

Exploring the Connection between a Developmental Change and Relationship Development with Caregivers and Peers

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Abstract

This qualitative case study explored changes in one infant's relationship development with her caregivers and peers in times of a major developmental transition, specifically from 10 months to 14 months. The data were collected through multiple sources, including observations, interviews, documents, and researcher journals, for a semester. Among the developmental achievements the infant gained in this study, her independent walking ability appeared to influence her relationships most. As her independent walking ability enabled the infant to gain a greater access to peers and caregivers, her presence in the room and social preferences for the people also appeared to change. The infant seemed to enjoy more play-based and group interactions with both peers and caregivers rather than emotion-based and dyadic interactions. The results of this study provided an insight into the multifaceted relationship development process, such as the connection between infant development and relationships and the association between infant-caregiver relationships and infant peer relationships.

Keywords : developmental milestones, infant-caregiver relationships, peer relationships, infant educate

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Introduction

Infancy is a critical period for growth and development. As many infants are being cared for in out-of-home childcare at an early age, caregivers and peers become an important factor on infants' everyday lives. Early exposures to peers as well as caregivers and relationships with them impact on their learning and development, in addition to the quality of childcare (Bardige, 2006; Howes & Ritchie, 2002). While many researchers have focused on the impact of the quality of childcare on infants' development and learning (Dunn, 2004; Elicker, Noppe, Moppe, & Fortner-Wood, 1997; Shonkoff & Phillips, 2000), there is a limited understanding of how infants expand their social realm and develop close relationships with caregivers and peers. In addition, studies have tended to explore infant-caregiver relationships and peer relationships separately. Recognizing that a relationship is dynamic and multifaceted, there is a need to examine whether and how infants develop and experience infant-caregiver relationships and peer relationships simultaneously. Moreover, infants undergo important and enormous developmental changes during the first two years, but few research studies have investigated a possible connection between the developmental milestones and relationship development. The present study aimed to explore how an infant experienced the multifaceted relationships with caregivers and peers during one of the salient developmental milestones in life, independent walking ability.

Childcare as a Social Context

According to the National Association of Child Care Resource & Referral Agencies (2009), there are approximately 12.6 million infants and toddlers in the United States, and almost 75 percent of the infants and toddlers of working mothers are being cared for by someone other than their parents. Consequently, childcare becomes an important context for infants' lives (Ladd, 2007), and infants' experiences in childcare have become an area of interest for everybody involved.

Infants are innately social beings (Stern, 1977/2002) and have a more advanced

understanding of others than previously known (Wang & Chien, 2010). As infants extended their relationship dances to caregivers and peers in childcare (Raikes & Edwards, 2009), scholars argued that early relationships are critical for infants and emphasized the significance of the context where the relationships are being built (Elicker & Fortner-Wood, 1995). A relationship-based approach in infant education and care programs is highly recommended and known as beneficial not only to infants but also infant caregivers (Wittmer & Petersen, 2010). Recchia and Shin (2010) also argue that building and supporting intimate relationships should be valued as a key element of professionalism for infant educare.

Relationships with Caregivers and Peers

A relationship is co-constructed by two people involved within a particular context. Since a relationship is established based on the result of actual cumulative experiences of interactions of the dyad, each relationship is unique (Fleer & Linke, 1999), multidimensional (Howes, Hamilton, & Matheson, 1994), and changing (Stern, 1977/2002). Mutuality and reciprocity between the dyad is crucial for a relationship, even with and among infants.

Infants form multiple and differentiated relationships with caregivers in childcare and show a clear hierarchy and social selectivity among caregivers even during the first year (Lee, 2006; Rochat, 2001). Infants express their relationships with individual caregivers through behaviors such as eye contact, gaze, smile, touch, and proximity seeking, depending on their hierarchical preference for the caregivers (Raikes & Edwards, 2009). Yet, their preference is not static, but changeable. Based on their relationship with particular infants, infant caregivers play various roles such as physical and emotional carer, playmate, resource, and teacher (Harding, Kromelow, Stilson, & Touris, 1995; Lee, 2006).

Infants are born with natural interest in peers (Raikes & Edwards, 2009). Early peer relationships play a unique and important role in the overall development of young children (Bukowski, Newcomb, & Hartup, 1996; Dunn, 2004; Williams,

Mastergeorge, & Ontai, 2010; Wittmer, 2008). Infant peer relationship research literature has suggested that infants are able to engage in positive social interactions and establish friendships by the end of the first year (Howes, 1983, 1988; Lewis, Young, Brooks, & Michalson, 1975). Early positive peer relationships or friendships can be characterized by preference, affection and enjoyment, and social play and responses (Shin, 2010).

There have been two kinds of conceptual models to explain the association between infant-caregiver (child-teacher) relationships and peer relationships: a hierarchical model (Elicker & Fortner-Wood, 1995; Howes et al., 1994; Pianta, 1999) and an interdependent model (Lee, 2006). So far, most of the literature implies a hierarchical model which indicates a one-way influence from infant-caregiver relationships to infant peer relationships. An interdependent model, which indicates interdependent and simultaneous development of the two relationships, is a relatively new attempt to explain the association. Yet, there is a dearth of research that explores the association actually and simultaneously.

Infant Development and Relationships

Infancy is a period in which all areas of development show most visible and rapid growth and achievement. Particular time points in development mark meaningful transition for infants; one of these is the end of the first year of life. It is around this time that infants acquire newfound mobility in walking. Mobility provides infants with a new way of being and relating with environment and people (Raikes & Edwards, 2009). As infants become more proficient in their motor skills, they become more independent and competent in the other areas of development. As a consequence, the nature of their social interactions is transformed, particularly entailing reciprocal exchanges between social partners (Raikes & Edwards, 2009). Yet little is known about how infants experience relationships with caregivers and peers along with their own developmental changes within natural childcare settings.

Adults' roles also should be changed to be responsive to infants. Raikes and

Edwards (2009) point out the possibility that infants need different roles from their caregivers as they get older; they expect their caregivers to be a cognitive facilitator or organizer beyond comfort provider with age. Howes et al. (1994) also revealed that emotional security with their caregivers was more influential in the infants' peer relationships when they were under two years of age, while socialization experiences provided by their caregivers were more influential beyond two years of age. These findings seem to imply that what is necessary and important for infants would change along with their growth and development. This is crucial because responsive care requires a continuous process of change in line with infants' growth, development, and emergent interests. However, little is known about how infant caregivers provide responsive care in relation to infants' growth and development.

Many scholars have claimed that early relationships in childcare settings set up an essential base for adjustment, development, and learning in the current setting and for later school life (Dunn, 2004; Elicker et al., 1997; Ladd & Kochenderfer, 1996; Shonkoff & Phillips, 2000). Most of the previous research also implies a directional influence from attachment/relationships to infant development, especially in socio-emotional development (Leifiels & Sanders, 2007; Ranson & Urichuk, 2008). Yet, there are also some questions about the one-way direction implied.

Purpose of the Study

The purpose of this study was to explore changes in one infant's relationships with her caregivers and peers during a major developmental transition (independent walking). Recognizing a dearth of research in this area, a possible connection between development and relationships and a possible association between infant-caregiver relationships and peer relationships were also explored and analyzed.

Utilizing an exploratory qualitative approach, this case study sought to answer the following research questions:

- 1) How do the infant's relationships with caregivers and peers develop and change over time?

- 2) Is there a possible connection between the infant's development and relationships? If so, what is this connection?
- 3) What is a possible association between infant-caregiver relationships and peer relationships?

Methods

Given the exploratory, particularistic, and process-oriented nature of this study, a qualitative approach was employed. To explore the connection between developmental changes and relationships closely and in-depth, a case study of an infant was implemented (Merriam, 2001; Stake, 1997), and multiple methods such as observations, interviews, document, and researcher journals were utilized for a semester.

Setting and Participants

The setting of this study was an infant room of a university-affiliated childcare center in New York City. The center's philosophy is based on the guiding principles that prioritize human relationships throughout the caregiving system and view infants as competent and innately motivated to learn. In particular, in the infant room a relationships-based approach and an emergent, child-centered, play-based curriculum is implemented. In addition to the philosophy, recommended practices for infants and caregivers such as a primary care system, a caregiver training program (student practicum), and keeping the caregiver-to-infant ratio low (less than 1:3) and the whole group small (6-8 infants at a time) are utilized. Based on a primary care system, one or two key infants are assigned to each student caregiver. Through the practicum course, student caregivers are expected to attend a weekly seminar and to work a minimum of 9 hours per week in a classroom.

At the time of data collection, the infant room served children from 1 month to 25 months from culturally and linguistically diverse families. There were 8 infants, 2 head caregivers (HC: Angie, Heejin), and 8 student caregivers (SC) in the room. The

infants attended from 20 to 40 hours per week based on each family's unique needs. Therefore, usually six or seven infants were present with one head caregiver and two student caregivers in the room at one time. Table 1 shows basic information of the infants and the student caregivers.

Table 1. *Basic Information of the Infant and Student Caregiver Participants*

Infant	Age (months)	Gender	Race/Cultural Background	Attendance	Key Student Caregiver
Chris	1	M	Euro-American & Latina	5 full days	Jennifer
Jane	6	F	Euro-American	2 full & 1 half days	Christina
Kevin	9	M	Euro-American (French)	5 full days	Sarah
Nadia	10	F	Asian & Euro-American	5 full days	Vicki
Katie	13	F	African	5 full days	Minji
Emily	14	F	Asian American	5 full days	Laura
Owen	23	M	Euro-American & Latina	3 full & 2 half days	Jackie
Brian	25	M	Euro-American	3 full days	Deborah

The infant who was the focus of this case study is Nadia. We decided to focus on Nadia for this study because she was very clear in expressing her thoughts and feelings through her behaviors and was going through major developmental changes during the data collection period.

About Nadia

Nadia was the second child for her Asian-origin father and Caucasian mother. After her birth, Nadia's mother was her primary caregiver, with some help from babysitters when the mother was at work. Nadia's parents regarded her as a quiet and calm baby; her parents were very responsive to her. Nadia started attending the infant room approximately 3 months prior to the data collection period. Her caregivers

reported that Nadia's most frequent behaviors in the room were watching and smiling at people. Overall, Nadia was adjusting well and smoothly. The caregivers regarded Nadia as a sociable and people-oriented girl.

Nadia showed typical development for her age. As her key caregiver mentioned in the developmental summary, Nadia's development had flourished in so many different ways. Yet, body mastery and gross motor skills were the most salient area of her development for the semester. When she reached her first birthday, she could walk independently on a consistent basis. Among the developmental milestones that she reached, walking independently was the one that appeared to influence the other areas of development the most. In particular, her walking ability provided her more independent access to the caregivers/peers.

Nadia was very clear in expressing her thoughts and feelings through her behaviors. She showed differentiated behaviors and relationships to different caregivers/peers, according to clear hierarchy in her preference. Her responsiveness, expressiveness, cooperativeness, and affection towards a person reflected the degree of her relationship with him/her. Nadia's behavior also changed depending on who else was in the room and her mood.

Data Sources and Data Analysis

A unique strength of case study is its in-depth understanding of the phenomenon under study using multiple methods (Merriam, 2001; Yin, 1994). This study also utilized multiple methods such as observations, interviews, documents, and researcher journals as data sources. Data were collected for a fall semester (September to December) by the two researchers, one focusing more on infant-caregiver relationships and the other focusing more on peer relationships.

As a key source of data, natural observations were conducted about 10 hours per week for 13 weeks. To minimize observer effects and build rapport with the people in the room, we tried to become a natural part of the room, using a gradual entry and exit plan and being participant observers in a responsive way. In addition to the

natural observations, to capture subtle nonverbal behaviors and expressions of infants (Brazelton & Cramer, 1990), natural interactions between Nadia and other infants/caregivers were videotaped for about 20-25 minutes per week, depending on the situation.

As a secondary source of data, interviews with Nadia's key caregiver and several informal conversations with the caregivers were conducted in order to gain additional information, to confirm our observations, and to request their interpretations. The interviews were conducted three times (beginning, middle, and end of the semester), at the center at times convenient for the caregiver, for 30-40 minutes per interview. Several documents including parent-caregiver communication charts, a developmental summary, and the student caregivers' weekly journals were collected and reviewed for data triangulation. We also kept reflective researcher journals during the data collection and analysis period.

As the process of making meaning, data analysis for this study was complex, emerging, and interpretive. Each researcher began the analysis independently, reading the collected data carefully and searching for emerging patterns and changes. Based on this initial independent analysis, both researchers came together to discuss and consolidate the findings. We identified some distinct changes in Nadia's behavior patterns toward caregivers/peers between before and after her independent walking began.

Findings

Our findings brought forward some compelling information on how an infant would experience, expand, and improvise relationships with caregivers and peers while going through a salient developmental milestone (independent walking).

Nadia's Relationships before Independent Walking

Nadia's relationships in the infant room before her independent walking are summarized in Figure 1.

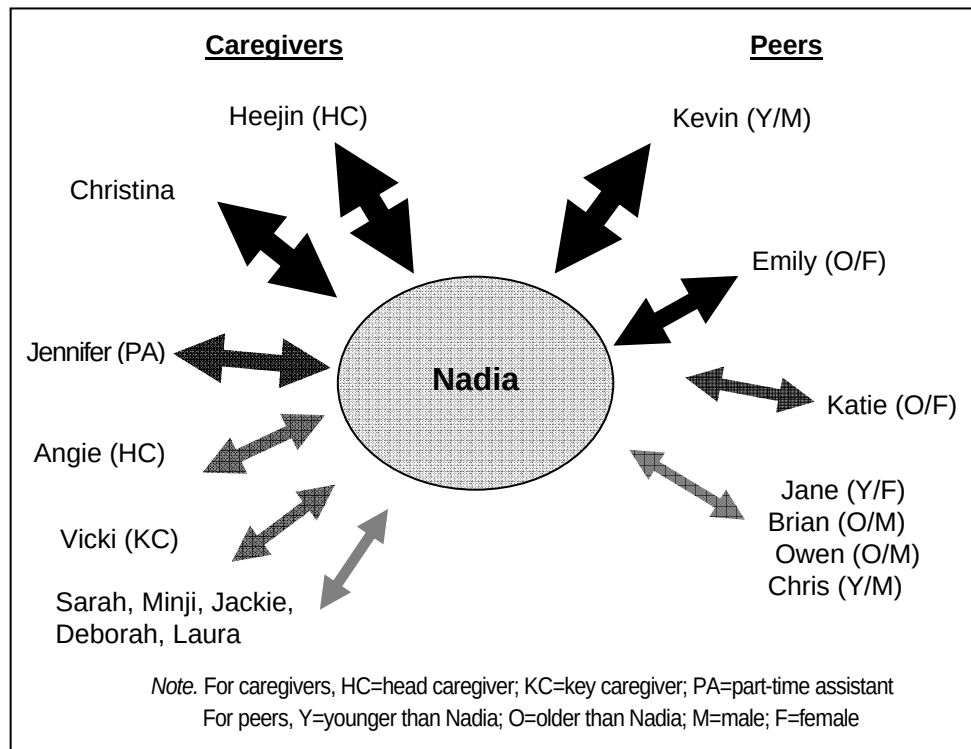


Figure 1. Nadia's relationships before independent walking.

In terms of the relationships with the caregivers, Nadia showed a clear hierarchy in her preference for caregivers. Heejin (HC, Nadia's former KC) and Christina (new but very responsive SC) were her first choice. Jennifer (PA) was in the second group. Angie (HC) and Vicki (Nadia's current KC) were in the third group, and then the rest were in the fourth group. Vicki (KC) was clearly aware of her status: She mentioned that Nadia would go to Christina, Heejin, or Jennifer before her.

The following anecdote showed Nadia's differentiated behaviors toward different caregivers, proving her clear hierarchy in her preference.

Mom talks to Nadia, "I have to go now, bye-bye Nadia." Heejin (HC) asks Vicki (KC) to take Nadia to the door to say bye to mom. When Vicki tries to hold Nadia up, Nadia resists a little bit, frowning, whimpering, and wiggling. Vicki picks up the toy that Nadia wanted right before and gives it to

her. Holding Nadia in one arm and waving the other hand to mom, Vicki goes to the door and helps Nadia say bye to mom. Mom leaves. Nadia starts crying hard and floundering her legs rigorously. Vicki has to put Nadia down. Nadia crawls to Heejin and throws herself to her; then Nadia stops crying. Heejin and Nadia play with the small blocks for a while quietly. Vicki approaches and sits next to them, watching them. (Observation, 48 weeks)

Nadia was familiar with Heejin (HC), Angie (HC), and Jennifer (PA), because they were in the infant room when Nadia began attending the center. Nadia would get help from the new student caregivers including her key caregiver, Vicki, and use them instrumentally to achieve what she wanted to do. She would also increase play/interaction with them when she was in a good mood. However, when Nadia was uncomfortable or tired or needed comfort, she showed clear resistance or rejection to them and sought out her preferred caregivers such as Heejin (HC), Jennifer (PA), and Christina (SC). For Nadia, if there were “*the right people around her, she can explore, she seems happy*” (Interview 1 with Vicki). It was interesting to observe Nadia’s differentiated behavior toward Christina (SC). After Nadia spent several afternoons with Christina, Nadia would approach her, touch her, make eye contact with her, initiate play with her, and seek her for comfort. There seemed a natural match between them, and Christina was very responsive to Nadia compared to the other student caregivers. Also interestingly, Nadia did not show clear preference for Angie (HC), the most experienced and popular caregiver.

Nadia’s relationship with Vicki (KC) had changed slowly but continuously. Having one-on-one time together and making continuous effort to get to know each other seemed to be effective in their relationship building process. In addition, the supportive context and the assistance from other caregivers, especially the head caregivers, helped Vicki have time and opportunities to interact with Nadia and assisted in Nadia’s natural transition to Vicki as her key caregiver. Yet, Nadia was selective in interacting with Vicki; she would interact more with Vicki when Vicki

was responsive to her and when she was in a good mood. In sum, during this period, Nadia preferred responsive, emotional, caring-oriented, individually focused caregivers (e.g., Heejin, Christina, Jennifer) over task-oriented, initiative, verbal, group and classroom management oriented caregivers (e.g., Angie, Vicki).

Nadia showed natural interest in peers from the very beginning. During this period, her interactions with peers focused on Kevin predominantly. Kevin was slightly younger than her, and because they started attending the center at the same time they experienced through the adjustment period together. The following anecdotes show their usual interactions.

Sitting on the cart, Nadia babbles to other children and to people on the street, even waved to people. She sees Kevin crying and reaches to touch his hand. Nadia sits together with Kevin, bends over Kevin, gets her head closer to Kevin, as if she wants to give him a kiss, and touches his face with her finger. (Chart, 46 weeks)

Nadia goes over to Kevin several times and lays her head on his head and shoulder very gently. She also carefully puts her lips on his head and pats his head with her hand. She follows him as he crawls around. (Chart, 51 weeks)

As seen in the above anecdotes, Nadia frequently showed affection to Kevin through smiling, hugging, touching, and kissing. The interactions between Nadia and Kevin seemed emotional and affectionate. In addition, Nadia usually played an active role in her interactions with Kevin.

Her next closest peer was Emily, who was 4 months older than Nadia and had a sweet and responsive personality. Then with Katie, who was 3 months older than her and had a strong personality. With Emily and Katie, Nadia usually played passively and following roles as illustrated below.

Emily goes to the fridge and opens the door with her mom. Mom takes a cup out of the fridge. Nadia comes near and sits next to Emily, watching.

Emily looks down at Nadia on the floor, points to her with her index finger, and then touches her head gently. (Observation, 49 weeks)

Nadia comes up the ramp of the slide then scoots down the stairs on her bottom. Katie is trying to take a step up the stairs. Nadia touches her, pulling Katie's shirt while coming down. Katie fusses and leaves the scene. (Observation, 50 weeks)

Interestingly, most of Nadia's interactions with peers took place on a one-on-one basis; there were few group situations before Nadia walked independently. In the few group situations, Nadia and the infants seemed to just stay together rather than truly interacting with each other, as shown below.

Emily, Nadia, and Kevin sit down with the bubble bucket, Emily holds a bubble wand, dips it into the bubble bucket. When Angie (HC) blows a bubble, Kevin smiles. Emily puts a wand into the bucket, takes it right out, and shakes it. Nadia puts a wand close to Vicki's (KC) mouth to blow. Kevin mouths a bubble wand. (Observation, 51 weeks)

In sum, Nadia's interactions/relationships with peers were concentrated on particular infants, Kevin and Emily, who had sociable and gentle personalities. Nadia had relatively few direct interactions with older boys and younger babies, including Owen, Brian, Jane, and Chris. Before she could walk independently, Nadia interacted with peers more on a one-on-one basis than a group.

Nadia's Relationships after Independent Walking

Nadia's relationships in the infant room after her independent walking are summarized in Figure 2, showing some salient differences from the before independent walking period.

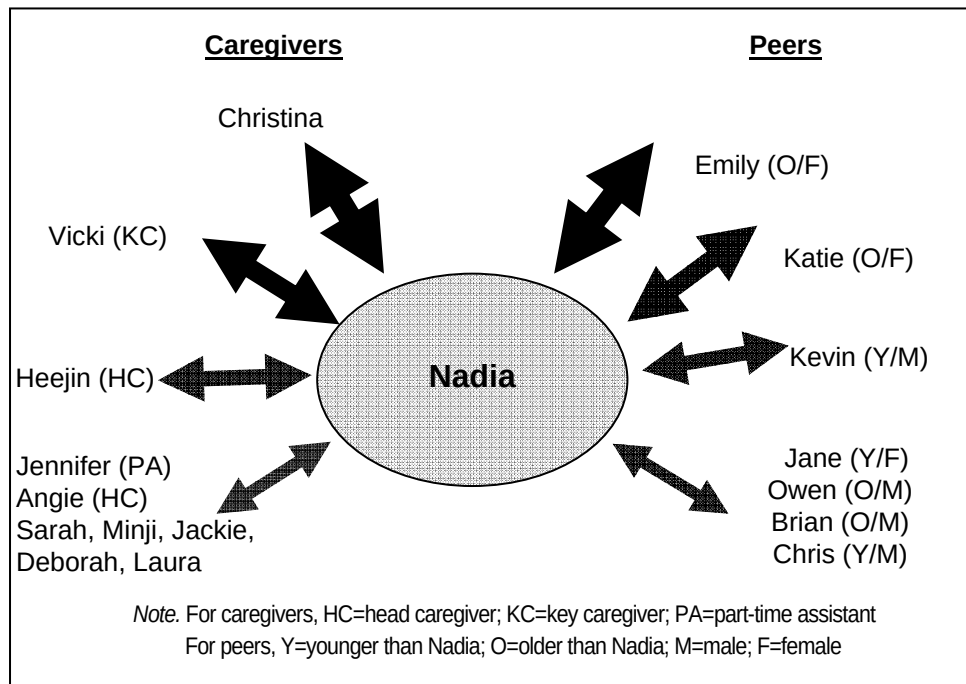


Figure 2. Nadia's relationships after independent walking

Nadia started walking independently around her first birthday. Achieving this developmental milestone seemed to provide her with more independence in her exploration and access to her caregivers and peers. Accordingly, there were many changes in Nadia's behaviors toward caregivers and peers, showing changes in interactions/relationships with them.

With the caregivers, Nadia was continuously clear in showing her hierarchical preference for them. At this time period, Christina was her first choice, and Vicki (KC) became her second choice. This means that Nadia's behaviors toward her key caregiver, Vicki, changed dramatically. For example,

Nadia goes to Vicki (KC) and sits on her lap naturally. They read the "Down by the Bay" book together. Katie comes to Christina with a book. Emily joins them. Katie and Emily read the book with Christina. Nadia goes to the shelf and takes out the "Baby Beluga" book. Nadia looks at Christina

who is reading a book with Emily and Katie. Then Nadia looks at Vicki and goes to her again. Nadia reads the book with Vicki, standing next to her. Nadia bends her knees up and down like dancing while Vicki sings the songs (“Baby Beluga” and “Down by the Bay”). Nadia pulls off her socks. Then she initiates peek-a-boo with Vicki using her sock. In tune with Vicki’s song, Nadia covers and uncovers her eyes with her sock, smiling widely and laughing a lot. (Observation, 58 weeks)

In this anecdote, Vicki was Nadia’s preferred play partner. Although Nadia’s first choice was Christina, if Christina seemed not available, Nadia would comfortably play with Vicki, her second choice. As Vicki became more responsive to Nadia, extended play based on Nadia’s interest without imposing her own agenda, and created a “zone of proximal development” (Vygotsky, 1986/1997, p. 187) for Nadia, Nadia became more affectionate, comfortable, and cooperative with Vicki, accepting her as a trustworthy caregiver and preferred play partner. The following anecdote also shows the changes of Nadia’s and Vicki’s behaviors.

Vicki (KC) sees Nadia who is on the changing table. Vicki says “Hi” to Nadia, waving her hand. When Minji (SC) puts her down, Nadia slowly walks toward Vicki. First she passes by her. Then she turns to Vicki and walks to her, stretching her arms to Vicki. Vicki hugs Nadia, asking “How’s your nap, Nadia?” Vicki walks like dancing around the room, holding Nadia in her arms.... When Vicki tries to put Nadia down, Nadia clings to Vicki. When Vicki puts Nadia down, Nadia holds Vicki’s legs, pretending to cry. Vicki talks to Nadia, “I need to wash my hands and dry my hands. Can we go to the trashcan and put this (paper towel) away?” They throw it into the trashcan together. Then they move to the table for Nadia’s lunch.... When Vicki goes to the sink, Nadia follows her with her eyes. Vicki notices this and says “I’m coming back soon, Nadia.” When Vicki approaches Nadia, Nadia smiles widely. (Observation, 55 weeks)

Heejin (HC), who had been the first choice before walking, became Nadia's third choice, reflecting a decrease of their interactions. Nadia got along with the rest of the caregivers smoothly and positively. In sum, during this time period, Nadia was building multiple relationships with the caregivers to different degrees, and the relationship with each caregiver was unique, changing, and being continuously fine-tuned. Nadia's close, synchronous relationships with the caregivers seemed to set a stage for her to play/explore more independently, using them as secure bases. Thus, the direct interactions between Nadia and the caregivers decreased; however, their interactions preceded in much more meaningful ways, and the group interactions among Nadia, peers, and/or caregivers increased.

After Nadia started walking independently, the dynamic of Nadia's peer relationships has also changed significantly. For instance, Nadia's interactions with all the peers increased considerably, and her preference and interaction style toward peers shifted drastically. In terms of the preference, Nadia interacted with Emily the most, then Katie and Kevin. The interaction style between Nadia and Emily seemed to change with Nadia's developing walking abilities. Instead of maneuvering herself around Emily and imitating Emily's behavior, Nadia, as an independent walker, began to initiate more interactions with Emily and played a more following role than leading role, as illustrated by the following anecdote.

Nadia walks over to the wagon, goes in and stands up, holding the handle of the wagon. Emily walks over, holds the handle with Nadia, and says, "Hi." Nadia vocalizes "ah- ah-," smiling at Emily. Nadia then gets in the wagon and looks at Emily. Then Emily starts pushing the wagon for Nadia. (Observation, 55 weeks)

The interactions and relationship between Nadia and Katie were getting more positive than before Nadia's independent walking. Nadia would imitate what Katie was doing and engaged in simple play/interaction with Katie. For example,

Nadia and Katie sit at the table for snack next to each other. Nadia picks

up her cheerios from the table, reaches her hand over to Katie, and feeds Katie. Katie eats the Cheerios and looks at Nadia. (Observation, 53 weeks)

Nadia is standing at the window and looking outside. When Christina (SC) says, "Wow, It's getting dark outside," Katie goes over to window to see outside. Katie and Nadia stand together and look outside. Then Katie looks at Nadia. Nadia then turns her body and looks at Katie. Katie touches Nadia's head, hair very gently. (Observation, 56 weeks)

With Kevin, Nadia continuously showed many nonverbal affectionate behaviors, emotional support, and empathic behaviors. Nadia played a leading role in their interactions, while Kevin played a following and accepting role. For example,

Nadia sits at the table for snack. While Nadia is eating her cheerios, Nadia bangs the table with her palm. Kevin looks at Nadia banging and then starts banging the table with his palm like Nadia. (Observation, 55 weeks)

With the two babies, Jane and Chris, Nadia continued to show gentle affection through touching, smiling, and kissing. Interestingly, Nadia showed more social interactions with Jane than with Chris; her close relationship with Christina (SC), Jane's key caregiver, seemed to influence her interactions with Jane, as illustrated below.

Nadia walks toward Christina (SC), smiling. Nadia gets a big hug from Christina and sit down on her lap. Nadia then looks at Jane sitting close to Christina on floor, and touches her head. Nadia then holds Jane's shirt with her left hand, pulls shirt toward her, and then touches Jane's hair and ear gently with her right hand. (Observation, 55 weeks)

There was also a dramatic increase in group interactions; among them, the most frequently seen combination was the three girls (Nadia, Emily, and Katie). The three

girls were getting more interactive than before as shown in the following anecdote.

Sarah (SC) got towel and gave it to Katie when Katie ran to shelves and pointed to blue bubble container, repeating 'buba'. Emily helped to get the towels and lay them on the floor. Nadia walks around them with a smile on her face. Nadia, Emily, and Katie chased the bubbles as Sarah blew them. Nadia followed the bubble with her eyes then pop it with her hands. Nadia said, "Pop!" when the bubbles popped. Katie walks away. Nadia points at Katie and calls her name. Katie comes back. Nadia smiles at Katie. (Chart, 60 weeks)

In addition, after Nadia could walk independently, more anecdotes of Nadia with peers and caregivers were observed. On the other hand, Nadia continued to interact with Kevin and the younger babies on a one-on-one basis rather than in a group. With Nadia's developmental changes and increased interest, the caregivers seemed to encourage peer interactions more between Nadia and other infants, as illustrated in the below anecdote.

Nadia, Owen, and Emily are having their snack with Vicki (KC). Eating her finger food, Nadia vocalizes "Eaa, aaaaaaa, aaa, aaa..." Owen imitates Nadia, "Nadia says aaaaa." Smiling, Vicki talks to Owen "Yeah, she sounds like that." Nadia stops her vocalization and looks at Owen. Vicki asks Nadia "Is that what you're saying?" Nadia says "No" (did not mean it). Vicki responds "No?" Nadia continues to vocalize "yayaya" looking at Owen. Owen talks to Vicki, "More, more, Nadia say more, more, more, more." Vicki asks "Is that what you're saying, Nadia? Did you say more, more, more, more?" Nadia smiles widely at Owen. Emily says "Ma, ma," looking at Vicki. Vicki responds "Nadia says ma, ma?" Nadia turns her head and looks at Vicki. When Vicki looks at her, Nadia smiles increasingly and playfully. Vicki giggles back playfully. Vicki helps them have snack, continuing the conversation. (Videotaped observation, 58 weeks)

In sum, after achieving the developmental milestone, the ways that Nadia interacted with caregivers/peers and thus her relationships with them also changed. With her new walking abilities, Nadia seemed to enjoy more play-based interactions than emotion-based interactions with both caregivers and peers.

Discussion

The findings of this study portrayed the multifaceted social experiences of a particular infant in a particular context. Nadia's relationships with caregivers and peers were continuously changing and evolving while she went through one of the salient developmental milestones in life, independent walking. This study highlighted an apparent connection between development and relationships, as Nadia's development appeared to influence her realm of relationships with caregivers and peers.

Connection between Development and Relationships

Infants develop enormously and rapidly during the first two years. A more contemporary stance was apparent in this study, which viewed the infant as a powerful social being (Lee, 2006; Raikes & Edwards, 2009; Shin, 2010; Stern, 1977/2002) as Nadia was an active participant in interactions and relationship building process in this specific context. Nadia developed multiple relationships with both caregivers and peers to varying degrees, and displayed differentiated behaviors based on her degree of relationships and/or preferences, making each relationship unique. This is consistent with other claims and research results reporting that each relationship is unique and "always expanding, changing, reforming" (Stern, 1977/2002, p. 132).

The findings of this study confirmed that the hierarchical preference and relationship evolved along with developmental changes (Howes et al., 1994; Lee, 2006; Raikes & Edwards, 2009; Rochat, 2001). In this study, Nadia clearly demonstrated her preference toward her specific peer(s) as well as clear hierarchy

and selectivity among caregivers. Her preference and hierarchy appeared to be changing and evolving. Nadia appeared to prefer responsive, caring caregivers for comfort and play before walking. As she became more proficient in her motor skills, Nadia tended to enjoy play-based interactions with caregivers, who might be more verbal and group oriented.

It was interesting to see the amount of direct interactions between Nadia and caregivers decrease, as she became an independent walker. The caregivers in this study were more likely a secure base for Nadia as she played and explored independently while constantly checking caregivers' whereabouts. Therefore, Nadia and caregivers would share a meaningful emotional connection rather than direct interactions. As infants develop, their interests and interaction styles also transform. Therefore, this study urges caregivers to be observant and to provide responsive care to infants along with infants' growth and development. These results supported a notion that caregiving styles should vary, such as carer, playmate, resource, and teacher mentioned in previous studies (Harding et al., 1995; Lee, 2006). Recognizing that little is known about how infant caregivers' roles should vary and be adapted in relation to infants' growth and development, the results of this study can expand current understanding of infant-caregiver relationship development process. This study urges educators that their caregiving styles and roles should be responsive to the developmental status of infants.

Association between Infant-Caregiver Relationships and Peer Relationships

One prominent finding that this study identified was that both infant-caregiver relationships and peer relationships could be interdependent rather than subordinate in the context, supporting Lee's (2006) claim. Previous literature has investigated infant-caregiver relationships and peer relationships separately and supposed a one-way influence of infant-caregiver relationships on infant peer relationships (Elicker & Fortner-Wood, 1995; Howes et al., 1994; Pianta, 1999). Unlike previous studies on the infant relationship development, this study revealed that Nadia's relationship

circle with both peers and caregivers seemed to evolve and expand simultaneously and reciprocally. For instance, Nadia's preference to a specific caregiver seemed to influence and enhance social interactions with peers. Nadia's interest in babies, especially Jane, seemed to reside in her close relationship with Christina (Jane's key caregiver). It was observed that Nadia often expressed positive affections toward Jane, such as gentle touching and smiling, when Christina was taking care of Jane.

On the other hand, Nadia's increased interests in peer social interactions seemed to invite caregivers into their social exchanges, and consequently, further promote a close infant-caregiver relationship. With Nadia's developmental changes, a dramatic increase of group interactions was noticed. As Nadia became more independent, the caregivers would be encourage and scaffold peer interactions more among the infants, which is known as an important role of infant caregivers (Williams et al., 2010). At the same time, the caregivers tended to play along, join the infants in their social engagement, and thus develop positive relationships with the infants. The findings underscore the complex relationship dances that infants and infant caregivers established and thus this study confirmed the notion that relationships are complex and multidimensional (Howes et al., 1994; Raikes & Edwards, 2009).

The findings highlighted an interdependent model, which indicates a two-way influence between infant-caregiver relationships and peer relationships. Considering that there is a dearth of research that explores this mutually supporting connection between infant-caregiver relationships and peer relationships concurrently, this study can contribute to the new understanding in the field of infant study. Furthermore, this study urges educators to recognize that both infants and infant caregivers develop and transform their relationships together.

Implications

The results of this study bring forward important implications in the field of infant education and care. First, this study encourages educators to deepen our understanding of infant capabilities. Like Nadia, infants are definitely powerful

social beings and active participants in their relationship development process. Recognizing the popular conception of “self-centered” infant (Salamon, 2011, p. 4), it is significant to realize that infants have a more advanced social understanding than previously known. With a belief that infants are socially competent, caregivers will be able to facilitate infants’ optimal learning and to assist them to respond and make a meaningful connection with both peers and caregivers on their own terms.

Second, it is imperative to implement a relationship-based infant educare program (Recchia & Shin, 2010; Wittmer & Petersen, 2010). According to many commentators, infant educare programs should have warm, sensitive, and knowledgeable caregivers, low caregiver turnover rate and continuity of care, small groups of six to eight infants, low caregiver-to-child ratios (less than 1:3), primary caregiver assignment, and responsive curricula and safe environment (Bernhardt, 2000; Howes & Hamiton, 1993; Kontos & Wilcox-Herzog, 1997; Lally, Mangione, & Signer, 2002; NICHD Early Child Care Research Network, 2001). Creating a safe, stimulating, and social setting and climate is crucial so that each infant feels comfortable in their interactions with caregivers and peers and thus can develop close relationships with them. A play-based curriculum also is a key in infant educare program. A play-based curriculum can provide infants and caregivers with ample time and opportunities to interact and engage in social play, understand each other, develop various relationships, and learn from each other.

Finally, our findings highlight the possible connection between developmental status and relationship experience, which deserve a further examination. It was observed that Nadia experienced various ways of interacting with others as she was developing. To support infants fully and appropriately, we need to consider different approaches that caregivers can utilize according to the developmental level or stage of infants. Since the results of this study are context specific, caution should be exercised before implementing the present results in a different context. Despite the limitation, the results of this study help to expand the current understandings of infant development and relationship building/changing process.

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