideas are supported by family systems theory. Family systems theory provides a broad mechanism for understanding different levels of relationships and functioning within the family. According to the family systems theory (Minuchin, 1974), a larger family system constitutes various units of the family subsystems (i.e., individual family members or subgroups of family members). These subsystems are concurrently discrete and interdependent of one another (Cox & Paley, 2003). Family systems theory views the family as an organized whole according to the principle that the whole is greater than the sum of its parts (Cox & Paley, 1997).

Applying the family systems theory to predict the levels of family functioning, the Circumplex Model was developed by Olson et al (1979). They conceptualized boundary regulation as interaction patterns that allow for two primary dimensions: cohesion (emotional bonds between family members) and adaptability (ability to change), with a third dimension, communication. Four levels of cohesion—disengaged, separated, connected, and enmeshed—describe the varying degrees of interpersonal distances between family members. Like cohesion, four levels of adaptability—rigid, structured, flexible, and chaotic—depict varying degrees of change in its power structure, role relationship, and relationship rules in response to developmental needs of the family members. The third dimension, communication, is defined as the positive communication skills utilized in the family system, which facilitates families to alter their levels of cohesion and adaptability. The combination of four levels of cohesion and adaptability creates 16 typologies that are used to identify the degree of family functioning. Families in the balanced (centered) sector on cohesion and adaptability dimensions, have been
found to be the most functional in family members’ development. Family systems theory is particularly useful to the present study of family functioning and the development of emotional regulation. Understanding the way a family system functions provides a clearer mechanism of the way in which individual family members think, feel, and behave under specific circumstances (Anderson & Sabatelli, 2011).

**Family Typology**

Using this theoretical standpoint, family researchers have developed distinct family typology (e.g., Circumplex model) that offers a full picture of how family-level functioning influences child adjustment both immediately and in the longer term. The typological approach provides an empirically distinct and reliable way to bridge the gap between the quantitative and qualitative approaches (Mandara, 2003). Baumrind (1967, 1971, 1978) and Maccoby and Martin (1983) proposed the prominent family typology. They theorized four prototypes of family according to two dimensions of parental demandingness and responsiveness: authoritative (e.g., demanding, responsive), authoritarian (e.g., demanding, unresponsive), permissive (e.g., undemanding, responsive), and neglectful (e.g., undemanding, unresponsive). However, Baumrind’s primary interest was to understand how families bring up capable children, not necessarily what types of families exist (Mandara & Murray, 2002). Baumrind and colleagues found that the authoritative family is related to better adjustment in children, whereas the neglectful family is associated with children’s behavioral problems (Baumrind, 1991; Pomerantz & Ruble, 1998; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Weiss & Schwarz, 1996).

Johnson (2003) hypothesized four types of family functioning using the constructs of family cohesion, strength of the marital subsystem, strength of the father-child subsystem, and
strength of the mother-child subsystem first theorized by Minuchin (1974). Family types included the following: cohesive families (e.g., emotionally connected but maintaining their own identities), separate families (e.g., emotionally detached), detouring families (e.g., distracted by marital conflict that transforms into parent-child conflict), and triangulating families (e.g., mother-daughter against father). Families were observed in structured and unstructured tasks in a laboratory playroom; however, the results of Johnson’s study only supported three distinct patterns of family functioning: cohesive, separate, and triangulated families using a three-cluster solution after dropping the small number of detouring families. Regarding children’s behavioral problems, results showed that children in triangulated families were more aggressive at school than those in cohesive or separate families.

According to Davies et al. (2004), four family systems profiles including interparental, parent-child functioning, children’s emotional security, and their psychological adjustment were found as a result of cluster analyses. Family types included: (a) cohesive families (e.g., warmth, affection, flexible well-defined boundaries), (b) disengaged families (e.g., high levels of hardship and low levels of support), (c) enmeshed families (e.g., high levels of disagreement and weak maintenance of relationship boundaries), and (d) adequate families (e.g., elevated levels of parental control with high warmth, low conflict). Children in enmeshed and disengaged families displayed higher levels of insecurity in the interparental relationship, and internalizing and externalizing symptoms than those in cohesive families.

More recently, Sturge-Apple et al. (2010) observed families through play and clean-up tasks in a laboratory and developed a typology of family functioning based on observed levels of interparental hostility, interparental withdrawal, parental emotional availability, parental intrusiveness, child relatedness, triadic competition, triadic cooperation, and triadic
Classification of families based on these dimensions yielded three types: cohesive (e.g., characterized by emotionally warm and close relationships with relational autonomy), disengaged (e.g., characterized by cold, controlling and withdrawn relationships as separate beings), or enmeshed (e.g., characterized by moderate warmth and emotional involvement but also hostility and intrusiveness from one family subsystem to another). These distinct family patterns were tested in association with children’s maladaptive adjustment trajectories in the school context. Children in enmeshed families exhibited greater slopes of internalizing and difficulties navigating emotional adjustment to classroom than children in cohesive families. Hence, Sturge-Apple’s and Davies’ research converge on a fairly consistent typology of family functioning; both investigations relied on laboratory observations, where behaviors may have been unusually constrained or exaggerated by the unfamiliar environment.

In the proposed study, I build upon and extend previous research by 1) identifying distinct patterns of family interaction among parents and children in homes during family dinnertime, 2) identifying family typology including multiple factors that contribute to family emotional climate across multiple family contexts, and 3) exploring the associations between family typology and children’s emotional regulation as they narrate stories about family relationships.

The Present Study

A large body of family research has exclusively utilized the assessment of marital relationships, mother-child and father-child dyadic relationships to evaluate family functioning. However, there is a missing piece of family functioning, which is reflected in a broad array of patterns and processes of family-level interactions that occur when the whole family is together. Furthermore, these dynamics, in turn, influence children’s developmental adjustment. Prior
research into family relationship contributions to children’s development has generally centered on variable-centered, cross-sectional investigations, where mother-child relationships are the sole focus. In the present study, in accordance with family systems theory, particular interest in family functioning is not only in mothers’ but also in fathers’ contributions to the emotional regulation of their children in the family using a person-centered approach.

Based on the literature reviewed above, the purpose of the present study was to: (a) identify distinct profiles of family interaction observed at family dinnertime; (b) identify distinct profiles of family emotional climate, including the characteristics of several family contributors, such as individual family member’s traits and relational perceptions; (c) determine the relation between the typology of family emotional climate and children’s emotional regulation through children’s narratives in the family context to understand family functioning; (d) investigate whether the inclusion of multiple dimensions of family emotional climate preserved or changed the patterns observed when family interactions only were considered. To do the pattern analyses, I utilized a latent profile analysis (LPA) approach. Additionally, the typologies from the identified profiles provided the richness of qualitative descriptions, which allowed me to systematically categorize individual families more accurately into distinct family typologies.

**Hypothesis 1: Family Interaction**

Family interaction patterns are identified based on the reviews of prior research (Johnson, 2003; Sturge-Apple, Davies, & Cummings, 2010). I hypothesized the existence of at least three profiles in family interaction: (a) cohesive families (e.g., high scores on the dimensions of cohesion, positive affect, communication, warmth, humor at family dinnertime), (b) disengaged families (e.g., low scores on all dimensions at family dinnertime), and (c) hostile families (high
scores on the dimensions of structure, maturity demands, limit setting; high scores on criticism, negative affect at family dinnertime).

**Hypothesis 2: Family Emotional Climate**

Individual and family characteristics and traits (i.e., family member’s individual characteristics, such as child’s temperament, mother’s/father’s personality; marital satisfaction; mother’s perceptions of parenting attitudes; child’s representations of his/her parents) are estimated in relation to the family’s emotional climate, operationalized according to variations of Johnson’s (2003) and Sturge-Apple et al.’s (2010) typologies. I hypothesize the existence of at least three profiles in family emotional climate as presented in hypothesis 1: (a) harmonious families: this profile is hypothesized to show positive family emotional climate (e.g., high parental warmth, positive representations, marital satisfaction, and easy personality in family members), which is consistently connected to the family interaction pattern of Cohesive. (b) apathetic families: this profile is hypothesized to show indifferent family emotional climate (i.e., low parental warmth and demands, positive/disciplinary representations, and marital satisfaction, few representations of parents as warm), which is consistently related to the family interaction pattern of Disengaged, (c) distressed families: this profile is hypothesized to display distressed family emotional climate (i.e., high parental strictness and conflict/anger, disciplinary/negative representations by children, marital dissatisfaction, and difficult personality), which is consistently associated with the family interaction pattern of Hostile.

**Hypothesis 3: Family Functioning**

Consistent with prior research exploring family patterns in relation to children’s emotional adjustment (Epstein, Ryan, Bishop, Miller, & Keitner, 2003; Novak & van der Veen, 1970; Schwab, Gray-Ice, & Prentice, 2002), the patterns of family functioning are examined as
predictors of children’s emotional regulation, assessed from their narratives about challenging situations (i.e., narrative coherence, affect regulation, empathy, avoidance/dissociation, and dysregulated aggression). From the view of children’s developmental outcomes, research has examined the associations between family types and children’s adjustment difficulties (Davies et al., 2004; Johnson, 2003; Sturge-Apple et al., 2010). Thus, this study aims to examine whether these family types are differentially linked with children’s emotional regulation. Consistent with the predictions derived from earlier research, I hypothesize that harmonious family type would be more strongly linked with well-regulated emotions in children (e.g., children in positive family emotional climate, such as harmonious families, more often show narrative coherence, affect regulation, and empathy; they rarely show avoidance/dissociation and dysregulated aggression). In turn, apathetic (e.g., withdrawn families with children showing lower narrative coherence, affect regulation, empathy, avoidance/dissociation, and dysregulated aggression) and distressed (e.g., high conflict families with children frequently showing greater avoidance/dissociation and dysregulated aggression; infrequently showing narrative coherence, affect regulation, and empathy) families would be differentiated from harmonious families in children’s emotional regulation.

**Post hoc Analysis: Profile Changes across Steps**

This study iterates LPAs in hypotheses 1 and 2 to layer information about family interaction patterns with or without family factors. The inclusion of the additional perspectives on family emotional climate (i.e., correlates), which are carried into hypothesis 2, may alter family profile memberships or confirm the characteristics of the family interaction profiles. Thus, the family profile memberships in hypothesis 1 are compared with those in hypothesis 2. The changes or preservations of family profile memberships are explored by tracking each
family’s profile membership from hypothesis 1 to hypothesis 2. I hypothesized that the majority of families maintain a profile consistent in its nature throughout the steps (e.g., cohesive→harmonious; disengaged→apathetic; hostile→distressed). However, I also hypothesized that a small number of families may change their profile due to the correlates, portraying less compatible memberships (e.g., cohesive→distressed; hostile→harmonious).

CHAPTER THREE: METHODS

Participants and Procedures

The parents of same-sex twin pairs were recruited between 1986 and 1990 for the MacArthur Longitudinal Twin Study (LTS) (Emde & Hewitt, 2001). The parents were initially contacted by letters mailed from Colorado Department of Health. Initially, 421 families agreed to participate in an earlier infant twin study of development (Emde & Hewitt, 2001). For the present study, 299 families participated in the study at child age 1 through 7. One child was randomly selected from twins for inclusion in this study.

The data were collected during home visits and parent questionnaires when the children were aged 14 months, 5 years, and 7 years. Home visits were scheduled during times that were convenient for parents and when the children were well rested. Several questionnaires were given to both parents to complete when their children were 14 months old to assess the children’s temperament, parents’ personality, and marital satisfaction.

When the children were aged 5 years, the mothers were asked to complete a questionnaire regarding their parental attitudes, and their children were administered the narrative story stem battery. In the story stem battery, an examiner offered an emotionally charged story beginning and then asked the child to tell the rest of the story by verbalizing and manipulating dolls/props. When the children were 7 years old, the story stem narratives
Bretherton, Oppenheim, Buschsbaum, Emde, & The MacArthur Narrative Group, 1990) were also administered to the children at home. Additionally, the research assistants requested families to allow them to observe (and videotape) the family evening meal. The family members had dinner at the end of the home visit and their interactions were observed and coded live by the two research assistants using the Family Dinnertime Observation Scale (Robinson, 1994). Although mothers, children and their siblings were present on all occasions, the fathers were present approximately 65% of the time.

**Measures**

**Children’s Temperament**

Children’s temperament was measured using the Colorado Childhood Temperament Inventory (CCTI, Rowe & Plomin, 1977) at 14 months. The measure contains 30 general statements describing the temperament dimensions of emotionality, activity, sociability, shyness, persistence, and soothability. The parents were asked to rate each statement on a 5-point Likert scale ranging from 1= strongly disagree; not all like the child; to 5 = strongly agree; a lot like the child. In this study, children’s emotionality and soothability refer to the items representing children’s temperamental characteristics. Emotionality measures the child’s tendency to become easily and intensely upset (e.g., “child cries easily”). Soothability appraises the child’s tendency to become easily calm and tolerant of frustration (e.g., “quickly calms down”) (Bates, 1980, 1987; Chess & Thomas, 1986; Thomas & Chess, 1986; Thomas, Chess, & Birch, 1968). In this study, the averaged score of soothability and reversed emotionality rated by mothers and fathers was used; the scores are most directly related to representing the children’s easy temperamental traits. Alphas for soothability are .71 rated by mothers and .65 rated by fathers, and alpha from the averaged score was .72. Also, alphas for emotionality are .80 rated by mothers and .77 rated
by fathers, and alpha from the averaged score was .76. Pearson correlation between the two reports was .42 for emotionality and .16 for soothability. Mother and father reports of the child’s easy temperament were averaged into one score to form a single measure and correct for reporter bias.

**Parental Personality**

The measure of parental personality was assessed using the Eysenck Personality Inventory (EPI, Eysenck & Eysenck, 1969) when the children were 14 months old. EPI, which is a self-report personality inventory, describes an individual’s personality on three dimensions: (1) an Extraversion Scale; (2) a Neuroticism Scale; and (3) a Lie scale. For the present study, Neuroticism of mothers and fathers, which is an indicator of parents’ psychological trait, was used. Neuroticism consists of 24 items that are answered with “yes” or “no” (e.g., Do you often worry about things you should have done or said?). Previous research has reported reliability coefficients for this scale at .71-.78 (Bolger & Shilling, 1991; Muñiz, García-Cueto, Lozano, 2005). In the current sample, mothers’ and fathers’ neuroticism will be used. Alphas for neuroticism are .80 for the father’s version and .83 for the mother’s version.

**Marital Satisfaction**

The Dyadic Adjustment Scale (DAS, Spanier, 1976) was used to measure factors of family functioning when the children were aged 14 months. The DAS, which is a self-report instrument completed by either or both partners in a relationship, characterizes the quality of a marital relationship. The respondents were asked to rate each of the 32 items on a 5-point Likert-type scale. The DAS includes four subscales: (1) Dyadic Consensus; (2) Dyadic Cohesion; (3) Dyadic Satisfaction; and (4) Affectional Expression. The DAS has established validity with other measures of marital adjustment (Graham, Liu, & Jeziorski, 2006; Spanier, 1976). Additionally,
the alpha for the total adjustment score has been reported at .96 (Spanier, 1976). For the present study, the total adjustment score was calculated by summing across the four subscales. The alphas for the total adjustment score are .79 (fathers) and .75 (mothers). The averaged score rated by mothers and fathers was used to create a marital satisfaction variable. The composite variable of dyadic marital satisfaction was utilized to form a single measure of interparental relationship in light of the moderate correlation \((r = .68)\) and strong intraclass correlation \((ICC = .81)\) to examine husband-wife agreement (Shrout & Fleiss, 1979). Another reason of utilizing the composite variable is to reduce the number of predictors relative to the sample size.

**Mothers’ Perceptions of Parenting Attitudes**

The Parental Attitudes Toward Childrearing (PACR, Easterbrooks & Goldberg, 1990) was used to measure mothers’ self-perceptions of parenting attitudes. PACR, which is a 65-item self-report instrument designed for parents of young children, assesses parents’ perceptions about parenting issues (e.g., I encourage my child always to do his/her best. I encourage my child to be independent of me. I believe that scolding and criticism make my child improve.). When the children were aged 5 years, the mothers were asked to mark how much they agreed with statements regarding their attitudes toward child independence and expression of emotion, and parental expression of affection, discipline, and aggravation on a 6-point Likert scale ranging from 1 (“strongly disagree”) to 6 (“strongly agree”). The PACR yields three subscales: Warmth, Strictness, and Conflict and Anger. All three subscales rated by the mothers were used for self-perceptions of parenting attitudes. The Cronbach’s alpha of internal consistency has been reported to range from .69 to .89 (Easterbrooks & Goldberg, 1990). In the present study, alphas for three subscales were .84 (Warmth), .67 (Strictness) and .60 (Conflict and Anger).
Children’s Representations of Parents

Children’s narrative representations of the relationship with their parents were scored using the MacArthur Narrative Coding Manual (MSSB, Oppenheim et al., 1996) when the children were 5 years old. Each story was scored for the presence-absence of children’s representations of parents as positive (i.e., protective, caretaking, warm, supportive, and helpful), negative (i.e., harsh, punitive, rejecting, and ineffectual) and disciplinary (i.e., discipline, control). Eight stories from the larger battery were coded for the entire child sample. In the present study, the coding scores of each child’s narrative from five of these stems in which father and mother dolls appear together were used (i.e., Spilled Juice, Gift to Mom or Dad, Lost Keys, Cookie Jar, and Three’s a Crowd). For the analysis, the aggregated scores of mothers and fathers were used for children’s representations of parents. Internal consistency coefficients at age 5 years were .77 for positive representations, .81 for negative representations, and .76 for disciplinary representations (Oppenheim, 1997).

Family Interaction

Family interaction was measured when the children were aged 7 years using the Family Dinner Observation Scale (Robinson, 1994). This measure contains 15 subscales that are rated on 5-point scales. A “cliff” scale approach was used for nine subscales that are rated on a 5-point scale (e.g., cohesion, communication, praise, criticism, humor, warmth, structure, maturity demands, and limit setting). For these cliff ratings, a score of 5 represents an unusual or unhealthy level of these behaviors. For this study, a rating of 5 was uncommon and was recoded as the lowest score. Six subscales (i.e., parental teamwork, parental emotions, triangulation, positive affect, negative affect, and environment) were rated on a 5-point scale, where 1 = lowest level and 5 = highest, optimal level). From the scale analysis of Family Dinnertime Observation,
a factor analysis of the subscales identified harmony, control, and conflict factors (see Scale Analysis, page 40).

**Children’s Emotional Regulation**

Children’s emotional regulation was measured by the MacArthur Narrative Coding System (MSSB, Oppenheim et al., 1996) and the MacArthur Narrative Completion Task (Hill, Hoover, & Taliaferro, 2000) when the children were aged 7 years. For this study, seven stories (i.e., Looking for Barney, Three’s a Crowd, Lost Keys, Bathroom Shelf, Cookie Jar, Scary Dog, Fight Friend) were coded and analyzed. The stories are composed of everyday emotional challenges within a family. Children’s emotional regulation was represented using coding schemes of the following themes: avoidance/dissociation (i.e., exclusion of self, repetition, denial of story conflict and resolution, and dissociative behaviors), dysregulated aggression (i.e., verbal aggression, physical aggression, unprovoked aggression and assaulting an adult, personal injury, and escalation of conflict), empathic schemes (i.e., sharing, empathy/helping, affiliation, and affection), and revised narrative coherence (Bretherton et al., 1990; Oppenheim et al., 1996), revised affect regulation (i.e., appropriate affect, dysregulated affect) (Hill et al., 2000). Emotional regulation was presented using empathic schemes, narrative coherence, and affect regulation; contrary to emotional regulation, emotional dysregulation was composed using avoidance and dysregulated aggression. Intraclass correlations were acceptable: narrative coherence (ICC = .83), affect regulation (ICC = .83), empathy (ICC = .65), avoidance/dissociation (ICC = .66), and dysregulated aggression (ICC = .79).

**Analysis Plan**

To test the hypotheses, I used person-centered approach in statistical analyses. Person-centered approach identifies the groups of individuals who share particular related attributes.
Classifying individuals into distinct profiles can potentially have meaningful information about individual-level processes (Bergman & El-Khoury, 2001; Magnusson, 1999). The LPA technique is useful for addressing questions that consider individual differences in family patterns.

Before testing the LPA models, scale analyses were performed to develop the adequate measurement on the Family Dinnertime Observation to investigate the research hypotheses. Scale analysis involved descriptive statistics, correlation analysis, and factor analyses of the Family Dinnertime Observation Scale. Additionally, missing data were addressed using the full information maximum likelihood (FIML) method. According to Enders (2001), in the case of data missing completely at random (MCAR) or missing at random (MAR), the FIML parameter estimates show less bias and are more appropriate than other methods, such as data deletion and imputation. This study had a considerable amount of missing data due to the parents’ decreasing response rate across time points. To estimate whether missing data in the present study were MCAR, I examined missing data using Little’s MCAR test (Little, 1988).

For the primary analysis, I employed LPA. LPA has become a popular statistical method for modeling unobserved heterogeneity in a population (Nylund, Asparouhov, & Muthén, 2007). Specifically, LPA is a person-centered analysis that contains categorization of individuals based on several criteria to identify homogeneous subgroups that are of theoretical interest (Magnusson, 1998). LPA is a variation of latent class analysis (LCA). LCA can be used with categorical variables, whereas LPA is used with continuous variables. LPA does not assume linearity, normal distribution of data, or homogeneity of variances (Magidson & Vermunt, 2002). In this study, individual families were categorized to identify the patterns of family interaction, emotional climate and functioning. LPA postulates that the correlations among the indicators can be explained by an unobserved categorical latent construct, such that the indicators are said to be
locally independent with respect to the latent construct (McCutcheon, 1987). Thus, in LPA, the
categorical latent construct explains the interrelatedness of the profile indicators simultaneously.
The resulting data are typologies or latent profiles that are present in the data and represent the
underlying covariation of the indicators within the population. LPA is a flexible procedure that
can easily incorporate covariates such as demographic variables into the profile solution and
estimate the contribution of covariates to the solution. Using this analytical method, I tested how
much each family factor contributes to the resultant profiles of family emotional climate. LPA is
based on mixture modeling, a method designed to divide the population under study into latent
subgroups that show distinct and interpretable patterns of development (Muthén, 2001). Mixture
models are well suited for the study of samples in which heterogeneity in behavior is attributed
to underlying latent class membership (Land, 2001).

The model is specified such that the means and variances among the indicators are
estimated within each class, whereas the correlations between the indicators are not estimated.
The number of latent classes is determined by trying iteratively an increasing number of classes
and examining the output and interpretability of the results for the meaningfulness of classes. In
terms of model fit indices, the LPA model fit is compared using log-likelihood, entropy, Akaike
information criteria (AIC), and Bayes information criteria (BIC), the bootstrap likelihood ratio
test (BLRT), and the Lo-Mendell-Rubin likelihood test (LMR), which is overall recommended
for evaluating these types of models (Grant et al., 2006). Kline (2005) described smaller values
of log-likelihood, AIC and BIC indicate better good fit, and higher value of entropy means better
distinctions among groups (Kline, 2005). The Lo-Mendell-Rubin likelihood ratio test (LMR) and
the bootstrapped ratio test (BLRT) can be used to determine if a model fits better than a model
with one less profile. For example, if a three-profile model is run, it is compared with a two-
profile model. A low $p$-value indicates that the model with one less profile can be rejected in favor of the model being analyzed (Muthén, 2004). In addition, the average latent class probabilities for most likely latent class membership can be used to help assess if the profile is correctly assigned (Lubke & Muthén, 2007). If the average probability of fitting profile 1 is greater than .9, and the average probability of fitting profile 2 is less than .1. This means that the classes are well distinguished. Entropy is an indication of correct profile assignment (Lubke & Muthén, 2007). Entropy values around .80 and above have been related to at least 90% correct assignment. In the present study, I prioritized BIC (maximizing the generalizability of the model) and BLRT (estimating the difference distribution) in interpreting the current outputs because previous research suggested that these methods performed best in identifying the correct number of classes (Nylund, Asparouhov, & Muthén, 2007). Accordingly, the lowest BIC and significant $p$ value were primarily considered to have the best model fit.

In the primary analysis, I first conducted LPA (Bartholomew, 1987; Muthén, 2002) to identify meaningful latent profiles of family interaction. The indicators of family interaction (i.e., harmony, control, conflict) were repeatedly included in all three steps to identify the relations with family factors as covariates and children’s emotional regulation as developmental outcomes. The second step of LPA involved earlier family factors (e.g., temperament, personality, relationship satisfaction, and relationship representations) that are considered to predict distinct profile membership of family emotional climate. For the best selection of the model solution, the optimal number of profiles was determined based on BIC, entropy and BLRT. Also, the mean scores of each indicator in each profile were standardized to facilitate the interpretation and typology of the latent profiles.
As the last step, children’s outcomes and five variables (narrative coherence, affect regulation, empathy, avoidance/dissociation, and dysregulated aggression) of child emotional regulation were included in the LPA procedure. However, the outcomes are not incorporated directly into the model because those mixture indicators would allow the models to influence the nature of the observed profiles (Petras & Masyn, 2010). More recently, LPA has been used to test the relationships between latent profiles and distal outcomes using auxiliary (e) function to compare probability-based profiles on covariates without including them in the model so that the nature of latent profiles would not be violated (Lanza, Rhoades, Greenberg, & Cox, 2011; Lanza, Rhoades, Nix, & Greenberg, 2010; Parra, DuBois, & Sher, 2006). The auxiliary function relies on a Wald chi-square test of statistical significance and evaluates the equality of outcome means across the various profiles (Asparouhov & Muthen, 2007). There can be one or more outcome variables that depend on the latent class. Because the distal outcomes are treated as indicators, the outcomes can be distinguished based on theoretical concepts or time ordering. In this study, five indicators of child emotional regulation were involved in the LPA procedure as the outcomes. The indicators of children’s emotional regulation were considered to be distal outcomes in this analysis because children’s developmental adjustment (e.g., emotional regulation) is conceptually considered to be outcome variables and to have a different likelihood in relation to each latent profile in most research. Thus, the children’s outcomes were added in the model as auxiliary variables in MPlus. In summary, the present study adopted a person-centered approach, LPA, to model the class membership of family emotional climate predicted by multiple family precursors to better understand family functioning, which is associated with child emotional regulation.
I investigated how the previous step solution was changed or preserved with the next step solution due to the inclusion of the correlates (e.g., covariates) between steps 1 and 2. Additional correlates to the next step can influence the profile formation and indicators because any observed variables that correlated with profile membership convey information about profile membership (Marsh, Lüdtke, Trautwein, & Morin, 2009; Muthén, 2004). Lubke and Muthén (2007) emphasized that the inclusion of the correlates in the LPA can improve classification accuracy. To compare the changes of profile memberships, I used the variable-centered approach to statistical analysis. Specifically, univariate ANOVA was included in the data analysis to examine the profile changes across the steps based on the comparison of group mean-level difference and similarity. Follow-up analysis was conducted using Tukey’s post-hoc tests to perform multiple comparison of two means between the groups, thus showing if the characteristics of the profiles were changed across the steps. In this study, the profile changes across the steps were recoded as categorical variables and subsequently tested by the mean differences between profile-changed groups to provide specific information on which group was significantly different from one other. In developing the primary models, LPA was conducted using SPSS and MPlus 6.0 (Muthén & Muthén, 2010).
CHAPTER FOUR: RESULTS

Sample Characteristics

A total of 290 families who completed follow-up assessments at the children’s age 7 years visit were included in the present study. The participating children had a birth weight of 1,700 g or more; those with medical complications were excluded from the study. Based on self-reported information on the children’s birth certificates, the ethnicity of the sample is as follows: 86.6% Caucasian, 8.5% Hispanic, 0.7% African-American, 1.2% Asian, and 2.9% other. The average years of education of all parents was 14.35; 5% did not complete high school, 29% completed high school without post-secondary education, 49% had some post-secondary education, and 17% had some graduate-level education. The mean of NORC (National Opinion Research Council) occupation for fathers is 48.59 (sd = 13.59) and for mothers is 38.88 (sd = 16.53) (Robinson, McGrath, & Corley, 2001). (See Rhea, Gross, Haberstick, and Corley (2006) for further information regarding the LTS.) To test for the family-level interaction (father-mother-child) in this study, I used randomly selected one twin in each pair (149 girls; 141 boys). The majority of participating families were married and approximately 15% of participating families were divorced when the children were 7 years old. Other parents’ characteristics are shown in Table 1.

Table 1

Demographic Characteristics of Parents

<table>
<thead>
<tr>
<th></th>
<th>Mothers (n = 290)</th>
<th>Fathers (n = 290)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>Min-Max</td>
</tr>
<tr>
<td>Age at birth (years)</td>
<td>30.01 (4.45)</td>
<td>20-43</td>
</tr>
<tr>
<td>Years of education</td>
<td>14.77 (2.07)</td>
<td>9-21</td>
</tr>
<tr>
<td>NORC occupation</td>
<td>38.88 (16.53)</td>
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</tr>
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</table>
Scale Analysis

The scale analysis was performed for the purpose of measuring development using the Family Dinnertime Observation Scale. Descriptive statistics of the Family Dinnertime Observation Scale showed that mean levels of subscales were well distributed and stable, and all of the variables had mid-level scores, except for triangulation (Table 2). The correlations among the subscales of Family Dinnertime Observation Scale are displayed in Table 3.

Table 2

Descriptive Statistics for Family Dinner Observation Scale

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<tr>
<td>Cohesion</td>
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<td>1.0</td>
<td>4.0</td>
<td>-.46</td>
<td>-.52</td>
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<td>Communication</td>
<td>290</td>
<td>3.17</td>
<td>.70</td>
<td>1.0</td>
<td>4.0</td>
<td>-.45</td>
<td>-.52</td>
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<tr>
<td>Praise</td>
<td>288</td>
<td>1.95</td>
<td>.71</td>
<td>1.0</td>
<td>4.0</td>
<td>.50</td>
<td>-.11</td>
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<tr>
<td>Criticism</td>
<td>289</td>
<td>2.16</td>
<td>.86</td>
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<td>4.0</td>
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<td>-.56</td>
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<tr>
<td>Humor</td>
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<td>4.0</td>
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<td>-.50</td>
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<td>Warmth</td>
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<td>4.0</td>
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<td>-.64</td>
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<td>Parent teamwork</td>
<td>188</td>
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<td>5.0</td>
<td>.42</td>
<td>-.33</td>
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<td>Parent emotions</td>
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<td>.84</td>
<td>1.0</td>
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<td>Triangulation</td>
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<td>3.0</td>
<td>3.01</td>
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<td>5.0</td>
<td>.80</td>
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Table 3

Correlations of Family Dinnertime Observation Subscales

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<th>12</th>
<th>13</th>
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<th>15</th>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Pra 3</td>
<td>.28**</td>
<td>.31**</td>
<td></td>
<td></td>
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<td>-.04</td>
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<td></td>
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<td>Hum 5</td>
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<td>.28**</td>
<td>.18**</td>
<td>.14*</td>
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<td>.37**</td>
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<td></td>
</tr>
<tr>
<td>Str 7</td>
<td>.19**</td>
<td>.06</td>
<td>.14*</td>
<td>-.02</td>
<td>.12*</td>
<td>.21**</td>
<td></td>
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<td></td>
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<tr>
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<td>.17**</td>
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<td>.55**</td>
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<td>.04</td>
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<td>.31**</td>
<td>.28**</td>
<td>.21**</td>
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<td>.00</td>
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<td>-.03</td>
<td>.12*</td>
<td>-.02</td>
<td>-.06</td>
<td>.08</td>
<td>.04</td>
<td>.12*</td>
<td>-.01</td>
<td>-.04</td>
<td></td>
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<td>.28**</td>
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<td>.43**</td>
<td>.64**</td>
<td>.20**</td>
<td>.12*</td>
<td>.09</td>
<td>.33**</td>
<td>.13</td>
<td>-.03</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>NA 14</td>
<td>-.30**</td>
<td>-.23**</td>
<td>-.13*</td>
<td>.58**</td>
<td>-.02</td>
<td>-.42**</td>
<td>.02</td>
<td>.18**</td>
<td>.27**</td>
<td>-.20**</td>
<td>-.11</td>
<td>.15*</td>
<td>-.31**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Env 15</td>
<td>-.10</td>
<td>-.21**</td>
<td>-.19**</td>
<td>.06</td>
<td>.14*</td>
<td>-.09</td>
<td>.06</td>
<td>.06</td>
<td>.05</td>
<td>.10</td>
<td>-.08</td>
<td>-.04</td>
<td>.05</td>
<td>.14*</td>
<td></td>
</tr>
</tbody>
</table>

Note. Coh=coherence; Com=communication; Pra=praise; Cri=criticism; Hum=humor; War=warmth; Str=structure; MD=maturity demands; LS=limit setting; PT=parent teamwork; PE=parent emotions; Tri=triangulation; PA=positive affect; NA=negative affect; Env=environment.
* p <.05, **p <.01.
The intraclass correlation for individual ratings (ICC) represented the coder reliability of the two different live observers. Cohesion, criticism, parent teamwork, triangulation, negative affect, and environment displayed strong agreement (> .70), whereas the others offered the moderate/fair agreement based on the ICC (Table 4).

Table 4

<table>
<thead>
<tr>
<th>Intraclass Correlation for Individual Ratings (Inter-rater Agreement)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICC (α)</strong></td>
</tr>
<tr>
<td>Cohesion .70</td>
</tr>
<tr>
<td>Communication .70</td>
</tr>
<tr>
<td>Praise .64</td>
</tr>
<tr>
<td>Criticism .69</td>
</tr>
<tr>
<td>Humor .63</td>
</tr>
<tr>
<td>Warmth .62</td>
</tr>
<tr>
<td>Structure .61</td>
</tr>
<tr>
<td>Maturity demands .49</td>
</tr>
<tr>
<td>Limit setting .51</td>
</tr>
<tr>
<td>Parent teamwork .67</td>
</tr>
<tr>
<td>Parent emotions .63</td>
</tr>
<tr>
<td>Triangulation .71</td>
</tr>
<tr>
<td>Positive affect .61</td>
</tr>
<tr>
<td>Negative affect .78</td>
</tr>
<tr>
<td>Environment .72</td>
</tr>
</tbody>
</table>

Factor Analysis of Family Dinnertime Observation Scale

For the early stages of scale development, I used exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is generally used for data exploration to find the model that best fits the data, to discover the factor structure of a measure, and to examine its internal reliability. First, the most common approach for determining the number of factors is to generate a scree plot.
In the scree plot, all of other components can be cut off after the curve forms an elbow, which occurs when the steep curve ceases and declines. Based on the EFA scree plot produced by SPSS (Figure 1), three factors accounted for most of the variance. These three factors were specifically defined in the below.

![Scree plot of Eigenvalue](image)

*Figure 1*
Scree plot of Eigenvalue.

From the EFA results, three factors were produced (e.g., Factor 1: communication, cohesion, positive affect, warmth, humor; Factor 2: maturity demands, structure, limit setting; and Factor 3: criticism, negative affect) (Table 5). Second, the confirmatory factor analysis (CFA), which is a statistical technique, verifies the factor structure of a set of observed variables. CFA is a hypothesis testing to define a model and to test whether the data support the model. In this study, three indicators of observed variables were established according to the EFA results. From these findings, all of the loadings on the latent variables were significant at $p < .001$ (Table
6). Tentatively, three dimensions of family interaction were created based on the results of the EFA and CFA (harmony, control, and conflict).

Table 5

EFA Output

<table>
<thead>
<tr>
<th>Rotated Component Matrixa</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>Cohesion</td>
<td>.81</td>
</tr>
<tr>
<td>Positive affect</td>
<td>.76</td>
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<tr>
<td>Communication</td>
<td>.75</td>
</tr>
<tr>
<td>Warmth</td>
<td>.75</td>
</tr>
<tr>
<td>Humor</td>
<td>.68</td>
</tr>
<tr>
<td>Structure</td>
<td></td>
</tr>
<tr>
<td>Maturity demands</td>
<td></td>
</tr>
<tr>
<td>Limit setting</td>
<td></td>
</tr>
<tr>
<td>Criticism</td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td></td>
</tr>
</tbody>
</table>

Note. Extraction method: Principal Component Analysis; Rotation method: Varimax with Kaiser Normalization; aRotation converged in six iterations.

Table 6

CFA Using Three Factors

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Estimate</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td>1.00</td>
<td>.00</td>
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<tr>
<td>Communication</td>
<td>.87***</td>
<td>.06</td>
</tr>
<tr>
<td>Humor</td>
<td>.59***</td>
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<td>Warmth</td>
<td>.97***</td>
<td>.07</td>
</tr>
<tr>
<td>Positive affect</td>
<td>.91***</td>
<td>.07</td>
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</tbody>
</table>

Factor 2

<p>| Structure | 1.00 | .00 |</p>
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<tr>
<th>Subcategory</th>
<th>Mean</th>
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<td>Maturity demands</td>
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<td>.12</td>
</tr>
<tr>
<td>Limit setting</td>
<td>.97***</td>
<td>.12</td>
</tr>
<tr>
<td>Criticism</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Negative affect</td>
<td>1.71***</td>
<td>.30</td>
</tr>
</tbody>
</table>

*** p < .001.

All subcategories under each dimension were aggregated and the alphas were calculated. In Table 7, performed ICC for three factors was presented. In the same vein, two coders observed and rated the family interactions at family dinnertime. The results indicated that Control showed moderate intra-class correlation coefficient (ICC) (= .59), whereas harmony (= .82) and conflict (= .79) displayed satisfactory interobserver agreement. “Control” comprised three parental measures of structure, maturity demands, and limit setting. Parental control was conceptualized as the degree to which parents exerted control and power over the child, as well as an indicator of the level of direct involvement in the child’s activities. Families establish themselves along positive or negative strategies of parental control, which can be a confusing nature of communication with disciplines. This mixed cue of parental control may be interpreted differently by children, depending on the functions in families. With respect to moderate inter-rater reliability for “Control”, the discrepancy between coders raises the likelihood that such factor perhaps plays a certain role in classifying the types of family interaction and emotional climate.
Table 7

*Intraclass Correlation for Three Dimensions*

<table>
<thead>
<tr>
<th>Factor 1: Harmony</th>
<th>ICC (α)</th>
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<tr>
<td>Cohesion, Communication, Humor, Warmth, Positive affect</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 2: Control</th>
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</thead>
<tbody>
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<td>Maturity demands, Structure, Limit setting</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 3: Conflict</th>
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</thead>
<tbody>
<tr>
<td>Criticism, Negative affect</td>
<td>.79</td>
</tr>
</tbody>
</table>

**Descriptive Analysis**

Basic descriptive statistics and bivariate correlations were analyzed. Table 8 presents the correlations, means, standard deviations, and ranges of all of key variables. The mean levels of harmony and control in Family Dinnertime Observation Scale showed mid-level scores, whereas the low mean level scores and the high standard deviations are shown to be in conflict.

The subscales of Family Dinnertime Observation were consistent with those of PACR and children’s representations in MSSB (i.e., ‘harmony’ in Family Dinnertime Observation, ‘warmth’ in PACR, and ‘positive representation’ in MSSB; ‘control’ in Family Dinnertime Observation, ‘strictness’ in PACR, and ‘disciplinary representation’ in MSSB; ‘conflict’ in Family Dinnertime Observation, ‘conflict and anger’ in PACR, and ‘negative representation’ in MSSB). In correlation with Family Dinnertime Observation, control showed significantly positive correlation with harmony ($r = .20$) as well as with conflict ($r = .18$); however, strictness in PACR was negatively correlated with warmth ($r = -.36$) but positively correlated with conflict and anger ($r = .42$). Between family dinnertime observation and PACR, harmony was negatively
correlated with conflict and anger ($r = -.23$). The subscales of children’s representations in MSSB were not correlated with any of Family Dinnertime Observation and PACR.

The children’s easy temperament and the mothers’ neuroticism indicators had a normally distributed mean at the mid-point of the scale with good variability; however, the distribution of the fathers’ neuroticism was positively skewed, which suggests that the mean of father neuroticism was less than the median. Also, fathers showed less neuroticism than mothers. In marital satisfaction, father-mother dyads showed high marital satisfaction at the mean level. In children’s narratives, the mean levels of children’s representations of parents and children’s emotional regulation themes were relatively low; however, the narrative coherence was high.

Additional analysis was performed to distinguish if a significant relationship was found due to the absence of fathers at the dinnertime and marital status. In the present study, the quality of family interaction may be influenced by covariates, such as father-presence or absence at dinnertime or marital status (i.e., married vs. divorced). I identified the differences in family interaction quality between the groups of father-presence and absence at dinnertime, divorced/separated and married in marital status (Table 9). To identify these differences in family interaction quality, an independent-samples $t$-test was conducted to compare two groups. Comparing father-present and father-absent groups in Family Dinnertime Observation, the results indicated that there was no significant difference in the scores for control ($t(287) = -.86, p > .10$) and conflict ($t(287) = .41, p > .10$); however, there was a significant difference between father-present ($M = 2.94, SD = .55$) and father-absent ($M = 2.71, SD = .58$) in harmony ($t(288) = -3.30, p < .05$). Also, comparing the married and divorced groups, the married group showed more harmonious interactions ($M = 2.89, SD = .57$) than the divorced group ($M = 2.69, SD = .58$); and this difference was significant in harmony ($t(288) = 2.09, p < .05$), but there were no
significant group differences in control ($t(287) = -0.22, p > .10$) and conflict ($t(287) = -1.47, p > .10$). Although I found a significant difference in harmony among the groups, I decided to retain the total sample rather than removing the father-absent or divorced families for the main analyses because the actual mean scores do not make a significant difference between the groups; the sample size is key to maximizing statistical power.
Table 8

Correlation

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*Note. HAR=harmony; CONT=control; CONF=conflict; CCTI=temperament; MEPI=mother neuroticism; FEPI=father neuroticism; DAS=marital satisfaction; WARM=warmth; STRT=strictness; CA=conflict/anger; POS=positive parents; NEG=negative parents; DC=disciplinary parents; NC=narrative coherence; AREG=affect regulation; EMP=empathy; AD=avoidance/dissociation; DA=dysregulated aggression.

*p < .05; **p < .01.
Table 9

*Family Characteristics*

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<td>M (SD)</td>
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<td>2.61 (.52)</td>
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<td>2.59 (.53)</td>
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<td>16</td>
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<td>2.61 (.50)</td>
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**Missing Data Analysis**

The missing data were addressed using the full information maximum likelihood (FIML) method, which is the default method for handling missing data in Mplus. According to Enders (2001), in the case of data missing completely at random (MCAR) or missing at random (MAR), the FIML parameter estimates showed less bias and were more appropriate than other methods, such as data deletion and imputation. In the present study, there was a considerable amount of missing data because the parents’ response rate, especially the fathers’ low response rate (e.g., 27% missingness in father neuroticism), decreased across the time points.

To estimate whether the missing data in the present study were MCAR, I examined the missing data using Little’s MCAR test (Little, 1988). For Little’s chi-square statistic, the null hypothesis tests whether the data are missing completely at random using p value. The p value for MCAR data should be greater than .05. In the present study, the results of Little’s test...
suggested that the data were MCAR ($\chi^2[1352] = 783.66, p > .05$). Accordingly, the entire sample was used in the analyses to maximize statistical power.

**Research Question 1: Family Interactions**

LPA was conducted using MPlus to determine if homogeneous subgroups of families exist based on harmony, control and conflict shown in family interaction. The fit indices statistics and overall interpretability of the solutions were explored to ascertain the best number of profiles. In Table 10, the fit indices suggested the preference of the three- (BIC, BLRT) and five-profile (Entropy, AIC, SaBIC) models. However, I determined that the three-profile solution was the best fit for the data and was substantively interpretable based on fit index simulation proposed by Nylund et al (2007).

### Table 10

*Model Fit Indices of Family Interactions*

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<th># profiles</th>
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*Note.* LL=Log Likelihood; # pars=numbers of parameters; AIC=Akaike Information Criteria; BIC=Bayesian Information Criteria; SaBic=Sample Size Adjusted Bayesian Information Criteria; LRT=Lo-Mendell-Rubin Likelihood Ratio Test; BLRT=Bootstrapped Likelihood Ratio Test.

It is important to consider model interpretability using the average latent profile probabilities for the most likely latent profile membership using latent profile based on an estimated model (Collins & Lanza, 2010). The latent class probabilities ranged from zero to 1.00 (0-100%), which indicates the proportion of the observation that falls into each profile. For
example, the probabilities close to 1.00 (100%) are very confident; thus, the profile in which its probability is close to 1.00 is confirmed to be assigned to a specific latent profile with clear description. If the probabilities are under .80-.85 (80%-85%), the profile memberships may not be distinct, in other words, the profile contains a considerable portion of the families who share other latent profile’s characteristics. Table 11 displays the latent profile probabilities and the degree of fit among the three profiles in the study. In particular, families who were in profile 1 had an 87% average probability of fitting profile 1, an 8% probability of fitting profile 2, and a 5% probability of fitting profile 3. Families who were in profile 2 had a 78% average probability of fitting profile 2, a 19% high probability of fitting profile 1, and a 3% probability of fitting profile 3. Finally, families who were classified as profile 3 had an 86% average probability of fitting profile 3, an 11% probability of fitting profile 1, and a 3% probability of fitting profile 2. From the results, profiles 2 and 3 had a large number of observations in profile 1, which might contribute considerably to the low entropy. However, these three latent profiles were named and characterized based on theory and research on the family interaction patterns as described below.

Table 11

<table>
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<th>Latent Profile 1</th>
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The three latent profiles of family interaction, which are composed of indicator variables of harmony, control and conflict, are shown in Table 12 and Figure 2. The first latent profile
(latent profile 1) is labeled *cohesive* because it is characterized by families that present a high level of harmony, a moderately elevated level of control, and a low level of conflict in family interaction. This cohesive family interaction profile includes 168 families. However, this cohesive pattern is somewhat different from the family typology research. Cohesive families in family typology research exhibit warm and harmonious relationships across multiple family subsystems; however, unlike cohesive families in research, these families in the present study displayed high levels of parental demands and structuring with warmth and harmony. The second latent profile (latent profile 2) is named *disengaged* because it is characterized by families that displayed generally low levels of harmony, control and conflict. This Disengaged family interaction profile describes 40 families. The third latent profile is labeled *hostile* because it is characterized by families that presented a low level of harmony, moderately high control and very high level of conflict. This Hostile family interaction profile includes 82 families. The profiles were consistent with the proposed family profiles in the study by Sturge-Apple et al. (2010).

Table 12

*Means, Standard Deviations, and ANOVA Comparison of Three Family Types on Variables of Family Interaction*

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<th>Hostile (H; n=82)</th>
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*Note.* ANOVA=analysis of variance; Tukey was used for post hoc comparisons; “>” refers to significantly large; “,” refers to no significant difference at alpha = .05 level. ***p < .001.
Figure 2

Characteristics of the latent profiles on the indicators of family interactions.

Note. The scores of estimated mean were standardized to facilitate the interpretation of the histogram.

Research Question 2: Family Emotional Climate

To identify the individual and family factors associated with the various types of family emotional climates, the following variables were included in the analysis with the variables of family interaction quality, children’s temperament, parental personality, marital satisfaction, maternal perception of parenting, and children’s representations of parents. Subsequently, another LPA set was performed. Initially, three-, four- and five-profile models were tested; finally, the five-profile model was dropped because one of the five profiles included only one family. Therefore, the model fit indices between the three- and four-profile models were compared for the final model selection (Table 13). The results demonstrated that both three-profile model (Entropy, AIC, BLRT) and four-profile model (BIC, SaBIC, BLRT) proposed the
good fit indices. As explained in step 1 for family interaction, the four-profile solution was chosen to be the best fit for the data and substantively interpretable according to Nylund et al. (2007).

Table 13

Final Model Fit Indices of Family Emotional Climates

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<th># pars</th>
<th>Entropy</th>
<th>AIC</th>
<th>BIC</th>
<th>SaBIC</th>
<th>LMR</th>
<th>BLRT</th>
</tr>
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<tbody>
<tr>
<td>Three</td>
<td>-3267.63</td>
<td>54</td>
<td>.95</td>
<td>6643.26</td>
<td>6841.43</td>
<td>6670.19</td>
<td>.77</td>
<td>&lt; .001</td>
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<tr>
<td>Four</td>
<td>-3213.43</td>
<td>68</td>
<td>.88</td>
<td>6562.86</td>
<td>6812.41</td>
<td>6596.77</td>
<td>.13</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

*Note.* LL=Log Likelihood; # pars=numbers of parameters; AIC=Akaike Information Criteria; BIC=Bayesian Information Criteria; SaBic=Sample Size Adjusted Bayesian Information Criteria; LRT=Lo-Mendell-Rubin Likelihood Ratio Test; BLRT=Bootstrapped Likelihood Ratio Test.

The model interpretability using the latent class probability of membership was considered in this step (Collins & Lanza, 2010). Table 14 shows the probabilities of the four-profile LPA solution and the degree of fit among families. The latent profile probabilities were overall better than those shown in step 1. Specifically, the families who were in profile 1 had a 94% average probability of fitting profile 1, a 1% probability of fitting profile 2, a 1% probability of fitting profile 3 and a 4% probability of fitting the profile 4. Families who were in profile 2 had a 100% average probability of fitting profile 2. Also, families who were in profile 3 had a 100% average probability of fitting profile 3. Finally, families who were classified as profile 4 had an 86% average probability of fitting profile 4 and a 14% probability of fitting profile 1.
I characterized and labeled these four latent profiles based on theory and research about family emotional climate (Table 15 and Figure 3). However, reviewing the MPlus results, I observed that the latent profile models showed insignificant p values in the estimated mean and variances in the children’s negative representations of parents. Consequently, I interpreted the characteristics of each profile without the children’s negative representations of their parents.

The first latent profile (profile 1) was labeled harmonious because it was characterized by mothers and fathers who reported a low level of neuroticism and a high level of marital satisfaction. Mothers reported high levels of warmth and low levels of strictness and conflict/anger in maternal perceptions of parenting attitudes. The families in this profile displayed elevated harmony in family interactions. This harmonious profile includes 217 families. The second profile (profile 2) was labeled control-oriented. This profile described average levels in most of family factors (e.g., parental neuroticisms, marital satisfaction). However, mothers reported moderately low warmth and elevated level of conflict/anger in their parenting perception and children frequently represented parents as disciplinary. These families exhibited moderately low harmony. This control-oriented profile includes 26 families. The third
profile (profile 3) was named *preoccupied with conflict* because some inconsistency emerged in this profile between findings regarding paternal neuroticism versus observed conflict in family. In this profile, mothers reported a low level of neuroticism; however, fathers reported a moderately high level of neuroticism. Their level of marital satisfaction was moderately low. Mothers reported a moderately high level of strictness and low level of conflict/anger in their perception of parenting. Children more frequently represented their parents as disciplinarians than in other profile types. These families showed elevated harmony and very low level of conflict in family interactions. This preoccupied with conflict profile includes 15 families.

Finally, the last latent profile (profile 4) was named *distressed* because it was characterized by neurotic parents and incompatible dyadic and family relationships. Both parents reported high levels of neuroticism and low level of marital satisfaction. Mothers reported a low level of warmth and high levels of strictness and conflict/anger in their perception on parenting. Families presented a low level of harmony and a high level of conflict in their family interactions. This distressed family emotional climate profile describes 32 families. Although I hypothesized that three profiles would emerge, my results suggested that four profiles better fit these data in family emotional climate. Harmonious and distressed family profiles were consistent with the hypothesis; however, control-oriented and preoccupied with conflict family profiles were newly formed from the analysis of correlates.
Table 15

Means, Standard Deviations, and ANOVA Comparison of Three Family Types on Variables of Family Emotional Climate

<table>
<thead>
<tr>
<th></th>
<th>Harmonious (H; n=217)</th>
<th>Control-oriented (C; n=26)</th>
<th>Preoccupied with Conflict (P; n=15)</th>
<th>Distressed (D; n=32)</th>
<th>F</th>
<th>Post hoc</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
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<tr>
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<td>13.75</td>
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<td>5.73</td>
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<tr>
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<td>4.11</td>
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<td>WARM</td>
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<td>.42</td>
<td>5.25</td>
<td>.40</td>
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<tr>
<td>STRT</td>
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<td>.49</td>
<td>3.62</td>
<td>.57</td>
<td>3.71</td>
<td>.50</td>
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<tr>
<td>CA</td>
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<td>.48</td>
<td>2.93</td>
<td>.53</td>
<td>2.65</td>
<td>.65</td>
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<td>.31</td>
<td>.19</td>
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<td>.24</td>
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<tr>
<td>DC</td>
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<td>.62</td>
<td>2.92</td>
<td>.64</td>
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<td>.54</td>
<td>2.55</td>
<td>.44</td>
<td>2.60</td>
<td>.65</td>
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<tr>
<td>Conflict</td>
<td>2.13</td>
<td>.77</td>
<td>2.19</td>
<td>.70</td>
<td>1.78</td>
<td>.63</td>
</tr>
</tbody>
</table>

Note. ANOVA=analysis of variance; “>” refers to significant large; “,” refers to no significant difference at alpha = .05 level. Tukey was used for post hoc comparisons.

†p < .10; *p < .05; **p < .01; ***p < .001.
Figure 3

Characteristics of the latent profiles on family emotional climate.

Note. The scores of estimated mean were standardized to facilitate the interpretation of the histogram.
Research Question 3: Family Functioning

The associations between children’s emotional regulation in children aged 7 years (e.g., narrative coherence, affect regulation, empathy, avoidance/dissociation, and dysregulated aggression) were explored because these factors were related to the four latent profiles of family emotional climate, representative of the distinctive patterns of family functioning. This study conceptually and theoretically hypothesized the causal arrow from family emotional climate to children’s emotional regulation as the outcomes, in other words, prior family emotional climate predicts subsequent children’s emotional regulation. From this perspective, it is appropriate to use the children’s outcomes as auxiliary variables to verify the relationship with the latent profiles using MPlus’ Auxiliary (e) analyses. The results are shown in Table 16 and Figure 4.

The results indicated that family emotional climate profiles distinguished narrative coherence and dysregulated aggression. In particular, harmonious families were distinguishable from control-oriented families by the level of children’s narrative coherence. The children in harmonious families also presented infrequent dysregulated aggression that was significantly different from those in control-oriented and preoccupied with conflict families. From the results, it should be noted that family emotional climate profiles were not distinguished by children’s affect regulation, empathy themes and avoidance/dissociation. Interestingly, the distressed family profile was indistinguishable from the other three patterns (i.e., harmonious, control-oriented, preoccupied with conflict) using any of the variables of children’s regulation.
Table 16

Results of Family Functioning from the Wald Chi-Square ($\chi^2$) Tests of Mean Equality of the Auxiliary Analyses of Children’s Emotional Regulation Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Global $\chi^2$</th>
<th>H vs. C</th>
<th>H vs. P</th>
<th>H vs. D</th>
<th>C vs. P</th>
<th>C vs. D</th>
<th>P vs. D</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC</td>
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<td>3.34†</td>
<td>.43</td>
<td>.01</td>
<td>.40</td>
<td>2.08</td>
<td>.27</td>
<td>H &gt; C</td>
</tr>
<tr>
<td>AREG</td>
<td>.99</td>
<td>.30</td>
<td>1.09</td>
<td>.10</td>
<td>.31</td>
<td>.03</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>EMPTH</td>
<td>1.71</td>
<td>.02</td>
<td>1.51</td>
<td>.03</td>
<td>1.08</td>
<td>.00</td>
<td>1.08</td>
<td>—</td>
</tr>
<tr>
<td>AD</td>
<td>1.47</td>
<td>.52</td>
<td>.63</td>
<td>.07</td>
<td>.12</td>
<td>.59</td>
<td>.73</td>
<td>—</td>
</tr>
<tr>
<td>DA</td>
<td>5.72</td>
<td>4.07*</td>
<td>2.74†</td>
<td>.21</td>
<td>.03</td>
<td>1.11</td>
<td>1.07</td>
<td>H &lt; C, P</td>
</tr>
</tbody>
</table>

*Note. H=harmonious; C=control-oriented; P=preoccupied with conflict; D=distressed.
†p < .10; *p < .05; **p < .01; ***p < .001.

Figure 4

Characteristics of the latent profiles on children’s outcomes.

*Note. The scores of estimated mean were standardized to facilitate the interpretation of the histogram.
**Post hoc Analysis: Profile Changes**

Possible latent profile solutions have been generated in steps 1 and 2. For the LPA model of step 1, a three-profile solution of family interaction was selected. For the LPA model of step 2, a four-profile solution that includes all of the family factors to reflect family emotional climate was selected. However, if the profiles are stable, there should be a high degree of retained families across the steps, whereas there would likely be some families’ relocation across the steps due to profile changes if the profile formation is influenced by additional indicators in each step. I examined these relationships by tracing the families to investigate the link across steps 1 and 2. The change or preservation of profile membership may offer more information about the validity of the second profile analysis.

**Profile Changes from Family Interaction to Family Emotional Climate**

Families were tracked using the profiles of family interaction (step 1) and those of family emotional climate (step 2). Three profiles were found from the first step; subsequently, four latent profiles in step 2 were identified. The patterns and typologies appeared to be inconsistent across the steps although several shapes of the profiles were alike between the steps. The correlates included in step 2 might affect the nature of changes of profile memberships; thus, a considerable proportion of families likely altered the profile memberships across the steps. Categorical variables named “profile change” were generated to pursue the families from steps 1 to 2. Table 17 shows the frequencies of profile changes.

Of the 168 families classified into cohesive for family interaction, 80% were classified into harmonious (n = 135), 7% were classified into control-oriented (n = 12), 5% were classified into preoccupied with conflict (n = 10), and 6% were classified into distressed (n = 11) for family emotional climate. Of the 40 families categorized into disengaged for family interaction,
62% were categorized into harmonious (n = 25), 15% were categorized into control-oriented (n = 6), 7% were categorized into preoccupied with conflict (n = 3), and 15% were categorized into distressed (n = 6) for family emotional climate. Of the 82 families categorized into hostile for family interaction, 69% were categorized into harmonious (n = 57), 9% were categorized into control-oriented (n = 8), 2% were categorized into preoccupied with conflict (n = 2), and 18% were categorized into distressed (n = 15). Having more information about earlier family factors, several profile assignments between two models were conceptually congruent (e.g., cohesive→harmonious, hostile→distressed; approximately 52% of the total sample); however, there were some incongruous profile changes (e.g., cohesive→distressed, hostile→harmonious) across the steps (approximately 23% of the total sample). Approximately 48% of the total sample in unexpected and unexplained profile changes suggested that the indicators of family factors in step 2 may provide more information for qualitatively differentiating classification and describing the features of family emotional climate.

Table 17

*Crosstabulation of the Number of Families in Profile Membership Change from Step 1 to Step 2*

<table>
<thead>
<tr>
<th>Profile Membership in Family Emotional Climate (Step 2)</th>
<th>Profile Membership in Family Interaction (Step 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmonious</td>
<td>Cohesive (11) Disengaged (21) Hostile (31) Total</td>
</tr>
<tr>
<td>Control-oriented</td>
<td>135 12 (12) 6 (22) 8 (32) 26</td>
</tr>
<tr>
<td>Preoccupied with Conflict</td>
<td>10 (13) 3 (23) 2 (33) 15</td>
</tr>
<tr>
<td>Distressed</td>
<td>11 (14) 6 (24) 15 (34) 32</td>
</tr>
<tr>
<td>Total</td>
<td>168 40 82 290</td>
</tr>
</tbody>
</table>

*Note.* The number within the parentheses represents the categorical variable of profile change.
With regard to the indicators of family interaction, the mean levels of harmony, control and conflict of each profile change are shown in Figure 5. In profile change of cohesive-harmonious to cohesive-distressed (cohesive in step 1), the levels of harmony and control in profile change of cohesive-preoccupied with conflict was relatively high, which indicates that this profile seemed comparatively easy to move to preoccupied with conflict in step 2 profiles. Also, the profile cohesive-distressed showed a lower level of harmony than other cohesive profile changes (cohesive-harmonious, cohesive-control-oriented, cohesive-preoccupied with conflict) presented, reflecting a greater likelihood for switching to distressed in step 2. In profile changes of disengaged-harmonious, disengaged-control-oriented, disengaged-preoccupied with conflict, and disengaged-distressed (disengaged in step 1), profile change of disengaged-distressed displayed relatively moderate-to-low levels of harmony and control than the other profiles, indicating a greater likelihood for moving to distressed in step 2. In profile changes of hostile-harmonious, hostile-control-oriented, hostile-preoccupied with conflict, and hostile-distressed (hostile in step 1), profile change of hostile-preoccupied with conflict showed relatively higher mean levels of harmony and control, and lower mean level of conflict than the other profiles, exhibiting a greater likelihood for switching to preoccupied with conflict in step 2. In general, three indicators of family interaction showed subtle differences among the profile change groups. This figure illustrates potential for diverse interpretation on the relationships among indicators to understand the profile changes through the steps.
Figure 5

Mean levels of harmony, control and conflict.

Note. The results were standardized to facilitate the interpretation of the histogram.

Additionally, the indicators of family factors played a role in altering the latent profile memberships between steps 1 and 2. Table 18 presents the means and standard deviations for the indicators of family factors in each profile change. Profile changes of cohesive-harmonious, disengaged-harmonious and hostile-harmonious (harmonious in step 2 profiles) showed the common patterns of low levels of parental neuroticisms, maternal strictness and conflict/anger, and high levels of marital satisfaction and maternal warmth. Profile changes of cohesive-control-oriented, disengaged-control-oriented and hostile-control-oriented (control-oriented in step 2 profiles) shared the consistent patterns of close-to-average levels of all of the indicators, except high level of maternal warmth and strictness in profile change of disengaged-control-oriented. The shape of profile changes of cohesive-preoccupied with conflict, disengaged-control-oriented...
preoccupied with conflict and hostile-preoccupied with conflict (preoccupied with conflict in step 2 profiles) appeared to be mixed and chaotic. For example, profile change of disengaged-preoccupied with conflict showed higher parental neuroticism than profile of cohesive-preoccupied with conflict, whereas profile change of hostile-preoccupied with conflict displayed imbalanced neuroticism between mothers and fathers (father > mother). These inconsistent levels of the indicators were shown across all three profile changes. Profile changes of cohesive-distressed, disengaged-distressed, and hostile-distressed (distressed in step 2 profiles) described the common patterns of high levels of parental neuroticism, maternal strictness and conflict/anger, and low levels of maternal warmth and marital satisfaction. However, from the results shown in Table 17, unexpected profile changes across the steps occurred; a majority of hostile families in step 1 (n = 57) moved to harmonious (i.e., profile change of hostile-harmonious). I found that profile change of hostile-harmonious presented relatively lower levels of parental neuroticisms, maternal strictness and conflict/anger and higher levels of marital satisfaction and maternal warmth compared to the other hostile profiles (e.g., profile changes of 32, 33, and 34).
Table 18

Means, Standard Deviations, and ANOVA Comparison of Indicators of Family Factors in Each Profile Change

<table>
<thead>
<tr>
<th>Profile Change</th>
<th>CCTI M (SD)</th>
<th>MEPI M (SD)</th>
<th>FEPI M (SD)</th>
<th>DAS M (SD)</th>
<th>WARM M (SD)</th>
<th>STRT M (SD)</th>
<th>CA M (SD)</th>
<th>POS M (SD)</th>
<th>DC M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 (n = 135)</td>
<td>13.61</td>
<td>9.63</td>
<td>7.08</td>
<td>114.13</td>
<td>5.35</td>
<td>3.53</td>
<td>2.67</td>
<td>.21</td>
<td>.16</td>
</tr>
<tr>
<td>12 (n = 12)</td>
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<td>4.38</td>
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<td>.33</td>
<td>.47</td>
<td>.49</td>
<td>.14</td>
<td>.13</td>
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<td>9.15</td>
<td>107.78</td>
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<td>3.67</td>
<td>3.07</td>
<td>.24</td>
<td>.20</td>
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<td>.55</td>
<td>.53</td>
<td>.15</td>
<td>.09</td>
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<td>7.86</td>
<td>109.93</td>
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<td>.17</td>
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<td>3.60</td>
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<tr>
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<td>3.67</td>
<td>4.14</td>
<td>17.91</td>
<td>.25</td>
<td>.34</td>
<td>.35</td>
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<td>.17</td>
</tr>
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<td>33 (n = 3)</td>
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<td>9.60</td>
<td>6.34</td>
<td>114.64</td>
<td>5.32</td>
<td>3.43</td>
<td>2.83</td>
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<tr>
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<td>4.84</td>
<td>3.67</td>
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</table>

(n = 8)  
1.51  4.52  2.28  10.68  .49  .73  .41  .10  .09

33  
(n = 2)  
12.88  14.00  17.00  122.75  5.04  3.53  1.40  .05  .25
1.24  2.83  —  10.25  —  —  —  .07  .07

34  
(n = 15)  
12.96  13.15  12.92  94.56  4.91  4.16  3.44  .17  .18
2.39  4.46  3.76  21.11  .38  .46  .39  .11  .14
CHAPTER FIVE: DISCUSSION

The purpose of the present study was to describe the value of applying an LPA to the investigation of family functioning and its’ distinct characteristics that contribute to types of families derived from family emotional climate and children’s outcomes. Additionally, the patterns of family functioning were explored in relation to children’s developmental outcomes, especially children’s emotional regulation in the family context. Hence, the study focused on our understanding of longitudinal process from family factors to children’s developmental outcome in view of the different types of family functioning suggested in family systems theory. The LPA was utilized in an innovative way to explore complex family functioning typology within children’s developmental framework. In this chapter, I review the findings to extend and build upon the existing work in this area. I emphasize the importance of children’s emotional regulation within the family context as a key construct in the study of family and children and a potential target for intervention.

Primary Findings

Family Interaction

The first model tested family interaction patterns. A measure of family dinnertime observation was used in this study to distinguish family patterns and to demonstrate how family members interact with each other. It assessed family members’ behaviors and atmosphere in their interactions in three domains: harmony, control, and conflict.

As hypothesized, the results from this study identified three distinct latent profiles of family interaction, which were qualitatively and quantitatively different from one another. The majority of families were classified as cohesive and showed a high level of harmony plus a moderate level of control without conflict in family interactions. This profile seems to have
amicable family relationships toward each other, showing warmth and positive affect. Similar to *cohesive* types in the studies of Johnson (2003), Minuchin (1974) and Sturge-Apple et al. (2010) and *adequate* type in the work of Davies, Cummings, and Winter (2004), this pattern of families highlights the encouragement of family members to be assertive without threatening their autonomy and to exert a moderate level of control. It is understandable that in families that express positive emotions and listen to each other, parents would still administer consistent discipline for rules and manners. The empirical studies of family interaction quality also support a significant positive relationship between parental warmth and structuring/limit setting (Davies et al., 2004; Johnson, 1999). According to the research on family typology (Mandara & Murray, 2002; Sturge-Apple et al., 2010), this type of family is likely to be the best at predicting a western ideal of effective family functioning.

The second group of families, which I named *disengaged*, displayed low levels of harmony, control and conflict. Given the evidence of low levels on all indicators, these families showed cold, unsupportive and emotionally distant demeanors. This type is consistent with *disengaged* according to the studies of Davies et al. (2004), Johnson (2003), Minuchin (1974) and Sturge-Apple et al. (2010), which displayed decreased expressions and disconnection across family systems. Compared to the harmonious family pattern, the disengaged pattern of families may be too distant from one another, share and communicate little or nothing about their feelings and thoughts.

Finally, *hostile* families show high levels of conflict and control and a low level of harmony. These families experience rigid boundaries, coerciveness and negative affect with high demands and significant restrictions in their relationships. This type is fairly similar to *enmeshed* as described in the earlier literature of Davies et al. (2004), Johnson (2003), Minuchin (1974) and
Sturge-Apple et al (2010). In this pattern of families, family members may be overly dependent on each other and feel threatened, yielding high levels of interpersonal conflict. In most situations, the parents tend to use denial or control in coercive ways.

In general, the findings in this study confirm hypothesis 1 and support the propositions in the existing research that suggest three distinct profiles of family interaction (Davies et al., 2004; Johnson, 2003; Minuchin, 1974; Sturge-Apple et al., 2010). However, Davies et al. (2004) differentiated the profiles between cohesive (e.g., high warmth and harmony) and adequate (e.g., highly elevated levels of parental control, high warmth and harmony) despite substantial similarity in positive emotions in cohesive and adequate families.

Several important issues should be considered. First, a high likelihood of cross-profile probabilities among the three profiles has potential implications for heterogeneity of profile identification. The families with high cross-profile probabilities among the other profiles imply that they may not be legitimately classified within one of the three latent profiles. In the present study, families who were classified to be harmonious had a 19% probability of fitting the disengaged profile and an 11% probability of fitting the hostile profile. More than 10% of harmonious families have some non-discriminating factors among profiles that are prone to change the profiles. Reliability of the indicators of family dinnertime interactions may be associated with this problem. There are challenges with intraclass correlation coefficients of family dinnertime observation subscales from CFA and EFA for consistency or reproducibility of the measurement. Two subscales (i.e., harmony and conflict) performed well and showed highly reliable scores, whereas the other scale (Control) had marginally acceptable reliability. Maturity demands, structure and limit setting in the indicator of control may reflect not only positive but also negative aspects of parent attempts to control child behaviors. For example,
maturity demands show low but significant correlations with cohesion \((r = .12, p < .05)\) in
harmony as well as with criticism \((r = .17, p < .01)\) in conflict. Thus, this mixed quality of
control likely influences the memberships that could make potential variations to other
relationships in the study. Future research would reconstruct the quality of family interaction
using two distinct subscales of harmony and conflict without the control subscale.

**Family Emotional Climate**

Little previous research has investigated the combined factors of family individual traits
and dyadic relationships in longitudinal relations to family interaction quality (Du Rocher
Schudlich & Cummings, 2003; Low & Stocker, 2005). The present study extended the previous
literature by examining family emotional climate, which is defined by emotions and relationship
qualities in intra-familial and inter-familial processes among family subsystems such as
individual family members’ personality (e.g., temperament, neuroticism), dyadic relationship
between mother-father (e.g., marital satisfaction), mother-child (e.g., maternal perception of
parenting behaviors), and child-parent (e.g., child’s representation of parent) (Darling &
Steinberg, 1993). From the results, I identified four distinct profiles that varied in individual
personality and dyadic relationship qualities for family emotional climate: harmonious, control-
oriented, preoccupied with conflict, and distressed families.

The harmonious profile described an elevated level of harmony in family interaction;
high warmth and low strictness and conflict/anger in maternal parenting attitudes; and overall
close to average frequencies in positive and disciplinary representations of parents among
children. In this profile, the children are temperamentally easy; the parents are lower or modest
levels of negative affectivity, preoccupation and worry and have high-level marital satisfaction.
The high proportion of families classified as harmonious and the characteristics of this profile
seem to be in accordance with earlier family typology of cohesive families, for the most part, suggested in family systems theory. According to the previous research, cohesive families display warmth, closeness, and maintenance of boundaries that permit family members access to resources without threatening their autonomy (Davies, 2004; Kerig, 1995; Sevenson-Hinde, 1990). However, the most atypical characteristics of this family pattern are found in children’s representations responding just at average levels about their parents, although the families are still observed to be supportive and loving in their interactions. Perhaps, children in this profile are more autonomous, capable of communicating their feelings symbolically and independently resolving challenges, instead of frequently representing parents as helping or mediating in narrative story stems (Buchsbaum, Toth, Clyman, Cicchetti, & Emde, 1992; Robinson, 2007). In this family type, on the basis of family members’ characteristics, both parents and children are easy in nature. It is likely that psychologically stable parents do not need to show authority and control to temperamentally easy children. However, additional research is warranted to support these ideas.

The control-oriented profile displayed average levels in personalities of children and parents, marital satisfaction, and maternal strictness but showed low maternal warmth and elevated conflict/anger. Also, family harmony was moderately degraded in family interactions. However, the children in this profile often told stories about their parents as disciplinarians. In other words, children captured some overtones of parental discipline/control in their representations. From the findings, the control-oriented profile presents higher control, which implies more closed boundaries among the family members. Parents in control-oriented families may disturb their children’s self-reliance and individual autonomy (Grolnick, 2003). This profile is similar to Baumrind’s concept of authoritarian families (Baumrind, 1971), whose family
system is based on unresponsiveness and firmness regarding rules for their child. Parental discipline without positive emotions affects low autonomy and high dependency in children (Grolnick & Ryan, 1989). These parents may heighten potential threats of harmonious family interactions and may undermine well-regulated emotions in their children.

In the preoccupied with conflict profile, mothers reported lower negative affectivity and preoccupation, but fathers reports were moderately elevated. Parents reported degraded marital satisfaction. Mothers described a high level of strictness and a low level of conflict/anger in parenting attitudes. A low level of conflict with moderate harmony was observed in family interaction. However, children had elevated parental representations of discipline/control. The inconsistency between paternal neuroticism and mothers’ reports of conflict and anger along with low conflict in parenting attitudes and family interaction seem significant. It appeared the parents suppressed their conflict in interaction, perhaps as a defense mechanism. However, children internalized the suppressed conflict and represented the coercive parental control when they told stories about their experiences. Parents may suppress overt negative emotions and conflict in their relationships. The parents’ state of mind of “socially desirable responding” (i.e., the tendency of respondents to respond to others in a manner that will be viewed favorably by others) in response to being observed may exist among preoccupied parents. Studies have also shown that preoccupied parents are often unobjective, overwhelmed, angry, or inconsistent in the interpersonal relationships (Ainsworth & Eichberg, 1991; Benoit, Vidovic, & Roman, 1991; Main & Goldwyn, in press; Ward, Botyanski, Plunket, & Carlson, 1991). Accordingly, they are unable to consistently offer positive affect, support and guidance to their children (Adam, Gunnar, & Tanaka, 2004). This pattern of families tends to be a fragile family, having some
difficulties in maintaining consistent and stable response in family climate and regulating positive affect.

The distressed profile was characterized by low harmony, high control and conflict in family interaction, low level of warmth but high levels of strictness and conflict/anger in maternal perception on parenting, and average frequency in children’s representation of positive and disciplinary parents in their narratives. Families in this profile reported highly difficult temperament in their children, high parental neuroticism, and a very low level of marital satisfaction. The typology of distress is indicated by multiple risk sources, including difficult personality, less satisfying parent-child relationships, and family climate dominated by control and conflict (Yoo, Adamsons, Robinson, & Sabatelli, in press; Yoo, Popp, & Robinson, 2014). Regarding the influence of personality, the child’s temperament is one of the predictors of the family emotional climate (Chess & Thomas, 1996). The child’s negative emotionality may be a powerful elicitor of various negative forms of family interaction (Crockenberg, 1986). Also, parents high in neuroticism tend to be easily distressed and less emotionally stable (Costa & McCrae, 1980), which is predictive of destructive parent-child interaction (Belsky, Crnic, & Woodworth, 1995; Clark, Kochanska, & Ready, 2000). An investigation by Kochanska, Clark, and Goldman (1997) found parents who were high in neuroticism, displayed more negative affect towards their child, and were observed to be less caring for their child. Additionally, considerable evidence has suggested that marital conflict contributes substantially to their negative experience of parenthood and corrosive effects on positive family interaction (Gilbert, Christensen, & Margolin, 1984; Kitzmann, 2000). The families in this profile would appear to be at high risk families in family emotional climate.
Findings in this study reveal that the harmonious type creates more positive family emotional climate than the others. The harmonious family emotional climate shows overall high harmony and low conflict, which help families to effectively maintain relationship boundaries with positive affect. In contrast, as predicted, control-oriented, preoccupied with conflict and distressed families may exhibit consistently greater dysfunctional signs than harmonious families. Above all, the distressed profile with temperamentally difficult children and neurotic parents with low marital satisfaction tends to produce more conflictual and entangled relationships. This situation may lead to family discord with difficulties in emotional and behavioral regulation (Smetana & Gaines, 1999). In stressful circumstances, distressed, controlling or preoccupied families are more likely to have difficulties in regulating negative affect and maintaining positive response in family climate.

**Family Functioning**

To address the developmental outcomes regarding family functioning, I examined how patterns of family emotional climate were substantially associated with children’s emotional regulation in the family. Ultimately, the aim of these typologies was to predict certain outcomes in children (e.g., children’s emotional regulation) that may reflect family functioning (or that may influence family functioning, in turn, in the future). In this study, children’s emotional regulation as children’s outcomes was assessed using a story stem completion measure. Creating a story in the context of challenging themes may reflect meaningful aspects of emotional regulation (Oppenheim, 2006; Oppenheim & Waters, 1995). The story stem approach presents children with emotionally charged story beginnings that may lead them to experience an emotional thrust, thus driving them to create an emerging representation drawn from their life and experiences (Shields, Ryan, & Cicchetti, 2001). The MSSB is distinctive in its inclusion of
story beginnings that provide diverse and normative family experiences (e.g., spilling juice, parents quarreling). The child’s capacity in building coherent narratives requires maintaining boundaries and not shifting details to create an organized story or not losing track due to strong feelings, which are relevant to children’s emotional regulation.

The findings indicated that children in a harmonious family profile reported a higher frequency of narrative coherence than the preoccupied profile and that these children reported a low frequency of dysregulated aggression than the control-oriented and preoccupied with conflict profiles. The corroboration of high narrative coherence and infrequent dysregulated aggression in children’s narratives suggests that elevated levels of observed emotional regulation are apparent in children characterized as harmonious. The findings are consistent with previous studies emphasizing a strong link between positive emotional climate in the family and children’s emotional regulation (Eisenberg, Cumberland, & Spinrad, 1998; Eisenberge et al., 2005; Halberstadt & Eaton, 2002; Morris et al., 2007). Considerable research has suggested that children in cohesive family climates tend to feel emotionally secure, experience more positive emotions, and show well-regulated emotions. Fosco and Grych (2012) found causal relationships in which a warm and supportive family emotional climate opened the way for children to learn and practice regulating their emotions within the family context. In a review focused on the development of emotional regulation, Morris et al. (2007) suggested children’s emotional regulation is influenced by the family emotional climate through positive parenting, attachment style, marital relations, plus parent and child characteristics. Moreover, these results are consistent with studies concerning how patterns of family functioning are associated with children’s adjustment, especially focusing on behavioral problems (Davies et al., 2004; Johnson, 2003; Sturje-Apple et al., 2010). These earlier empirical findings have suggested that children in
cohesive families manifested substantially low levels of externalizing and internalizing problems.

However, the present study is distinct from previous studies regarding the inclusion of multiple factors for creating family emotional climate and using family typologies to predict children’s outcomes. The current findings from paired comparisons among the four emotional climate profiles suggested some distinctions between family types. The findings are particularly interesting because the children’s emotional regulation as outcomes are, for the most part, associated with the harmonious family type only under narrative coherence and dysregulated aggression (i.e., harmonious > control-oriented in narrative coherence; harmonious < control-oriented and preoccupied with conflict in dysregulated aggression), whereas the distressed family type is not differentiated from other family types with regard to children’s emotional dysregulation.

Several explanations for this finding need discussion. First, compared with the harmonious family climate type, the control-oriented type presented elevated maternal conflict and anger with moderately low maternal warmth and family harmony. Also, as shown in children’s parental representations, children captured some overtones of parental discipline and control. It is possible that themes of discipline and punishment lead to affects of anger and distress within the children or the represented characteristics. The control-oriented family type is similar to authoritarian (Baumrind, 1971), restrictive (Becker, 1964), controlling (Schaefer, 1959), and autocratic (Baldwin, 1949) in the family literature. Parental discipline without emotional warmth and support (e.g., harsh parenting) may be associated with aversive control and coercive family interaction (e.g., Patterson, 2002). Thus, the conflict-oriented family may fail to provide consistent caring and support, predictable responses and security, thus
contributing to children’s difficulties in regulating emotions. Given the evidence of children’s emotional dysregulation (e.g., narrative incoherence, dysregulated aggression) in this family type, it makes sense that children may miss opportunities to learn how to regulate their emotions when they are emotionally distressed, less confident, and fretful of one other. This type of family tends to show punitive parenting, displaying negative emotion, which is robustly correlated with their children’s emotional regulation (Melnick & Hinshaw, 2000).

Second, children in preoccupied with conflict family climates often represented dysregulated aggression in completing the challenging stories. Interestingly, the present study found imbalanced parental neuroticism (e.g., low in mothers; high in fathers) and suppressed conflict in family relationships. Yet, the suppressed family conflict leaked into children’s more frequent parental representations of discipline and control. In other words, children internalized the suppressed conflict and represented the coercive control. Those fathers likely tend to negatively perceive their relationships with other family members as difficult or more fearful. As shown in the vulnerability hypothesis, parents with elevated neuroticism may be prone to expose themselves to stressful experiences and they may have poorer problem-solving skills that contribute to ongoing difficulties in interpersonal relationships (Ploubidis & Frangou, 2011). Studies have also demonstrated a relationship between neuroticism and less optimal parenting (Belsky & Barends, 2002; Kendler, Sham, & MacLean, 1997; Metsäpelto & Pulkkinen, 2003). Prinzie et al. (2009) emphasized that emotional instability due to elevated distress symptoms was related to more strict control in parenting. The results support the spillover hypothesis in relation between personality and diverse aspects of family life (Yoo, et al, 2014; Yoo, et al, in press). Parents high in neuroticism are prone to express more anger, criticism or mood fluctuation to their children and partners than less distressed parents (Weinberg & Tronick, 1998). In the
review article, Morris et al. (2007) highlighted that children of preoccupied parents exhibited higher anxiety and hostility and lower emotional regulation compared with families classified as secure (Kobak & Sceery, 1988). Accordingly, children who have been exposed to their fathers’ conflicting emotions and controlling behavior tend to feel more anxious and display difficulties in managing their own emotions just like their fathers.

However, the findings of testing the relationships between family typology and outcomes evoke several questions concerning our understanding of the typical pathway between distressed family climate and children’s regulation. The literature on family functioning in relation to children’s adjustment suggests that parents in this profile are likely to offer harsh, uncaring or unpredictable responses without positive affect to their children (Adam, Gunnar, & Tanaka, 2004). These parents may heighten potential threats to promoting harmony in the family interaction and encouraging well-regulated emotions in their children. Accordingly, children may experience greater levels of instability within family relationships and they may show numerous signs of developmental maladaptation (Davies et al., 2004; Sturge-Apple et al., 2010). Such parents may display emotional and behavioral inconsistency, and their children may similarly learn dysfunctional regulatory strategies (Frick & Morris, 2004; Morris, et. al., 2007). However, in the present study, within families characterized as distressed emotional climate, children do not leak the dysregulated emotions. Children in this family profile do not often portray heightened emotional difficulties to complete story stems. There are several explanations for these unexpected findings. Children with parents who are overly negative in their personality and relationships tend to suppress their emotions and inhibit emotional expressions (Eisenberg & Fabes, 1994; Eisenberg, Fabes, & Murphy, 1996; Krause, Mendelson, & Lynch, 2002).

According to Gross and John (2003), suppression refers to controlling emotions by inhibiting
emotionally expressive behavior (e.g., “When I am feeling negative emotions, I make sure not to express them.”). Although very little attention has been given to emotional suppression in early childhood, such as masking emotions or absence of emotional display, some research has found that emotional suppression in children may be an early pathway to later internalizing problems (e.g., Keenan & Hipwell, 2005).

Regarding narrative story stems, the examiner delivers the challenging and conflictual stories that the child is then invited to resolve. Young children in highly difficult families often show “spontaneous expressive control” by diminishing their emotional expressions when unfamiliar others are present (Cole, Martin, & Dennis, 2004) because of their deficiency of social appropriateness of emotion regulatory strategies (Saarni, 1999). Also, in narrative story stems, positive representations were more frequently represented by children in distressed families rather than negative depiction at this age; positivity may dominate the child’s experience and reflect idealizing even when parents themselves experience more distress in their family life. This point emphasizes the need to investigate the influence of family functioning types on their children in more nuanced and diverse ways and the importance of conceptualizing positivity and negativity as not simply opposite ends of a single continuum. This approach may alleviate endogenous issues about story stem frequencies, which show mostly skewed distribution curves and high kurtosis in many cases.

In general, the findings above underscore the relation that children in harmonious families demonstrate adaptive emotional regulation that may be associated with children’s adjustment within their schools and wider surroundings. These findings certainly support the practice of assessing and intervening to promote harmonious family functioning predicted by multiple factors and eventually predicting the encouragement of children’s emotional regulation.
Linking Changes of Family Profiles

Using LPA in step 1 and 2 (e.g., family interaction, family emotional climate), I classified three distinct profiles at step 1 and four distinct profiles at step 2. The first step included three profiles of cohesive, disengaged and hostile family interaction. The second step determined four profiles of harmonious, control-oriented, preoccupied with conflict, and distressed family emotional climate.

The present study allowed the correlates to directly influence the associations of family factors and children’s outcomes. Although the use of the correlates is necessary to identify well-defined profiles, LPA groups are likely re-formed to maximize the distinctiveness of the groups due to the correlates. Therefore, I interpreted the change or preservation of the profiles across the steps using the profile means. Notably, the analysis of profile change across the steps in this study examines quantitative differences using the overall mean level and the qualitative differences via the shapes of the profiles (Marsh et al., 2009).

However, from the results, I found that the profile groups across the steps are not apparently equivalent to mean levels of family dinnertime observation subscales (i.e., harmony, control, conflict). Although the inclusion of the correlates in the LPA makes the interpretation of the profiles in each step more complex, I propose that the set of LPA grouping variables presents some shape similarity across the steps. According to Marsh et al. (2009), the shape likeness of latent profiles enables intuitive decision-making to interpret whether the profile memberships are preserved or changed across the steps. In addition to the shape comparison, a substantial number of families shift to a similarly characterized profile, although the mean level and several shapes of the profiles are erratic across the steps in this study.
Another metric, the frequencies of profile change, enables identification of the links and origin among the equivalent profiles across the steps. Under the frequency interpretation of profile change, for example, the hostile profile in step 1 displays shape similarity with the distressed profile in step 2. Results also indicate that a majority of distressed families (15 of 32 families; 46%) are drawn from the hostile pattern in step 1. Similar to the profile preservation between hostile and distressed, cohesive in step 1 showed consistency with harmonious in step 2, with approximately 62% of harmonious families in step 2 were drawn from cohesive in step 1. This finding is the most salient feature of family type (e.g., cohesive in family systems theory), which occurs in prior empirical and clinical research in family typology (Johnson, 2003; Khodarahimi, 2011; Mandara & Murray, 2002; Sturge-Apple et al., 2010). However, in the profile change of control-oriented from the first steps, findings show that the control-oriented families are evenly drawn from the three profiles in step 1. The mean levels of the control-oriented profile are close to average; thus, the profile characteristics tend to be easily affected by other correlates.

It is surprising that approximately 37 percent of harmonious families were drawn from disengaged (25 of 217; 11%) and hostile (57 of 217; 26%) family interaction types in step 1. Also, 34% of distressed families (11 of 32) were moved from the cohesive profile. Considering those unexpected links across the steps, the results of average latent class probabilities for the most likely latent class membership in Step 1 may offer evidence of profile flexibility. For example, disengaged (19%) and hostile (11%) families have a high likelihood of being classified in harmonious in step 1.
Limitations

There are several limitations of this work. First, the family dinnertime observation is a snapshot in time for the family interactions. As such, there is a limit to the generalizability of the family interaction patterns. Specially, in this study, 112 fathers (approximately 38%) were absent at dinnertime, which means that some family interactions did not fully contain the family systems view that multiple subsystems influence and are influenced by each other (e.g., father-mother, father-child) (Anderson, Sabatelli, & Kosutic, 2013). In addition, approximately 45% of the father-absent families were divorced families. Perhaps, patterns of family emotional climate were partly affected by those covariates (e.g., father absence, marital status). A relatively higher percent of the distressed families (31%) were divorced families in this study (for reference, 13% in harmonious, 11.5% in preoccupied, 20% in adequate families). Future research is needed to control the family demographic variables and test the effects on interparental, mother-child, father-child, and the whole family interactions.

Secondary data analysis also created limitations. This investigation was conducted in the large MacArthur Longitudinal Twin Study. I analyzed the family dinnertime observation, which allows me to zoom in on family interaction in a natural setting and to attempt a novel approach by estimating family processes. However, the family dinnertime coding system, which was deployed live by two observers, was not a standardized measure. Also, the interobserver agreement in family dinnertime observation for control-oriented processes was relatively low.

Additionally, there were no data about fathers’ perceptions of parenting attitudes available that might confirm another key aspect of the subsystems in family functioning (Whitchurch & Constantine, 1993). Another limitation is that children’s emotional regulation was assessed at age 7 and not at later ages. In this longitudinal study, family factors at age 1 and
5 years are antecedent variables to family interaction at age 7 years, however the emotional regulation as a children’s developmental outcome variable that are influenced by the latent groups was simultaneously measured. Having distal children’s outcomes would enhance our inferences about this causal aspect of the model.

Attrition is another limitation because these data are from a longitudinal study. Parents’ questionnaires were the most vulnerable to non-completion. Approximately 15-20% of parents did not provide questionnaires. Particularly, fathers’ low responses may incur potential attrition biases. However, the missing data analysis indicated that these data were MCAR, an assumption that provides valid and unbiased inferences.

Several of the correlates of family emotional climate were formed without regard to the influence of multiple informants. Paternal data were combined with maternal reports to form the indicators of child temperament, marital satisfaction, and children’s parental representations were also combined across parents. Mothers and fathers may have multiple intra- or interpersonal factors which tend to influence inter-rater variation (e.g., different representations or experiences with their children and partners). Consequently, their reports may yield similar or different pictures of the same child and partner, which might be indicative of functions in the family, and accordingly might be predictive of the child’s developmental outcomes. However, the average scores may obscure variation. Future research need to consider about the advantages of separately analyzing multiple informants to represent a sample.

The last limiting factor is that one of the twins was removed from the original sample for the present study because of data incompletion. Twins may play a specific role in sibling or differential twin relationships in the family process (Winek, 2010). Future research will
incorporate the other twin to examine the role of heritability and better understand sibling relationships in family functioning.

**Strengths**

This study has several strengths. This study relied on observational procedures to gather information about family-level interactions and child representations that complement the parental voice reflected in questionnaires. Using narrative assessments that capture the children’s representations of parents and their emotional regulation during story telling may yield a rich understanding that is not adequately captured by questionnaires. In particular, the story stem narratives in this study provides a new outlook on family climate by looking at children’s internalized representations of parents (Robinson, 2007). Simultaneously, using children’s narratives enables us to assess their regulated emotions in everyday context (Oppenheim et al., 1997).

This study highlighted the family emotional climate reflected by individual psychological traits that emerged in self-report measures. Little is known about the combined factors of children’s temperament (Modry-Mandell, Gamble, & Taylor, 2007) and parents’ neuroticism (Miller et al., 1992) in relation to the family emotional climate, which is how often families express a wide range of emotions in family relationships.

Another strength of this study is that a large sample of middle class families with healthy children over the first 7 years of life was utilized to identify family types. Family typology is distinguished by a person-centered approach, LPA, which has important advantages concerning the identification of qualitatively different profiles. Additionally, offering more information by including the longitudinal correlates across 7 years of early family life (e.g., individual level at
14 months, dyadic level at 5 years, family level at 7 years) allows me to accurately differentiate the groups and to investigate the causal relationship.

**Implications for Research and Application**

The purpose of the present study was to identify patterns of family functioning inclusive of family emotional climate and children’s emotional regulation. The findings of family typology have meaningful implications for family and child researcher clinicians.

The present study adds to research on family typology (Davies et al., 2004; Johnson, 2003; O’Connor, Hetherington, & Reiss, 1998; Sturge-Apple et al., 2010). Consistent with earlier research, family patterns from the current findings provide an informative window for children’s development, specifically for emotional regulation. The present study used a variety of predictors to characterize family functioning, including individual psychological traits, dyadic parent-child relationship, triadic family-level relationship and children’s regulation. The findings in this study suggest that the pattern of harmonious family emotional climate plays an important role in which children can manage their emotions. This study confirms the importance of the positive family emotional climate in children’s emotional regulation and provides more information in family functioning by including individual characteristics, interparental and parent-child processes. However, the pattern of distressed family emotional climate among four family emotional climate patterns was not found to be related with less adaptive emotional regulation. In future research, the family emotional climate may be conceptualized as qualitatively positive and negative to directly test the link to children’s emotional regulation and dysregulation.

Additionally, I focused on the importance of the family relationship quality and children’s emotional regulation within the family context as a key construct in the study of
children’s development and a potential target for prevention and intervention. These relations have important implications for relationship-based interventions that consider family functional relationships and joint interventions that target children’s behavioral adjustment within the family context. The findings in this study suggest that harmonious family climate is largely advantageous to children’s regulation. Understanding family characteristics and enhancing family harmony appear to be particularly helpful for functional family relationships. Also, sensitive approach to the dysfunctional families in preoccupied with conflict, control-oriented, and distressed groups may be needed to prevent children’s dysregulation later on. However, the present study pays particular attention to advantaged middle-class families. Extending attention to diverse families (e.g., low income, cross-cultural) may help future interventions with this population.

Finally, the person-centered and pattern-based approach helps us understand multiple and complex phenomena in family processes and identify groups of children who are at-risk for negative developmental issues.

**Conclusion**

Using an innovative, longitudinal LPA to characterize family functioning, the present study makes several key contributions. First, this approach allowed me to qualitatively and quantitatively characterize family-level interaction. Consequently, this investigation looks at diversity and similarity within and across family profiles in their interaction processes. Second, testing family emotional climate including family factors and family interaction enables me to suggest various intra-individual patterns of family functioning. Third, using LPA, I developed a family functioning typology rooted in family climate and child emotional regulation ability, thus enhancing the understanding of the important developmental pathway from individual-level and
dyadic family factors to a child’s capacity for emotional regulation in the context of family-level interaction.

Overall, this study contributes to the literature by providing a framework for explaining the intricate processes of family functioning that link early individual factors in families to children’s later emotional regulation.
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Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing points of


Appendix A

Example MPlus Syntax for Latent Profile Analysis with Continuous Variables

TITLE: three family profiles
DATA: FILE IS "C:\Users\Yoo\Desktop\Dissertation Analysis\Dinner mplus.dat";
VARIABLE:
   NAMES ARE family har cont conf;
   USEVARIABLES = har cont conf;
   MISSING = ALL (-999);
   CLASSES = C(3);
ANALYSIS:
   TYPE = MIXTURE;
   ESTIMATOR = MLR;
   STARTS = 300 20;
   LRTBOOTSTRAP = 100;
   LRTSTARTS = 10 5 80 20;
OUTPUT: SAMPSTAT TECH1 TECH11 TECH14 PATTERNS;
PLOT: TYPE = PLOT3;
   SERIES IS har(1) cont(2) conf(3);
SAVEDATA:
FILE IS family_three_profile.dat;
SAVE = CPROBABILITIES;
Appendix B

Example MPlus Syntax for Latent Profile Analysis with Continuous Covariates and Auxiliary Variables

TITLE: Family profiles with outcome
DATA: FILE IS "C:\Users\Yo\Desktop\Dissertation Analysis\Family mplus.dat";
VARIABLE:
   NAMES ARE dyad p1 p2 p3 cctipos mepneu fepneu spsc5 warm strict confang pos5 neg5 dc5 AVODIS NC REG EMPTH DYSAG;
   USEVARIABLES = p1-p3 cctipos mepneu fepneu spsc5 warm strict confang pos5 neg5 dc5;
   MISSING = ALL (-999);
   CLASSES = C(4);
   AUXILIARY = AVODIS (e) NC (e) REG (e) EMPTH (e) DYSAG (e);
ANALYSIS:
   TYPE = MIXTURE;
   ESTIMATOR = MLR;
   STARTS = 800 40;
   STITERATIONS = 40;
   LRTBOOTSTRAP = 100;
   LRTSTARTS = 10 5 80 20;
MODEL:
%OVERALL%
%C#1%
[p1-p3 cctipos mepneu fepneu spsc5
 warm strict confang pos5 neg5 dc5];

%C#2%
[p1-p3 cctipos mepneu fepneu spsc5
 warm strict confang pos5 neg5 dc5];

%C#3%
[p1-p3 cctipos mepneu fepneu spsc5
 warm strict confang pos5 neg5 dc5];

%C#4%
[p1-p3 cctipos mepneu fepneu spsc5
 warm strict confang pos5 neg5 dc5];

OUTPUT: SAMPSTAT TECH1 TECH11 TECH14;

SAVEDATA:
FILE IS family_four_profile.dat;
SAVE = CPROBABILITIES;