The Science and Psychology of Infant–Toddler Care

How an Understanding of Early Learning Has Transformed Child Care

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What we see in the crib is the greatest mind that has ever existed, the most powerful learning machine in the universe.
—Gopnik, Meltzoff, and Kuhl (1999, p. 1)

In September of 2003, I wrote an article for this journal to celebrate ZERO TO THREE's 25th anniversary as an organization. That article, titled "Infant–Toddler Child Care in the United States: Where Has It Been? Where Is It Now? Where Is It Going?," traced the history of infant–toddler care from World War II to the present (Lally, 2003). In celebration of the *Zero to Three* journal's 30th year of publication, I will explore the future. The present article shares new approaches to care that are now being used in America's best programs. Although not yet followed in many infant and toddler child care programs, these new approaches lead the way in matching practice to what research is discovering about what babies need from caregivers.

Unfortunately, much of infant–toddler care today looks like a glorified version of babysitting or a watered-down version of preschool. The former approach endorses a style of care that treats very young children as if they only need safe and healthy environments, in which bonding with special caregivers and attention to learning are unnecessary. The latter approach operates on the belief that an adult-directed curriculum should be followed with babies and that intellect and language advances need to be stimulated by planned lessons programmed throughout the day. Both of these approaches ignore what we have recently come to understand about what infants and toddlers need to help them grow and learn.

What is now known is that babies come into care with their own learning agenda—their own curriculum. Armed with an inborn motivation to learn and explore, they are on a constant quest for knowledge, learning from what they see, hear, feel, taste, and touch. And they do this without the need for prompting. They have a holistic stance toward learning, with social, emotional, intellectual, language, and physical lessons often coming from the same experience. They use their many competencies to help them address their vulnerabilities and to better understand the workings of the world and the people in it. As shown by research compiled in *From Neurons to Neighborhoods* (National Research Council & Institute of Medicine, 2000) and other sources (Belsky & Cassidy, 1994; Honig, 2002; Sroufe, 1996), babies seek out their caregivers for help with their physical survival; emotional security; the provision of a safe base for learning, modeling, mentoring, and regulation of social behavior; information about the workings of the world; and appropriate rules for living. They also exhibit their own skills as inventors, communication initiators, imitators, interpreters, integrators, meaning seekers, relationship builders, and curious, motivated, self-starting learners. And, because of the way the young child is wired for this learning, unique adult accommodations are required. Alison Gopnik, a leading researcher on infant cognition,

Abstract
Recent research on how infants and toddlers grow and learn has provided new evidence for creating child care practices that support healthy development. The author describes 6 program practices drawn from this research. The article discusses practices that support secure attachments, identity formation, family practices, attention to developmental trajectories, responsive caregiving, and reflective curriculum planning.

Photo: Sara Webb-Schmitz

Infant care teachers are caring facilitators of the child's journey toward emotional, cognitive, language, physical, and social competence.

described important differences between how babies learn in comparison to older children (2009b). According to Gopnik, adults mistakenly believe that infants learn the same way school age children do. In school, adults set objectives and goals for children and try to get the children to focus on the skills and content they should master. However, research shows that baby learning is different. "Babies aren't trying to learn one particular skill or set of facts; instead, they are drawn to anything new, unexpected or informative" (p. WK10). Gopnik's research shows that infants are not very good at planned focus but very good at the exploration of the real world objects they are interested in and interaction with the people around them. She concludes that " Babies are designed to explore and they should be encouraged to do so" (p. WK10).

Gopnik's description of the way babies learn states precisely why downward extensions of school don't work in child care settings for babies. Accordingly, infant care teachers are altering their practice to be much more holistic in their approach to care. For example, rather than segregating lessons by developmental domain, a teacher will engage a 20-month-old in back-and-forth language exchanges while attending to the physical, social, emotional, and intellectual components of the exchange.

The research is clear: Putting infants and toddlers in care settings in which older children thrive has been shown to produce negative effects in the younger children. In these settings, babies become less interested in learning, expect less of themselves, and are more stressed and less cooperative (Gopnik, 2009a).

What I am seeing now, however, are a number of infant–toddler programs "righting the ship." Armed with new knowledge, infant and toddler teachers are starting to match their care of infants and toddlers with the learning agenda of the baby. They are coming to respect and respond to infants' active participation in the developmental process and to support the work of the infants rather than treat them as subjects or objects. What has emerged is a dramatic new view of the role of the infant care teacher: neither babysitter nor trainer but rather a caring facilitator of the child's journey toward emotional, cognitive, language, physical, and social competence. This attention to the interests of infants is now driving practice and also creating a revolution in the understanding of curriculum for infants. This new approach has the infant becoming an active partner in the selection of learning content, and daily experiences moving and flowing with the infant's changing interests and needs.

Also, these innovative programs are much more concerned than in the past about blending teaching and caring, with emotional support and facilitation of learning happening simultaneously (Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001). It is now understood that, in infancy, relationships and experiences with trusted caregivers are the base for all learning. The work of the infant care teacher is seen as critically important to the child's developmental trajectory, with the teacher influencing not only how children come to view and participate in the learning process but also how they come to feel about themselves and others. Infants learn the rhythms of speech, gestures, social rules, the meaning of facial expressions, and how people respond to their communication and behavior through these early interactions. As Carlina Rinaldi states in the DVD *New Perspectives in Infant Toddler Care* (Lally & Mangione, 2006), "Learning and loving are not so far apart as we once thought they were."

In model programs, policies are being enacted and practices implemented that optimally nurture security and provoke curiosity. Researchers find that quality programs include safe, interesting, and intimate settings in which children have the time and opportunity to establish and sustain long–term, secure, and trusting relationships with knowledgeable caregivers. In addition, these caregivers are responsive to the children's needs and interests, support the children emotionally, model and engage in socially appropriate behavior including rich language exchanges, and give the children uninterrupted time to explore.

Program Practices to Support Learning and Development

It is now more common for programs, such as a number of the Early Head Start programs and Educare sites (Buffett Early Childhood Fund & Ounce of Prevention Fund, 2009; Early Head Start, 2009), to institute a context for care based on the following program practices recommended by the Program for Infant Toddler Care (PITC, 2009).

Primary Care

In a primary care system, each child is assigned to one special caregiver who is principally responsible for that child's care. When children spend a longer time in care than their primary caregiver is available, a second caregiver assumes the primary role. Each child should have a special caregiver assigned to him at all times during the child care day. Teaming is also important. Primary care works best when caregivers team up and support each other and provide a backup base for security for each other's primary care children. Primary care does not mean exclusive care. It means, however, that all parties know who has primary responsibility for each child.

Photo: Sara Webb-Schmitz

In infancy, relationships and experiences with trusted caregivers are the base for all learning.

Small Groups

Every major research study on infant and toddler care has shown that small group size and good ratios are key components of quality care. PITC recommends primary care ratios of 1:3 or 1:4, in groups of six to nine children, depending on the age. The guiding principle is the younger the child, the smaller the group. Small groups facilitate the provision of personalized care that infants and toddlers need, supporting peaceful exchanges, freedom and safety to move and explore, and the development of intimate relationships.

Continuity

Continuity of care is the third key to providing the deep connections that infants and toddlers need. Programs that incorporate the concept of continuity of care keep primary caregivers and children together throughout the 3 years of the infancy period, or for the time during that period of the child's enrollment in care.

Individualized/Personalized Care

The administrative policy of the program is adaptation to the child, rather than vice versa. The child's unique rhythms and styles are followed. The child gets the message that she is important, that her needs will be met, and her choices, preferences, and impulses are respected.

Cultural Continuity

As more children enter child care during the tender years of infancy, questions of their cultural identity and sense of belonging in their own families are raised. Consistency of care between home and child care, always important for the very young, becomes even more so when the infant or toddler is cared for in the context of cultural practices different from that of the child's family. Because of the important role of culture in development, caregivers who serve families from diverse backgrounds are expected to:

1. Heighten their understanding of the importance of culture in the lives of infants;
2. Develop cultural competencies;
3. Acknowledge and respect cultural differences;
4. Learn to be open and responsive to, and willing to negotiate with, families about child-rearing practices.

Inclusion of Children With Special Needs

Inclusion means making the benefits of high-quality care available to all infants through appropriate accommodation and support, so that each child can have full, active program participation. Issues already recommended—a relationship-based approach to the provision of care that is individualized and responsive to the child's cues and desires to learn—are equally important for children with disabilities or other special needs.

These program practices give infant care teachers the space and time to do their important work. Freed up from having to handle large groups, allowed to stay with the same group of children for an extended time, and administratively supported to build relationships and facilitate learning, teachers are changing the way they provide care.

New Approaches in Infant–Toddler Care

The following six approaches to care present some of the changes being made.

1. Helping Infants Form and Prolong Secure Attachments

What is known: Infants form emotional bonds, or attachments, with their parents. As increasing numbers of mothers work outside the home (Oser & Cohen, 2003), child development experts, parents, and nonparents alike have been concerned about whether infants enrolled in out-of-home care can form secure attachments with caregivers. Evidence (Dalli, 1999; Honig, 1998; Raikes, 1993, 1996) now suggests that infants and toddlers can and do form secure attachments with infant care teachers, and that those who do make such attachments function better in care. Not only do secure attachments with caregivers benefit those babies who have them, but their lack may well make child care a lonely, stress-filled, and learning-limited experience. Experts in child development (Belsky, Spritz, & Crnic, 1994; Honig, 2002) believe that the security of a child's attachments is strongly related to his development of a positive sense

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Experiences for infants and toddlers are now being designed with the infant's developing sense of self in mind.

of self-worth and the ability to have positive social relationships later in life.

What is done: Good infant care teachers get "in tune" with the baby's rhythms and learn to respond to the child's cues, such as various cries, eating and sleeping patterns, smiles, and movements. As the teacher follows the infants' leads, the children learn that someone outside themselves understands their emotions and feelings. By establishing a primary care relationship and making sure that the relationship is continued over time, teachers and infants become linked with one another, and the infants begin to believe that their needs will be met. Experiences for infants and toddlers are now being designed with the infant's developing sense of self as a learner in mind. This approach tries to maximize the child's sense of security in care, while also maximizing connection with family.

Infant–toddler care is now being structured to support attachments between parents and child, and caregivers and child.

2. Helping Infants With Positive Identity Formation

What is known: Researchers have found that many infants and toddlers are forging much of their definition of self in the presence of professional caregivers. Answers to questions such as "Are my interests important?" and "Do I have power and potency to pick my lessons?" are coming not only through interactions with family members but through interactions with teachers. Infant care teachers are now acting on the knowledge that part of what infants and toddlers get from them are perceptions of how people act at various times and in various situations (seen by infants as how they should behave), how people act toward them and others (seen by infants as how they and others should be treated), and how emotions are expressed (seen by infants as how they should feel and exhibit feelings; Bornstein et al., 2008).

What is done: Experiences for infants and toddlers are now being designed with the infant's developing sense of self in mind. Infant care teachers now work on the premise that more is happening than the *what* of care—that values and beliefs are being witnessed and incorporated into the child's growing sense of self. They are now becoming more careful about the *how* of care, understanding that they are providing the infant with a model for self. They are becoming more conscious about how, for example, their fears may become incorporated into the child's sense of what to fear; how they give and receive messages; what the intensity level of the emotions they project communicates; and how they express interest in a child's work. Researchers (Bornstein, & Bornstein, 1995) believe that it is these day-to-day early interactions that affect children's behavior and help shape the way children will learn to relate to people.

Infant care teacher training is now being structured to help teachers understand their role in the child's development of her first sense of self.

3. Including Family Child-Rearing Practices as Part of Care

What is known: The child-rearing practices of parents in large part reflect the values and beliefs of their larger family, community, and culture. The most basic acts of caring—feeding, comforting, toileting, and playing—reflect the family's values. By the time an infant enters child care, he has learned to expect a certain pattern of response in his daily routines. That familiar pattern provides him a feeling of belonging, a sense of personal history, and a security in knowing who he is and where he comes from. An infant's family, his culture, and his language are the fundamental building blocks of his identity (Edwards & Raikes, 2002; Mangione, 1995). But if a teacher does not understand or value the cultural practices of the child's home or is not able to blend them into the child care setting, the child may become torn between the pulls of family and the practices of the child care setting. The child can become confused to the point that he rejects the home culture or resists socialization efforts within his own family.

What is done: Teachers are now becoming committed to incorporating the family's culture into their patterns of care so as to reinforce the infant's cultural identity. They engage in open and ongoing communication with family members about their values and expectations so as to keep cultural connections alive and help children feel good about themselves. Things are done in a manner that follows the form and style of what the child is familiar with at home. The child experiences similar patterns of care, senses the connection between child care and home, and, as a result, feels secure. Policies and practices that increase cultural continuity in care make it easier for the child to merge the lessons of home and child care.

Infant care teachers now structure care to keep the child's connection to family strong.

4. Treating Babies Differently at Different Points Along Their Developmental Trajectory

What is known: During the first 3 years of life, much of a child's behavior is organized around issues related to security, exploration, and identity. Although children attend to all three issues throughout infancy, each of these issues generally takes center stage at different points in development. As an issue becomes more or less prominent, developmental transitions occur. The child's behavior starts to change, reflecting a new way of organizing experience. The box Greenspan's Stages of Emotional Development contains a summary of Stanley Greenspan's descriptions of these changes (Greenspan, 1990).

Greenspan's Stages of Emotional Development

I. **Regulation and interest in the world (birth+).** During the first stage, up to about 4 months, babies are learning to take an interest in sights, sounds, touch, smell, and movement. Babies are also learning to calm themselves down. We find that even during the first weeks of life, children respond to care differently. For example, some babies are especially sensitive. In addition, babies differ in their abilities to understand the messages their senses take in. The ability to make sense of a caregiver's sounds, learned during the first 2 to 3 months of life, varies from baby to baby. It is very important for caregivers to detect these individual differences because they are the basis for babies developing an interest in the world. Caregivers should learn what is special about each infant's way of dealing with sensations, taking in and acting on information, and finding ways to organize their movements to calm or soothe themselves, and then act accordingly. What caregivers do early is important.

II. **Falling in love (4 months+).** By 4 months of age, infants are in the second stage of emotional development, a stage in which the baby needs to be wooed into a loving relationship. Babies differ in the ways they act during this stage also. There are the more passive, "laid back" babies who need to be sold on the human world and those who eagerly reach out and embrace their caregivers. Caregivers who are not afraid to feel rejected, who don't take a particular baby's lack of interest as a personal insult, can do this baby a world of good. They can try many different "wooing" tactics based on a sensitive reading of what the baby shows he likes and doesn't like. Facial expressions, holding positions, types of touch and pressure, and sounds can all be used to communicate the adult's part in the falling-in-love process.

III. **Purposeful communication (8 months+).** By 8 months, the babies need experiences that verify that their signals are being read. Dependency (reaching out), assertiveness, curiosity, and even aggression are now part of a give-and-take, cause-and-effect pattern whereby caregiver and baby "read" and respond to each other. Sometimes the amount of exploration and excitement generated by new and different experiences during this period can lead to the caregiver overstimulating the infant. Experienced caregivers are usually involved in constant "signal reading." They know when to do more with the infant and when to do less. While neither overstimulating nor understimulating, caregivers also model how purposeful communication should go. By respecting the infant's messages, they model respect of others for the infant.

IV. **The beginning of a complex sense of self (10 months+).** By 10 to 18 months, babies need to be admired for all the new abilities they have mastered. They have organized these abilities into schemes to get things done and make things happen. They are inventive and show initiative. By acknowledging the child who completes such a complex action, caregivers contribute to that child's developing sense of self. When caregivers engage in complex play with the child and intellectually expand it, they model new ways for the child to grow. Lots of imitation happens at this point in development, and so does the beginning of pretend play. By allowing for and taking part in early games and imitation play, caregivers help children expand their sense of themselves as complex, organized persons.

V. **Emotional idea (18 months+).** By 18 to 24 months, children are able to create images in their minds, as evidenced by their pretending to be someone else. During this stage, caregivers can be of great help if they assist children to express their feelings as emotional ideas, rather than just acting them out. Make-believe play is wonderful for this purpose because children begin to use words and gestures to label their feelings. Caregivers can provide young children a safe way to put into words their curiosity about sexuality, aggression, rejection, and separation through make-believe play. This expression of emotional ideas is very releasing to a child but sometimes uncomfortable to adults. If a caregiver finds that she is having trouble letting children put these feelings into words, she can turn to another caregiver for help. Another caregiver might be quite comfortable allowing children to explore competition and anger but may cut off imaginative play about closeness and separation. By getting help with "hot spots" and "blind spots," a caregiver will open up more emotional areas to the child for his exploration.

VI. **Emotional thinking (30 months+).** When children are about 30 months old, their emotional development involves shifting gears between make-believe and reality. Young children are beginning to have the ability to reason about their feelings instead of being able to act them out only in pretend play. During the stage of emotional thinking, setting limits and discipline become very important. However, limit setting must always be in balance with empathy and an interest in what the child is feeling. Here, too, the caregiver needs to look at herself. Some caregivers who are very indulgent are great on the pretend-play side but very weak on the limit-setting side; some who are law-and-order people are great on the limit-setting side but very weak on the make-believe-play and empathy side.

Source: From S. I. Greenspan, "Emotional Development in Infants and Toddlers" in *Infant/Toddler Caregiving: A Guide to Social-Emotional Growth and Socialization* (pp. 15–18), by J. R. Lally (Ed.), 1990, Sacramento: California Department of Education. Originally published in *First Feelings: Milestones in the Emotional Development of Your Baby and Child*, by S. I. Greenspan, 1985, New York: Viking. Copyright by S. I. Greenspan. Condensed with permission. Discussed more fully in *Infancy and Early Childhood: The Practice of Clinical Assessment and Intervention with Emotional and Developmental Challenge*s, by S. I. Greenspan, 1992, Madison, CT: International University Press.

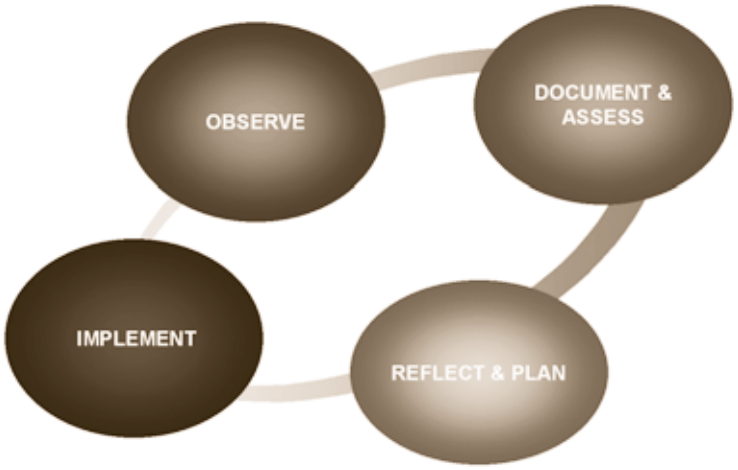
What is done: The knowledgeable infant care teacher knows that these changes are coming and prepares accordingly, switching gears from transition to transition. For example, the way a teacher handles biting with a 3-month-old will be different than how she handles it with a 12-month–old, and it will be different again for a 28-month-old. What is now being considered in care is how the "developmental equipment" of the child should influence teacher behavior and how accommodation must occur during transition periods.

Infant care teachers alter their behavior in relation to the transitions infants go through.

5. Engaging in Responsive Practice

What is known and done: Responsive care is subtle yet carefully orchestrated to meet each individual child's needs and relate to that child's unique thoughts and feelings. Rather than teaching specific lessons, teachers focus on facilitating natural interests and urges to learn by providing close and responsive relationships with caregivers; designing safe, interesting, and appropriate environments; giving infants uninterrupted time to explore; and interacting with infants in ways

Figure 1. The Curriculum Planning Process



that emotionally and intellectually support their discovery and learning.

Responsive practice:

- Requires a teacher to have respect for the infant, meaning an appreciation for what children are doing, at the time they are doing it, and not superimposing the teacher's interests and agenda on the child, avoiding the temptation to teach children specific lessons.
- Requires acute powers of observation. A responsive teacher observes infants to see what kind of discovery they are engaged in. Through watching infants in the discovery process, teachers find the best ways to relate to their play.
- Is reading cues and adapting. The teacher lets the child's interests be the guide. She reads and responds to infant behavior, delights in the types of learning in which the infant is engaged, and expands, provokes, and encourages the learning.
- Is slowing down. A responsive teacher lets the child set the pace for learning. A responsive teacher follows the child's lead, not offering guidance or assistance too early, lest an opportunity for a learning experience be eliminated. Teachers keep in mind that a little help is often the most effective kind of help they can give a child.
- Models and encourages hypothesis generation. This is done by mirroring and encouraging the curious explorative hypothesis testing of babies. It is also done when the babies witness caregivers study and interact with them trying to find out how best to understand their interests and meet their needs.
- Takes into consideration the temperament of the child, the child's "developmental equipment," and the child's history and current mood, and accommodates to those factors before taking action.

The appropriate stance of the infant care teacher toward the baby is now seen as facilitative, responsive, reflective, and adaptive.

6. Using a Reflective Curriculum Process

What is known: Experts (Raikes & Pope Edwards, 2009) in the field of early development have increasingly come to recognize the importance of infants and toddlers having the freedom to make learning choices and to have a hand in the selection of their learning agenda. Most babies, except for those born with constitutional limitations, are genetically wired to seek out the skills and relationships that will help them survive and prosper in their early months and years. For teachers to assign their own learning agenda to the infants is inappropriate. Without special attention and adaptation to the strength of infants' inborn curriculum, the curriculum clarity of the infant would be missed, and a mastery motivation already in place would be thwarted or ignored.

What is done: What is happening in infant care today is a revolution in thinking about curriculum. The most critical curriculum components are no longer seen as lessons and lesson plans but rather the planning of settings and experiences that allow learning to take place. With this approach, the planning of learning environments and the specific program policies that help create a climate for learning—small groups, continuity of care, and the like—are more important than the planning of specific lessons or specific activities. Reflective curriculum planning focuses on finding strategies to help caregivers search for, support, and keep alive children's internal motivation to learn, and their spontaneous explorations of people and things.

Reflective practice begins with the study of the specific children in care. Records of each child's interests and skills are kept so as to give guidance to planning. Adaptation and change are seen as a critical part of the planning process. Once an interaction with a child or small group of children begins, a teacher stays ready to adapt plans and actions to meet the momentary needs and interests of each child. Good plans always include a number of alternative strategies and approaches. Planning is also done to explore ways to help teachers (a) better get "in tune" with each infant they care for, (b) learn from the infant what he needs, thinks, and feels, and (c) find ways to deepen their relationships with the children. Figure 1 illustrates the reflective curriculum planning process. It is used by the teacher to collect information, form and test hypotheses, and make adaptations and corrections. This process can be used to decide on momentary, daily, or weekly teacher corrections. Once started it does not always

Learn More

The Program for Infant/Toddler Care
www.pitc.org/
The Web site of The Program for Infant Toddler Care offers information, resources, and training opportunities for infant/toddler caregivers and links to PITC publications distributed by the California Department of Education.

Key publications containing information about quality infant–toddler care are:

Concepts for Care: 20 Essays on Infant/Toddler Development and Learning
Edited by J. Ronald Lally, Peter L. Mangione & Deborah Greenwald (Editors).
San Francisco: WestEd

California Infant Toddler Learning & Development Foundations & DVDs (2009)
Sacramento, CA: CDE Press

California Infant Toddler Learning & Development Program Guidelines & DVDs (2009)
Sacramento, CA: CDE Press

follow the circular pattern illustrated but rather an interactive one.

Good plans (a) reflect activities that orient the caregiver to the role of facilitator of learning rather than the role of "teacher" and (b) assist the caregiver in reading the cues of each infant served.

The appropriate view of infant curriculum is now seen as one with respect for the infant's interest.

What Still Needs to Change?

What I have presented in this article are some of the new practices that are starting to redefine the role of the infant care teacher in the United States, and I am very encouraged by what I see being practiced. Yet, the practices described here are present in only a small number of programs across the country, and almost always those programs are receiving some kind of supplemental financial assistance. For example, the Educare program, referred to earlier in this article as an illustration of quality, provides funding additional to what parents and government pay. It is extremely difficult to do the high-quality work described here at the rate of compensation programs currently receive. Issues that have been plaguing our country's infant–toddler child care profession since it first started still exist. With low salaries, high turnover, large class sizes, little training, and inadequate time for reflection, it is hard for infant care teachers to implement what they are coming to know is best practice. Let's hope that in the next 30 years there will be a plethora of articles in *Zero to Three* describing new and exciting examples of infants and toddlers being enriched by their child care, the type of care we know they need and deserve.

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