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CAREGIVER-INFANT/TODDLER INTERACTIONS DURING DIAPERING: ASSOCIATIONS WITH WELL-BEING AND INVOLVEMENT

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CAREGIVER-INFANT/TODDLER INTERACTIONS DURING DIAPERING: ASSOCIATIONS WITH WELL-BEING AND INVOLVEMENT

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF INSTRUCTIONAL LEADERSHIP AND ACADEMIC CURRICULUM

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DEDICATION

For Ben, My Sons, and All the Children.

He who learns must suffer. And even in our sleep pain that cannot forget falls drop by drop upon the heart, and in our own despair, against our will, comes wisdom to us by the awful grace of God. *Aeschylus*

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Finally, across the miles, I felt the loving support of family and friends who understood the pursuit of learning and the calling that takes us to places we cannot at first imagine, but then cannot deny.

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PROLOGUE

This dissertation adheres to a journal-ready format. Three journal articles prepared for submission to refereed journals comprise the first part of the dissertation. Manuscript I, The Pikler approach, Bronfenbrenner's Proximal Processes, and Child Care Theory: Re-envisioning Infant-Toddler Diapering Practices, is prepared for the journal *Early Child Development and Care*. Manuscript II, Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement is prepared for the journal *Infant Mental Health Journal*. Manuscript III, One Diaper at a Time: Re-envisioning Diapering Routines with Infants and Toddlers is prepared for the journal *Zero-To-Three*.

Dissertation Abstract

Diaper changes, as an aspect of care for implementing quality caregiver-child interactions in infant and toddler non-parental care settings is examined. First, this study proposes a theory of care that specifically addresses bodily care routines as a main tenet of infant and toddler curriculum and pedagogy guided by elements of theories that relate to child well-being and developmental support. Using elements of Bronfenbrenner's (2001) Proximal Processes (PPCT), Nodding's (1984) Care theory, Vygotsky's (Goldstein, 1999) Zone of Proximal Development (ZPD), and Pikler's approach to infant and toddler caregiving provide a framework to re-envision diapering routines, caregiver practices, and child involvement. Second, two standardized tools were used during 226 classroom observations of diaper changes by 49 caregivers, with 113 infants' and toddlers' in 30 infant and toddler classrooms in a Midwest US city. The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes and The Process-Oriented Self- Evaluation Instrument for Care Settings (PSIC) were used to examine caregiver interactions and child well-being and involvement. Strong positive correlations between caregiver interactions and child well-being and involvement were found with differences between caregiver roles. Caregiver responsiveness and encouragement strongly predict child well-being and involvement. Extant data on global measures of quality were available and analyzed. Third, two diaper change vignettes, one using questions from The Newborn Behavior Observation (NBO) and the PICCOLO are used to re-envision and explore how diapering can be transformed from a hurried routine to an opportunity to enhance child well-being and involvement.

MANUSCRIPT I

The Pikler Approach, Bronfenbrenner's Proximal Processes, and Child Care Theory: Re-envisioning Infant-Toddler Diapering Practices

This manuscript is prepared for submission to the peer-reviewed journal *Early Child Development and Care* and is the first of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

Given that a sizable amount of an infant's or toddler's day is involved in bodily care routines, specifically diapering, a discussion about the quality of caregiving interactions and the child's experience based on theory is warranted. By drawing on research focused on caregiving interactions and child involvement, specifically routines including diapering, I argue an approach to diapering care would be best guided by elements of theories that relate to child well-being and developmental support. Elements of Bronfenbrenner's (2001) Proximal Processes (PPCT), Nodding's (1984) Care theory, Vygotsky's (Goldstein, 1999) Zone of Proximal Development (ZPD), and Pikler's approach to infant and toddler caregiving provide a robust framework to discuss diapering routines, caregiver practices, and child involvement.

I propose a theory of care that specifically addresses bodily care routines as a main tenet of infant and toddler curriculum and pedagogy as "part of the program" rather than "time away from the program" (Gonzalez-Mena, 1990; Psaltis & Stonehouse, 1988, p. 79). To re-envision diapering practices, I argue that elements of an approach developed by Dr. Emmi Pikler, a Hungarian pediatrician, align with Bronfenbrenner's Proximal Processes of Person-Process, Context-Time, Care theory, and Vygotsky's ZPD. Broadening the scope of infant and toddler pedagogy to include diaper change routines as vital elements of the curriculum is discussed.

Keywords: Bronfenbrenner, infants and toddlers, diapering, early childhood education, Noddings, Pikler approach

The Pikler Approach, Bronfenbrenner's Proximal Processes, and Child Care Theory: Re-envisioning Infant-Toddler Diapering Practices

Caregiver interactions are an important feature in determining high quality environments that support the healthy development of young children (Horm, Norris, Perry, Chazan-Cohen, & Halle, 2016). On the whole, sixty percent of two-year-olds and fifty percent of infants spend an average of 30 hours per week in non-parental care across all family socioeconomic levels (Horm, Hyson, & Winton, 2013). This large number of young children in non-parental care settings spawns the need for understanding the characteristics of caregivers, of children, and of the environments where they spend significant amounts of time (Patrick, 2016).

Research suggests that high quality classrooms experienced by infants and toddlers are very important for young children in poverty and have the potential to buffer the impact of poverty for those young children who are experiencing it (Yazejian, Bryant, Freel, Burchinal, & the Educare Learning Network Investigative Team, 2015; Yazejian et al., 2017). This potential buffering is important because a high percentage of infants and toddlers living in poverty are in out-of-home care which serves as a primary early learning environment for a significant period of time for these children (Helburn, Culkin, Morris, Mocan, Howes, Phillipsen, et al., 1995; Matthews & Shumacher, 2008; Thomason & La Paro, 2009).

Unfortunately, for children living in poverty, the quality of infant and toddler care is generally poor, further jeopardizing their development (Phillips & Lowenstein, 2011;

Schmit & Matthews, 2013; Thomason & La Paro, 2009). In addition, infant and toddler group settings are understudied, with a paucity of information available on important process variables defining teacher-child interactions, relationships, curriculum implementation, and other variables impacting quality. Research findings that help to inform program practices and policies, which lead to the creation of high quality early care and learning environments that support infant and toddler optimal development, are needed, especially for those programs serving vulnerable young children. Overall, infants and toddlers are still the most under-represented age group in early childhood research and professional literature (Clark & Baylis, 2012). Clark and Baylis (2012) suggest that one possibility for the lack of research in this area are feelings of insignificance and invisibility of this age group of children and their caregivers.

Research that specifically targets caregivers' interactions with infants and toddlers during care giving is needed (Venn & Wolery, 1992). An examination of caregiver interactions and children's involvement during care routines will help to inform how caregiving impacts infants' and toddlers' well-being and will be of use in determining needs for caregivers' professional development and the teaching of supportive caregiving practices. Given the significant amount of time that many infants and toddlers spend in child care, McMullen and McCormick (2017, p.2) ask, "How do we ensure that infants and toddlers flourish and thrive, not merely survive their days in childcare?" Research focusing on caregiving interactions and child involvement is vital to the discussion of childcare quality and the environmental context of care with infants' and toddlers'. In addition, a theory based approach to diapering practices that focuses caregiving routines

and child involvement that promotes infant-toddler well-being and development is crucial.

Theoretical Framework

Research focused on caregiving interactions and child involvement, specifically routines including diapering, would be best guided by elements of theories that relate to child well-being and developmental support. Elements of Bronfenbrenner's (2001) Proximal Processes (PPCT), Nodding's Care theory (1984), Vygotsky's Zone of Proximal Development (ZPD) (Goldstein, 1999), and Pikler's approach to infant and toddler caregiving provide a robust framework to inform diapering routines, caregiver practices, and child involvement. Given that a sizable amount of an infant's or toddler's day is involved in bodily care routines, a scholarly conversation about the quality of caregiving interactions and the child's experience based in theory is warranted. Following an overview of these conceptual frameworks, a theory of care that specifically addresses bodily care routines as a main tenet of infant and toddler curriculum and pedagogy as "part of the program" rather than "time away from the program" (Psaltis & Stonehouse, 1988, p. 79) is discussed. To re-envision diapering practices, elements of an approach developed by Dr. Emmi Pikler, a Hungarian pediatrician, align with Bronfenbrenner's Proximal Processes of Person-Process, Context-Time, Care theory, and Vygotsky's ZPD. Arguably, diapering routines are one of the earliest influences forming a child's positive or negative internal representations of the dyad relationship.

To begin, this paper addresses the professional tensions in early childhood education related to caring versus educational practices. Infusing a strong foundation of caring pedagogy in the infant and toddler routines contributes to child outcomes. If

positive child outcomes across all developmental domains, including social-emotional, cognitive, and language (National Scientific Council on the Developing Child, 2004) are associated with sensitive, responsive care then, diapering, warrants closer study. This paper argues that intersubjective, quality relationship-based responses so integral to learning may arise in the moment-to-moment encounters during the intimacy of diapering when caregivers are not constrained by external demands and rigid schedules. Thus, this paper is a call to action that diapering, one of the first frequently occurring and consistent care routines experienced by infants and toddlers, is worthy of scrutiny. Specifically, the paper contributes a theoretical understanding of Bronfenbrenner's conceptual framework to influence and deepen caregiver practices in a routine that holds immense potential for addressing the tensions of early childhood professionalism and care in infants and toddler programs.

Routines

At the center of infant and toddler group care are the caregiving routines, defined as the repeated, sequence of predictable actions regularly followed and highly important in the daily life of children (Addessi, 2009). Routines in infant and toddler center-based care are undeniably, the most intensive activities of the day and arguably, are inseparable from programming pedagogy. Common routines include, napping, eating, sleeping, dressing, diapering, arrival, departure, transitions, and washing. If approached consistently, center-based environments offer predictability and security for the caregiver-child relationship.

As a routine that infants and toddlers experience numerous times each day, diapering provides an opportunity for caregivers to interact with individual children and

offers an important window for observation of proximal processes. A key mechanism of learning and development for infants and toddlers occurs in the context of caregivers' interactions and relationships (Thompson, 2006). Moreover, routines offer a background for research on infant and toddler well-being, involvement, and the evaluation of care through the responsive, encouraging, affectionate, embedded learning in caregiver actions during diapering. Diapering practices offer opportunities for children to be involved as agents of their own learning and autonomy when caregivers are responsive to the child's interest and cues.

Routines consist of essential concrete features that inform a child's sense of time, and space, long before abstractions of these concepts are developed. As anchored moments between a child and a caregiver throughout the day, routines provide opportunities for agency to thrive. Diapering usually occurs in a sequence of steps becoming clear and predictable to both the child and caregiver over time. As a result, opportunities for predictable and spontaneous communication, social interaction, and mutuality can take place giving ample moments for shared meaning. Further, individualized routines with infants and toddlers, allow for variations in caregiver timing, actions, and proximity rather than a one-size-fits-all, production-line approach (Gillespie, 2012).

However, caregiver diapering practices, heavily influenced by disease prevention protocols and caregiver scheduling demands, are often hurried (Laurin, 2015), leaving little time for spontaneity, relationship building, and embedded learning. Especially alarming is research highlighting routines as missed opportunities for relationship formation and early learning (Degotardi, 2010; Gonzalez-Mena & Widemeyer-Eyer,

2007; Greenman, Stonehouse, & Schweikert, 2008; Laurin, 2015). While undeniably important, disease prevention and hygienic procedures are the major drivers that shape caregiver interactions. Arguably, re-conceptualizing routines as integral elements of infant and toddler curriculum and pedagogy for healthy child development is long overdue.

Early Childhood Professionalism and Care

Noddings, (1984), states that educational settings play an important role in promoting a caring society, and are especially germane because a significant percentage of young children are in out-of-home care. Mothers with children under the age of three make up fifty-five percent of the US labor force and, 38 percent of those children are in care more than 35 hours a week (Schmit & Matthews, 2013). A trend for and use of infant and toddler care has increased dramatically in developed nations, with more two-parent families employed in the workforce (NIEER, 2004). Crucial to the discussion about professionalism are the ethical and pedagogical aspects of care and care routines so integral to the child's positive or negative experience of being cared-for at the hands of the caregiver. Having an inner experience of being cared-for is of vital importance (Noddings, 1984), because eventually it transforms into the capacity to care-about others, feelings that are instrumental in developing a sense of justice and for social capital (Smith, 2004).

Historically, caring for was a term associated with nurses or matrons hired to mainly attend to health and hygiene responsibilities when caring for infants and toddlers (Noddings, 1984). To this day, caring-for evokes images of childminding and baby-sitting, a misnomer still used by the general public when referencing infant and toddler

work. Manning-Morton (2006) argued that the predominantly female early childhood workforce, to gain professional standing, more highly valued educational curriculum to promote infant and toddler school readiness rather than with the physical and emotional care so vital to this age group.

Professional tensions continue to exist in the field (Degotardi & Pearson, 2014; Degotardi, Semann, & Shepherd, 2012; Manning-Morton, 2006; Moyles, 2001), as educators struggle with curriculum questions pertaining to care-related, routine-based pedagogy, and educational contexts. For example, skills pertaining to toileting and diapering routines are under-valued when compared to caregiver practices based on their knowledge of children's learning. This schism in thinking is problematic and devalues "the art of care giving" (Lally, Torres, & Phelps, 2003, p. 45). Urging the profession to put this outdated debate behind them, Taggart (2011) argued for educators to embrace the "care aspect" as a core element and responsibility of their professional work with children and families (p. 85). Fusing care theory with professional knowledge in the moment-to-moment interactions in bodily care routines offers concrete experiences to scaffold a child's learning through involvement with specific tasks based on a child's volition and intrinsic motivation, all significant to a child's flourishing.

At the center of young children's learning are their bodies, using sensory, somatic, and tactile experiences to send powerful messages to the brain signaling how a child learns about themselves, and their environment (Laurin & Goble, in press; Tardos, 2016). With this in mind, being cared for is the first experience of the dependent, altricial infant (Noddings,1984), where the child learns what it is to be cared-for and, by extension, eventually expands this experience as the capacity to care-about others.

Through the experience of being cared-for in episodes of shared, sensitive, reciprocal exchanges, infants' and toddlers' draw meaning from their social and cultural contexts. Quality experiences of caring and being cared-for contain the elements of connectedness and of receptivity (Goldstein, 1999); it is characterized by the caregiver's capacity to "to remember to think like you are the child" (Laurin & Goble, in press, p. 4; Tardos, personal interview, December 2014). By doing so, the one-who-cares steps in to the child's experience thus, temporarily suspending one's own frame of reference; a psychological state that goes beyond simply responding to the child. A state described as (McMullen & McCormick, 2016) motivational displacement, it is a quality central to receptivity and requires an empathic, sensitive, mindful response from the caregiver (Noddings, 1984). Noddings (1984) identified this type of care, as highly important to the caregiver-child relationship because the caregiver acts on the concerns of the child.

Reciprocal verbal and nonverbal exchanges can convey warmth, joy, delight, and interest in a myriad of ways. Is the one-who-cares demonstrating an attentive presence? What is the quality of touch? Is genuine concern for the well-being of the other conveyed? What is the attitude of the one caring? When genuine caring is received by the cared-for then, visible signs of well-being are observable, for example, expressions of delight, playfulness, and joy in being with the one-who-cares. Crucially, the caring response is unique to each situation (Noddings, 1984), it contains elements of spontaneity; encounters even in brief time intervals can be meaningful. Caregiver actions are not based on prescribed, rule-based principles, rather, it transpires out of an individual's moral attitudes of natural caring arising from prior experiences of being cared-for.

Infant and toddler group care is complex because the caregiver is responsible for many children. Caring for multiple infants and toddlers presents high mental, emotional, physical, and intellectual demands on caregivers (Johnston & Buzzelli, 2010; Smith, 2004). High levels of self-awareness and an understanding of the uniqueness of each child underpin the physical and mental demands of the skilled manual labor of the caregivers. Thus, the important caregiver manual skills involved in diapering when founded on a theoretical knowledge of care theory and natural caring serve as core tenets of infant and toddler curriculum and professional practice. McMullen and McCormick (2016) propose a third type of caring, an approach based on collaborative care—caring with—where power is shared between the one-who-cares and the cared-for. The Pikler approach, founded on a similar tenet of care, illustrates the highest levels of proximal processes with young children where children are participants with their caregivers (Vincze, 1994). Additionally, the Pikler approach successfully bridges caring and professionalism to guide this discussion about re-envisioning diapering routines in infant and toddler childcare settings.

Diapering and the Pikler Approach

An approach founded on the principles of respectful interactions, Dr. Emmi Pikler (1902-1984) bridged routine pedagogy with the care. A core tenet of the Pikler approach used caregiving during routines as part of the curriculum (Petrie & Owen, 2005). Through the intimate physical contact occurring in the dressing, feeding, and diapering routines, caring and learning shape the caregiver child relationship (Pikler, 1979). Trained as a pediatrician in Vienna in the 1920s, Emmi Pikler (1902-1984) interned with Dr. Claus Pirquet known for his highly unusual pediatric approach to care for that time

period; a practice based on the adult's respect and the child's cooperation. Hospitalized children provided they were well enough, roamed the ward freely, played in the garden, and ate only the most nutritious of foods served by caring nurses and physicians.

As a result of her exposure to these unique pediatric practices, Dr. Pikler, systematically developed an approach to care that respected the autonomy and well-being of the child. She trained caregivers at the Pikler Institute, a children's home created after the devastating losses of World War II, to implement, with the utmost sensitivity, all care routines with the children in an unhurried, gentle way working in unison with the movements of a child on the diapering table. Her over-riding goal was to diminish the trauma children frequently experienced as a result of living in institutionalized settings. The Pikler Institute, also known as Loczy, now operates as a childcare center for families with children under the age of three.

Pikler's approach to care ensured the child could anticipate and participate in what was going to happen during care routines (Vincze, 1994). Caregivers received in-the-setting training with skilled mentors, refining their observation skills so they could know the child deeply, and work with sensitivity with each child's unique needs. An essential principle of the Pikler approach is cooperation. Vincze (1994) pointed out that cooperation was not to be confused with obedience, nor was it just about speaking with kindness or working in an unhurried way. She explained that cooperation was the quality of being in a continuous responsive way between a caregiver and child. For example, a caregiver in a diapering routine might follow the child's interest and playfulness beyond the purpose of the activity. A caregiver would respond to the child's delight and interest in her environment while at the same time, guiding the child through the process of

diapering. Similarly, Noddings (1984) described how a caregiver might discern between what ought or what must be done in response to the motives and intentions of the one-cared-for. These moment to moment encounters revealed how a child motivated by his own sense of pleasure and agency, at times, reacted adequately to the caregiver requests, or playfully departed from the requests (Vincze, 1994). Following the child's spontaneous interests is an example of caregiver-child reciprocal joint attention that is necessary for language, social-emotional, and cognitive development. Thus, by refining the art of working cooperatively together, the Pikler caregivers never compromised the child's growing sense of agency and self. Comparatively, like a funnel (Hinde, 1979), caregiver-child relationships are filtered through the adult's caring, protective presence, where the child's experience of "who I am with" surpasses "where I am" and "what I am doing" (Elicker, Ruprecht, & Anderson, 2014, p. 131). Similarly, Bronfenbrenner and Ceci (1994) described the moment-to-moment bidirectional interactions as the engines of human development. Examining infant and toddler motor activity provides additional insights about the diapering relationship.

Diapering and Infant/Toddler Motor Activity

Being in movement is about the free and spontaneous activity accessible to the child by the caregiver, the environment, and interiority of the child's mental state. Pikler adopted principles of Wallon's (1882-1962) research with a focus on how the emotional state of the baby influenced infant motor activity and was integral to child development (Stern, 1985, 2002; Szanto-Feder, 1984). When interpreted by those interacting with the infant, a child's motor activity offers an outward mode of expression about the baby's social and emotional well-being (Voyat, 1984).

Paying attention to motor activity offers valuable insights about the child's psychic space, because spontaneous activity is a resource unique to each child (Stern, 1985, 2002; Szanto-Feder, 1984). In other words, a child's uninhibited motor activity unfolds as a result of a child's own volition, motivated by access to sensory-motor sensations.

Insightfully, Myriam David (as cited in Konicheckis, 2010) stated, "If I were to observe babies today, I would pay attention to motor activity. I would wonder about the way motor activity constitutes the psychic foundation of the person." Importantly, movement visibly expresses a child's feelings about the environment in relationship to the available space to examine how the child behaves during diapering. It is not just about the physical parameters, it is also about the child's sensory, somatic, and cognitive sensations associated with the diapering space. For example, when diapering is associated with a model of mutual reciprocity with access to pleasant, spontaneous movement, the child may form positive social-emotional and mental associations.

A range of motion within the parameters of the diapering change table, are available to a child providing attentive and caring adults are present and support a child's motoricity. With this in mind, Pikler diapering tables and platforms are equipped with railings, thereby, a child can stand securely and safely to participate in bodily care. Infants diapered in the supine position have space to turn, roll, sit, or kneel. These features of the environment influence a child's associations with time and space when caregiver tempo and timing follow the child's rhythm, motivation, volition, and movements, important to the Pikler approach to care. Thus, diapering spaces and caregiver reciprocity promote or inhibit a child's interactions and spontaneous activity

(Vamos, 2010), either contributing or detracting from the quality of the relationship encounter.

Diapering and Child Well-Being and Involvement

Well-being. Much attention to the well-being of children occurred when ratification of the Convention on the Rights of the Child became widely known (UNICEF, 1989). Since then, dissemination about child well-being in scholarly literature across disciplines is more available and addresses issues of child well-being across the world. In the context of US infant and toddler non-parental care, examination of well-being specific to diapering routines and in relationship to the child's involvement during the routine is important because it is an indicator of quality of care and impacts the emotional and physical development of children (Davis et al., 2010; Howard & McInnes, 2012; Laevers, 2000).

Well-being is defined as a feeling of ease, spontaneity, a positive state, feeling safe, self-confident, and the capacity to become deeply absorbed in activities with concentration, interest, and involvement with minimum emotional tension (Balledux, 2002; Laevers, 1998, 2000; Riksen-Walraven, 2004). Other indicators associated with well-being include contact with trusted caregivers, lower caregiver-child ratios, and smaller group sizes, thus confirming quality of caregiver-child interactions and care are essential for well-being (Barandiaran et al., 2015).

Involvement. A child's involvement in diapering is easy to observe and reveals what is happening with the child in the activity. Involvement refers to the quality of activity that occurs in the child's zone of proximal development in a bounded context (Laevers, 1998). Laever's characterized involvement as a feeling of satisfaction when

dimensions of a child's intrinsic motivation find expression through actions on the environment. Meeting the child's basic needs for autonomy, competence, and relatedness enhance well-being, and alternately, detract from well-being when these opportunities are absent. Having access to experiences that heighten feelings of relatedness acting on intrinsic motivation, and experiencing the desired effects fulfill the human need for competence and are highly relevant to infant and toddlers in care routines (Deci & Ryan, 1991). Moreover, fulfilling intrinsic based motivational needs is highly linked to healthy psychological growth across the lifespan (Kasser & Ryan, 1993, 1996). For infants' and toddlers', opportunities to act upon innate sensorimotor drives, fulfills an important basic tenet of human development.

As research variables, well-being and involvement may provide important professional development information for improving caregiver practices with infants and toddlers to support intrinsic motivational interests. Similarly, Csikszentmihalyi (1992) argued that subjective well-being may hinge on finding value and motivational expression in everyday activities, and engaging in those activities contributes to psychological meaning and emotional well-being in the social milieu (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). For infants' and toddlers', psychological meaning develops through their ability to act upon the objects and with the persons in their environment in meaningful ways. For example, caregivers' following a child's interest in clothing; features of the buttons, zippers, or caregiver's invitation to choose between two shirts, or two diapers facilitates involvement. Sometimes these actions result in concentration, engagement, and persistence for a child, if a child is given time to attempt to fasten a shirt or button, or help close or open the sticky tabs on a diaper. Echoing

similar themes, (Seligman, 2012; Roberts, 2010), emphasize the ability to carry out meaningful activities based on intrinsically motivated actions to promote a sense of satisfaction, positive emotions, and well-being in relationships.

Instead, caregivers' frequently "focused on their own role in attending to the physical, rather than the developmental needs of the infant, thus overlooking the infant's agency to be involved in dressing or other meaningful contexts" (Degotardi & Davis, 2008, p. 38). Thus, a child's zone of proximal development is expressed through the child's involvement and experience of the desired effects on the environment when guided through caring caregiver relationships.

Diapering: Motivation and Volition in the Zone of Proximal Development

In her examination of motivation and volition, Goldstein (1999) addressed teaching-learning encounters while integrating care theory with the zone of proximal development (ZPD). Because Vygotsky did not extrapolate on affect and volition in his work, Goldstein (1999) offers insights about affect as a potential source of child motivation in the ZPD teacher-learning relationship. Pleasurable encounters motivated by interpersonal connections and growth require sensitivity, reflection, careful observation, and attention to timing by teachers with infants' and toddlers' and is pertinent to this discussion about diapering practices. To enter into a child's ZPD necessitates "a conscious act of volition" and "a series of deliberate pedagogical decisions" (Goldstein, 1999, p. 666). Goldstein compared this to Nodding's ethical ideal of caring, whereby professional and ethical exchanges in the ZPD are realized as caring encounters. In this way, deliberate pedagogical decisions in infant/toddler pedagogy span time and events unique to each child's motivation and volition; it is not a one size fits all approach.

With infants' and toddlers', bodily care routines are typically the first experiences of learning to be cared for and of caring encounters. Thus, diapering experiences are opportunities to be engaged in a caring learning relationship and influence a child's motivation to participate or behave passively. Through the child's ZPD, a knowing caregiver scaffolds the tasks that a toddler sets out to do, by providing information, encouragement, and co-constructing knowledge, without becoming intrusive or manipulative. Astutely, Goldstein (1999) warns that some ZPD practices may be potentially harmful and detrimental because current interpretations lack interpsychological and interrelational dimensions for direction. Diapering routines rigidly carried out according to rote schedules and emphasizing hygienic, custodial practices over quality caregiver-infant/toddler interactions disregards infant and toddler psychic and affective contexts. Thus, a fundamental tenet for cognitive development is missed. "If the research indicating that children learn through socially mediated encounters is correct, then caring relationships, as a necessary and fundamental part of an intersubjective encounter, actually enable and lead to cognitive development" (Goldstein, 1999, p. 669).

Similarly, White (2016) asserted, "Teachers are the curriculum" because the affective quality in teacher intonation, gestures, attitude, and movements influences how a child interprets the caring moment (p. 169). Vitally, without becoming teachey, learning as a dialogic process is promoted when infant and toddler pedagogy supports person-to-person, in-the-moment encounters, motoricity and spontaneity. It requires attentive caregivers be willing to work with ambiguity and challenge, to understand the meaning of sensory-motor expression, motivation, and volition for infant and toddler development.

Crucially, learning evolves from mutuality rather than caregiver practices that impart knowledge and treat children like *tabula rasa*, empty vessels. Caring encounters in the ZPD are bidirectional experiences that require responsive relationships as detailed in Bronfenbrenner's bioecological theory.

Bronfenbrenner's Proximal Processes Person-Process, Context-Time (PPCT)

Human development is a biopsychological process, which relies on person-to-person relationships, object interactions, and external environmental experiences (Bronfenbrenner, 2001). The reader can also think of proximal processes as the key ingredient in the recipe for human development. Proximal processes are in part, focused on the relationships and complex interactions between people and environment. For example, the human infant experiences a long period of dependence upon the caregiver for survival, and subsequently, is dependent on the proximal processes of feeding, comfort, and care. Without the timely, regular occurrence of these processes, the infant's survival and well-being would be at risk. As the infant matures, development requires that the caregiver be attentive and capable of adapting the relationship to the child's evolving sense of self.

Emerging from research on genetic transmission theory, proximal processes, a core tenet of Bronfenbrenner's bioecological model (2001), emphasize the effects of interactional experiences with the environment and its subsequent influence on development. Bronfenbrenner described genetic traits in the genotype as still unfinished, thus relying on bidirectional experiences to shape its outward characteristics as expressed in the phenotype; it is a process that unfolds over time. Bronfenbrenner and Ceci (1994) explained:

> Hence, from its beginnings, development involves interaction between organism and environment: The external becomes internal and becomes transformed in the process. However, because from the very beginning the organism begins to change its environment, the internal becomes external and becomes transformed in the process. The bidirectional nature of these transformations is rooted in the fact that genetic potentials for development are not merely passive possibilities but active dispositions expressed in selective patterns of attention, action, and response. However, these dynamic potentials do not spring forth full-blown like Athena out of Zeus's head from a single blow of Vulcan's hammer. (p. 572)

Examined through this lens, infant development hinges on the rich, reciprocal interactions with a caring adult, across time, and so the cumulative experiences of caregiver-child interactions during diapering provide a rich context for enhancing child development. Like partners in a dance, the caregiver and child engage in a process that requires the attention, action, and response of both participants. When viewed from this perspective, the child is no longer a passive recipient. Instead, the child becomes an active participant in a shared process. In the diapering process, recurring patterns occur in a daily ritual, where new possibilities for child knowledge, performing tasks with more complexity, and anticipating the next sequence in the routine take place. Similarly, Vygotsky (1986) believed learning and development occurred through everyday experiences (Goldstein, 1999; Hedges & Cullen, 2015), first beginning with the social process, then scaffolding conceptual knowledge in the ZPD in a relationship-based approach to pedagogy, thus, building, on a fount of previous experience.

Bronfenbrenner (2001) outlined two propositions in the bioecological model; (1) proximal processes must occur regularly, span time, and required a person's active participation in an environment that progressively offered more complex reciprocal interactions to drive a child's social, moral, and cognitive development and, (2)

interactions between characteristics of the environment and person are influenced by historical contexts that generate development across the life span.

People bring personal characteristics that influence their interactions with others. Aspects of the caregiver-child relationship shaped by the actions and responses to one another are partly based on personal attributes. For example, a child's gender, age, skin color, language, and physical appearance may have an immediate effect on a caregiver, and at first, influence interactions. Other less apparent proximal processes based on caregiver past experiences, skills, level of education, and access to resources such as social and material goods that affect socioeconomic status are factors influencing characteristics of context and time (Tudge, Mokrova, Hatfield, & Karnik, 2009). Specific to diapering care, cultural and historical views play a significant role in attitudes and taboos associated with and in response to a child's interest and physical exploration of bodily functions, and accurate naming of genital anatomy. Does a caregiver approach a child's curiosity with avoidance, punitively, or as an age appropriate interest?

Understanding the behaviors of caregivers toward a child in the bioecological model requires distinguishing the former, the caregiver-child interactions as a process, from the latter, the environment where process take place (Bronfenbrenner & Ceci, 1994). Looking at the two separately, the caregiver-child as person-process, and the environment as context-time, distinguishes the environmental sphere from the immediate setting even further. For instance, the immediate setting, the infant and toddler classroom diapering area, is embedded in the child care center, which is embedded in the community, the state, and the broader social, historical, cultural, and ethnic contexts.

Bronfenbrenner's Hypotheses

Prompted to test a set of hypotheses for his proposed theoretical framework, Bronfenbrenner examined several studies. One study by the Dutch developmental psychologist, Riksen-Walraven (1978) examined working-class mothers in a randomly assigned intervention designed to increase their responsiveness (a proximal process) with their infants. Mothers in the first group stimulated their infants by speaking frequently and directing the infant's attention by labeling and pointing to objects and persons. Mothers in the third group responded to their infants with both responsive and stimulation interaction strategies. Of the three assigned groups, the second group of mothers assigned to the responsiveness group proved to be the most successful; they engaged in an intervention that required freely responding with reciprocal interactions to their infant's initiative. These mother's infants showed higher levels of cognitive development that persisted across time. In this instance, the high levels of mothers' reciprocal responsiveness to the infant's initiatives emerged as a potent predictor of the infants' developmental outcomes. Thus, the proximal processes of the mother's interactions moderated against environmental differences of social economic status. Importantly, the free flow of responsiveness by the second group of mothers required that they not interrupt rather, instead, follow their child's interests (Bronfenbrenner, 1999).

Significantly, Bronfenbrenner and Ceci (1994) concluded that developmental outcomes were not a result of genetic selection, rather, it was the proximal processes that produced variation in outcome levels. A growing body of research echoes this finding highlighting sensitive, responsive quality caregiver-child interactions as key mechanisms for healthy development (Horm et al., 2016). High levels of quality caregiver-child

interactions serve as a buffer in diminishing the negative developmental effects associated with lower social economic status and environmental difference (Duncan & Sojourner, 2012; Vandell et al., 2010; Yazejian, Bryant, Hans, Horm, St. Clair, File, & Burchinal, 2017). To further clarify this point, proximal processes of caregiver-child interactions in the diapering routine are examined.

Person-Process

Caregiver-child interactions. "Many people look at infants and do not see anything but an eating, sleeping, and defecating machine" (Lally & Mangione, 2006, p. 11). As a result, young children are often viewed as incapable, are developmentally underestimated, and their personal perceptions and experiences during caregiving routines are not recognized. Given these pervasive attitudes, acknowledging infants and toddlers as active participants, even in bodily-care routines is rare. This view of infants and toddlers limits their sense of agency and involvement during daily caregiving routines (Laurin & Goble, in press).

A child's growing need for autonomy in the relationship is associated with attachment security and necessary for development to progress. Without the opportunity to experience more complexity over time with those persons, objects, and symbols the child is most intimate with, development maybe negatively influenced. For example, during the daily recurrence of diapering, patterns of inattentive, withdrawn, inconsistent, perfunctory, caregiver actions may disrupt opportunities for interactions, diminish child interest and curiosity, affect child well-being, and result in passive or negative behaviors occurring in the routine. The following extraction from an observation of a diapering routine conveys one caregiver's unresponsiveness and rejection of a toddler's distress:

Placed on the diaper changing table without warning or comment from her caregiver, Maia, 30 months old, is swiftly picked up from behind, her play disrupted. Talking to her colleague, the caregiver pulls Maia's pants down, quickly removes her diaper, smiles briefly, and begins to wipe Maia's bottom without talking to her about what is occurring and what will happen next. The tension and discomfort in Maia is clear as she makes an attempt to turn her body away from her caregiver. Unable to move her body, and possibly in defeat, Maia turns her head away and grabs the raised edge of the change table with her little fingers. She is crying, but her caregiver continues diapering with no acknowledgement of Maia's distress or tears.

With swift, abrupt movements, the caregiver applies cream to Maia's vulva, ignoring the child's obvious signs of discomfort. In response to the insensitive touch, Maia's legs are outstretched and stiff with tension as she resists the application of the cream with cries. Continuing without eye contact or communication, the caregiver puts a clean diaper on Maia, lifts her to standing, pulls her pants up, and lifting her from the change table, comments "All done." without addressing her by name. The caregiver washes her hands, but not Maia's. The diaper change was finished in less than one minute.

This vignette evokes a powerful image of a child's distress and a caregiver's focus on the custodial elements of diapering. In this instance, elements of the engine of child development are the characteristics of the child and caregiver, as persons, and the diapering, as context (Bronfenbrenner & Ceci, 1994), thus, providing the fuel for the proximal processes. Arguably, if diapering routines become fraught with tension as a result of repeated patterns of perfunctory, unresponsive care then, the quality of the fuel

seriously compromises the engine functioning. Proximal processes depend on quality joint actions of persons and environment for optimal developmental outcomes. Denzin (1973) described a possible outcome for children at the mercy of circumscribed, controlling conditions:

> The children's jobs, as they learn to comply to caregiver directives, are to be docile and accepting of the teachers' position, playful when play is demanded, sleepy when it is time to go to bed, hungry when meals are served …Not to get it right at an early age is to place oneself in an untenable position-- in a position where whether you want to or not, you must get it right. (p. 17)

Despite an emphasis in literature on individualized care in routines, frequently, diapering routines are implemented with haste and little thought for the child's experience at the hands of the caregiver (Gonzalez-Mena, 1990). Unfortunately, diapering becomes a mundane task carried out in a formulaic process lacking caregiver intention and sensitivity as in the vignette depicting Maia's experience.

Alternately, the intimate nature of diapering, both in center care and at home (Laurin & Goble, in press), offers recurring opportunities for the use of proximal processes that support young children's learning and development through relationship-based interactions between caregivers' and babies. Proximal processes allowing for high levels of reciprocal caregiver-child interactions in less restrictive, more permissive environments are more likely to contribute to a child's cognitive competence (Bronfenbrenner & Ceci, 1994). Viewed from this perspective, inviting a child's cooperation, mobility, and participation in the diapering routine provides opportunities for high levels of reciprocal interactions, and genuine caring, especially when a caregiver pauses, and slows down to allow the child time to integrate and participate.

Touch

Touch is another essential component in physical care (Manning-Morton, 2006). When a caregiver interacts with the child in an unhurried and gentle way, a powerful message conveys the caregiver enjoys being with the child (Tardos, 1994, 2016), positively influencing how a child begins to feel about their bodies and bodily functions (Laurin & Goble, in press). In contrast, a caregiver's perfunctory attention to a child's physical needs becomes problematic (Manning-Morton, 2006), when devoid of a desire to linger lovingly and attentively (White, 2016). Importantly, the ability to act with sensitivity and accurately interpret a child's signals with interest and positive prompt responses, supports secure attachment and a child's development across domains (Ainsworth, Blehar, Waters, & Wall, 1978; Bernier, Carlson, & Whipple, 2010; Fuligni & Brooks-Gunn, 2013; Groeneveld, Vermeer, Van IJzendoorn, & Linting, 2016; Helmerhorst et al., 2016). Crucially, sensitive care is associated with higher levels of child well-being, and lower levels of cortisol (stress hormone) compared to less sensitive caregiving practices with children (Groeneveld et al., 2016; Helmerhorst et al., 2016).

Somatosensory brain functions develop through tactile, kinesthetic, experiences and are active from birth. This orbital prefrontal region informs a child's interpretations of painful or pleasant physical touch. Thus, internalized positive or negative representations become part of a child's internal working model and influence attachment relationships, health, and well-being (Bowlby, 1969; Manning-Morton, 2006). Sensitive, responsive, interactions internalized by the child trigger a physiological cascade of chemicals affecting regulation and immune functions that expand the child's orbital prefrontal region. Thus, internal becomes external and vice versa in expressions and

patterns of proximal processes in attention, action, and response. This is a foundation for optimal physical and mental well-being (Bronfenbrenner & Ceci, 1994).

Thus, embedded in physical care routines are critical opportunities for important trust-building, relationship-supporting interactions, and responsive sensitive tactile experiences between the caregiver and child. Bronfenbrenner's PPCT provide a strong theoretical foundation to inform caregiver practices and to examine the individualized, moment-to-moment care across context and time during diapering sessions.

Context and Timing

Figure 1. Conceptual Framework based on Bronfenbrenner's (2001) Proximal Processes

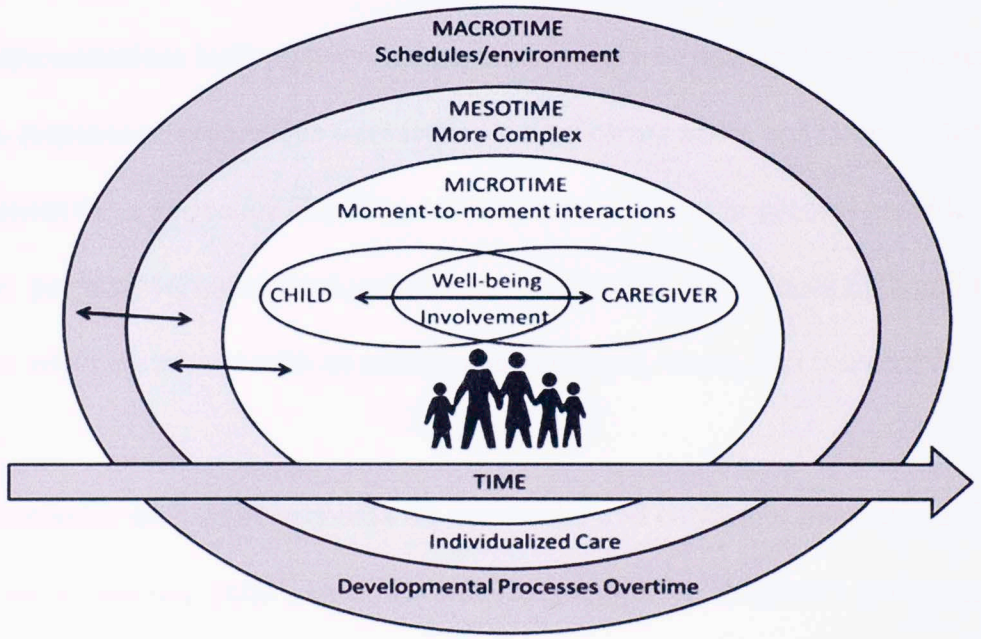

Figure 1. At the center is the relationship between caregiver and child; interactions in micro-time occur within the dyad in the moment-to-moment exchanges in the diapering routine. As the child matures, meso-time accounts for more complexity unique to each child's personality and development thus defining opportunities for child involvement in the care routine. Macro-time addresses the broader environment that includes the physical space for diaper changing routines, individualized versus scheduled diapering practices, and a child's maturation and transition to toileting. (Laurin, 2017b)

Miso, meso, and macro-time offer three elements to view the diapering relationship as displayed in Figure 1 (Bronfenbrenner & Morris, 2006). First, micro-time is the moment-to-moment occurrences between a child and a caregiver, for example, infants and toddlers pay attention to and respond to the emotions, facial expressions, and gestures of caregivers. This type of responsive exchange relies on the caregiver's ability to interpret, match, or scaffold the infant's experiences. When a caregiver speaks in a warm tone of voice, smiles, and responds to an infant or toddler's bids for social interaction, a procedural memory is developed (Beebe & Stern, 1977; Sander, 1975). Procedural memory or internal working model (Bowlby, 1969), allows the infant to prepare and anticipate environmental interactions and to construct expectations. Positive mental representations built on previous experiences rely on anticipatory responses, sensitive, responsive, predictable interactions with a caring adult, and is one of the tenets of attachment theory. Quality diapering relationships in a similar process provide particular, predictable, anticipated, consistent, and familiar experiences for a child especially when associated with an affectionate, engaged, warm, and responsive caregiver.

Similarly, meso-time accounts for the regular and consistent interactions that occur in the developing child's environment. For example, a caregiver's consistent and timely responses to an infant's overtures have beneficial implications for the infant's development of secure attachment and the associated positive developmental outcomes (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982, 1988; Bretherton, 1992; Bronfenbrenner, 2001; Grossman, Grossman, & Zimmerman, 1999; NICHD ECDRN, 2002; Rimm-Kaufman & Wanless, 2012). Moreover, children are more likely to explore

their environments (Head Start Early Learning Framework, 2015), show interest in novel activities, and develop a sense of agency and independence. Attachment with out-of-home caregivers is similar to maternal caregivers when high quality interactions occur. These high-quality interactions, beginning in the perinatal period, and occur consistently over several months have a positive effect on well-being and development (Elicker et al., 2014; Ainslie & Anderson, 1984; Howes, 1999).

The frequent repetition and sequence of activities occurring in diapering provide a predictable and familiar experience to the child where over time milieu or contextually mediated learning can occur when guided by primarily the same caregiver. Through co-constructed experiences and joint activity, teaching and learning occurs using the cultural implements unique to diapering. Embedded learning opportunities might include the following tasks: (1) washing hands and face, (2) pushing pants down, pulling pants up, (3) choosing between two diapers, (4) retrieving a diaper from a cubby, (5) holding the diaper, (6) securing diaper tabs, (7) dressing and undressing, (8) climbing up and down change table steps, (9) placing paper towels in the trash, and (10) opening or closing a door to the change area. Thus, new information adds complexity to the child's growing awareness and leads to increased abilities, developing conceptual aptitude and eventually independence (Woods & Kashinath, 2007). Additionally, the caregiver-child relationship is influenced by time and timing which shapes the degree or extent that change occurs across development and within the relationship (Tudge, Mokrova, Hatfield, & Karnik, 2009). Therefore, learning is co-constructed in a participatory experience that supports involvement, through meaningful encounters (Hedges & Cullen, 2011). Conversely, current practices of diapering toddlers in the supine position do not support autonomy,

movement, and opportunities for optimal participation and growing independence that is congruent with the toddlers developing self (Laurin, 2015). Consequently, the diapering experience can be fraught with tensions and power struggles between caregiver and child.

The following observation at the Pikler Institute in Budapest, Hungary demonstrates a caregiver's approach to the diapering routine where the child, 28 months, moves with intention and anticipation, happily cooperating and participating in her diapering care. Villő, 28 months, is competently involved in the diapering routine with Gabi, her caregiver. Moments before, Villő nimbly stepped up on the little stool in front of the dressing table, then easily pulled herself to standing on the table by holding on to the child height rails that surround two sides of the table. With synchronous actions, Villő and Gabi engage in the diapering routine with care, respect, cooperation, and at a pace that allowed time for Villő to participate. Once able to stand on their own, the Pikler children frequently participated in diapering from a vertical position as observed in this extract.

> Gabi begins to unzip Villő's pants, speaking softly, in a conversational style as she helps to push Villő's pants over the challenging bulk of her diaper.
>
> Pausing, Gabi waits while Villő, standing, pushes her pants the remainder of the way to her ankles. Now, Villő seats herself for more stability, because pushing the pants over her foot presents more challenge. Gabi knowingly assists, easing the pant leg over Villő's foot she stops at her toes, importantly, Gabi does not complete the task for the toddler. Instead, she waits for Villő to finish her task, first pulling one pant leg over her toes and then the other. How satisfied Villő looks and shares a mutual smile with Gabi! (Laurin, 2017a, p. 11)

This vignette reveals Villő's interest, agency, and competency to participate in her diapering care. With a light touch, quiet dialogue, and knowing gestures, Gabi responds and pauses as Villó completes her task. Crucially, Gabi's sensitivity to time, timing, and the sequence of undressing is an example of a successful choreography because of authentic cooperation and mutual tuning to each other (Laurin, 2017a). For example, Gabi pauses when Villő makes bodily adjustments, sitting down on the dressing table to remove her pants. Notably, the caregiver does not move the child into position.

Significantly, the vignette exemplifies milieu learning appropriate to Villő's abilities, scaffolding complexities in the form of small tasks as observed in Villő pushing her pants down, then pulling the pants over her toes. Each sequence of this caregiver-child dance depends on the caregiver's sensitive awareness of the subtleties in gesture, communication, timing, and touch. Thus, an internalized pattern of expectancy reveals itself in the external anticipatory responses of Villő and Gabi. With high levels of proximal processes at work, Gabi as her primary caregiver knows details unique to Villő in her diapering thus, acting in the true sense of a partnership. Gabi's pedagogical decisions, guided by the child's volition and motivation in the routine, support Villő's ZPD. Conversely, a child's internalized pattern of expectancy in diapering when associated with negative representations, intrusiveness, and inconsistent practices, may result in a child responding with passiveness, disassociating from the process, or with behaviors fraught with tension, distress, and resistance.

Macro-time includes a sociocultural context where learning, influenced by historical and cultural factors, shape caregiver beliefs, and assumptions that form expectations about care, for example, attitudes about diapering hygiene, and

individualized versus scheduled diapering routines. Frequently, caregivers feel constrained to administrative tasks demands and routine expectations rather than focus on the individual needs of the children. Environmental factors must be supportive for the teacher so optimal interactions can happen (White, 2009). Otherwise, the demands increase the likelihood of caregiver emotional burnout, decreasing genuine encounters of caring with children.

Unfortunately, an emphasis on learning outcomes and school readiness accelerates educational practices that maybe developmentally inappropriate for infants and toddlers. Expected to behave and act in ways beyond their developmental years, Polakow (1992) described how toddlers denied the lived experience of time and spontaneity suffer from the imposed rigors of the external forces of adult schedules. One consequence of focusing on infant and toddler school-readiness rather than child-readiness is ignoring the importance of care routines as conduits for embedded milieu-based learning across the domains. Caregivers, find themselves at the center of this debate, enacting sociocultural expectations prioritized from a current emphasis on school readiness and a trickle down from elementary curriculum expectations.

Professional preparation standards for early childhood professional development and developmentally appropriate practice for infants and toddlers, also shape caregiver attitudes and practices. The National Association for the Education of Young Children (NAEYC, 2009) standards emphasize diapering practices that kindle a sense of teamwork between baby and caregiver in cooperation and with attentiveness towards the baby's needs (Copple et al., 2013), however, in practice cooperation in the true sense, is rarely realized. A Diapering/toileting subscale of the Infant Toddler Environment Rating Scale-

Revised (ITERS-R) addresses the sanitary protocols with only one item targeting caregiver interactions, "Pleasant staff-child interaction" (Harms, Cryer, & Clifford, 2003, p. 24).

Environmental factors also influence diapering relationships. The physical space, height, size, location, and proportion of the diapering table are important factors that affect the diapering relationship (Falk, 2007; Gonzalez-Mena & Eyer, 2007; Post & Hohmann, 2000). Some change tables are equipped with stairs that slide out from beneath the diapering surface for easy access and storage. When utilized with toddlers, climb-up-stairs prevent caregiver back-strain and minimizes physical impact from lifting and bending (Post & Hohmann, 2000). Equally important, toddler mobility is supported when stair access to and from the diapering table is allowed. Provided a toddler chooses, stair use when available is one example of minimizing environment restrictions and arguably, supports a child's quest for new challenges through movement. For instance, in the vignette, Villő unrestricted by her caregiver, is free to move on the surface of the change table thus, significantly influencing her ability to participate with Gabi in her diapering care. Notably, by standing, Villő interacts on the same plane as Gabi, thus, inferring a more equitable approach to the diapering relationship. Alternately, diapering in the supine position would impinge Villő's ability to act with spontaneity, and to express the unique characteristics of her toddler personality revealed in the following account.

> Now washing is complete and Villő standing, removes a wipe from the package and cleans her vulva, then places the wipe in the garbage bag Gabi is holding ready. Gabi takes another wipe and gesturing she speaks to Villő who in response cooperatively lifts her leg to assist Gabi in the washing task. Standing,

> Villő gazes at the children playing in the other room. Gabi follows Villő's gaze and noticing her interest in the children's play, pauses in the diapering process to narrate about the activity that has captured Villő's attention. When Villő's attention shifts back to Gabi, she offers two diapers for Villő to choose. Gabi holds them in front and in a moment of playfulness, Villő chooses with her toes. They both smile at this, their eyes meet before Villő turns to hold the rail with both hands, her legs apart in a wider stance, as Gabi places the diaper, secures the tabs, then, snaps the onsey closed. (Laurin, 2017a, p. 11)

Ezster Moszes (2016) explained how the caregiver, while observing, may briefly suspend activity. For example, Gabi followed Villő's gaze and interest, pausing in the diapering care to listen and talk to Villő in a moment of shared mental states or joint attention (Laurin, 2017a). Shared mental states are vital to the child's development of agency and sense of self (Stern, 1985, 2002). Villő's playfulness in selecting between two diapers with her toes highlights a joyful diapering experience where in novel ways spontaneity is welcome. Importantly, the diapering scenario shines a light on the anchored moment between Gabi and Villő. With a wider stance for stability, Villő's bodily adjustment facilitates placing and securing the new diaper, thus, Villő with expectancy, aids Gabi's task. Inter-woven with elements of care and contextually mediated learning through the ZPD, Villő is not restricted in her movement, interests, and participation. Thus, the high level of proximal processes occurring between Gabi and Villő in the diapering environment likely contributes to the toddler's competence across the domains. This paper now moves to consider a theory of bodily care specific to diapering routines as a foundational curriculum for infant and toddler pedagogy.

Re-envisioning Diapering Practices as a core element of Infant and Toddler Pedagogy

This article is meant as a first step in re-conceptualizing diapering and toileting practices as a foundation of infant and toddler curriculum and pedagogy. A transformation of diapering practices when informed by the theoretical dimensions of care in the proximal processes is possible. Imbedding elements of the Pikler approach into existing diapering routines addresses components of professional standards of care as well as DAP process quality practices that support the caregiver-child relationship and enhance infant and toddler's learning and development (Laurin & Goble, in press). Developmentally appropriate practices are supported when in a diapering partnership; the caregiver seeks the attention and cooperation of the infant and toddler. Based on a caregiver's attention to the child's motivation, volition, and participation, a caregiver becomes a conduit for interpreting, guiding, and facilitating knowledge development through the relationship. Vitally, through the caregiver's gestures, intonation, and receptivity the child receives a powerful message that the caregiver enjoys being with the child thus, influencing how infants and toddlers begin to feel about their bodies and bodily functions, and further triggering the child's motivation and volition, the essence for meaningful learning.

Further, affect and intellect are inseparable from the learning experience, requiring the weaving of the interpersonal and intersubjective encounter to strengthen educational pedagogy (Goldstein, 1999). Thus, research capturing the process dimensions of the dyadic relationship is crucial to understanding what occurs during diapering routine interactions between caregivers and infants' and toddlers'. Goldstein explains:

> It will also be crucial to explore the nature of caring interpersonal connection in cross-cultural teaching situations, specifically in setting in which White, middle-class teachers are working with poor children of color; in these settings, caring can be of the greatest benefit but can also be dangerously problematic. (p.69)

Using Vygotsky's insights about transforming experiments, Bronfenbrenner (1994) discussed childcare programs, specifically Head Start, because of its focus on children and families from low socioeconomic backgrounds. He explained that "stable environments comprised of optimal proximal processes positively influenced a child's acquisition of knowledge and skills by increasing actualized potential, competence, and reducing developmental dysfunction" (p. 6). Disorganized, chaotic environments negatively influence a child's development and behaviors, thus attracting less positive interactions from caregivers. Highlighting Bronfenbrenner's insights, helps conceptualize the significance of enhancing the proximal processes during diapering and especially for programs serving children from chaotic family environments challenged with instability. Although only one facet of the infant and toddler's day in child care, diapering offers key opportunities for children to act on motivational impulses and acquire competences when supported by attentive caregivers.

Conclusion

The importance of caregiver-child interactions in producing child outcomes is well- documented in a large body of literature (Horm et al., 2016). Drawing on Bronfenbrenner (2001) and other theorists, diapering can be positioned as a critical platform for high quality interactions that promote a child's well-being and interests. Bronfenbrenner identified moment-to-moment interactions as a vital element of

development in the proximal processes. Unfortunately, the rare one-on-one opportunity for a child to receive intentional, high quality responsive care in infant and toddler classrooms during diaper changing is often squandered. Frequently approached with haste, on average three minutes in length, (Laurin, 2015, 2017), diaper changing and other toileting routines are undervalued and not typically approached as a central element in infant and toddler classroom care. Undoubtedly important, disease prevention and hygienic procedures are mostly shaping caregiver interactions in diaper changing at the expense of quality relational experiences in the dyad.

Alternately, diaper changing is a key opportunity for a child to have an inner experience of what being cared-for is. What meaning does a child extract from the diapering relationship when touched with haste, treated as an object, and without sensitive, reciprocal exchanges by a caregiver? In care theory, it is through the day-to-day experiences of being cared for that the capacity to care for others is learned (Noddings, 1984). Ensuring that infants' and toddlers' flourish and thrive in infant and toddler classrooms, requires diaper change routines be re-envisioned and approached as significant one-on-one experiences for conveying the highest quality of care through sensitive, timely, and responsive actions with caregivers.

Arguably, adopting an approach to diaper changing based on collaborative care — caring with — where power is shared between a caregiver and child, (McMullen & McCormick, 2016) illustrates the highest principles of proximal processes. Founded on a similar tenet of care, the Pikler approach exemplifies diapering care practices where children are participants in their care with their caregivers (Vincze, 1994). Broadening the scope of infant and toddler pedagogy to include diaper change routines as vital

elements of the curriculum, offers infinite possibilities, unique each time, for undiscovered moments of new potential to emerge in the care relationship between a caregiver and child to support optimal development.

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MANUSCRIPT II

Caregiver-Infant/Toddler Interactions during Diapering: Associations with Child Well-Being and Involvement

This manuscript is prepared for submission to the peer-reviewed journal *Infant Mental Health Journal* and is the second of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

A large portion of an infants' or toddlers' day is involved in bodily care routines, including diapering. However, few studies examine this aspect of care as an opportunity for quality caregiver-child interactions or investigate the potential associations with child outcomes. This quantitative study highlights a common routine, diapering, to observe and describe caregiver-child interactions and measure child well-being and involvement. Two tools were used during classroom observations of diapering, The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO; Roggman, Cook, Innocenti, Norman, & Christiansen, 2013) measure to assess caregiver-child interactions and The Process-Oriented Self-Evaluation Instrument for Care Settings (PSIC; Laevers, et al., 2005) to examine child well-being and involvement. Bronfenbrenner's proximal processes serve as the theoretical framework. Observations included 226 diaper changes by 49 caregivers, with 113 infants' and toddlers', in 30 infant and toddler classrooms in a Midwest US city. Strong positive correlations between caregiver interactions and child well-being and involvement were found with differences between caregiver roles. Results indicated caregiver responsiveness and encouragement strongly predict child well-being and involvement. Extant data on global measures, of quality were available and analyses showed the Emotional Behavior Support (EBS) dimension significantly correlated with caregiver-child interactions mean scores. This study contributes important information about the specific elements of diapering with potential implications for caregiver intervention and professional development.

Keywords: infants and toddlers, diapering, early childhood care routines

Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement

For children living in poverty, the importance of high quality early care is that it can serve as a buffering effect that powerfully influences all aspects of early development (Horm, Norris, Perry, Chazan-Cohen, & Halle, 2016; Yazejian, Bryant, Hans, Horm, St. Clair, File, & Burchinal, 2017). A high percentage of infants' and toddlers' living in poverty are in non-parental care settings and thus these settings are important early environments impacting development (Zaslow et al., 2010). Non-parental care across all socioeconomic circumstances is increasing with 60% of 2-year-olds and 50% percent of infants spending an average of 30 hours per week in out-of-home care settings (Horm, Hyson, & Winton, 2013). Research on infants' and toddlers' experiences at the classroom level indicate quality of care is generally in the low to mediocre range, with high-quality care being the exception (Lippard, Riley, & Hughes-Belding, 2016). Given the growing number of young children spending significant amounts of time in early care settings and the research documenting the importance of quality across socioeconomic circumstances (Institute of Medicine & National Research Council, 2015), McMullen and McCormick ask a vital question, "How do we ensure that infants and toddlers flourish and thrive, and not merely survive their days in childcare?" (2016, p. 2)

Improving the day-to-day experiences of children in non-parental care requires understanding infants' and toddlers' interactions at the individual level to inform caregiver's professional development and training in the field of early childhood education. Beyond overall quality, important process variables defining caregiver-child interactions, relationships, curriculum implementation and other variables impacting

quality are poorly defined in infant and toddler group-care research (Phillips & Lowenstein, 2011; Schmit & Matthews, 2013; Thomason & La Paro, 2009). Characteristics of these process variables need exploration because infants' and toddlers' rely on quality caregiver-child interactions for developing secure attachments and for building trust. Important implications of examining and better understanding the moment-to-moment interactions between a caregiver and child during care routines will be of use in informing caregiver professional development and for teaching supportive caregiving practices to create optimal early care and learning environments.

Routines in Infant and Toddler Care

This study highlights a caregiving routine, diapering, as an opportunity to observe and describe caregiver-child interactions and measure child well-being and involvement. Given that a sizable amount of an infants or toddlers day is involved in bodily care routines, including diapering, research about the quality of caregiver interactions and the child's experience during these routines is vital to the discussion of quality and of improving care in infant and toddler childcare environments. Despite this, the current literature has few studies that describe interactions during diapering or investigate potential relationships with child outcomes. Mainly, research attention on diapering has focused on hygienic protocols and disease prevention in infant and toddler classrooms (Laurin & Goble, in press). For example, The Infant/Toddler Environment Rating Scale (ITERS-R; Pianta et al., 2008) includes items on diapering and they focus on handwashing, sanitation, and the physical features of the diapering area. While important, classroom quality goes beyond health and safety with the critical aspects including the individual experiences between a caregiver and child. Unpacking elements of process

quality to distinguish between, for example, child outcomes and bidirectional experiences in the dyad are important features of caregiving routines and to the child's social development that require closer examination (Zaslow, Halle, Martin et al., 2006).

Routines consist of the *anchored moments* throughout the day, providing opportunities for caregivers to individualize routines with variation in timing and action, rather than a one-size-fits-all, production-line approach (Gillespie, 2012). When caregivers tune into the uniqueness of a child's individuality during diapering by responding with sensitivity, encouragement, and in an unhurried manner, a powerful message (Laurin & Goble, in press; Tardos, 2016) is absorbed by the child about his or her body, bodily functions, and crucially, that the caregiver enjoys being with the child. This is fundamental to the establishment of a positive caregiver-child relationship.

Conceptual Framework

Research focused on caregiving interactions and involvement, specifically diapering routines and practices, is best guided by elements of Bronfenbrenner's (2001) *Proximal Processes* of Person-Process-Context-Time (PPCT). Proximal processes are, in part, focused on the relationships and complex interactions between people and environment. For example, the human infant experiences a long period of dependence upon the caregiver for survival, and is dependent on the proximal processes of feeding, comfort, and care. Without the timely, regular occurrence of these processes, the infant's survival and well-being are at risk. With maturation, infant development requires that the caregiver be attentive and capable of adapting the relationship to the child's evolving sense of self and developing abilities. Examined from this perspective, infant development hinges on the rich, reciprocal interactions with a caring adult, across time, --

a basic tenet of PPCT. Diapering, as a cumulative experience involving caregiver-child interactions provides a rich context for potentially enhancing child development. Like partners in a dance, both participants engage in a process that requires their attention, action, and response. Approached from this perspective, the child is no longer a passive recipient in the diapering session. Instead, diapering becomes a shared process where the child is actively involved with the caregiver.

Person-Process-Context-Time

White (2016) asserted the significance of the teacher-child relationship in learning where "teachers are the curriculum" (p. 169) such as in infant and toddler classrooms. How a child interprets the caring moment with a caregiver depends on the affective quality expressed through caregiver responsiveness, gestures, attitude, voice intonation, and touch, essentially promoting a feeling of mutuality in the dyad. Figure 1 displays the proximal processes (PPCT) across time in the care routine between a caregiver and child.

Figure 1. Theoretical Framework based on Bronfenbrenner's (2001) Proximal Processes

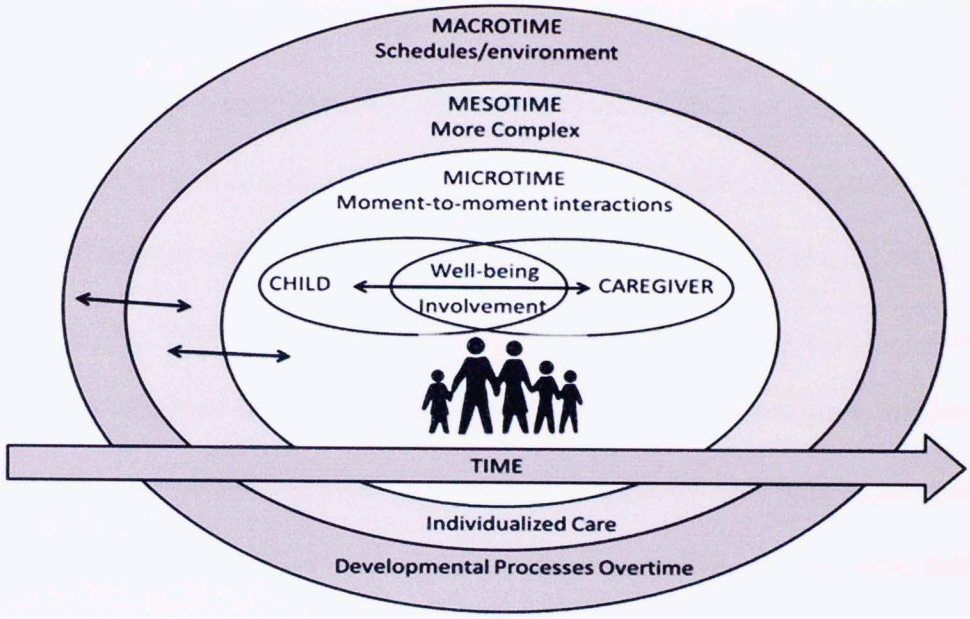


Figure 1. At the center is the relationship between caregiver and child; interactions in micro-time occur within the dyad in the moment-to-moment exchanges in the diapering routine. As the child matures, meso-time accounts for more complexity unique to each child's personality and development thus defining opportunities for child involvement in the care routine. Macro-time addresses the broader environment that includes the physical space for diaper changing routines, individualized versus scheduled diapering practices, and a child's maturation and transition to toileting (Laurin, 2017b).

Well-being and Involvement

As an indicator of quality of care, well-being and involvement in the context of diapering is important because it provides a lens to examine the emotional and physical development of children (Davis et al., 2010; Howard & McInnes, 2012; Laevers, 2000). Well-being is defined as a feeling of ease, spontaneity, a positive state, feeling safe, self-confident, and the capacity to become deeply absorbed in activities with concentration, interest, and involvement with minimum emotional tension (Balledux, 2002; Laevers, 1998, 2000; McMullen & McCormick, 2017; Riksen-Walraven, 2004).

A child's level of well-being and involvement is easy to observe in the intimacy of diapering and reveals what is happening with the child in the activity. Laever's (1998) characterized involvement as the quality of activity occurring in the child's zone of proximal development where a child's intrinsic motivation finds expression through actions on the environment and with people. When opportunities for expression of relatedness, autonomy, and competence are absent, well-being is impacted (Deci & Ryan, 1991). Healthy psychological growth across the lifespan is linked to having access to experiences that heighten feelings of relatedness, and is highly relevant to infants' and toddlers' in care routines. For infants' and toddlers', opportunities to act upon innate sensorimotor drives with persons and objects in their immediate environment fulfills an important basic tenet of human development. For example, a caregiver's ability to follow a child's interest in clothing; features of buttons, zippers, or a caregiver's invitation to choose between items of clothing, two shirts, or two diapers facilitates involvement. Similarly, Seligman and Roberts (2010) argued positive emotions, a sense of satisfaction, and well-being is promoted when meaningful activities are accessible through acts of involvement based on intrinsically motivated actions. Caregiver's frequently miss opportunities to support a child's initiative to be involved in the care routine and other meaningful contexts, and instead, attend to the custodial elements of the care routine (Degotardi & Davis, 2008). It is important that caregivers' reframe diapering as a chance to build and support the development of well-being and involvement because these are critical aspects of child development.

The Current Study

Frequently used measures of classroom quality, the CLASS-Toddler and ITERS-R, do not consider diapering routines as a significant component or aspect of quality for interactions at the individual level. As previously mentioned, The ITERS-R does not focus on interactions and mainly assesses sanitary conditions, handwashing, materials available for diapering, and the physical aspects of the diaper changing space. Moreover, this study responds to the call for more research to understand the experiences of infants' and toddlers' and their variations in care (Lippard, Riley, & Hughes-Belding, 2016), to examine caregiver interactions and child well-being and involvement. Individualized care routines are viewed as important indicators of process quality in the professional literature, yet information highlighting dimensions and specific processes of high quality group care in the infant and toddler population is lacking (Zaslow, Halle, Martin et al., 2006; Zaslow et al., 2010). Importantly, diapering routines offer a context for examining one-on-one time to assess the child's development and the quality of the diapering sessions. Thus, a primary aim of this study was to provide information about specific caregiver interactions and child well-being and involvement during diapering.

Research Questions

1. **What types of interactions do the caregivers demonstrate during the diapering routine?**
2. **What is the child's involvement and well-being during the diapering routine?**
3. **What is the relationship of caregiver interaction and child behavior?**

METHOD

The goal of this quantitative study was to provide descriptive information about diapering including associations and relationships among caregiver-child interactions and child well-being and involvement during diapering routines in infant and toddler classrooms. This study occurred independently but utilized extant caregiver and child demographic data collected from an Early Head Start (EHS) childcare center partner evaluation study in a Midwest US City to supplement the information collected for this study.

Participants

Participants from 30 infant and toddler classrooms across 3 high-quality childcare centers in a Midwest City were recruited for this study. The full-day, year-round program provides center-based care for infants and toddlers through PreK for families living in low socioeconomic circumstances and were designed to prevent or reduce the achievement gap for at-risk children. Infant and toddler classrooms have a maximum of 8 children with no more than 2 infants' under the age of 12 months per classroom. Classroom staffing consisted of a lead teacher, assistant, and teacher aide with floaters available to meet additional staffing needs. The ratio of caregiver to child was 1:4.

Research permission was secured in a preliminary meeting with the organization's executive directors to introduce the study and answer questions. Following Internal Review Board (IRB) approval, the three childcare center site directors in the childcare organization were contacted by the researcher and meetings were arranged with caregivers to provide study information, answer questions, and obtain caregiver consents. Parent recruitment occurred during child pick-up and drop-off times by the researcher at

the three childcare center sites. Parents received information about the purpose of the study: that participation was voluntary, confidential, and the childcare services provided to them would not be affected. Caregivers and parents were compensated with a five-dollar gift card regardless if they agreed to participate or not in the study.

Children in infant and toddler classrooms, still requiring diapers, including children transitioning to toileting, fulfilled the inclusion criteria for this study. To be included in the sample for analyses, the child had to have had 2 observed diapering cycles. From the possible participants of 272 children, 102 caregivers, in 34 infant and toddler classrooms, 75 caregivers and 139 children consented to participate in the study, observed participants were 49 caregivers, (n = 49), and 113 children (n = 113), ages 3 months to 37 months. Reasons for eliminated child participants, (n = 24), from the observed number, included child transitioned to PreK, left the center, or were fully toilet trained and no longer in diapers for study inclusion criteria. For eliminated caregivers, (n = 26), reasons included no longer employed at the centers or did not diaper on the day of observations. Thus, the final sample for analyses included 49 caregivers (n = 49) and 113 children (n = 113). The child participants, (46%) Female and (54%) male, represented diverse ethnicities, including (30%) Black, (16%) White, (39%) Hispanic, and identified as other (14%) children. Family structures were comprised of (73%) single parent families, (23%) two-parent families, and (2%) identified as other. Demographic information for infant and toddler participants is presented in Table 1 and for caregivers in Table 2. Extant demographic data were available for only 28 of the 49 caregivers because consent was not given to share this data from the larger study.

Procedures

Data were collected through conducting classroom observations and included two quantitative measures. Data collection spanned 4.5 months, mid-October through mid-February, 3 hours per morning, 4 days a week. In each classroom, diapering was observed and each diapering session data was simultaneously coded by the study researcher and a trained research associate, each scoring a standardized measure. Two diapering cycles per child during a three-hour classroom observation period were observed and recorded. Using stop-watches the study researchers collected duration time point data about the duration of diapering interactions. Duration time point 1 began when a child entered the diaper change space and ended when the caregiver diaper change interactions ended at the diaper change table. Duration time point 2 began when a child left the diaper change table and ended when the child returned to the main classroom area. A total of 226 diapering observations of 114 of Lead Teachers, 60 Associate Teachers, 45 Teacher Assistants, and 7 Floater teacher assessments occurred during data collection for this study for a total of 226 observations.

Before data collection began in the morning, the researcher checked that the consented classroom caregivers were present. Researchers remained in each classroom for 3 hours to ensure all consented children were observed for 2 timed diapering cycles per child using stop watches. In the absence of a consented caregiver or child, researchers returned to the classrooms to collect data another day.

Designed as suites, the infant and toddler classrooms used in this study are open style where both classrooms are divided by a shared washroom and diaper changing area. Both infant and toddler classrooms have access to the diaper space. One diaper changing

table is shared between two infant and toddler rooms with an additional diaper changing table available in an atelier area shared by both classrooms. Two to three child-sized toilets, depending on the childcare center site, and one or two sinks at child height, make up the diapering/toileting areas. Data collectors followed the caregiver and child into the diaper changing area, standing in the back of the toileting area about two feet behind the caregiver and child, but still close enough to clearly observe and hear the interactions. Due to the sensitive nature of diapering, videotaped observations did not occur.

Measures

Data collected for this quantitative study were naturalistic observations of the diapering process in infant and toddler classrooms. Observational measures documenting caregiver-interactions, child wellbeing, and involvement were utilized in this study to explore characteristics of the diapering relationship. Prior to data collection two assessors were trained in standardized measures for child well-being and involvement and caregiver interactions.

Assessor Training

Adhering to the procedures per the measurement authors' instructions; assessors read and reviewed video for scoring practice over a two-week period. This study's author trained and obtained reliability simultaneously with the research associate on the PICCOLO. Video coding reliability was established with interrater agreement on item scores. Additionally, two mornings of live coding occurred in community partner childcare site's infant and toddler classrooms for additional practice. To maintain interrater reliability, two calibration checks occurred after completing data collection observations at each childcare center site participating in the study. Assessors also

returned to community partner childcare centers to calibrate scoring by live coding and a discussion of scores. Assessors came to agreement and no items were more than 2 points' difference. Training and reliability by the study author in the PSIC scale was obtained at a 3-day workshop at the University of Leuven, Belgium, Center for Experiential Education in May 2016.

The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO). The PICCOLO measures four behavioral domains of caregiver interactions with children including affection, responsiveness, encouragement, and teaching. It is a 29-item checklist of behaviors using a 3-point scale. Ratings measure caregiver interactions as either [0 (absent), 1 (barely) and 2 (clearly)]. Diapering routines offered a clearly bounded opportunity for observing individual caregiver-child interactions. Observers primary goal was to observe the types of interactions occurring in the dyad during the intimacy of one-on-one time in diapering routines. A score of "absent" revealed no observation of the item dimensions in the caregiver's interactions with the child. For example, the caregiver diapered the child without making eye contact or speaking with a warm tone of voice. "Barely" indicated that a caregiver did not engage the child in the diapering experience and missed opportunities for promoting quality interactions. "Clearly" conveyed an engaged dyad during the routine. Trained raters observe for observable behaviors in each of the four domains in approximately 5-minute cycles. Some observation cycles were less than 5-minutes, because diapering caregiver-child interactions were brief, however, some interactions extended beyond 5-minutes. Tested across an ethnically diverse sample, the PICCOLO has been linked to positive child outcomes across multiple ethnic groups (Norman Jump, & Christiansen, 2013).

Primarily used to measure parent-child interactions at the individual level; the PICCOLO has demonstrated reliability and validity in that context. Recent research examining the PICCOLO in childcare settings revealed its validity as a measurement of caregiver interactions with children in nonparental care (Lippard, Riley, & Hughes-Belding, 2016; Norman, & Christiansen, 2013; Roggman et al., 2013).

Reliable coding of the PICCOLO with younger babies, under 10 months, and shorter observations of only 5 minutes have occurred in training using 1 and 5-minute video clips. When compared with longer versions of the same observations, they only rarely showed big changes in scores (L. Roggman, personal communication, February 16, 2016).

The Process-Oriented Self-Evaluation Instrument for Care Settings (PSIC). The child's well-being and involvement in diapering routines was measured with the Process-Oriented Self-Evaluation Instrument for Care Settings (PSIC; Laevers, et al., 2005). Well-being, significant to optimal mental health is defined as a feeling of ease, spontaneity, and a lack of emotional tensions. Involvement consists of the capacity to become deeply absorbed in activities with concentration and interest, indicators include: 1) The child hardly shows any activity, 2) The child shows some degree of activity but which is often interrupted, 3) The child is busy the whole time, but without real concentration, 4) There are clear signs of involvement, but these are not always present to their full extent, 5) During the episode of observation the child is continuously engaged in the activity and completely absorbed in it.

The PSIC measures the two constructs of well-being and involvement. PSIC assessors rate observed child behaviors on a 5-point scale. Involvement lists 5 categories

of signals or domains, with items within each domain indicating, for example, (1) Extremely low: the child shows hardly any activity, no concentration: staring, daydreaming; an absent or passive attitude; aimless actions, no signs of exploration or interest; not taking anything in, no mental activity, (2) Low: some degree of activity but is often interrupted: limited concentration, looks away during activity, fiddles, dreams; is easily distracted, (3) Moderate: busy whole time, no real concentration: superficial attention; not absorbed in activity, short-lived; limited motivation, no real dedication, no challenge, (4) High: Clear signs of involvement-not always present to full extent: engaged without interruption; frequent concentration, brief moments attention is superficial; child feels challenged/motivated; capabilities addressed, (5) Extremely high: continuously engaged, absorbed in activity, absolutely focused, concentrated, highly motivated, perseveres, not distracted by strong stimuli, is alert, has attention for details, shows precision, intense mental activity, clearly enjoys being engrossed in activity. Well-being lists signals for domains measured using a 5-point scale ranging from (1) Extremely low: clear signals of discomfort, whines, sobs, cries, screams; looks frightened, dejected, is angry or furious; wriggles, throws objects, hurts others; sucks its thumb, rubs its eyes; doesn't respond to the environment, avoids contact, withdraws; hurts him/herself; bangs its head, throws him/herself on the floor, (2) Low: posture, facial expression and actions indicate child does not feel at ease with signals less explicit than under level 1, (3) Moderate: the child has a neutral posture; facial expression and posture show little or no emotion. No signals indicating sadness or pleasure, comfort or discomfort, (4) High: obvious signs of satisfaction, however, these signals are not constantly present with the same intensity as in level 5, and (5) Very high: clear signals

of joy, happy, cheerful, smiles, beams, cries out of fun; is spontaneous, expressive; talks to him/herself, plays w/sounds, hums, sings; is relaxed, shows no signs of stress/tension; is open/accessible to environment; lively, full of energy, radiates; expresses self-confidence-self-assurance.

Analysis of Cronbach's alpha $\alpha = .83$ and mean scores were computed across the sample with higher scores indicating more well-being and involvement in the child. PSIC is an easy scale to use and learn and observations are usually conducted in ten-minute cycles. Interrater reliability is .083-.089 reported in the literature. There is limited psychometric data at this time.

The Classroom Assessment Scoring System-Toddler (CLASS-T). (Thomason & La Paro, 2009). The CLASS-T primarily focuses on interactions in the classroom setting at the global level and is intended for use with children ages 15-36 months. Observations of two specific domains, rated in 20-minute cycles are completed in 2-hour periods followed by 10-minute coding and note entry on the score sheets. Certified, reliable observers, for each dimension assigns a score rated on a 7-point scale for quality and frequency of teacher-child interactions. A score of 1-2 indicates low quality interactions. Scores of 1-2 reveal ineffective or minimal teacher-child interactions with children, rote teaching instruction, and inappropriate behavior management practices. Scores in the 3-5 range indicate a mixed quality of teacher interactions, for example, at times teachers implement effective interactions while at other times, rarely. A 6-7 score range is documenting consistent, effective interactions during the observational cycles. The domains in the CLASS-T are comprised of Emotional Behavior Support (EBS) with 5 dimensions; Positive and Negative Climate, Teacher Sensitivity, Regard for Child

Perspectives, and Behavior Guidance. The Engaged Support for Learning domain with 3 dimensions includes, Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. Good reliability is reported for the two domains of the CLASS-T with a range of .92 - .86 respectively (La Paro et al., 2014).

The Infant Toddler Environment Rating Scale-Revised (ITERS-R) (Harms, Cryer, & Clifford, 2006). The ITERS-R assesses global quality and focuses on the physical elements of the environment for health, safety, warm, supportive interactions and appropriate stimulation through language (Bisceglia et al., 2009). Measuring overall quality in center-based infant and toddler classrooms the ITERS-R is utilized for children birth to 30 months (Harms, Cryer, & Clifford, 2006). ITERS-R is comprised of 39 items with 7 subscales; Space and Furnishings, Language, Activities, Interaction, Personal Care Routines, Program Structure, and Parents and Staff, the ITERS-R measures sub dimensions with 1 "Inadequate" to 7 "Excellent". Validity showed high internal consistency for global quality with an alpha score of .88 (Bisceglia et al., 2009; Harms, Cryer, & Clifford, 2006). Extant data subscales used in this study included: (1) Program Structure; Schedule, (2) Interaction; Staff-child interaction, Discipline, (3) Personal Care Routines; Diapering/toileting, Health practices, (4) Listening and Talking; Helping children understand language, helping children use language, (5) Parents and Staff; Staff continuity, (6) Space and Furnishings; Furniture for routine care and play.

As previously mentioned, extant data were utilized to assess classroom quality based on commonly-used, global classroom quality measures: Toddler Classroom Assessment Scoring System (CLASS-Toddler), CLASS-T Emotional and Behavior Support sub scales of Positive and Negative Climate, Teacher Sensitivity, Regard for

Child Perspectives, and Behavior Guidance. Engaged Support for Learning subscale included Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. The Infant/Toddler Environment Rating Scale-Revised (ITERS-R) dimensions and subscales included in this study were Space and Furnishings, Personal Care Routines, Listening and Talking, Activities, Interactions, and Program Structure.

Results

Analytic Approach

Preliminary analyses were conducted to explore if the data were within normal ranges to justify the use of inferential statistics. Once it was confirmed the assumption for inferential statistics were met, data for 30 infant and toddler classrooms were analyzed including a total of 113 infants and toddlers, 226 diapering observations, and 49 caregivers. Three research questions were examined for this study. Analyses were tailored for each question and included descriptive, correlational, and inferential statistics. Results are presented by research question.

RQ1: What types of interactions do the caregivers demonstrate during the diapering routine?

Preliminary Analyses. The PICCOLO was used to assess caregiver interactions. It consists of 4 dimensions measuring the interactions of lead, associate, assistant, and floater teachers separately. Assumptions of normality for skewness and kurtosis were within range with boxplots indicating a normal distribution for teacher roles in classrooms and child gender for the PICCOLO. Bivariate correlational results of the PICCOLO dimensions are displayed in Table 3 and indicated significant positive correlations among the dimension items. The Homogeneity of Variances statistic results

were significant at $p < .001$ for Affection and $p < .023$ and for encouragement, indicating equality of variances for those dimensions. Responsiveness was non-significant at $p > .157$ and Teaching at $p > .063$. Group variances for caregiver roles are not equal thus, the null hypothesis is rejected. Total variation in average scores across the teacher's role in the classroom is attributable to the differences between the levels of the PICCOLO dimensions of responsiveness (11%) encouragement, (5%) teaching, (12%) and affection (2%).

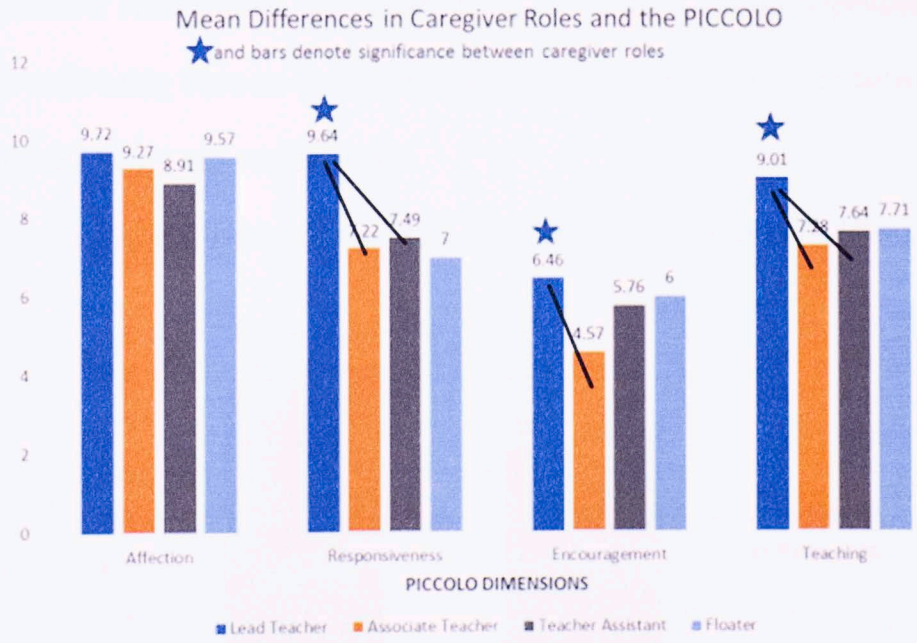
Main Analyses. A between subjects One-way Analysis of Variance (ANOVA) was used to examine potential differences demonstrated by caregivers in different roles (IV) on the dependent variables of Affection, Responsiveness, Encouragement, and Teaching interactions with infants and toddlers. There was a significant difference between caregiver roles (IV) at the $p < 0.05$ level for the three (DV) items: Responsiveness [$F (3, 222) = 11.82$, $p = <.001$], Encouragement [$F (3, 222) = 5.408$, $p = <.001$], and Teaching [$F (3, 222) = 12.02$, $p = <.001$]. No significant difference between groups was found for Affection [$F (3, 222) = 1.90$, $p = .130$]. Post hoc analyses were conducted to explore potential, significant differences across teacher roles for Responsiveness, Encouragement, and Teaching.

As shown in Figure 2, all teacher roles scored high in Affection, but role differences were apparent in the 3 other dimensions of Responsiveness, Encouragement, and Teaching. As a result of the statistical significance of the ANOVA F test for Responsiveness, Encouragement, and Teaching, and unequal variances, a Tamhane's Post hoc comparison was conducted. Results are shown in Tables 7, 8, and 9. The

following teacher roles in classrooms were found to be significantly different at the $p < 0.05$.

For Responsiveness, lead teachers ($M = 9.64$, $SD = 2.73$) significantly differed $p = < .05$ from both associate ($M = 7.22$, $SD = 2.98$) and assistant teachers ($M = 7.49$, $SD = 3.42$). Floater teachers' ($M = 7.00$, $SD = 2.82$) were not statistically significant. Lead ($M = 6.46$, $SD = 3.08$) and Associate teacher roles ($M = 4.57$, $SD = 2.52$) differed significantly in Encouragement, but not for teacher assistant ($M = 5.76$, $SD = 3.18$) and floater role ($M = 6.00$, $SD = 2.08$). Significant differences for Lead, ($M = 9.01$, $SD = 1.87$) Associate, ($M = 7.28$, $SD = 1.85$) and Assistant teachers ($M = 7.64$, $SD = 2.31$) were found in Teaching but not for the Floater role ($M = 7.71$, $SD = 2.05$). Results are displayed in Figure 2 and Table 6.

Figure 2. Mean Differences in Caregiver Roles and the PICCOLO

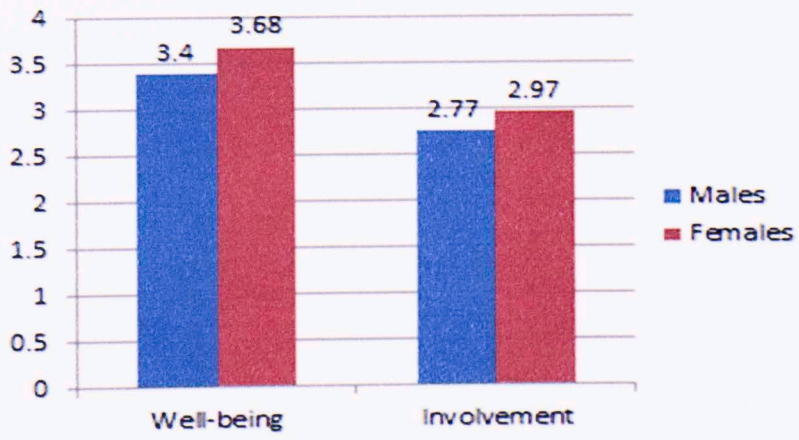


RQ2: What is the child's involvement and well-being during the diapering routine?

Preliminary Analyses. Assumptions of normality for skewness and kurtosis were reasonable with boxplots indicating a normal distribution for teacher roles in classrooms and child gender for the dependent variables of child well-being and child involvement.

Differences in males and females in the PSIC. Frequency of well-being and involvement for males and females is displayed in Figure 3 and shows females rated higher for well-being and involvement than males. Statistic results for Homogeneity of Variances were not significant for child's level of well-being $p < .080$ and child's level of involvement $p < .322$. Inequality of variance resulted in the rejection of the null hypothesis. There was a significant effect between groups in child's level of well-being at the $p< 0.05$ level [$F (1, 224) = 4.11$, $p = <.044$] however, child's level of involvement was not significant [$F (1, 225) = 2.104$, $p = >.148$]. A between subjects, Two-way Analysis of Variance (ANOVA) was used to compare the effect of the independent variables of child gender and teacher's role in classroom to the dependent variables of child well-being because the F test revealed significant differences between gender in child well-being and teacher roles.

Figure 3. Mean Differences in Male and Female Infants' and Toddlers' the PSIC



Mean scores for levels of child well-being for females (N = 104) diapering observations, (M = 3.68, SD = .929) with a minimum and maximum range of (1.5-5) and for males, (N = 122) diapering observations (M = 3.40, SD = 1.09) minimum and maximum range of (1-5). Mean scores for female child's level of involvement (N = 104) (M = 2.97, SD = 1.06) with a range of (1-5) and males (M = 2.77, SD = .973) (N = 122) diapering observations with a range of (1-4.5).

Main analyses teacher roles and child well-being and involvement. The mean and standard deviations for child well-being and involvement by teacher role at the classroom level are reported in Table 4. Figure 3 shows the mean scores of child well-being and involvement by child gender. Figure 4 shows the mean differences in teacher roles showing well-being rated higher than involvement across the teacher roles. Figure 5 presents the total mean and standard deviations for teacher roles and child well-being and involvement. Teacher total mean were higher for involvement than for child well-being.

Figure 4. Mean Differences between Caregiver Roles for Child Well-being and Involvement

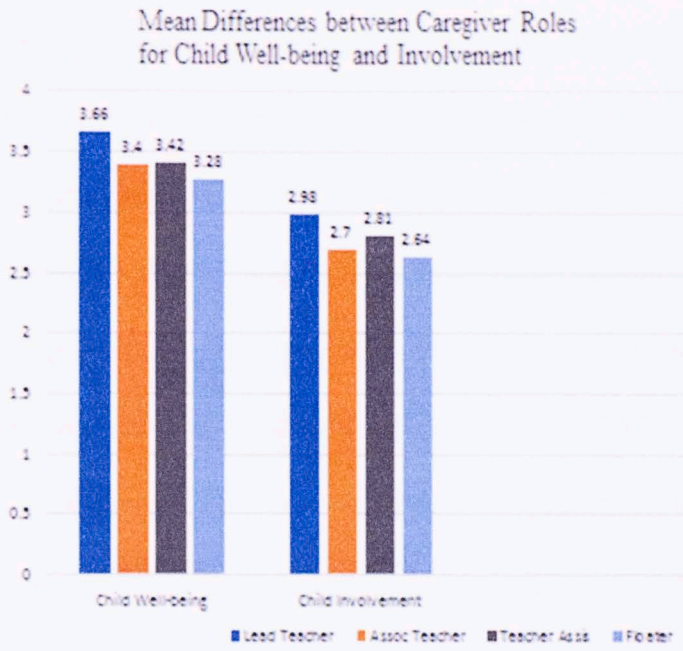
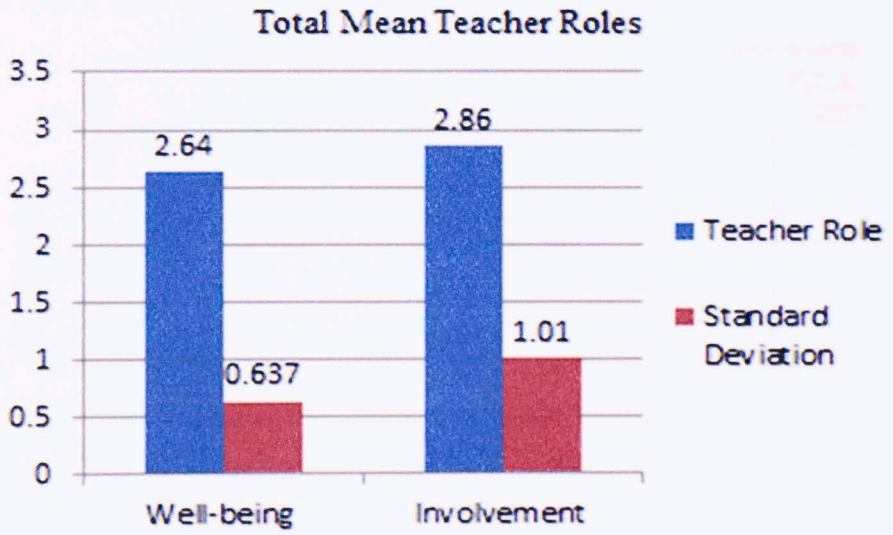


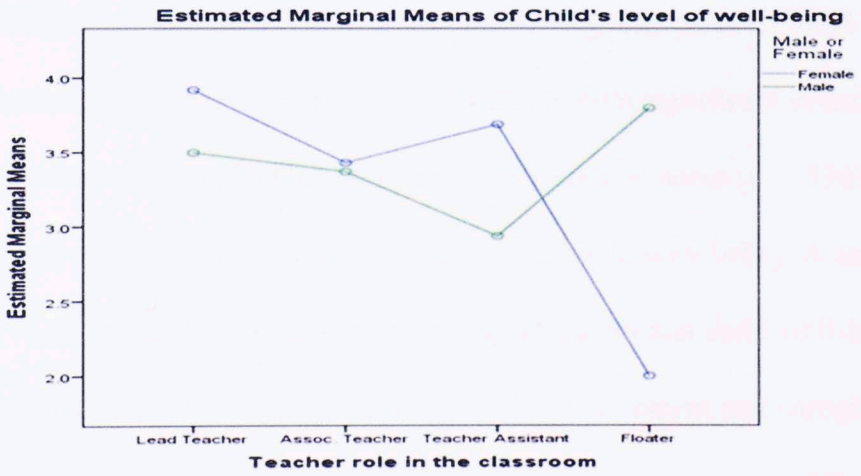
Figure 5. Total Mean Differences for Teacher Roles in Well-being and Involvement



A two-way Analysis of Variance was conducted to evaluate the effects of interactions of teacher roles on male and female child well-being. The independent variable in this analysis are male and female children and teacher roles. The dependent

variable is child well-being. The means and standard deviations for male and female child well-being as a function of teacher roles are previously shown in Table 5. The test for homogeneity of variance was not significant, Levene F (7, 218) = 1 .90, p = .069, indicating the assumptions for normality were met for application of the two-way ANOVA. An alpha level of .05 was used in the initial analyses. The results for the two-way ANOVA indicated a significant main effect for child gender, and child's level of well-being, F(1, 3) = .354, p = .552, η^2 = .002) and a significant main effect for teacher roles in classroom and child well-being, F(3, 3) = 2.87, p = .037, η^2 = .038). The results show a significant interaction between child gender and teacher roles, F(3, 218) = 3.18, p = .025, η^2 = .042). This indicates differences between male and female child well-being were dependent upon different teacher roles (a graph of this interaction is shown below in Figure 6).

Figure 6. Graph of Interaction between teacher roles and child gender



Approximately 8% (R = .080) of the total variance for child well-being was attributed to the interaction of child gender and teacher's role in the classroom. Due to the significance levels for teacher roles in classrooms and differences in child well-being,

reported in Table 10, all possible comparisons of means using a Least Significant Difference (LSD) Post hoc analyses were conducted and are shown in Table 10. Pairwise comparison of significant differences in child gender and teacher roles is presented in Table 11 and shows significant interactions at the Lead Teacher, Teacher Assistant, and Floater level. No significant interactions were reported for the Associate Teacher role.

RQ3: What is the relationship of caregiver interactions and child behavior?

Results of a correlational analyses for the PICCOLO dimensions of responsiveness, encouragement, and teaching are displayed in Table 3 and indicated significant positive correlations among the dimension items. No indication of multicollinearity between PICCOLO items were found. A multiple regression equation utilizing a PICCOLO mean score and PICCOLO subdimensions was used to determine which items contributed to better child outcomes and are displayed in Table 12.

PICCOLO and PSIC. Table 13 displays the results of correlational analyses between the PICCOLO and the PSIC. Correlation was significant at the 0.01 level (2-tailed). As shown in Table 13 there was a moderate positive significant correlation between dimensions of the PICCOLO for caregiver responsiveness (r = .536), encouragement (r = .523), and teaching (r = .502), and child well-being. A small positive correlation (r = .253) was found between caregiver affection and child well-being. There was a moderate significant correlation between child involvement and caregiver responsiveness (r = .495), encouragement (r = .518), and teaching (r = .437). There is a small relationship between caregiver affection and child involvement (r = .228).

PICCOLO mean score and involvement. Assumptions of normality were met for running a multiple regression to examine the relationship of caregiver interactions as

measured by the PICCOLO and child behavior ratings for involvement. The null hypothesis was rejected as the reported p value of .001 is less than .05 for the total PICCOLO mean score. This indicated that the total PICCOLO score was a predictor of child involvement with a significant positive relationship. Mean scores for child's level of involvement (M = 2.86, SD = 1.01) and total PICCOLO mean were (M = 1.10, SD = .278). As shown in Table 12 the adjusted R^2 effect size of the total PICCOLO mean score explained (33%) of the variance in the outcome measure child involvement and is making a statistically significant unique contribution. For every 1-point increase in the total PICCOLO score there is a corresponding increase in the outcome units for child involvement of 2.118.

PICCOLO mean score and well-being. Tests of normality were met with few outliers. Analysis of the total PICCOLO mean score and the outcome variable of child well-being revealed a moderate positive correlation at .526 and was predictive of child well-being. A reported p value of .001 is statistically significant supporting the hypothesis that caregiver interactions were associated with child well-being thus the null hypothesis was rejected. Mean scores for child's level of well-being (M = 3.53, SD = 1.03) and total PICCOLO mean were (M = 1.10, SD = .278). Effect size of the total PICCOLO mean score explains (27%) of the variance in child well-being and is making a statistically significant unique contribution. For every 1-point increase in the total PICCOLO mean score there is a corresponding increase in the outcome units for child well-being of 1.944 as reported in Table 12.

Analysis of PICCOLO subdimensions and well-being. To predict child well-being based on caregiver Affection, Responsiveness, Encouragement, and Teaching, a

stepwise multiple regression was calculated. Results are presented in Table 12. Excluded variables for caregiver Affection and Teaching were not predictive of child well-being. Mean scores for PICCOLO items were Affection (M = 9.43, SD = 2.03), Responsiveness (M = 8.49, SD = 3.15), Encouragement (M = 5.80, SD = 3.03), and Teaching (M = 8.24, SD = 2.11). For child well-being, Encouragement and Responsiveness (IV) predicted a significant regression equation of [F (2, 223) = 42.178, p = >.001] with an Adjusted R^2 of (27%).

Encouragement and responsiveness were significant predictors of child well-being with a slope coefficient for every 1-point increase in caregiver encouragement and responsiveness there was a corresponding increase in child well-being of .106 for encouragement, and .093 for responsiveness. The results of the multiple regressions suggest that caregiver Encouragement and Responsiveness predicted a statistically significant portion of the total variation in child well-being.

Analysis of PICCOLO dimensions and involvement. To predict child involvement based on caregiver Affection, Responsiveness, Encouragement, and Teaching, a stepwise multiple regression was calculated. Excluded variables for caregiver Affection and Teaching were not predictive of child involvement. Mean scores for PICCOLO items were Affection (M = 9.43, SD = 2.03), Responsiveness (M = 8.49, SD = 3.15), Encouragement (M = 5.80, SD = 3.03), and Teaching (M = 8.24, SD = 2.11). For child involvement, Encouragement and Responsiveness (IV) predicted a significant regression equation of [F (2, 223) = 73.605, p = >.001] with an Adjusted R^2 of .392. Encouragement and responsiveness were significant predictors of child involvement. A slope coefficient indicated for every 1-point increase in caregiver encouragement and

responsiveness there was a corresponding increase of .139 for encouragement and .097 for responsiveness in child involvement. The results of the multiple regressions presented in Table 12 suggest that caregiver Encouragement and Responsiveness predicted a statistically significant portion (39%) of the total variation in child involvement.

Additional Analyses

Given the importance of overall quality as a predictor of child outcomes, additional analyses explored associations between caregiver interaction variables and the CLASS-T variables of Emotional Behavior Support and Engaged Support for Learning. Time may be another variable of interest. Past research suggest diapering is often rushed, so additional analyses were completed to look at time devoted to diapering as another variable of interest.

Classroom quality. To assess the relationship between classroom quality data and the PICCOLO, correlational analyses were conducted with two measures, of overall classroom quality, the CLASS-T and the ITERS-R. Mean, standard deviation, and ranges for the PICCOLO, CLASS-T, and ITERS-R are displayed in Table 14. Additional analyses examined the mean times across teacher roles for 2 different time points, one measuring the end time of caregiver diapering procedures, and the second, measuring when child left the diaper changing area to return to the classroom as seen in Figures 7 and 8.

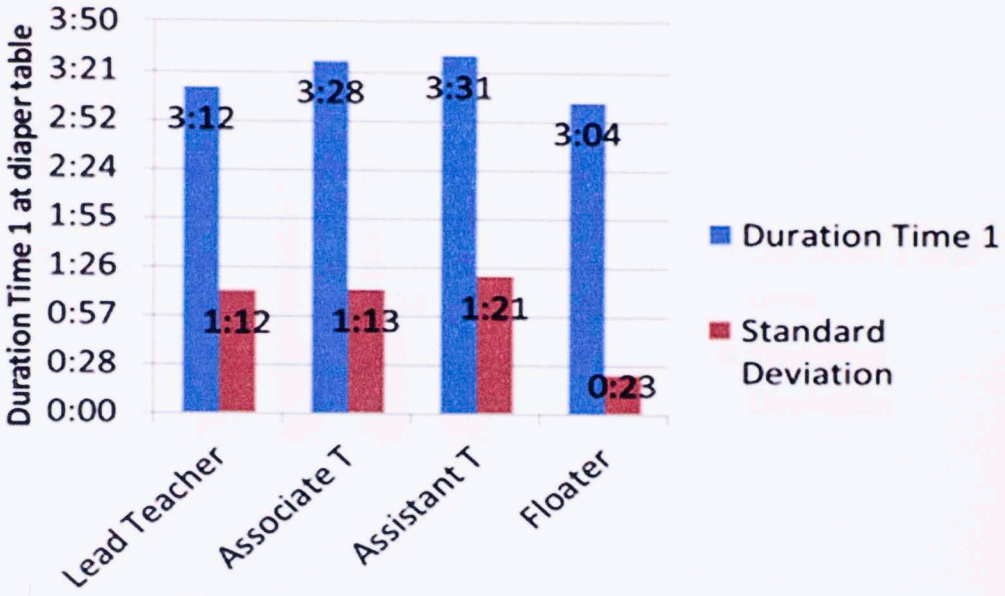
PICCOLO and CLASS-T. Moderate significant positive correlations between the same PICCOLO and CLASS-Toddler subscale dimensions are illustrated in Table 15. The CLASS-T domain for Emotional Behavior Support (EBS) measuring Teacher Sensitivity, ($r = .373$), was significantly correlated at the $p = < .05$ with Encouragement

and with Teaching, (r = .626), p = < .01. Positive Climate, (r = .406), p = < .05 with Encouragement and Teaching, (r = .477). Regard for Child perspective was significant and strongly correlated with the PICCOLO dimensions for Teaching, (r = .629), p = < .01, Responsiveness, (r = .405), and Encouragement (r = .431) at p = < .05. No significant correlational relationships for the CLASS-T domain Engaged Support for Learning and the PICCOLO were found.

PICCOLO and ITERS-R. A moderate positive significant correlation is shown in Table 16 for one item of the PICCOLO, Teaching, (r = .683, p < .05), and the ITERS-R dimension for Activities.

Duration of diapering session. A one-way analysis of variance was used for analyzing potential differences in duration across caregiver roles. Duration of diapering was operationalized in 2 different ways to measure the duration of the diapering session. The first method displayed in Figure 7 measured duration of diaper changing time while on the change table. The second method displayed in Figure 8 used the total routine time when the child and caregiver leave the diaper changing area to return to the main classroom as the measure of duration to determine different caregiver interactions across roles for two different time points in the diaper routine. Shown in Figure 7 the first-time point examined when the child leaves the physical diaper change table. The second-time point, displayed in Figure 8, examined total routine mean time when the child and caregiver leave the diaper changing area to return to the main classroom.

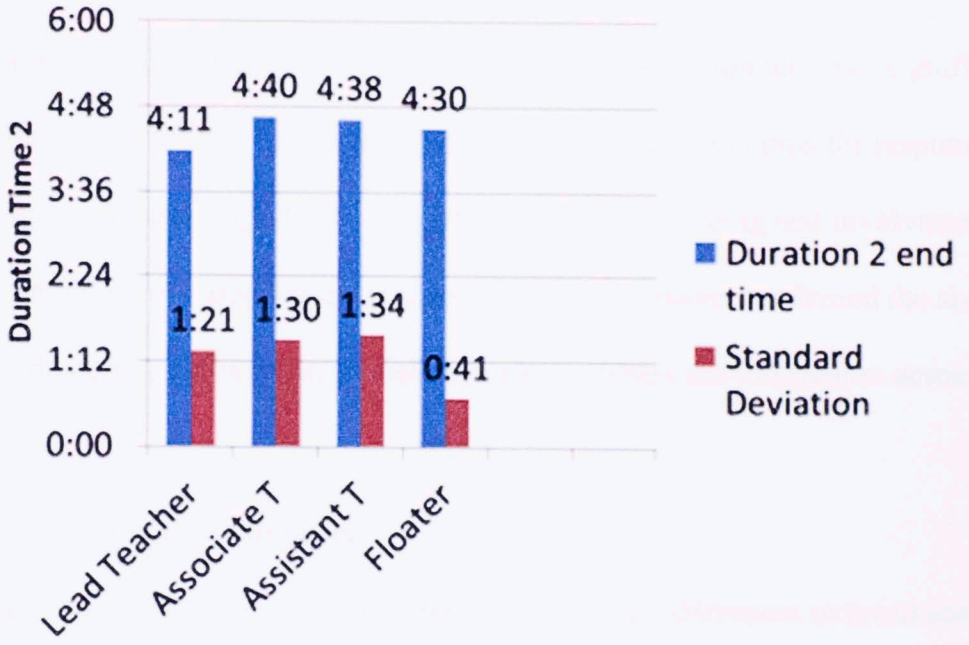
Figure 7. Duration Time 1: Diaper changing interactions end time by teacher roles



Duration 1. A between subjects One-way Analysis of Variance (ANOVA), between subjects, was used to compare the effect of the independent variable, teacher roles, to the dependent variable of duration of diaper changing time length. There was not a significant difference between teacher roles at the $p< 0.05$ level for the time length of diaper changing interactions: [$F (3, 222) = 1.08$, $p = >.356$]. No post hoc analyses were used, due to the lack of significant differences. However, it is notable that the average times across roles were relatively brief.

Duration 2. No significant differences were found between different teacher roles on the second measure of duration. A between subject one-way analysis of variance ANOVA, revealed [$F (3, 222) = 2.01$, $p = >.112$] and no post hoc analysis were used. Mean times between teacher roles are displayed in Figure 8. Again, it is notable that the durations across teacher roles were relatively brief.

Figure 8. Duration Time 2: Total routine end time-child returns to classroom



Discussion

The purpose of this study was to provide information about specific caregiver interactions and child well-being and involvement during diaper change routines in infant and toddler childcare settings. Important process variables defining caregiver-child interactions as measured by the PICCOLO were linked to child outcomes thus contributing important information about an understudied care routine in infant and toddler childcare settings. Three research questions guided this study.

1. **What types of interactions do the caregivers demonstrate during the diapering routine?**
2. **What is the child's involvement and well-being during the diapering routine?**
3. **What is the relationship of caregiver interaction and child behavior?**

Major findings of this study revealed moderate significant relationships between caregiver responsiveness, encouragement, and teaching on child well-being and

involvement. Significant differences were revealed between caregiver roles of Lead, Associate, Assistant, and Floater roles with no significant differences in caregiver's level of affection across roles. Child well-being between males and females was significantly different, but not for child involvement. Importantly, PICCOLO items for responsiveness and encouragement were significant predictors of child well-being and involvement. Two measure of duration of caregiver-child diaper changing sessions confirmed the short duration of diapering, on average, 3 minutes with no significant differences across caregiver roles.

Child Well-being and Involvement

Differences between caregiver roles. Significant differences in mean scores between caregiver roles in the classroom maybe attributed to different educational levels. Lead caregivers are required to hold a 4-year Bachelor's degree while Associate caregivers a two-year degree, Assistant caregivers, and Floaters require a Child Development Associate certificate (CDA). Prior research suggests higher levels of caregiver education is significantly associated with the quality of caregiver interactions, especially in emotional and behavioral supports of the CLASS-T domain (Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Thomason & La Paro, 2009). Other research findings correlated caregiver education levels with more sophisticated epistemology and quality of infant care (Brownlee et al., 2009) supporting this study finding of higher levels of responsiveness, encouragement, and teaching with lead caregivers.

No significant differences between caregiver roles were reported for child well-being and involvement. However, mean scores for child involvement were lower than

mean scores for well-being. These results may be indicative of the lack of understanding by caregivers about how to use involvement as a dimension of participatory learning with infants and toddlers especially during diaper changing routines (Brownlee et al., 2009; Hedges, & Cullen, 2012). Moreover, Degotardi (2010) hypothesized that less complex interpretive thinking about diapering routines, explained lower caregiver expectations for child involvement in the diapering relationship. Another possible explanation is caregivers focused on their own role in fulfilling the physical aspects required in the routines rather than attending to the child's developmental needs (Degotardi, 2010). On average, diapering interactions of 3 minutes revealed no significant differences between caregiver roles for diapering changing. However, the briefness of the diapering session mean scores substantiates Degotardi's (2010) suggestion that diapering interactions are typically approached with lower expectations for promoting quality interactions (as cited in Laurin & Goble, in press).

Caregiver interactions and child well-being and involvement. Responsiveness and Encouragement are predictive of child well-being and involvement in diaper-changing routines. An infant's sensitivity to the timing and congruency of others for optimal development hinges on the contingency and responsiveness of caring adults (Colombo, Kannass, Walker, & Brez, 2012). For example, caregivers clearly responding to young infants during diaper changing identified the child's cues, emotions, and interests by following the child's gaze or through awareness of the infant's sensorimotor states thus, conveying vital emotional and physical characteristics (Degotardi & Davis, 2008; Piaget, 1952). Moreover, having access to experiences that heighten feelings of relatedness (Deci & Ryan, 1991) for example, through encouragement, are highly

relevant to infant and toddlers in care routines; because acting on intrinsic motivation and experiencing the desired effects fulfills a basic human need for competence. Children demonstrating high scores in well-being displayed outward signs indicating spontaneity, excitement both verbally or nonverbally through motor movement, and radiated a sense of happiness, frequently smiling. Additionally, high scores in involvement demonstrated children's participation in the routine, for example, helping with dressing, handwashing, holding a diaper, an infant's rapt attentiveness and interest in a caregiver's speech and gestures, and interest in objects, persons, or the environment.

Measurement of Caregiver Roles and Child Well-being and Involvement

Significant positive correlations between the PICCOLO dimensions for Responsiveness, Encouragement, and Teaching, and Emotional Behavior Support in the CLASS-T is not surprising given the unique emotional needs of infants and toddlers. A caregiver's sensitivity and responsiveness in a back and forth, serve and return style promote optimal experiences necessary for a child to flourish (Aikens et al., 2015; Fantuzzo, et al., 2012; National Association for the Education of Young Children, NAEYC, 2012). As a measure developed from attachment literature, the PICCOLO emphasizes interactions at the individual level, similar to theory that promotes attention, action, and timely responses in the moment-to-moment interactions between a caregiver and child (Bronfenbrenner, 2001, 2006). Moreover, caregiver interactions that allow time for child led interactions where the caregiver and child are mutually involved in reciprocal, responsive ways is associated with high quality care (Recchia, Lee, & Shin, 2015; Zaslow, Halle, Martin et al., 2006).

PICCOLO dimension mean scores were higher than Class-T, possibly a result of the differences between CLASS-T global scoring at the classroom level. For example, CLASS-T observation coding assesses for quality of caregiver interactions with many children. A criticism of global measures of quality in infant and toddler classrooms is observations do not account for children's experiences at the individual level thus, high global classroom scores may not accurately reflect caregiver-child individual experiences (Hallam, Fouts, Bargreen, & Caudle, 2009; Mortensen & Barnett, 2014).

Surprisingly, no significant correlations between the PICCOLO and CLASS-T domain Engaged Support for Learning for Facilitation of Learning and Development, Quality of Feedback, and Language Modeling were reported in this study. This indicates caregivers did not engage in these types of interactions with children during diapering. Weakest in instructional support (Aikens et al., 2015), infant and toddler caregivers primarily provided quality of care in emotional support with infants and toddlers (Brownlee, Berthelsen, & Segaran, 2009). For example, no robust differences in levels of affection across caregiver roles revealed caregivers primarily interacted with warmth and affection, exemplifying emotional support towards the infants and toddlers during diaper changes. Similarly, Degotardi and Davis (2008) found that caregiver's interpretations about diaper-changing practices with infants and toddlers were significantly and qualitatively different from other interactions throughout the day with infants and toddlers, specifically with play.

Caregiver roles and child gender. During diapering, the caregiver-child interactions are the proximal processes involved in the intimate infant/toddler child care providing moment-to-moment opportunities for synchronous interactions to occur.

Parent-child attachment literature, also applicable to infant and toddler classrooms, consistently emphasizes the importance of sensitive, responsive, stimulating interactions to promote child development, "whereas overly harsh, detached, and intrusive interactions undermine development in these areas." (Mortensen & Barnett, 2014, p. 212) For infants and toddlers at risk, caregiver-child relationships in childcare settings serve as important mechanisms for addressing children's differential susceptibility (Phillips, Fox, & Gunnar, 2011; Sabol & Pianta, 2012). Research demonstrates that caregiver-child interactions are also influenced by a child's sex and temperament, and toddler boys, in terms of developing close, secure attachments are reportedly worse off than girls (Ahnert, Pinquart, & Lamb, 2006).

Not surprisingly, the results of this study revealed males rated lower in well-being than females and echoes research findings examining gender differences in childcare settings. With this in mind, a significant predictor of gender differences in child well-being reported in this study was associated with caregiver roles, specifically at the Lead, Assistant, and Floater, caregiver levels. This significant finding raises questions about the types of interactions with males during diapering and warrants closer examination to understand the subtleties of the proximal processes involved in the caregiver-child interactions, and specifically across caregiver roles. Similarly, West and Zimmerman (1991) saw gender as being manifested in each interaction.

Research examining caregiver stereotypes found no significant sex differences during infancy, however, with toddlers, caregivers responded more frequently to assertive behaviors in boys and to girls' communicative interactions (Fagot, Hagan, Leinbach, & Kronsberg, 1985). Moreover, Lippard, Riley, and Hughes-Belding (2016) found toddlers'

behavior, specifically problem behavior, was associated with the types of interactions experienced with an individual caregiver.

Notably, sex differences in male and female brain development follows a somewhat different timetable; in sensory and cognitive development girls are slightly more advanced (Zero-To-Three, 2017). For example, female babies vision, hearing, memory, smell, and touch are more acute and they respond more readily to human voices and faces thus indicating a propensity to be more socially attuned than male infants. Additionally, fine motor and language skills in females are somewhat more advanced (Zero-To-Three, 2017). This study finding raises important questions about early interactions with male and female infants' and toddlers' and the types of caregiver interactions that positively or negatively influence a child's well-being.

Implications

This study is a response to the call for research exploring process variables in infant and toddler classrooms and contributes to the limited data on infant and toddler classroom quality (Yazejian et al., 2015, 2017). Vital to the discussion of quality is the context of care at the proximal level in infant and toddler childcare environments and the quality of interactions that occur during this frequently occurring routine and specifically looking at gender differences for male and female infants and toddlers. This has important implications for infant and toddler care since a young child's day evolves around caregiving routines and offer ideal contexts for embedding opportunities for learning and development beyond the scope of play (Degotardi & Davis, 2008; Gonzalez-Mena & Eyer, 2007; Greenman, Stonehouse, & Schweikert, 2008).

A number of researchers and professional organizations advocate and emphasize the importance of individualized care routines (e.g., NAEYC, 2012; Copple, Bredekamp, Koralek, & Charner, 2013; Zaslow et al., 2010; Zero-To-Three, 2008) but important information about the specific elements of diapering are missing. Literature in developmentally appropriate practices (DAP) highlight diapering as an opportunity for inviting an infant's attention and cooperation in the experience to build a sense of teamwork (Copple et al., 2013; Laurin & Goble, in press). However, fast-paced, diapering practices mostly adhere to hygienic and custodial practices with missed opportunities for relationship building and embedded learning experiences (Laurin & Goble, in press). Similarly, research reveals limited talk and interactions, an emphasis on instructional content, and directing child behaviors during caregiving routines (de Schipper, Riksen-Walraven, & Guerts, 2006; Degotardi, 2010; Powell & Goouch, 2012). Alternately, diaper changing offers key opportunities for caregivers to act on a child's motivational impulses and to aid a child's acquisition of competences.

Venn and Wolery (1992), among others (Degotardi & Davis, 2008; Gonzalez-Mena, & Eyer, 2007; Laurin, 2017a), highlighted the need for research specifically targeting caregiver training on how to interact during care routines with infants and toddlers. Other challenges include the lack of specific training about infants and toddlers in higher education early childhood programs (Horm, Hyson, & Winton, 2013). Some college students reported never having held a baby though majoring in early childhood education (L. Baines, personal communication, April 2011) (as cited in Horm et al., 2013). Influencing diaper change practices in infant and toddler classrooms through professional development is a future study goal.

Limitations

There are limitations to this study. First, causality cannot be established due to the correlational design of this study. Second, research was conducted on a small atypical sample in an Early Head Start (EHS) partner site known for implementing high quality childcare with highly trained degreed caregivers and may not be generalizable. The caregiver participants in this study have access to professional development, and lead caregivers are required to have a Bachelor's degree. This level of training and education is not typical of the broader infant and toddler caregiver population. Additionally, the EHS childcare centers involved in this study, provide services to a unique population of families experiencing poverty. Third, access to data from a larger EHS implementation study resulted in reduced demographic information for some study variables. Lastly, due to the descriptive exploratory nature of this study further investigation with a larger more diverse sample and a more complex analysis would shed light on the predictive relationships among the variables. Despite these limitations, this study contributes new information about diaper change variables to contribute to the findings on infant and toddler research and to the DAP literature about caregiver-child interactions at the proximal level.

Conclusion

Diapering, a frequently occurring routine in infant and toddler settings has been infrequently studied in research. This study shows that the structured nature of the diapering session presents a unique opportunity to investigate caregiver-child interactions and the child's well-being and involvement. It is unique because in the overall infant and

toddler classroom setting, diapering offers opportunities to observe one-on-one interactions in a bounded context multiple times throughout the day.

A large body of literature documents the importance of caregiver-child interactions in producing child outcomes (Horm et al., 2016). The intimacy of diapering routines provide a rare opportunity between a caregiver and child in infant and toddler classrooms to provide intentional, high quality relational experiences. Unfortunately, this rare opportunity is often squandered in the hustle-bustle occurring in many infant and toddler classrooms. Alternately, drawing on Bronfenbrenner's (2001) proximal processes diapering and care routines can be positioned as a central tenet of relationship-based care with infants and toddlers. However, the fast pace and brief duration of diapering care, on average 3 minutes, for the 226 diapering observations of this study, indicates valuable opportunities for meaningful encounters between a caregiver and child are most likely missed.

Importantly, this research revealed child well-being and involvement in diaper changing is significantly predicted by a caregiver's level of responsiveness and encouragement. Differences between teacher roles for levels of responsiveness, encouragement, and teaching were also found. Additionally, a child's level of well-being was predicted by caregiver roles with male infants' and toddlers' lower in well-being than females. Importantly, even brief observations revealed caregiver strengths across domains providing valuable information for developing caregiver skills. The findings of this research clearly identify the relationships among variables supporting child outcomes for well-being and involvement in diapering thus adding missing descriptive information to potentially influence practices and improve quality. With this in mind, findings from

intervention research targeting caregiver responsiveness revealed moderate and significant effects on a child's social-emotional well-being when caregiver interactions with children improved (Werner, Linting, Vermeer, & Van IJzendoorn, 2016). A future direction of this study is improving diaper-changing quality by targeting caregiver interaction skills with intervention training to improve child outcomes, especially for children at risk.

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Table 1 *Child Demographics*

	(n = 113)	%
Child Gender	Female	46
	Male	54
Child Race and Ethnicity	Black	30
	White	16
	Hispanic	39
	Other	14
	Missing	(n = 3)
Primary Home Language	English	73
	Spanish	26
	Other	1
	Missing	3
Parents' Level of Education	Eighth grade or less	1
	HS but no diploma	41
	HS or GED	38
	Some college-no degree	5
	HS or GED, plus technical	1
	Bachelor's degree	10
	Master's degree	2
	Missing	(n = 21)
Diagnosed Special Need	Yes	92
	No	5
	Missing	(n = 21)

Table 2 *Caregiver Demographics*

Caregiver (n = 49) Provided Demographics (n = 28)
No Demographic Information (n = 21)

		Number	%
Caregiver Gender	Female	48	28
	Male	1	1
Caregiver Race and Ethnicity	Black		19
	White		67
	Hispanic		7
	Other		7
	No Demographic Info	(n = 21)	
Level of Education	HS or GED		2
	Some College		2
	One-year degree		4
	Two-year degree		12
	BA/BS degree		28
	MA/MS degree		8
	No Demographic Info	(n = 21)	
Caregiver Position	Lead Caregiver		37
	Associate Caregiver		12
	Caregiver Assistant		8
	No Demographic Info	(n = 21)	

Table 3 *Correlation Matrix for PICCOLO*

	Affection	Responsiveness	Encouragement	Teaching
Affection				
Responsiveness	.461**			
Encouragement	.270**	.546**		
Teaching	.333**	.658**	.517**	

**Correlation is significant at the 0.01 level (2-tailed

Table 4 *Means and standard deviations between teacher roles and child well-being and involvement*

	N = 113 *diapering interactions*	*M*	*SD*	*Min-Max Range*
Well-being	**TOTAL**	1.76	.878	
Lead Teacher	114	3.66	1.08	1-5
Associate Teacher	60	3.40	.982	1-5
Teacher Assistant	45	3.42	.929	1-5
Floater	7	3.28	1.07	2-5
Teacher Role TOTAL	226	2.64	.637	
Involvement	**TOTAL**	1.76	.878	
Lead Teacher	114	2.98	1.01	1-5
Associate Teacher	60	2.70	1.02	1-4.5
Teacher Assistant	45	2.81	1.01	1-5
Floater	7	2.64	.988	1.5-4
Teacher Role TOTAL	226	2.86	1.01	

Table 5 *Means, SDs, Male and Female Child Well-being and Teacher Roles in the Classroom*

			Lead Teacher	Associate Teacher	Teacher Assistant	Floater
Child Well-being	Males	Mean Scores	3.50	3.37	2.93	3.80
		SD	1.14	1.03	1.01	.75
	Females	Mean Scores	3.92	3.43	3.69	2.00
		SD	.93	.94	.77	.00

Table 6 *Means and standard deviations in caregiver roles between responsiveness, encouragement, teaching, and affection.*

	N = 226 *diapering interactions*	*M*	*SD*	*Min-Max Range*
Responsiveness				
Lead Teacher	114	9.64	2.73	3-14
Associate Teacher	60	7.22	2.98	2-14
Teacher Assistant	45	7.49	3.42	1-14
Floater	7	7.00	2.82	4-10
TOTAL	226	8.49	3.1	
Encouragement				
Lead Teacher	114	6.46	3.08	0-12
Associate Teacher	60	4.57	2.52	0-12
Teacher Assistant	45	5.76	3.18	1-11
Floater	7	6.00	2.08	3-9
TOTAL	226	5.8	3.03	
Teaching				
Lead Teacher	114	9.01	1.87	4-13
Associate Teacher	60	7.28	1.85	2-11
Teacher Assistant	45	7.64	2.31	3-12
Floater	7	7.71	2.05	5-10
TOTAL	226	8.24	2.1	
Affection				
Lead Teacher	114	9.72	1.69	5-13
Associate Teacher	60	9.27	2.15	4-13
Teacher Assistant	45	8.91	2.64	3-14
Floater	7	9.57	.97	8-11
TOTAL	226	9.43	2.03	

Table 7 *Tamehane's Post hoc Analyses of Significance Differences in Teacher Roles*

Encouragement		Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower	Upper
Lead Teacher	Associate Teacher	1.88*	.000	.73	3.05
	Teacher Assistant	–	NS	–	–
	Floater	–	NS	–	–
Associate Teacher	Lead Teacher	-1.88*	.000	-3.05	-.73
	Teacher Assistant	–	NS	–	–
	Floater	–	NS	–	–
Teacher Assistant	Lead Teacher	–	NS	-2.41	-.31
	Associate Teacher	–	NS	–	–
	Floater	–	NS	–	–
Floater	Lead Teacher	–	NS	–	–
	Associate Teacher	–	NS	–	–
	Teacher Assistant	–	NS	–	–

*The mean difference is significant at the 0.05 level.

Table 8 *Tamehane's Post hoc Analyses of Significance Differences in Teacher Roles*

Responsiveness		Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower	Upper
Lead Teacher	Associate Teacher	2.42*	.000	1.18	3.66
	Teacher Assistant	2.15*	.002	.60	3.70
	Floater	–	NS	–	–
Associate Teacher	Lead Teacher	-2.42*	.000	-3.65	-1.18
	Teacher Assistant	–	NS	–	–
	Floater	–	NS	–	–
Teacher Assistant	Lead Teacher	-2.15	.002	-3.70	-.60
	Associate Teacher	–	NS	–	–
	Floater	–	NS	–	–
Floater	Lead Teacher	–	NS	–	–
	Associate Teacher	–	NS	–	–
	Teacher Assistant	–	NS	–	–

*The mean difference is significant at the 0.05 level.

Table 9 *Tamehane's Post hoc Analyses of Significant Differences in Teacher Roles*

Teaching		Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower	Upper
Lead Teacher	Associate Teacher	1.75*	.000	.93	2.52
	Teacher Assistant	1.34*	.005	.31	2.41
	Floater	–	NS	–	–
Associate Teacher	Lead Teacher	-1.75*	.000	-2.52	-.93
	Teacher Assistant	–	NS	–	–
	Floater	–	NS	–	–
Teacher Assistant	Lead Teacher	-1.36*	.005	-2.41	-.31
	Associate Teacher	–	NS	–	–
	Floater	–	NS	–	–
Floater	Lead Teacher	–	NS	–	–
	Associate Teacher	–	NS	–	–
	Teacher Assistant	–	NS	–	–

* The mean difference is significant at the 0.05 level.

Table 10 *LSD Post hoc Analyses of Significance Differences in Teacher Roles*

Teacher role in classroom		Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower	Upper
Lead Teacher	Associate Teacher	–	NS	–	–
	Teacher Assistant	.397*	.032	.034	.759
	Floater	–	–	–	–
Associate Teacher	Lead Teacher	–	NS	–	–
	Teacher Assistant	–	NS	–	–
	Floater	–	NS	–	–
Teacher Assistant	Lead Teacher	-.397	.032	-.759	-.034
	Associate Teacher	–	NS	–	–
	Floater	–	NS	–	–
Floater	Lead Teacher	–	NS	–	–
	Associate Teacher	–	NS	–	–
	Teacher Assistant	–	NS	–	–

* The mean difference is significant at the 0.05 level.

Table 11 *Pairwise Comparisons of child well-being by child gender/teacher roles*

Teacher role in classroom			Mean Difference (I-J)	Sig.	95% Confidence Interval	
					Lower	Upper
Lead Teacher	Female	Male	.420*	.031	.040	.801
	Male	Female	-.420*	.031	.801	.040
Associate Teacher	Female	Male	_	NS	_	_
	Male	Female	_	NS	_	_
Teacher Assistant	Female	Male	.752*	.017	.136	1.368
	Male	Female	-.752*	.017	-1.36	-.136
Floater	Female	Male	-1.800*	.033	-3.456	-.144
	Male	Female	1.800*	.033	.144	3.456

* The mean difference is significant the .05 level.

Table 12 *Stepwise OLS Regression of PSIC Well-being and Involvement and PICCOLO Mean and PICCOLO Predictor variables*

	PSIC Well-being	PSIC Involvement
Intercept PICCOLO MEAN	1.390 1.944(.210)*	.530 2.118(.199)*
Adjusted R-squared	.268	.333
Intercept PICCOLO significant Predictor variables Encouragement Responsiveness	2.131 .106(.023)* .093(022)*	1.236 .139(.021)* .097(.020)*
PICCOLO non-significant variables Affection Teaching	 .80(.215) .094(.233)	 -.044(.459) -.036(.615)
Adjusted R-squared	.274	.392

*$p < .05$

Note. Unstandardized beta reported with standard errors in parentheses.

Table 13 *Correlation Matrix for PICCOLO and Child Well-Being and Involvement (PSIC)*

	Well-being	Involvement
Affection	.253	.228
Responsiveness	.536**	.495**
Encouragement	.523**	.518**
Teaching	.502**	.437**

**Correlation is significant at the 0.01 level (2-tailed)

Table 14 *Measurement Means, SDs, Minimum and Maximum Ranges*

	M	*SD*	*Min- Max Range*
PICCOLO			
Affection	9.41	1.30	7.17-11.50
Responsiveness	8.44	1.81	4.17-12.63
Encouragement	5.78	1.87	2.83-9.17
Teaching	8.20	1.25	5.75-10.13
PICCOLO Total Score	249.18	.278	
CLASS-T			
Positive Climate	6.38	.44	5.75-7.00
Negative Climate	1.06	.16	1.00-1.50
Teacher Sensitivity	6.11	.59	4.75-7.00
Regard for Child Perspective	6.06	.75	4.25-7.00
Behavior Guidance	5.78	.82	3.75-7.00
Facilitation of Learning and Development	3.18	.67	2.00-5.00
Quality of Feedback	3.09	.69	1.50-4.50
Language Modeling	3.46	.57	2.25-4.50
ITERS-R			
Space and Furnishings	6.20	.37	5.60-6.80
Personal Care Routines	5.42	.87	4.17-6.83
Listening and Talking	6.69	.73	4.67-7.00
Activities	6.11	.85	4.11-7.00
Interactions	6.75	.33	6.00-7.00
Program Structure	6.28	.97	4.00-7.00

PICCOLO = Parenting Interactions with Children: Checklist of Observations Linked to Outcomes; CLASS-T = Classroom Assessment Scoring System-Toddler; ITERS-R = Infant Toddler Environment Rating Scale-Revised.

Table 15 *Correlation Table for PICCOLO and CLASS-T*

		PICCOLO			
		Affection	Responsiveness	Encouragement	Teaching
CLASS-T Emotional Behavior Support	Positive Climate	.345	.323	.406*	.477*
	Negative Climate	-.174	.138	.118	
	Teacher Sensitivity	.163	.350	.373*	.626**
	Regard for Child Perspective	.344	.405*	.431*	.629**
	Behavior Guidance	.331	.280	.280	.328
CLASS-T Engaged Support for Learning	Facilitation of Learning and Development	.058	-.001	.109	.153
	Quality of Feedback	.213	.158	.273	.293
	Language Modeling	.305	.199	.231	.350

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Table 16 *Correlation Matrix for PICCOLO and ITERS-R*

	Affection	Responsiveness	Encouragement	Teaching
Space and Furnishings	.029	-.205	-.042	.101
Personal Care Routines	-.187	.025	.324	.357
Listening and Talking	.597	-.073	-.094	.187
Activities	.603	.427	.199	.683*
Interactions	.120	-.013	.276	.523
Program Structure	.634	.252	.169	.495

*Correlation is significant at the 0.05 level (2-tailed)

MANUSCRIPT III

One Diaper at a Time: Re-envisioning Diaper Routines with Infants and Toddlers

This manuscript is prepared for submission to the peer-reviewed journal *Zero-To-Three* and is the third of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

A large portion of an infants or toddler's day is involved in bodily care routines, including diapering. Vital opportunities for relationship building are often overlooked in this rare one-on-one experience in the group care setting. Unfortunately, a custodial approach, focusing on hygienic and disease prevention practices, eclipses the opportunity for a satisfying relational experience. Tuning into the uniqueness of a child's individuality during diapering by responding with sensitivity, encouragement, and in an unhurried manner, sends a powerful message to the child about his or her body, bodily functions, and crucially, that the caregiver enjoys being with the child (Laurin, & Goble, in press; Tardos, 2016). Guided by Bronfenbrenner's theory of proximal processes, diapering, when completed in a sensitive and responsive manner, can be an opportunity for building positive caregiver-child relationships.

This article highlights a program practice, diapering, to describe, and re-envision high quality caregiver-child interactions and the associations with child well-being and involvement. A vignette describing diapering and questions from The Newborn Behavior Observation (NBO; Nugent, 2007) and The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO; Roggman, Cook, Innocenti, Norman, & Christiansen, 2013) tools are used to explore how diapering can be transformed from a rushed routine to an opportunity to enhance child well-being and involvement.

Keywords: infants and toddlers, diapering, care routines, caregiver interactions, quality

One Diaper at a Time: Re-envisioning Diapering Routines with Infants and Toddlers

This article highlights how diapering routines in infant and toddler non-parental care settings are opportunities to make positive developmental impacts through the interactions that occur between a caregiver and child. Typically, diapering is completed quickly, on average in less than three minutes (Laurin, 2017). This fast pace does not allow time for high-quality caregiver interactions, nor accommodates to the slower pace infants and toddlers require for absorbing and processing information and communication. Diapering provides a rare one-on-one moment in the day-to-day experiences of group-care. However, this opportunity is mostly eclipsed by the custodial elements of the routine, primarily a focus on disease prevention and hygienic practices.

To help to re-envision diapering as an opportunity, a vignette describing Faith's experiences with Amber, her caregiver, is described and discussed in this article. In a two-pronged approach, this anecdotal description of an actual diapering observation makes use of questions from: (1) The Newborn Behavior Observation (NBO) (Nugent, 2015), to illustrate the child's perspective, and (2) The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO) (Roggman, Cook, Innocenti, Norman, & Christiansen, 2013) to describe the caregiver's interactions including affection, responsiveness, encouragement, and teaching. Both of these tools help to reframe diapering and the associated interactions from the child's point of view and to highlight the opportunities to build the caregiver-child relationship. This reframing gives rise to recommendations for how caregivers can re-envision diapering as an opportunity to enhance the quality of the child's experience.

Infant and Toddler Program Quality

A large body of research documents that the quality of early care and education programs matter for short-and-long term outcomes for all children (NICHD, 2002, 2005; Vandell et al., 2010). This is important because young children are experiencing out-of-home care at high rates. With 60% of 2-year-olds and 50% of infants spending an average of 30 hours per week in non-parental care, the trend for early childhood care services by families across all socioeconomic circumstances has increased dramatically (Horm, Hyson, & Winton, 2013). Quality has been found to be especially important for children growing up in poverty and a high percentage of infants and toddlers living in poverty are in non-parental care settings (Zaslow et al., 2010). High quality early care for children living in poverty has an important buffering effect that positively and powerfully influences all aspects of early development (Horm, Norris, Perry, Chazan-Cohen, & Halle, 2016; Yazejian, Bryant, Hans, Horm, St. Clair, File, & Burchinal, 2017). Thus, enhancing the quality of all group care settings is important for all children and families.

Understanding infants' and toddlers' experiences at the individual level in non-parental care is critical for improving the day-to-day experiences of children in non-parental care and has implications for caregiver professional development and training in the field of early childhood education. Pawl (1990) explains:

> Most vital…is that the infant or toddler is cared for in ways that promote his feeling effective, respected, and understood much of the time. If this occurs both with parents and with caregivers, then we have far less about which we must be concerned. (pp.1-5)

More than 15 years later, the reality for many infants' and toddlers' in non-parental care is that the quality is less than ideal. Research on infants' and toddlers' experiences in group care indicate, in general, the quality of care is in the low to mediocre range, with high-quality care being the exception (Lippard, Riley, & Hughes-Belding, 2016). This is especially troubling for children living in poverty because, as noted above, high quality early care acts as a buffer and can positively influence early development (Horm et al., 2016).

Qualitative studies are needed to shine light on the lived experiences of infants' and toddlers' to improve the quality of care (Horm, Hyson, & Winton, 2013). Also, further research is needed to provide vital information about optimal teacher characteristics and attributes that promote positive development and learning for infants' and toddlers' in group care (Horm et al., 2013). Leavitt (1994) noted that important meanings are missing about the relational experiences in group care when context and content information is absent. Information on caregiver-child interactions, relationships, curriculum implementation, child well-being, and involvement in the infant and toddler early childhood professional literature is not well developed and is characterized by gaps in the knowledge base.

Highlighting a frequently-occurring program practice, this article specifically examines diaper-changing routines as an opportunity for rich, reciprocal caregiver-child interactions. Highly important in the daily life of children according to social psychology researchers, and at the center of infant and toddler care (Addessi, 2009) are the caregiving routines, defined as the repeated, sequence of regularly followed predictable actions.

Routines

Despite a number of researchers and professional organizations that advocate and emphasize individualized care routines as important (e.g., NAEYC, 2009; Copple, Bredekamp, Koralek, & Charner, 2013; Zaslow et al., 2010; Zero-To-Three, 2008), information highlighting the specific elements of high-quality routines with infants' and toddlers' is sparse. In the developmentally appropriate practices (DAP) literature, routines, including diapering, are highlighted as an opportunity for building teamwork by inviting an infant's attention and cooperation in the experience (Copple et al., 2013). However, in practice, approaching diapering with a mindset that views the infant as a team participant is not typical of diapering among classroom staff.

Theory also highlights the importance of routines and the associated adult-child interactions. Bronfenbrenner's (2001) theoretical foundation recognizes the importance of high-quality caregiver practices and the individualized, moment-to-moment care across context and time. Key ingredients in supporting infants' and toddlers' optimal development and learning require regular, consistent interactions in the immediate environment. Bronfenbrenner (2001) referred to these timely, consistent interactions between persons as proximal processes. For example, when a child's cooperation and participation in the diapering routine are invited, opportunities for high levels of back and

forth interactions between the child and caregiver can occur. Thus, infant and toddler learning occur within the context of high quality relationships that take time to allow for "infant-led interactions, observant, reciprocal, and reflective caregiver responses" (Recchia, Lee, & Shin, 2015 p. 101), where both caregiver and child are mutually involved.

With 80% of a caregiver's time focused on daily routines, attention to structuring high- quality proximal processes are important. Experienced through the caregiver's ability to pay attention to and interact with a warm tone of voice, smiles, and positive responses to a child's interest and bid for social interaction, a caregiver's attitude will directly affect the positive or negative experiences a child might have (Gonzalez-Mena, 1990). Between a child and a caregiver, routines are the anchored moments throughout the day. Routines on the whole, provide important repetitive, sequenced episodes that help the child's biological and regulatory rhythms adapt to the day-to-day demands of the social environment (Emiliani, 2002). Routines inform a child's sense of time and space, long before abstractions of these concepts develop. Routines include napping, eating, sleeping, dressing, diapering, arrival, departure, transitions, brushing teeth, and washing. Inseparable from infant and toddler programming curriculum, routines are an important part of the program presenting ideal situations for promoting a child's involvement, well-being, learning, and self-regulation (Laurin, 2015). By tuning into the uniqueness of each child with sensitive, responsive interactions, the child absorbs a powerful message about their bodies, and bodily functions, and most important, that the caregiver enjoys being with the child (Laurin, & Goble, in press; Tardos, 2016).

Diaper Changes

As one of the first cumulative experiences for infants' and toddlers', diaper changes occur an average of 5000 times in the first three years and are providing an easily observed, bounded routine for collecting vital information about the context and content of what is happening with the child and caregiver (Gerber, 2000; Lally, 2013). The intimacy of diapering becomes an opportunity, when unhurried, for a caregiver to listen, to observe, and to pay close attention to the actions of infants' and toddlers' (Laurin & Goble, in press; Tardos, 2016). However, in reality, diapering routines are typically fast-paced (Laurin, & Goble, in press), with caregivers frequently missing opportunities for rich learning and language experiences with infants' and toddlers' that do nothing to "tether conversation to the real world" (Alter, 2017). Similarly, limited talk and interactions (de Schipper, Riksen-Walraven, & Geurts, 2006; Degotardi, 2010; Powell & Goouch, 2012), during caregiving routines primarily emphasize instructional content and directing child behaviors. Overall, diapering is typically approached as a custodial task (Venn & Wolery, 1992). Researchers have suggested that the limited talk during routines is attributed to a number of possibilities including caregiver embarrassment and self-consciousness; a lack of knowledge and experience about how to interact during care routines; and a lack of awareness about the importance of sensitive interactions to support optimal healthy development with infants and toddlers (Norris & Horm, 2015; Powell & Goouch, 201).

Diapering Vignette

Let us look at an actual diapering interaction between Faith, a toddler, and her caregiver, Amber, in this vignette based on an actual classroom observation:

Faith, age twenty-four months, sits on the tiled floor in her infant/toddler classroom with an array of plastic cups scattered around her. Her experiment of moving cotton balls into different cups has absorbed her attention for more than ten minutes. With precision, she begins to fill another cup deliberately removing cotton balls one by one into the cup she is holding.

Faith's caregiver, on her way to diaper another child, gives Faith a verbal warning to help her to transition by announcing to her that her diapering turn will be next. A few minutes later, Faith's caregiver, Amber, returns to collect Faith for her diaper change. Faith, now standing, walks hand-in-hand with her caregiver through the latched door to the diaper changing area. Amber slides the stairs out beneath the changing table for Faith to climb up to access the change table surface. Counting, "One, two, three, four, and five!" Amber announces the numbers with each step as Faith climbs. "How many steps did you climb?" asks Amber.

Not responding to Amber's question, Faith reaches hold of Amber's hand for extra support at the top step. Removing a pair of latex gloves from the box nearby, Amber begins counting the fingers on the gloves, making sure that Faith, standing, is watching, "What comes after one?" "It's two, then three, then four, and five!" Amber explains with enthusiasm. Instead, Faith is interested in the lanyard around Amber's neck, and reaches to touch the keys on Amber's bright yellow cord. Faith's curiosity is short-lived when Amber pushes Faith's hand away and asks, "Are you ready?" Without waiting for Faith's response,

Amber repositions Faith to a supine position on the diaper-changing table and then begins removing Faith's pants.

Faith is interested and curious about her surroundings; she reaches for the diapers stored in cubbies sectioned by diaper size beside the changing area. Amber redirects Faith's interest away with the comment, "Those are Caleb's." "You wear a size 4." Amber removes a size 4 diaper from another cubby, proceeds to rapidly remove Faith's soiled diaper then, quickly, replaces it with a clean one. Gazing at the mobile overhead, Faith points to the balls and says, "Ball." Several seconds pass before Amber notices and responds to Faith's pointing finger and vocalization, "Yes, ball." she replies. "Where is the red ball?" asks Amber. Not waiting for Faith's response, Amber asks another question, "Which one is the blue ball?" Moving on with her task, Amber removes a wipe from the package and swoops in to wipe Faith's nose. Startled, and resisting with swift head turns from side-to-side, Faith whimpers and makes an effort to sit up. Amber holds the child down to finish wiping her nose then, quickly lifts Faith to standing, and pulls her pants up.

Faith attempts to touch the balls on the mobile hanging above her head, but Amber gives her a quick hug before lifting Faith down to the floor. "Time to wash your hands." "Do you want the ABC song?" inquires Amber and begins singing before Faith responds. Standing in front of the child-level sink, Amber hovers over Faith, reaches to pump soap from the wall dispenser, takes hold of Faith's little hands then, begins rubbing them together vigorously with soap, while singing the ABC song. Shortly after, her hands washed, rinsed, and dried,

Faith is led through the diaper-changing gate to the play area. Amber drops Faith's hand, turns her back, and approaches another child to diaper. Faith's diapering is finished. (Laurin, 2017)

In analyzing this vignette, the caregiver demonstrated many positive behaviors such as giving a verbal warning prior to the transition to diapering. However, there are missed opportunities for in-the-moment reciprocal, back-and-forth interactions between Amber, and Faith.

From the Child's Perspective!

Imagining this diapering routine from the child's perspective provides the reader an opportunity to "think as if you are the child" (A. Tardos, personal interview, December 2014). By doing so, the caregiver steps in to the child's experience, while at the same time suspending one's own frame of reference; this is a state of mind that goes beyond simply responding to the child. If we could step into Faith's little shoes, suspending for a moment our own thoughts, feelings, and urges to complete the task quickly, what might Faith want to tell us about her diapering experience with Amber?

As part of his iconic work with families and newborns, Nugent et al. (2007) developed the Newborn Behavior Observation (NBO), a tool to facilitate and strengthen parent relationships with their newborns. Although the NBO was developed for observing infants birth to age three months, elements of this tool are useful to the discussion about this diapering vignette. Some noteworthy points about the NBO give insight about Nugent's contribution to the literature in identifying the uniqueness and individual differences in babies. Importantly, Nugent, like his mentor Brazelton, argued infants' are competent and fully responsive human beings with individual personalities from birth.

For example, infants' initiate communication in many ways and are innately motivated to engage in interactions with others. Essentially, the NBO tool sensitizes parents to the capabilities and individuality of their child to promote attachment and a positive relationship. With that in mind, the infant is a catalyst or teacher to family members for relationship building; parents are asked to imagine the infant's story, to give voice to the infant's needs through narrative, as part of the NBO observation.

Similarly, inviting caregivers to think about how infants' and toddlers' experience care and what infants' and toddlers' convey in their verbal and nonverbal expressions is worthy of exploration to support relationship building in diapering. Questions from the NBO guide the next section of this paper to explore and give voice to Faith's diapering experience with Amber. Giving voice to Faith's imagined experience helps the reader visualize Faith's capacities and where she may have benefitted from additional caregiver support in the diapering relationship. Faith's perspective is outlined below in Table 1.

Table 1. From the Child's Perspective: Imagining Faith's experience of her diapering with Amber.

"What I like and prefer at this time and the cues I use to tell you"
• Did you notice how engaged I was in my task with the cups and cotton balls? • Verbally acknowledging my effort and focus will help me to stay more engaged with my play. • I like holding your hand when we walk to the diaper changing area. • I like that you walk at my pace and hold my hand gently. • I prefer to pull the stairs out from beneath the diaper table. • In addition to counting, please comment on my coordination, balance, motor ability, and how carefully I climb, using both my hands to guide me because these themes relate to my body and what I am doing in the moment. • I am glad you give me time to master the stairs and do not hurry me. • I would prefer to move myself to lie down on the change table if you ask me to do this I will most likely cooperate. • I like to help you by taking a diaper out of the cubby and holding it for you. • I enjoy looking at the patterns on my diaper while I am holding it for you.

- I was trying to engage you in conversation when I was pointing and said, "Ball", but you missed my intention and instead, asked me questions about colors I do not know yet. Instead, you could acknowledge how much I love balls right now and how I played with the cotton balls earlier.
- I love getting hugs from you! This makes me feel loved and gives me a sense of belonging.
- I am ready to try to get my own soap and rub my hands together. I may not get it right but I like to 'do it myself' first before you help.
- Most of the time I don't mind the ABC song, but I prefer when you talk to me about the soap, the water, the bubbles, and the towels.

"What I find difficult at this time and the cues I use to tell you"

- It is hard work climbing the stairs, but I enjoy this motor movement, however, when you count the stairs as I climb it distracts me from concentrating on my task.
- When I reach out to touch your keys on the lanyard around your neck, I am demonstrating curiosity and interest in you. When you brush my hand away, it sends a powerful message that my interests are not important.
- Please give me time to adjust my body when you move me from standing to supine.
- I feel like I am falling when you move me too quickly into the supine position and I do not have time to prepare myself to do this.
- If you let me stand, providing it is safe, I can begin to push my own pants down.
- When I reached into the wrong cubby for a diaper, I was really trying to help you get one of my diapers ready because I knew this comes next in my diapering routine.
- I know a lot about the sequence of steps in diapering because I have experienced diapering so many times, so I can be helpful and participate.
- I can lift my bottom to place a diaper beneath if you ask and give me time to do this.
- I process and move more slowly than you do, so please give me time to shift my attention and my body.
- I find it difficult when you swoop in to wipe my nose. It startles me because I am unprepared.
- Sometimes I like to climb down the stairs and push them in.
- I find it difficult when you grab my hands quickly and rub them together so hard. I feel your hurry through the way you touch me.

"Ways in which you can help me at this time"

- You can help me by noticing my interest in your keys and lanyard and give me information about these objects.
- I love keys! I notice my parents have keys too, and I like to touch them.
- You can help me by allowing time for my response to your question, "Are you ready?" before moving me.

- Allowing me to open the cupboard and slide the stairs supports my initiative with your guidance.
- You can help me by giving me time to master the stairs and to appreciate my motor skills.
- Allowing me to trust you, by giving me your hand at the top of the stairs and guiding me over the top step onto the change table.
- You can help me by talking to me about what you are doing, what comes next, and paying attention to my attempts to engage you in the relationship through my sounds, words, and pointing. This is an enjoyable experience for me.
- You can let me know that you need to wipe my nose, that there is mucus in my nose, then, give me a moment to get ready or even let me attempt to wipe my own nose
- Ask me if I want to climb down the stairs and slide the stairs back under the change table.
- You can allow me to attempt to wash my own hands because I am becoming familiar with the sequence of handwashing because I have had my hands washed hundreds of times.
- You can help me by letting me try handwashing on my own at first, then help me to make sure I have cleaned them enough.
- After diapering, please make a comment about our nice one-on-one time together, it is very special for me and one of the few times in the day when I get you all to myself!

Newborn behavior observation (NBO) questions developed by (Nugent, 2015).
Subtext communication examples developed by Laurin, D. (2017).

Next, an analysis is based on dimensions of caregiver affection, responsiveness, encouragement, and teaching is used as a guide to re-envision Faith's diapering experience as an opportunity for enhanced interaction with her caregiver.

From the Caregiver's Perspective: Affection, Responsiveness, Encouragement, and Teaching

The caregiver's interactions in this vignette can also be reimagined. The case study described in this paper can be analyzed with items borrowed from The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO; Roggman, Cook, Innocenti, Norman & Christiansen, 2013). The PICCOLO is based on the parent attachment literature to support a strengths-based approach in examining parenting behaviors. The tool has successfully been used in childcare settings (Lippard,

Riley, & Hughes-Belding, 2016; Norman, & Christiansen, 2013; Roggman et al., 2013), to observe caregiver interactions with children and its constructs of affection, responsiveness, encouragement, and teaching are useful to frame our re-envisioning exercise of Amber's interactions with Faith. A brief description of each construct follows:

- **Affection.** Affection is caregiver behaviors that convey warmth, positive regard and a fondness for the child. Research indicates caregivers demonstrating warmth, enjoyment, and physical contact positively influences a child's well-being, cooperation, and positive child behavior (de Schipper, Riksen-Walraven, & Geurts, 2006).
- **Responsiveness.** Responsiveness defines how well a child's cues, emotions, words, interests, and behaviors are attended to by the caregiver. For example, do caregivers change pace and activities to meet the child's interests or needs, or follow what the child is trying to do, and respond to the child's words or sounds. Timely, responsive caregiving is a strong predictor of attachment security and is associated with language and cognitive outcomes (Norman & Christiansen, 2013; Ritchie & Howes, 2003).
- **Encouragement.** Encouragement broadly encompasses how well a caregiver supports a child's initiatives, choices, independence, and creativity (Norman & Christiansen, 2013). For example, waiting for a child's response after making a suggestion, supporting exploration, effort, skills, and child curiosity is positively associated with child behaviors, well-being and cooperation (Roggman et al., 2013).

- **Teaching.** Teaching is defined as cognitive stimulation, providing explanations, initiating conversations, joint attention, and shared play (Fuligni & Brooks-Gunn, 2013; Hart & Risley, 1995). Does the caregiver talk about the environment, ask questions, respond to the child's vocalizations, explain reasons for something to the child, and label objects or actions? Caregiver teaching behavior is an important element of language and cognitive development for infants and toddlers (NICHD ECCRN, 2000).

Based on these PICCOLO constructs, a re-envisioned diapering vignette from the caregiver's perspective is provided in Table 2.

Table 2. Re-envisioning Faith's diapering experience through the lens of caregiver affection, responsiveness, encouragement, and teaching.

Affection *warmth, physical closeness, and positive expressions toward child* • "I see you are ready, do you want to hold my hand?" • "That was such a nice big hug we shared together!" • "Let's share a high five for that." • "I like the way you were ready to have your diaper changed when I came to get you." • "I'm smiling at you because you are very special to me."
Responsiveness *responding to child's cues, emotions, words, interests, and behaviors* • "I am going to change your diaper soon." "Are you ready?" "Yes, you may play with the cups and cotton balls after your diaper is changed." "I'll put them here for you." • "I see you are interested in the lanyard and keys around my neck." • "Do you want to touch them?" "You are making the keys jingle together, do you like that sound?" • "I remember your mother wears keys around her neck too, just like I wear mine." • "Are you ready to lie down on the diapering table?" • "Do you want to stand or lie down to have your diaper changed?" • "What a nice big smile you gave to me." "You must be very happy." • "You remembered those are Caleb's diapers. They are much bigger than your size because Caleb is three and you are two years old." • "See your diapers are in the cubby *beside* Caleb's diapers." "Can you find your diapers and hold one for me?"

- "I see you are holding your diaper and looking at the zebras."

Encouragement *active support of exploration, effort, skills, initiative, curiosity, creativity, and play*

- "I see that you are very focused on your task Faith!" "You are so engaged in playing with the cups and cotton balls." "I think you like this task a lot." "I have some other objects you might like to put in the cups."
- "That's it, pull harder, there you go, you pulled the stairs out!" "Now you can climb."
- "You are managing on the stairs so well!"
- "I see how strong your legs are to climb the stairs all the way to the top!"
- "I notice how much you like to climb the stairs all by yourself, you did it!"
- "I notice how carefully and safely you climb the stairs, holding on with both hands."
- "Thank you!" "I see you are helping me, you are lying down and ready to have your diaper changed."
- "Thank you for helping me!"
- "That's it, you are wiping your nose with the wipe, it's all clean now, hurray!"
- "You know where the towel goes; you put it in the trash all by yourself, well done!"

Teaching *shared conversation and play, cognitive stimulation, explanations, and questions*

- Faith, "I see you are working hard *filling* the cup to the very top with cotton balls."
- "You needed a lot of cotton balls to *fill* the cup to the top."
- "Look, the red cup is *empty* now and you filled the blue cup, it is *full*."
- "These are my keys for opening the cupboard where I keep the toys and supplies."
- "Look, how shiny the keys are, can you think of another shiny object that you like to play with?"
- "Can you find the *small key*?" "Yes, it's that one." "See this is the *big* key for my car."
- "I'm going to change your diaper because you had a big pee this morning."
- "Look the line is blue on your diaper that tells me that your diaper is wet."
- "I see the zebras are black and white on your diaper, just like the zebras you played with this morning."
- "You have mucus in your nose and I need to wipe it." "Would you like to try first?" "Like this, with the wipe."
- "Yes, I see the red ball you are pointing to, it's red just like the red shirt you are wearing today and my shirt is red too."
- "The blue ball is the same color as your pants, look, I am wearing blue pants too!" "We are wearing the *same* colors today!"
- "We rinse our hands first, there you go, do you like the feel of the water?" "It's a bit *cold* today, let me make it *warmer* for you." "I can see you like playing with the bubbles the soap has made."

- "Rub, rub, rub your hands, make them nice and clean, wash the germs away, HURRAY!"
- "Last of all we need to dry our hands with the paper towel, here is a towel for you to use."
- "Do you remember where to put the towel when we are all finished?" "Yes, you do!"

PICCOLO dimensions: (Roggman, Cook, Innocenti, Vonda, & Christiansen, 2013). Subtext communication examples developed by Laurin, D. (2017).

After considering the child's point of view and how the caregiver could enhance affection, responsiveness, encouragement, and teaching, let us re-envision the original observed diapering experience.

Re-envisioned Diapering Vignette

Faith, age twenty-four months, sits on the tiled floor in her infant and toddler classroom with an array of plastic cups scattered around her. Her experiment of moving cotton balls into different cups has absorbed her attention for more than ten minutes. With precision, she begins to fill another cup deliberately removing cotton balls one by one into the cup she is holding.

Faith's caregiver, on her way to diaper another child, gives Faith a verbal warning to help her to transition knowing that her diapering turn will be next. A few minutes later, Faith's caregiver, Amber, returns to collect Faith for her diaper change. "Are you ready?" she asks, waiting for Faith's response. Faith, now standing, walks hand-in-hand with her caregiver through the latched door to the diaper changing area. Knowing Faith likes to pull the sliding stairs out from the cupboard, Amber opens the door, and together they pull the stairs in place. Now Faith is ready to begin climbing. She steps nimbly up the stairs, holding the sides with two hands she carefully makes her way to the top. Amber watches closely, ready to offer her help should Faith require it, but Amber knows how much Faith

enjoys the satisfaction of mastering the stairs on her own. Offering words of encouragement, Amber comments on Faith's coordination, balance, and strong legs that help support her climbing. "You are managing on the stairs so well and your strong legs climbed all the way to the top!" "I noticed how carefully and safely you climb the stairs, holding on with both hands." At the top step, Faith is ready for Amber's help and reaches with her hand to grasp Amber for extra support as she climbs onto the surface of the change table. She meets Amber's eyes in a mutual gaze and beams with a big wide smile of satisfaction.

Removing a pair of latex gloves from the box nearby, Faith feels the gloves because she is fascinated with the texture. Sometimes, Faith even tries on a glove before she is diapered. This time Faith is interested in Amber's keys hanging on a lanyard around Amber's neck. Faith reaches to touch the keys and makes them jingle together. Following Faith's interest, Amber responds with descriptive information about the keys, describing what they are for then, knowing Faith's mother also wears keys on a lanyard she uses descriptive talk to make this association. All of this happens in a casual conversational style with Faith. Now it is time to move on with the diapering, "Are you ready?" Amber waits for Faith's response, pausing, holding her hands out signaling that she is ready to help Faith to the supine positon on the change table. Undressing Faith, Amber talks to the child about what she is doing, providing rich language information embedded in the concrete actions of the diapering relationship.

Essentially, Amber is tethering conversation to in the moment activities that hold meaning for Faith. Always interested and curious about her surroundings

Faith reaches for the diapers stored in cubbies sectioned by diaper size beside the changing area. Noticing this, Amber gives information to Faith about Caleb's diapers, and invites Faith to find her own diaper cubby to remove and hold a diaper to help. Amber invites Faith to lift her bottom so she can remove the soiled diaper and replace it with a clean one. She talks to Faith about the pee in her diaper that is making her diaper so wet. Glancing at the mobile overhead, Faith points to the balls and says, "Ball." Amber promptly responds to Faith's pointing finger, giving Faith information about the color of the balls and connecting this information by pointing to the colors of clothing that they both wear. Amber does this slowly and at the pace of the child, so Faith has time to absorb this new information.

Noticing Faith's nose is in need of a wipe, Amber offers a wipe to Faith so she can attempt to do this task on her own. Amber follows up with another wipe, giving time and information so Faith can expect this to happen. All the while, she offers encouragement because she knows Faith's efforts are important for her development. Now standing, Faith tries to pull up her pants, this is difficult and requires help so Amber facilitates the task. Again, during hand washing, Faith knows the sequence and makes an effort to follow Amber's guidance. Amber asks timely questions that guide Faith's tasks for a successful experience. Knowing Faith will go through the motions successfully, Amber then finishes the task to ensure hands are clean. She does this with a gentle touch and talks with Faith about returning to play with the cups and cotton balls. Her diapering finished,

Faith is happy, and smiles at Amber who returns the smile and gives Faith a hug before guiding her back to resume her play.

Discussion

This re-envisioned vignette demonstrates a high-quality diapering session that supports Faith's optimal participation as a partner with her caregiver Amber. This re-envisioned diapering example also illustrates the positive experiences of Faith, age 24 months, and her caregiver Amber, a lead teacher in a large infant and toddler childcare setting. Working within the moment-to-moment interactions that arise together, Amber in a re-envisioning of the diapering experience responds to Faith's interests with words of encouragement, using teaching moments that link with Faith's world—her interests and capabilities. Using a light touch, quiet dialogue, and slower pace, gives Faith time to absorb meaning and make bodily adjustments in the diapering sequence. Amber uses content and context in real time to respond and reciprocate Faith's curiosity and interest in everything around her. She explains, labels, and talks in a conversational way to promote Faith's development across the domains. Using encouragement, Amber sends a powerful message that supports Faith's motivation to explore and master new tasks that offer challenge in the safety of her caregiver's presence. Affection and warmth, vital for developing secure attachment and trust, is notable in their diapering relationship and expressed through the verbal and nonverbal communication of smiling, hand holding, and hugs. Each diapering change becomes a new opportunity for supporting a child's development across the domains. Vitally, the diapering relationship shifts from a custodial chore to an experience that requires Amber to adapt her frame of reference to

include Faith's point of view, as a participant *with* Amber, rather, than an object without ideas, motivations, and interests of her own about the routine. Beyond Faith and Amber, what lessons can be abstracted? What are the implications for professional preparation and for research related to infant and toddler care?

Preservice Teaching

A lack of specific training about infants' and toddlers' is evident in most early childhood programs in higher education (Horm et al., 2013). Findings from a national Early Childhood Teacher Education (ECTE) survey (Horm, Hyson, & Winton, 2013) found that only 29 percent of US colleges and universities included curriculum content targeting children under four, and 40% at minimal, offered only one infant and toddler course (Early & Winton, 2001). Acquiring the knowledge and skills to work with infants' and toddlers' is critical to the long-term positive outcomes for this age group (Institute of Medicine & National research Council, 2015). Some college students majoring in ECE (L. Baines, personal communication, April 2011) reported never having held a baby (as cited in Horm et al., 2013). Although beyond the scope of this article, preservice programs could include more infant and toddler content and additional focus on care routines, specifically diaper changing, as a vital component of infant and toddler curriculum. Practicum placements in high quality infant and toddler classrooms would also help strengthen knowledge and skills in infant/toddler care and education.

Inservice Caregiver Training and Research Implications

The anecdotal narrative described in this paper was part of a larger study examining caregiver-child interactions and child well-being and involvement during diaper change routines in infant and toddler classrooms. Results from the larger study

conducted by the author revealed that a child's well-being and involvement, significantly influenced by a caregiver's level of responsiveness and encouragement, is also different across caregiver roles. This means that a caregiver who responds with encouragement, like Amber in the re-envisioned vignette, is actively supporting the child's exploration, initiative, curiosity by allowing the child to make choices, and showing enthusiasm for the child's effort to do things on his or her own. Caregivers who are responsive are paying attention to the child's interests, changes pace to meet the child's needs, shows understanding or acceptance of a child's emotions, and the child's use of words or sounds to communicate.

Addressing the current void in the literature on professional development research specifically for infant and toddler caregivers is needed (Zaslow et al., 2010). Notably, questions examining the unique needs of infants' and toddlers' in nonparental care would target caregiver training specific to infant and toddler development across the developmental domains, informed by current research. A high priority placed on theory to practice would address interactions where caregivers are engaged with infants and toddlers based on collaborative care where power is shared between a caregiver and child (Horm et al., 2016; McMullen & McCormick, 2016).

Conclusion

The importance of caregiver-child interactions in producing child outcomes is well- documented in a large and growing body of literature (Horm et al., 2016). Bronfenbrenner identified moment-to-moment interactions as a vital element of the relationship between caregivers and children. Thus, both theory and research support the conclusion that caregiver-child interactions are critically important to support a child's

development. Unfortunately, opportunities to provide high quality responsive care in infant and toddler classrooms during routines is often squandered. Diaper changing, frequently approached with haste, on average three minutes in length, (Laurin, 2015, 2017), typically provides little time for relationship building experiences to occur. Diaper changing and other toileting routines are often undervalued and not approached as a central element in infant and toddler classroom care. For the most part, disease prevention and hygienic procedures shape caregiver practices in diaper changing and eclipse this rare one-on-one moment between a caregiver and child as a precious time in the hustle-bustle of the day. Ensuring that infants' and toddlers' flourish and thrive in infant and toddler classrooms, rather than just survive, (McMullen & McCormick, 2016) requires diaper change routines be re-envisioned and approached as significant one-on-one experiences for conveying the highest quality of care through sensitive, timely, and responsive actions with caregivers.

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APPENDIX A: PROSPECTUS

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CAREGIVER-INFANT/TODDLER INTERACTIONS DURING DIAPERING: ASSOCIATIONS WITH WELL-BEING AND INVOLVEMENT

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A DISSERTATION APPROVED FOR THE
DEPARTMENT OF INSTRUCTIONAL LEADERSHIP AND ACADEMIC CURRICULUM

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Abstract

This research explored caregiver-child interaction during diapering in infant and toddler group childcare and associations with infant and toddler well-being, and involvement. Bronfenbrenner's proximal processes served as the theoretical framework in the discussion of timing, pacing, and environmental factors in the child's diapering experience. Trained researchers collected observational data utilizing standardized measures of overall classroom quality, teacher-child interactions during diapering and dimensions of a child's well-being and involvement during diapering. The planned analysis answered five questions: (1) What types of interactions do the caregivers demonstrate during the diapering routine, (2) What is the child's involvement and well-being during the diapering routine, (3) What is the relationship between caregiver interactions and child behavior

The results contributed information to an understudied dimension of infant and toddler childcare. Caregiver's capacity to reflect on, and examine the child's experiences, as well as their own practices in the context of diapering was explored in recent research and from an approach applied in the Pikler Institute child care setting since the 1940's.

Keywords: diapering, bodily care, caregiving routines, Pikler, infant and toddlers, involvement, well-being, caregiver-interactions

Chapter 1: Introduction

Background and Research Problem

Routines in out-of-home childcare offer a context for research on the well-being and involvement of infants and toddlers, and the evaluation of sensitive, timely, and responsive caregiver actions during child diapering. To date, a paucity of research exists on diapering practices as a context for children to be involved as agents of their own learning and autonomy with their caregivers (Berthelson, 2009). Surprisingly, measurement of the child's well-being and involvement and caregiver interactions during diapering care routines in US infant and toddler group-care has yet to be studied systematically. Diapering literature examining relational circumstances exist in studies from the Pikler Institute in Budapest, Hungary, however, much of the research is not in English. Early intervention research includes some information, mainly, as a context for embedded learning practices with special needs children in the parent/child diapering experience (Aukrust, 1996; Venn & Wolery, 1992; Woods, Cripe, & Venn, 1997; Woods & Kashinath, 2007). In addition, medical literature examines diapering from primarily the perspective of disease and dermatitis prevention, handwashing, and hygienic practices, with virtually no mention of a relational context (Blume-Peytavi et al., 2014; Hedin et al., 2006, 2010; Kotch et al., 2007; Miller, Fraser, Sturgis, Chen, & Saunders, 2013; Nield & Kamat, 2007; Warrick & Helling, 1997).

Interestingly, fourteen out of fifteen items on the Diapering/toileting subscale of the ITERS, addresses sanitary protocols with one item for interactions, "Pleasant staff-child interaction" (Harms, Cryer, & Clifford, 2003, p. 24). The National Association for the Education of Young Children (NAEYC, 2009) position statement on developmentally

appropriate practice (DAP) addresses diapering routines in a perfunctory paragraph, with a brief mention of the relational context, then, contrasts inappropriate diapering practices in bulleted points (Copple & Bredekamp, 2009).

- Diapering usually occurs by a familiar adult or primary caregiver. Treated as a personal, one-one-one interactions-where the caregiver seeks the baby's attention and cooperation-diapering builds a sense of teamwork, and their relationship grows as a result
- Diapering supplies and extra clothes are within easy reach of the changing table. The caregiver has the needed time and tools to make diapering an efficient and pleasant experience for adult and child (Copple & Bredekamp, 2009, p. 86).

While disease prevention is undeniably important during diapering, hygienic protocols, for the most part, shape caregiver practices. Laurin (2015) in a pilot study found that diapering procedures on toddlers were completed, on average, in less than two minutes. This indicates that diapering routines are occurring at a fast pace which would give little time for interaction between caregiver and child. Given the personal nature of diapering and the development of attitudes towards one's self as reflected in caregiver interactions during these routines, questions regarding cultural attitudes and assumptions about diapering are of interest as well. Berthelson (2009) argued that drawing on the beliefs and practices of other cultures in early childhood education creates a broader context from which, to better understand, our own assumptions and attitudes. The exploration of cultural attitudes regarding diapering in the US as compared to other countries is in need of study. For example, to what extent have social and cultural

attitudes towards diapering shaped US attitudes and practices? Do actions speak louder than words?

These questions lead to a personal quest to gain insight about respectful interactions and care with infants' and the exploration of caregiving routines in out-of-home childcare settings with a focus on diapering. This inquiry led to a visit to the Pikler Institute in Budapest, Hungary where well documented childcare practices provided valuable insight on caregiving routines. Importantly, Pikler's approach is not a generic model to implement in identical fashion. It does however offer a unique context to understand, examine, and adapt features for US diapering practices.

Significantly, the Pikler approach addresses a child's needs for a primary relationship with a caring adult, opportunity for independent activity and free movement, an environment that supports the child's developing awareness of self and others, and the child's overall well-being (Petrie & Owen, 2005). Some of the most dynamic aspects of quality in childcare are revealed in the adult's ability to respond to a child with sensitivity, attentiveness, and appropriate to the child's developmental level of interests (Broberg & Hwang, 1991).

Quality in Care. The demand for and use of infant and toddler care has increased dramatically. Mothers with children under the age of three make up fifty-five percent of the U.S. labor force and, 38 percent of those children are in care more than 35 hours a week (Schmit & Matthews, 2013). These numbers indicate a high percentage of infants and toddlers are in out-of-home care for significant periods of time. Unfortunately, the quality of infant and toddler care is generally poor, especially for children living in poverty (Phillips & Lowenstein, 2011; Schmit & Matthews, 2013). This translates to

frequent infant and toddler diapering routines occurring in center-based caregiving. Importantly, diapering routines offer a context for examining one-on-one time to assess the child's development and the quality of the diapering relationship.

This paper begins with an explanation of quality indicators as measured by structural and process variables in childcare settings. A definition of caregiving routines, including rhythms and rituals, and schedules is provided along with a discussion of primary and responsive caregiving practices. An overview of diapering practices implemented at the Pikler Institute provides insights about respectful, responsive, caregiver-child interactions in a setting outside the US. Additionally, a discussion of well-being and involvement as elements of the child's diapering experience is followed by a look at future research. In conclusion, Bronfenbrenner's (2001) proximal processes provides a conceptual framework to guide the reader's understanding about the features of diapering routines in infant and toddler group care and caregiver interactions.

Research Problem

In infant-toddler classrooms caregiving routines are important opportunities for learning as well as for building and strengthening a child's relationship with others. Common routines that occur multiple times on a daily basis include diapering and toileting, feeding and eating, and rest and sleeping. Caregiving routines address both a child's physical and emotional needs during which time infants and toddlers gain a sense of self-worth and develop relationships with caregivers. Although teacher-child interactions are important indicators of process quality, an extensive review of research literature indicated a lack of systematic assessment of caregiver interactions and child well-being and involvement during infant-toddler diapering routines. Given that a sizable

amount of the infant or toddler's day is involved in bodily-care routines, research about the quality of caregiver interactions and the child's experience during these routines provided important information about the teacher-child relationship and child well-being. Interestingly, infants' and toddlers' are still the most under-represented in research and early childhood professional literature (Clark & Baylis, 2012). Feelings of insignificance and invisibility of the children and the educators who work in infant-toddler classrooms, might in part, be attributed to the lack of research.

A controversial issue in early childhood education today, is the tension between an emphasis on values of care versus a focus on education in the childcare setting (Degotardi & Pearson, 2014). Historically, the term caring for was associated with nurses or matrons, who were hired to care for infants and toddlers and whose main responsibility was health and hygiene practices (Noddings, 1984). However, caring for also infers childminding, and baby-sitting, a misnomer still used by the general public, when referencing infant and toddler work. Tensions continue to exist in the profession as educators struggle with curriculum questions pertaining to care-related, routine-based pedagogy, and educational contexts (Degotardi, Semann, & Shepherd, 2012). Arguing that the profession needs to put this outdated debate behind them, Taggart (2011) urged the field to "reclaim the care aspect as an integral aspect of their professional responsibility towards young children and families" (p.85).

Lally (2006) claimed "Many people look at infants and do not see anything but an eating, sleeping, and defecating machine" (p. 11). As a result, young children are often viewed as incapable, developmentally underestimated, and their personal perceptions and experiences during caregiving routines are not recognized. Given these pervasive

attitudes, infants and toddlers are rarely viewed as active participants in bodily-care routines. This view of infants' and toddlers' limits their sense of agency and involvement during daily caregiving routines. A balanced view that includes respecting the vulnerabilities and capabilities of the young child is warranted. For example, attitudes and approaches that ensure the safety and health of the child are needed while at the same time the child's need to interact in the social and material environments is recognized and respected (Degotardi & Pearson, 2014).

An essential component in physical care is touch, which has been found to be significant for young children's well-being and self-identity (Manning-Morton, 2006). Embedded in physical care routines are opportunities for important trust-building, relationship-supporting interactions, and responsive sensitive tactile experiences between the caregiver and child. Brooker (2009) describes the caring relationship from an ethical perspective. He argues that caring is more than a routine carried out on the child and that instead it is a psychological element co-created as part of the social context especially when respectful and reciprocal interactions occur. Furthermore, ethical and pedagogical notions of care are important to the discussion about professionalism when working with infants' and toddlers'. In Tanyel and Knopf (2011), teachers emphasized the importance of routines in the child's learning experiences. They pointed to the one-on-one time as valuable in assessing the child's development and for building relationships.

Despite an emphasis in literature on individualized care in routines, frequently, diapering routines are implemented with haste and little thought for the child's experience at the hands of the caregiver (Gonzalez-Mena, 1990). As a result, diapering becomes a mundane task carried out in a formulaic process. Is the routine carried out with

intention and sensitivity, or in a cursory, matter-of-fact, custodial way? Does the caregiver take pauses, and slow down to allow the child to integrate the activity? Infant sensitivity to the timing and congruency of their caregiver's actions, and reliance on contingent, caring, responsive adults for optimal development was identified by Colombo, Kannass, Walker, and Brez (2012). In addition, a dynamic aspect of quality care was the adult's ability to respond appropriately to the child's developmental level of interest (Broberg & Hwang, 1991).

Well-Being and Involvement

Involvement refers to the quality of activity that occurs in the child's zone of proximal development in a bounded context (Laevers, 1998). Observing the child's involvement in diapering is easy to observe and reveals what is happening with the child in the activity. Laevers (1998) posited that the concepts of well-being and involvement as research variables aid caregivers in improving their practices with children when examined for professional development. He characterized involvement as a feeling of satisfaction when a dimension of the child's intrinsic motivation is expressed through actions on the environment. For example, a child's interest in clothing; features of the buttons and zippers or an invitation to choose between two pair of shirts if supported by an attuned caregiver facilitates involvement. Sometimes these actions result in concentration, engagement, and persistence for the child. Pertaining to diapering practices, well-being and involvement of the child provided an important context for evaluating dimensions of the caregiver-child experience.

Research Purpose

This study examined the quality and responsiveness of caregiver interactions on child well-being, and involvement, during diapering practices in infant and toddler classrooms. Measurement tools for assessing caregiver interactions have yet to target diapering care routines as an indicator of a child's well-being and involvement in infant and toddler classrooms. De Schipper et al. (2004) described well-being for infants' and toddlers' as an indicator of the child's ease with his or her caregivers, with the physical setting, and other children.

In the caregiver-child relationships, the child develops an understanding of their world, of self, and other (Brooker, 2009). Studying caregiver interactions with infants' and toddlers' during diapering provided much needed information about reciprocal interactions. Reciprocal interactions are a core element of relationships, for the young child it is a source of ongoing information about behaviors, affect, responses, reactions, gestures, touch, and tone, that constructs self-knowledge. More importantly, do adult interactions change with the developmental needs of the child, for example, a toddler's need for mobility and agency?

Research in early intervention addressed caregiver interactions in daily routines as a strategy for milieu teaching to facilitate child development (Venn & Wolery, 1992; Woods & Kashinath, 2007). Interestingly, both studies noted the lack of training specific to infants and toddlers in the caregiver participants. Similarly, Horm et al. (2013) revealed a deficit in higher educational institutes (IHE) and in the field of training and knowledge in infant/toddler development. Venn and Wolery (1992) pointed to the need for more research in the interactive behavior changes between infants and caregiver, specifically on how to interact during routines with infants'.

Research Questions

The following questions guided this research study:

1. What types of interactions do the caregivers demonstrate during the diapering routine?
2. What is the child's involvement and well-being during the diapering routine?
3. What is the relationship of caregiver interaction and child behavior?

Conceptual Framework

Bronfenbrenner's Proximal Processes (PPCT). Human development is a biopsychological process, which relies on person-to-person relationships, object interactions, and external environmental experiences (Bronfenbrenner, 2001). Examined through this lens, infant development hinges on the rich, reciprocal interactions with a caring adult and so the cumulative experiences of diapering provide a rich context for development. Notably, interactions had to be regularly consistent over periods-of-time and Bronfenbrenner (2001) referred to these interactions in the context of the immediate environment as *proximal processes* (p.6).

The reader can also think of the proximal processes as the key ingredient in the recipe for human development. The proximal processes are in part, focused on the relationships and complex interactions between people and environment. For example, the human infant experiences a long period of dependence upon the caregiver for survival, and subsequently, is dependent on the proximal processes of feeding, comfort, and care. Without the timely, regular occurrence of these processes, the infant's survival and well-being would be at risk. As the infant matures, development requires that the

caregiver be attentive and capable of adapting the relationship to the child's evolving sense of self.

> Proximal processes require that in order for development-intellectually, socially, and morally – a child requires, for all of these, the same thing; participation in progressively more complex activities, on a regular basis over an extended period of time, and with one or more persons with whom the child develops a strong, mutual emotional attachment, and who are committed to the child's well-being and development, preferably for life (Bronfenbrenner, 2001, 2005 p. 4, 9).

A significant principle of the Bioecological model, the bidirectional processes of reciprocal interactions, is pertinent to caregiver-child interactions during diapering. Diapering routines offer the opportunity for the practice of mutuality and reciprocation by the caregiver to support the infants developing sense of self. Significantly, activities engaged in by the child would only be developmentally effective if over time the activity provided complexity (Bronfenbrenner & Morris, 2006). For example, current practices of diapering toddlers in the supine position do not support autonomy, movement, and independence that is congruent with the toddlers developing self (Laurin, 2015). Consequently, the diapering experience can be fraught with tensions and power struggles between caregiver and child.

Timing in the Context of Diapering

Bronfenbrenner and Morris (2006) conveyed the importance of time in the context of human development as, micro-time, meso-time, and macro-time. Micro-time in the context of diapering, are the moment-to-moment occurrences between the infant/toddler and the caregiver. Meso-time accounts for the extent to which the routine and interactions occur with some regular consistency in the developing child's environment. Last of all, Macro-time takes into account that developmental processes influenced by historical and cultural factors are relevant.

Cultural practices are important in shaping the attitudes, beliefs and assumptions that form expectations about care, for example, attitudes and language about diapering hygiene, bowel movements, and individualized versus scheduled diapering routines. In addition, current educational emphasis on learning outcomes and school readiness diminishes the importance of care routines as conduits for relationship based development and learning in all domains. Viewed from a sociocultural context, learning is co constructed in a participatory experience that supports involvement, through meaningful encounters (Hedges & Cullen, 2011). Importantly, discussion of values and child rearing practices in the home contribute to creating a predictable, consistent and secure context for the child in out-of-home care (Bredekamp, 1987).

Environment

Environment is an important factor in the diapering practices. The location and availability of material resources are identified as important factors in diapering routines (Falk, 2007; Gonzalez-Mena & Eyer, 2007; Post & Hohmann, 2000; The Program for Infant Toddler Caregivers, 2000). First, the physical space, height, size, and proportion of the diapering table play a role in the diapering practices. Is it safe for the child? Is there enough space for movement and are all diapering supplies within reach of the caregiver? Diapering tables that include climb-up-stairs are congruent with mobility and developmental needs of toddlers. Importantly, caregiver back-strain is prevented when change tables include stair access for the children (Post & Hohmann, 2000).

Other factors that can impinge on the interaction of the caregiver and child during diapering in the childcare setting, is an adherence to rigid routines and schedules that interfere with the individualized needs of the children. These environmental factors can

create stressful challenges that interfere with the caregiver's ability to provide responsive, appropriate care. In addition, teachers may feel constrained to administrative task demands and routine expectations rather than focus on the individual needs of the children. White (2009) argued that environmental factors must be supportive to the teacher so that optimal interactions can happen.

Figure 1: Conceptual Framework based on Bronfenbrenner's (2001) Proximal Processes

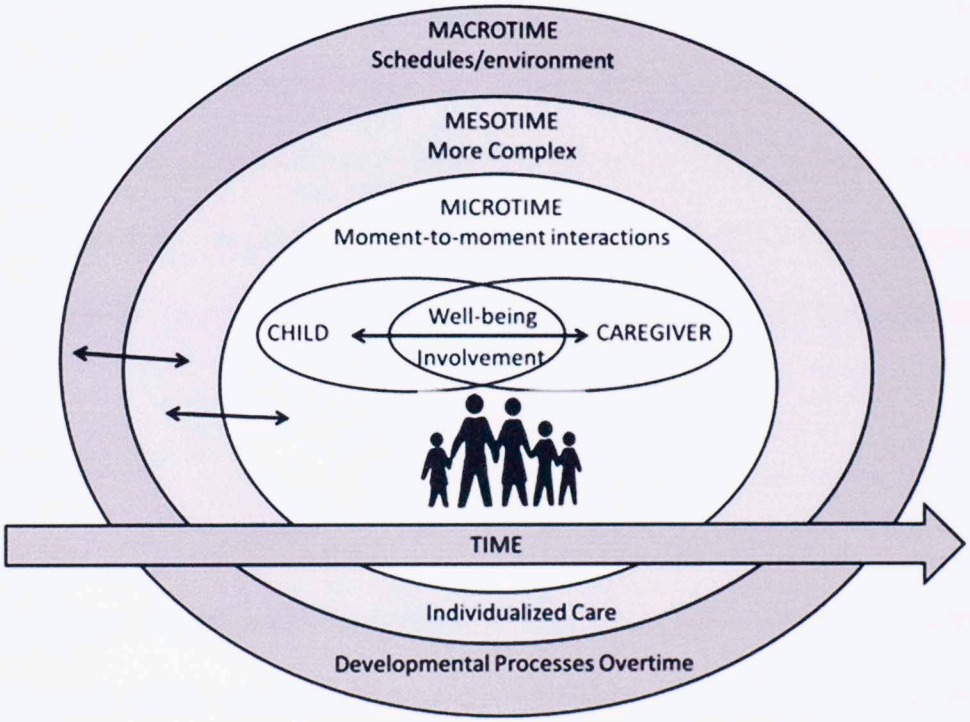

Figure 1. At the center is the relationship between caregiver and child; interactions in micro-time occur within the dyad in the moment-to-moment exchanges in the diapering routine. As the child matures, meso-time accounts for more complexity unique to each child's personality and development thus defining opportunities for child involvement in the care routine. Macro-time addresses the broader environment that includes the physical space for diaper changing routines, individualized versus scheduled diapering practices, and a child's maturation and transition to toileting. (Laurin, 2017b)

Significance of the Study

Vital to the discussion of quality is the context of care and quality of caregiver interactions at the proximal level in infant and toddler childcare environments. The importance of individualized care routines is emphasized by a number of professional organizations and in developmentally appropriate practices (DAP) literature, however, important specifics about diapering is missing. Diapering practices are typically fast-paced, on average two minutes in length, (Laurin, 2015) allowing little time for relationship building to occur. Typically diaper changing and other toileting routines are guided by disease prevention and hygienic procedures and not approached as a central element in infant and toddler classroom care. This study will contribute new information about important process variables in a frequently occurring routine in infant and toddler childcare classrooms. The intimacy of diapering routines provides a rare opportunity to provide high quality, meaningful experiences in the hustle-bustle of infant and toddler classrooms.

Definition of Terms

The following operational definitions of terms will be used in this study:

1. Caregiver: A person who provides care for other people's children. The term caregiver will be used and denotes the same meaning as; educator and teacher.
2. Bodily-care: Diaper changes, dressing, and washing of infants and toddlers during brief frequently occurring routines (Post & Hohmann, 2000).
3. Infant and Toddler program: A program part or full time in centers, homes or schools that provide care for children under the age of three.
4. Constructs: A construct is defined as an abstraction to describe behavior. Constructs require operational definitions to facilitate observations and

measurement (Gay et al., 2006). The constructs defined for the purpose of this study are caregiver interactions, child well-being and involvement, and are defined in the section on measurement.

Chapter 2: Literature Review

Quality of Care

Since the early 1990's, a trend for early childhood care services in developed nations has increased dramatically with more two-parent families employed in the workforce. In the United States 59% of children under the age of 2 are in childcare for more than 30 hours per week (NIEER, 2004). Additionally, welfare reform at the federal and state level has dramatically increased the need for early childhood care (Mulligan, Brimhall, West, & Chapman, 2005; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCR], 1997). In the Cost, Quality, and Child Outcomes national study 40% of infant/toddler classrooms were of poor quality and only 8% of infant/toddler settings were rated as good or excellent (Helburn et al., 1995).

Although child care has become an embedded aspect of American culture, evaluating and assessing quality of care is a challenge (Thomason & La Paro, 2009). Moreover, childcare serves as a primary early learning environment with nearly 5.8 million under-threes in nonparental care in the US (Matthews & Schumacher, 2008). Concern for the effects of out-of-home care on child development led to research in quality and quantity of care for children (Huntsman, 2008). For the most part, research on quality examines developmental outcomes associated with high and low quality childcare. The National Day Care Study was the first major study to examine government regulated structural characteristics of quality in childcare settings (Ruopp, Travers, Glatz, & Coelen, 1979). Since then, research on quality has been instrumental in influencing

government to adopt practices to monitor and improve safety and quality in childcare (Huntsman, 2008).

Notably, The Early Head Start Family and Child Experiences Survey (Baby FACES) longitudinal study, implemented in 2009, examined the association between quality, children's growth and development outcomes, and parenting outcomes (Aikens et al., 2015). The study has contributed important information on classroom quality attributes, revealing mid-to-moderate range quality scores compared to other measures. Teacher interactions, an indicator of quality, were strongest in emotional and behavioral support. However, instructional support was weakest, revealing a pattern of diminished quality in learning instruction overtime (Aikens et al., 2015; Thomason & La Paro, 2009). Optimal, high quality learning environments rely on the teacher's sensitivity and responsiveness to children (Fantuzzo et al., 2012; National Association for the Education of Young Children, NAEYC, 2012). Quality in early childhood education is defined by the structural and process variables: Structural variables focus on teacher education, teacher-child ratios, and group sizes, and are the regulated aspects of programs, whereas, process variables define teacher-child interactions, relationships, and curriculum implementation. Process variables point to how service is prescribed, while structural variables define by whom and what delivery takes place (Aikens et al., 2015; Thomason & La Paro, 2009).

To date, quality in infant and toddler settings is under-studied with a paucity of information on process variables, especially in Early Head Start settings (Aiken et al., 2015). Importantly, quality childcare is dependent on the interaction between process and structural variables. Centers adhering to licensing standards to maintain adult: child

ratios, and group size, a structural variable, tended to employ well-educated teachers and pay relatively high salaries, a process variable (Howes, Phillips, & Whitebrook, 1992).

An evaluation of teacher-child interactions, an important indicator of process quality, was not included in the National Institute of Child Health and Human Development Early Child Care Research Network study of characteristics of infant childcare (NICHD, ECCRN, 1996). For example, The Infant/Toddler Environment Rating Scale (ITERS) evaluated mainly structural variables and physical aspects of the childcare setting such as, space, furnishings, curriculum, routines, parents, staff and adequate number of play objects (Pianta et al., 2005). Additionally, The Caregiver Interaction Scale (CIS) does not assess the domain of behavior guidance and language development (Arnett, 1989). Similarly, a literature review for the Quality of Caregiver-Child Interactions for Infants and Toddlers (Q-CCIIT) project, revealed two important constructs for assessing quality caregiver-child interactions, joint attention and reciprocity, were the least prevalent in measures (Halle, Anderson, Blasberg, Chrisler, & Simkins, 2011). Additionally, unpacking elements of process quality to distinguish between, for example, child outcomes and bidirectional social experiences are important features of caregiving routines and to the child's social development that require closer examination (Zaslow, Halle, Martin et al., 2006).

Healthy development of the young child is contingent upon the quality and reliability in the child's primary relationships both inside and outside the home setting with lasting effects on a child's well-being and development when early childhood care is optimal (National Council on the Developing Child, 2004). Sensitive caregiving and the ability to participate in episodes of shared and reciprocal exchanges, or mutuality, with

infants/toddlers is crucial to how they draw meaning from the social and cultural contexts and is relevant to the discussion on diapering practices (Funamoto & Rinaldi, 2015; Karoly et al., 1998; Thomason & La Paro, 2009). Structural elements of childcare quality for health and safety have evolved considerably, and included indicators on hygiene, and disease prevention with much emphasis given to the importance of handwashing as a preventative practice.

Monitoring Health and Safety in US childcare

Dating back to1979, interest in monitoring health and safety practices in childcare programs through a review process was beginning to take shape. With the aid of federal grant money, pilot testing began in several US states to monitor indicator systems for childcare quality (Fiene, 1988). As a result, responsibility for overseeing childcare program indicators shifted from the federal to the state level. In a synthesis of the health and safety literature for nonparental care, 13 evidence-based indicators pointed to essential harm reduction protocols for children and for program quality.

For two decades, the indicators formed part of a collective childcare regulatory database, integral to the development of state licensing indicator structures (Fiene & Nixon, 1981, 1983; Fiene, 1988; Fiene, 1994). High program compliance with the indicators revealed higher levels of quality, associated with better outcomes for children (Fiene, 1994). Handwashing/diapering, was a 13th key indicator, and to date, handwashing was cited as the most effective preventative measure of infection control in the childcare setting. Interestingly, of the 13 indicators, handwashing and diapering, has the most widely distributed resource materials available (Niffenegger, 1997; Mohle-

Boetani et al., 1995). As discussed in a previous paper for an independent study with Dr. Williamson some of the content is pertinent to this review and will be included.

Although it is not the focus of this paper the need for psychometrically sound scientifically based measures of quality in infant and toddler settings is important. Process and structural variables provide a framework, but to date, fail to provide a lens through which the subtle attributes of optimal caregiver-child interactions are measured. Furthermore, context and content are frequently absent. In the absence of contextualization, important meanings are missing about the relational experiences in the field (Leavitt, 1994). When the focus of evaluation is outcome, performance based, and on hygiene and disease prevention, the child's moment-to-moment experiences are overlooked (Guttentag, 1987). Pawl (1990) aptly stated:

> Most vital…is that the infant or toddler is cared for in ways that promote his feeling effective, respected, and understood much of the time. If this occurs both with parents and with caregivers, then we have far less about which we must be concerned. (p.1 - 5)

Fifteen years later, the reality for many infants' and toddlers' in out-of-home care settings is less than ideal (Pawl, 1990). To improve group care quality, qualitative studies examining the day-to-day lived experiences of infants and toddlers are needed (Horm, Hyson, & Winton, 2013). More importantly, further research will provide much needed knowledge to a field that has yet to find consensus on issues related to optimal teacher characteristics and attributes that promote positive development and learning for infants and toddlers, in addition to the structural variables of health, safety, and disease prevention practices. Lack of training specific to infants and toddlers is another challenge for early childhood programs in higher education.

Horm et al. (2013) noted that the knowledge and skills of infant/toddler teachers

in the field and those in teacher training settings is critical to the long-term positive outcomes for infants and toddlers. However, in US colleges and universities only 29% included curriculum content specifically addressing the development of children under four, and an appalling 40% offered at minimal, only one infant and toddler course. Baines (L. Baines, personal communication, April 2011) reported some college students majoring in ECE have never held a baby (as cited in Horm et al., 2013).

Defining Routines

At the center of infant/toddler care are the caregiving routines, defined as the repeated, sequence of predictable actions regularly followed and highly important in the daily life of children according to social psychology researchers (Addessi, 2009). Emiliani (2002) described routines as:

> The repetitive structuring of interactive sequences with the early formation of routines regulate and give order to the child's biological rhythms, aims towards the goal of survival, which can only be guaranteed by the organization of social life on a daily level– the children must master it early on. (p. 54)

For most children, routines are associated with, and represented by the contextual elements in which they occur, for the most part, home and school, in Western cultures (Addessi, 2009). In the childcare environment routines if approached consistently, offer predictability and security for the caregiver-child relationship. Importantly, routines constitute essential concrete features that inform a child's sense of time, and space, long before abstractions of these concepts are developed. They are the *anchored moments* between a child and a caregiver throughout the day. Routines include napping, eating, sleeping, dressing, diapering, arrival, departure, transitions, washing, playtime.

For infants' and toddlers', individualized routines allow for variation in timing and action, rather than a one-size-fits-all, production-line approach (Gillespie, 2012).

Undeniably, routines in infant and toddler childcare settings are the most time intensive activities in the day and arguably, are inseparable from programming pedagogy. With eighty percent of a caregiver's time focused on daily routines, caregiver attitude will directly affect the positive or negative experiences a child might have (Gonzalez-Mena, 1990). Psaltis and Stonehouse (1988) postulated that routines be considered "not as time away from the program, but as an important part of the program" (p. 79).

In other words, routines in childcare settings are ideal situations for the facilitation of learning, development, and self-regulation of infants' and toddlers' (Brannock, 2004; Post & Hohmann, 2000). Importantly, adult adjustments to facilitate congruency with the timing and pacing of infant and toddlers, reframes caregiver practices from one of adult externalized time management, a structural feature, to the lived, in-the-moment experiences of the child, a process feature. Ideally, routines are not formulaic procedures carried out on the child, but rather, a shared experience that respects the child as a partner participant in care.

Frequently, routines become mundane tasks approached in a hurried way to get it over with as quickly as possible (Gonzalez-Mena, 1990). Beyond the immediate goal of feeding a baby (Gonzalez-Mena, 1990), there is the intention in the way the caregiver approached the routine. How is the routine accomplished, in a cursory way, or does a task become imbued with sensitivity and convey so much more to the baby? Significantly, infants and toddlers learn so much at the hands of the caregiver during feeding, diapering, washing, and dressing, such as: security and self-esteem, pleasure and tactile stimulation, a sense of time, space and rhythms, independence and competence, and cognitive and language skills (Gonzalez-Mena, 1990). When caregivers tune into the uniqueness of a

child's individuality during diapering by responding with sensitivity and in an unhurried manner, a powerful message (Tardos, 2016), is absorbed by the child about their bodies, bodily functions, and crucially, that the caregiver enjoys being with the child.

Rituals and Rhythms. From birth, children are immersed in the cyclical events of feeding, sleeping, waking, and diapering that bring sequences of activity involving repetition and rhythm to every day (Addessi, 2009). Already, early relationships are shaped by routines, as a child develops a sense of cyclical time via repeated activities through actions with people. Alive and every changing in nuanced ways between participants, Fogel (2000) described the variations in routines as "*mutually reciprocal activity*" (p. 748). A feature of routines is rhythmicity. The term aliveness, explains the child's sensitivity to the varying rhythms of an adult caretaker and the ongoing effort by the child to adapt and interact in ritualized turn taking.

Rituals are the aspects of a routine that take into consideration the individual needs of a child, for example, waving goodbye at the childcare center window to a departing parent, eases the child's separation grief (Rossano, 2012). Moreover, with time, the ritual may change as the child feels more secure and trusts the relationships with the caregiver. In the infant-caregiver relationship, rituals are emotional bonding opportunities that eventually form the basis for imitative learning and development of social norms and expectations. Importantly, in childcare, rituals are the bridges between families, caregivers, and the children, offering possibilities to deepen connections to support the daily routines of the setting. Rhythms and rituals in the daily schedule diminish chaos and contribute to the child's sense of control (Post & Hohmann, 2000).

Schedules. Ideally, infant and toddler care is organized around the occurrence of daily events that are both predictable and flexible for the individual needs of the children (Post & Hohmann, 2000). In sync with each child's particular needs, one element of the caregiver's task is to organize personal caregiving routines of each child into the overall daily schedule, for example, a child who arrives at 7:00 AM, is ready for a nap by 9: AM, while yet, another child is just arriving and ready to play. Notably, diapering is not a rote, *scheduled event*, but rather, occurs in response to the child's need. An example of rote diapering is adherence to a routine between 9 – 9:30 a.m. where children are diapered, silently, one after the other in a mechanized systematic approach (Petersen & Wittmer, 2008). Lower adult child ratios in infant and toddler care, support safety and security for young children and is less challenging for caregivers to implement personalized daily schedules of care. Correspondingly, a primary caregiver approach is ideal because it provides the caregiver with enough time to build relationships, trust, and embed learning time in routines with a child (The Program for Infant Toddler Caregivers, 2000).

Primary Caregiver System. When adequate resources are available, continuity-of-care, based on predictable schedules and routines, facilitate primary caregiving practices (Butterfield, 2002). Primary caregiving is a term used to define adult caregivers who are responsible for feeding, diapering, nap preparation, and toilet training a small group of infants' and toddlers', usually between 1-4 children. Importantly, primary caregiving is not an exclusive practice, rather it implies, in principal, the responsibility for a key group of children, while at the same time, teachers work cooperatively to oversee the whole group. Other terms for primary caregiving include, own caregiver, key

caregiver, responsible caregiver, and continuity of care (Bernhardt, 2000; Elliot, 2009; Gonzalez-Mena, 1990; Vincze, 2007).

Ideally, through consistent daily interactions between caregiver and child, a bond develops, and as a result, both come to know expectations, rules, and rituals from the experiences shared in caregiving routines. Secure attachments are more likely to develop when a child has consistency with a caregiver (Raikes, 1996). A key feature of adopting primary caregiving, are the relationship building opportunities with infants and toddler and their families. Primary caregiving provides the opportunity for parents to develop a deeper relationship with one adult who knows their child well. In addition, a key adult figure can be instrumental in facilitating a family's first experience of transitioning into childcare, and dealing with the difficulties of separation (Bernhardt, 2000; Elliot, 2009; Raikes, 1996). Consistent practices that respond to the child's timing and developmental level facilitates trust in relationships and routines. Infant intersubjectivity and responsive-caregiver interactions are discussed next.

Responsive Caregiver-Child Interactions

Joint Attention and Cumulative Experiences. Given that a large extent of the first few years of a child's life is dependent upon the care routines of diapering, feeding, bathing, and nap preparation it is timely that infant/toddler routines be studied as a rich context for embedded learning experiences to support a child's first cognitive experiences and to support well-being and involvement.

On average, a young child will experience 5000 diaper changes (Gerber, 1998), in the first few years of life in a highly recurrent activity that provides a potentially, rich context for learning and relationship. Highly routinized caretaking activities provide

opportunities to study the acquisition of language, joint attention, and culture through the dyadic relationship. Furthermore, cumulative experiences of diapering create a relational pattern in the dyad, based on the history of past interactions, and in anticipation of future expectations. Significantly, cumulative life experiences have the potential to make a positive or negative affect, and diapering is one of the first cumulative experiences of an infant during a highly impressionable time (Aukrust, 1996: Berthelson, 2009; Gerber, 2000; Lally, 2013).

Research reveals the infant's sensitivity to the timing and congruency of others, where optimal development hinges on contingency and responsiveness by caring adults (Colombo, Kannass, Walker, & Brez, 2012). Cumulative experiences in caregiving routines are unique to human infants' who require long periods of care and feeding before reaching independence (Terrace, 2009). This extensive period of dependency on a caring, sensitive adult is pertinent to the infant's development of joint attention. In exploration with the adult attachment figure, the infant begins to learn the you/me distinction followed by an increased frequency in mutual gaze. It is this impact on the subjective experience of the other that the infant discovers aspects of self. For the altricial infant, the mutual social process supports the infant's regulation and capacity to make meaning which eventually leads to the acquisition of culture and language (Tronick, 2011).

As an illustration, in the iconic Still Face experiment, mother-infant playfulness was disrupted, when the mother failed to engage in a timely, reciprocal response with her child (Tronick, 1989). As a result, the baby in distress, attempted to reengage the mother's attention. Upon success, the infant regained regulation of her emotions. In an empirical investigation of the Still Face procedure, findings revealed an impressive

capacity by the infant to read intentions, and to regulate affective displays for the social experience (Adamson & Frick, 2003).

Acute sensitivity to timing emphasized the importance of caregiver contingency and timing in response to the infant's bids (Colombo et al., 2012). Despite the importance of responsive, contingent caregiving, ideal interactions accounted for less than a third of caregiver-child experiences. Nonsynchronous experiences posed an adaptive challenge for the child, provided a sensitive adult could engage in making a timely repair with the baby. In other words, miscues between adult and child must not result in a situation of recurring, heightened levels of toxic stress for the child (Tronick, 1989).

Early Intervention. Diapering routines are an ideal context for social interactions and provide an opportunity for timely, congruent experiences that support the regulation of infants and toddlers in the dyad relationship. Early intervention literature for parent strategy use has examined caregiving routines, specifically diapering and feeding, as a way to facilitate child development. Milieu teaching or contextually mediated instruction is an approach implemented in the natural environments that are typical for infants and toddlers (Woods & Kashinath, 2007). The term natural environments broadly encompass the setting as well as everyday activities that are familiar to and provide meaningful experiences for the child and caregiver. For example, daily living routines might include tasks of hair brushing, washing face and hands, brushing teeth, dressing, and undressing. Notably, it is the frequent repetition and often sequence of the activities that provide a predictable experience familiar to the child. The cumulative repetitiveness of the experiences provided opportunity for the child to respond, anticipate, cooperate, and

participate. Over time, new information and the child's growing awareness can lead to increased abilities and eventually independence (Woods & Kashinath, 2007).

The findings in early intervention literature are applicable and relevant to caregiving routines in childcare settings. Interestingly, milieu teaching parallels aspects of the Pikler approach where caregiving is the curriculum for the young child and learning takes place with a primary caregiver in a safe, trusted, and familiar environment. In other words, everyday routines are an encounter for relationship, and learning is embedded in the natural environment of the child. Woods and Kashinath (2007) explain:

> Routines support interaction between children and their caregivers by providing clear roles and responsibilities that can be learned by caregivers and used to increase engagement, communication, and social interaction.
> During familiar routines, they can predict when the next opportunity for communication or social interaction will occur and can be prepared to support the children's responses. (p.139)

Venn and Wolery (1992) conducted a study to train paraprofessionals in positive interactions with babies during caregiving routines, specifically diapering and feeding. Their research, targeted caregiver training in interactive games during diapering with special needs infants. Notably, none of the caregiver participants had formal education or training in infant care. Results of the study revealed increased caregiver attentiveness towards the infants during diaper changes. In addition, caregivers demonstrated heightened responses to infant cues, and were less mechanical in diapering procedures.

Noting the paucity of research on infant caregiver preparation with a focus on how to interact with special needs infants during every day routines, more research in interactive behavior changes (Venn & Wolery, 1992), between infants' and caregivers' is warranted. Similarly, a lack of training and knowledge of infant/toddler development in

early childhood institutes of higher education (IHE) and in the field (Horm et al., 2013), is of continuing relevance today.

Procedural Memory. As early as 2 months of age infants' make anticipatory bodily adjustments in expecting to be picked up (Reddy, Markova, & Wallot, 2013). This recent finding has implications for the infant's experience in all aspects of care in the childcare setting, but is especially pertinent to diapering. The study revealed the infant as a participant in joint actions with a capacity for social cognition from very early in life. With this in mind, research methodology must refrain from a spectator perspective and take a new approach to include the infant as a participant (Reddy et al., 2013). Diapering is an integral part of the infant's early experiences. Desperately needed is a paradigm shift in the thinking and actions of caregivers to include infants' as participants rather than passive objects at the hands of the adults.

Recognizing that early experiences lay down a neurological pathway in the infant's brain Siegel (2004) wrote of the infant brain as an anticipation machine. He explained how anticipatory responses, based on prior experiences, are integral to the attachment process for the infant's survival. The term internal working model, or mental representations is a central tenet of Bowlby's (1969, 1982, 1988) attachment theory, more recently, identified as procedural memory in neuroscience research. Available from birth, procedural memory is what allows the infant to prepare and anticipate environmental interactions and to construct a neuronal pattern of expectancy (Sander, 1975; Beebe & Stern, 1977, Murray, 1980).

Development of the infant brain builds on previous experiences to form *channels* akin to water flowing along familiar routes (Music, 2006). For example, Hebb's Law, is

the principal that experiences lay down a neural network forming a basis for one experience to follow another, if they have previously gone together. In other words, cells fire and wire together (Music, 2006). Procedural memory or knowledge are also described as patterns of behavior which are integral to habit formation. Through a repetitive process, patterns are internalized providing a sense of knowing and comfort, and reduce stress (Butterfield, 2002).

Diapering routines follow a similar process, based on particular, predictable, anticipated, and familiar experiences associated with the caregiver and the environment facilitating development of a child's brain construct, or channels. Research on procedural memory and the infant's ability to anticipate has relevance to current diapering practices in infant/toddler childcare settings. Next, the Pikler approach subscribes to primary care practices where predictability and familiarity are central tenets of the child's learning and relational experiences with the caregiver.

Pikler Practices

Dr. Emmi Pikler (1902-1984) a pediatrician, trained in Vienna in 1920's in the positivist tradition with Professor Clemens von Pirquet (Falk, 2007). Dr. Pirquet, a brilliant physician and scientist, was the first pediatrician at Johns Hopkins University, and discovered the concept of allergy. Dr. Pikler influenced by Pirquet's views on physiology and prevention, developed an approach that addressed the interrelationship of physical and mental health in orphaned children. During her internship with Dr. Piquet, she adopted a level of cooperation with young children that was highly unusual for the times. Hospitalized children, provided they were well enough, roamed the ward, enjoyed outdoor time in the garden, and play spaces were available in every child's room. A

central tenet of physician and nurse practices with children involved respectful interactions, and to ensure their well-being. A decade later, in the 1950's, James Robertson, coined the term hospitalization, to describe the trauma experienced by children separated from their parents when hospitalized. His research was instrumental in changing pediatric practices with hospitalized children (Alsop-Shields & Mohay, 2001).

In 1946, Dr. Pikler, by then a reputable pediatrician in Budapest, she was commissioned to direct a children's home after the devastation of World War II (Falk, 2007). Despite the lack of resources, she forged on, noting in her diary her concern with the nurses employed in the orphanage. She wrote:

> They do not really care for the children: they wash them down, clean them up, see that they get food etc. – if possible in a matter of minutes and with the least possible exertion…they mainly care for the linens…. that there is no time left for the children. (p. 13-14)

Subsequently, Pikler dismissed the nurses and hired caregivers who were interested in learning how to care for children in a way that respected their well-being.

Implementing an *own caregiver* approach, the caregivers were trained to practice the routines of diapering, bathing, feeding and dressing the children with the utmost sensitivity, to avoid hurrying, to be gentle, and to talk in such a way that the child would anticipate what was going to happen (Vincze, 2007). Moreover, the caregivers were astute observers of all aspects of the child's activity, attentive to the unique timing and pacing in care routines, in the belief, that a child, regardless of age, was sensitive to the adult's affect and intention. Significantly, and essential to the whole experience was the voluntary cooperation of the child in the caregiving routine. This next section of the paper will examine the caregiver-child interactions in diapering routines through the theoretical framework of Bronfenbrenner's (2001) proximal processes.

Chapter 3: Methodology

Research Design

This quantitative study provides descriptive information about associations and relationships among caregiver-child interactions and child well-being and involvement during diapering routines in infant and toddler classrooms. Using purposive sampling, children, still requiring diapers in infant and toddler classrooms fulfilled the study criteria including children transitioning to toileting. This study project occurred independently and utilized extant caregiver and child demographic data collected from an Early Head Start (EHS) childcare center partner evaluation study in a Midwest US City. Data on global classroom scores assessed at the classroom level were accessed from extant data to describe correlations, means, standard deviations, and ranges for comparison of infant and toddler quality with a measure for examining interactions at the caregiver-child level.

Participants

Participants from 30 infant and toddler classrooms across 3 high-quality childcare centers in a Midwest City were recruited for this study. The full-day, year-round program provides center-based care for infants and toddlers through PreK for families living in low socioeconomic circumstances and were designed to prevent or reduce the achievement gap for at-risk children. Infant and toddler classrooms have a maximum of 8 children with no more than 2 infants under the age of 12 months per classroom. Classroom staffing consisted of a lead teacher, assistant, and teacher aide with floaters available to meet additional staffing needs. The ratio of caregiver to child was 1:4.

Research permission was secured in a preliminary meeting with the organization's executive directors to introduce the study and answer questions. Following Internal

Review Board (IRB) approval, three childcare center site directors in the childcare organization were contacted by the researcher and meetings were arranged with caregivers during work hours to provide study information, answer questions, and obtain caregiver consents. Parent recruitment occurred during child pick-up and drop-off times by the researcher at the three childcare center sites. Parents received information about the purpose of the study: that participation was voluntary, confidential, and the childcare services provided to them would not be affected. Caregivers and parents were compensated with a five-dollar gift card regardless if they agreed to participate or not in the study.

Children in infant and toddler classrooms, still requiring diapers, including children transitioning to toileting, fulfilled the inclusion criteria for this study. To be included in the sample for analyses, the child had to have had 2 observed diapering cycles. From the possible participants of 272 children, 102 caregivers, in 34 infant and toddler classrooms, 75 caregivers and 139 children consented to participate in the study, observed participants were 49 caregivers, (n = 49), and 113 children (n = 113), ages 3 months to 37 months. Reasons for eliminated child participants, (n = 24) from the observed number, includes child transitioned to PreK, left the center, or were fully toilet trained and no longer in diapers for study inclusion criteria. For eliminated caregivers, (n = 26) reasons included, no longer employed at the centers or did not diaper on the day of observations were reasons observations did not occur. Thus, the final sample for analyses included 49 caregivers, (n = 49), and 113 children (n = 113). The child participants, (46%) Female and (54%) male, represented diverse ethnicities, including Black, (30%) White, (16%) Hispanic, (39%) and (14%) identified as other. Family structures were

comprised of almost three quarters (73%) single parent families, one quarter (23%) two-parent families, and (2%) identified as other. Demographic information for infant and toddler participants is presented in Table 1 and for caregivers in Table 2. Extant demographic data were available for only 28 of the 49 caregivers because consent was not given to share this data from the larger study.

Procedures

Data were collected through conducting classroom observations and included two quantitative measures. Data collection spanned 4.5 months, mid-October through mid-February, 3 hours per morning, 4 days a week. In each classroom, diapering was observed and each diapering session data was simultaneously coded by the study researcher and a trained research associate, each scoring a standardized measure. Two diapering cycles per child during a three-hour classroom observation period were observed and recorded. Using stop-watches the study researchers collected duration time point data about the duration of diapering interactions. Duration time point one began when a child entered the diaper change space and ended when the caregiver diaper change interactions ended at the diaper change table. Duration time point 2 began when a child left the diaper change table and ended when the child returned to the main classroom area. A total of 226 diapering observations of 114 of Lead Teachers, 60 Associate Teachers, 45 Teacher Assistants, and 7 Floater teacher assessments occurred during data collection for this study for a total of 226 observations.

Before data collection began in the morning, the researcher checked that the consented classroom caregivers were present. Researchers remained in each classroom for 3 hours to ensure all consented children were observed for 2 timed diapering cycles

per child using stop watches. In the absence of a consented caregiver or child, researchers returned to the classrooms to collect data another day.

Designed as suites, the infant and toddler classrooms used in this study are open style where both classrooms are divided by a shared washroom and diaper changing area. Both infant and toddler classrooms have access to the diaper space. One diaper changing table is shared between two infant and toddler rooms with an additional diaper changing table available in an atelier area shared by both classrooms. Two to three child-sized toilets, depending on the childcare center site, and one or two sinks at child height, make up the diapering/toileting areas. Data collectors followed the caregiver and child into the diaper changing area, standing in the back of the toileting area about two feet behind the caregiver and child, but still close enough to clearly observe and hear the interactions. Due to the sensitive nature of diapering, videotaped observations did not occur.

Measures

Data collected for this quantitative study were naturalistic observations of the diapering process in infant and toddler classrooms. Observational measures documenting caregiver-interactions, child wellbeing, and involvement were utilized in this study to explore characteristics of the diapering relationship. Prior to data collection two assessors were trained in standardized measures for child well-being and involvement and caregiver interactions.

Assessor Training

Adhering to the procedures per the measurement authors' instructions; assessors read and reviewed video for scoring practice over a two-week period. This study's author trained and obtained reliability simultaneously with the research associate on the

PICCOLO. Video coding reliability was established with interrater agreement on item scores. Additionally, two mornings of live coding occurred in community partner childcare site's infant and toddler classrooms for additional practice. To maintain interrater reliability, two calibration checks occurred after completing data collection observations at each childcare center site participating in the study. Assessors also returned to community partner childcare centers to calibrate scoring by live coding and a discussion of scores. Assessors came to agreement and no items were more than 2 points' difference. Training and reliability by the study author in the PSIC scale was obtained at a 3-day workshop at the University of Leuven, Belgium, Center for Experiential Education in May 2016.

Data collected for this quantitative study were naturalistic observations of the diapering process in infant and toddler classrooms. Observational measures documenting caregiver-interactions, child wellbeing, and involvement were utilized in this study to understand characteristics of the diapering relationship. As previously mentioned, extant data was utilized to analyze specific dimensions of the following variables based on commonly-used classroom global quality measures: Toddler Classroom Assessment Scoring System (CLASS-Toddler), CLASS-T Emotional and Behavior Support sub scales of Positive and Negative Climate, Teacher Sensitivity, Regard for Child Perspectives, and Behavior Guidance. Engaged Support for Learning subscale included Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. The Infant/Toddler Environment Rating Scale-Revised (ITERS-R) dimensions and subscales included in this study were Space and Furnishings, Personal Care Routines, Listening and Talking, Activities, Interactions, and Program Structure.

The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO). The PICCOLO measures four behavioral domains of caregiver interactions with children including affection, responsiveness, encouragement, and teaching. It is a 29-item checklist of behaviors using a 3-point scale. Ratings measure caregiver interactions as either [0 (absent), 1 (barely) and 2 (clearly)]. Diapering routines offered a clearly bounded opportunity for observing individual caregiver-child interactions. Observers primary goal was to observe the types of interactions occurring in the dyad during the intimacy of one-on-one time in diapering routines. A score of "absent" revealed no observation of the item dimensions in the caregiver's interactions with the child. For example, the caregiver diapered the child without making eye contact or speaking with a warm tone of voice. "Barely" indicated that a caregiver did not engage the child in the diapering experience and missed opportunities for promoting quality interactions. "Clearly" conveyed an engaged dyad during the routine. Trained raters observe for observable behaviors in each of the four domains in approximately 5-minute cycles. Some observation cycles were less than 5-minutes, because diapering caregiver-child interactions were brief, however, some interactions extended beyond 5-minutes. Tested across an ethnically diverse sample, the PICCOLO has been linked to positive child outcomes across multiple ethnic groups (Norman Jump, & Christiansen, 2013).

Primarily used to measure parent-child interactions at the individual level; the PICCOLO has demonstrated reliability and validity in that context. Recent research examining the PICCOLO in childcare settings revealed its validity as a measurement of caregiver interactions with children in nonparental care (Lippard, Riley, & Hughes-Belding, 2016; Norman & Christiansen, 2013; Roggman, et al., 2013).

Reliable coding of the PICCOLO with younger babies, under 10 months, and shorter observations of only 5 minutes have occurred in training using 1 and 5-minute video clips. When compared with longer versions of the same observations, they only rarely showed big changes in scores (L. Roggman, personal communication, February 16, 2016).

The Process-Oriented Self-Evaluation Instrument for Care Settings (PSIC). The child's well-being and involvement in diapering routines was measured with the Process-Oriented Self-Evaluation Instrument for Care Settings (PSIC; Laevers et al., 2005). Well-being, significant to optimal mental health is defined as a feeling of ease, spontaneity, and a lack of emotional tensions. Involvement consists of the capacity to become deeply absorbed in activities with concentration and interest, indicators include: 1) The child hardly shows any activity, 2) The child shows some degree of activity but which is often interrupted, 3) The child is busy the whole time, but without real concentration, 4) There are clear signs of involvement, but these are not always present to their full extent, 5) During the episode of observation the child is continuously engaged in the activity and completely absorbed in it.

The PSIC measures the two constructs of well-being and involvement. PSIC assessors rate observed child behaviors on a 5-point scale. Involvement lists 5 categories of signals or domains, with items within each domain indicating, for example, (1) Extremely low: the child shows hardly any activity, no concentration: staring, daydreaming; an absent or passive attitude; aimless actions, no signs of exploration or interest; not taking anything in, no mental activity, (2) Low: some degree of activity but is often interrupted: limited concentration, looks away during activity, fiddles, dreams; is

easily distracted, (3) Moderate: busy whole time, no real concentration: superficial attention; not absorbed in activity, short-lived; limited motivation, no real dedication, no challenge, (4) High: Clear signs of involvement-not always present to full extent: engaged without interruption; frequent concentration, brief moments attention is superficial; child feels challenged/motivated; capabilities addressed, (5) Extremely high: continuously engaged, absorbed in activity, absolutely focused, concentrated, highly motivated, perseveres, not distracted by strong stimuli, is alert, has attention for details, shows precision, intense mental activity, clearly enjoys being engrossed in activity. Well-being lists signals for domains measured using a 5-point scale ranging from (1) Extremely low: clear signals of discomfort, whines, sobs, cries, screams; looks frightened, dejected, is angry or furious; wriggles, throws objects, hurts others; sucks its thumb, rubs its eyes; doesn't respond to the environment, avoids contact, withdraws; hurts him/herself; bangs its head, throws him/herself on the floor, (2) Low: posture, facial expression and actions indicate child does not feel at ease with signals less explicit than under level 1, (3) Moderate: the child has a neutral posture; facial expression and posture show little or no emotion. No signals indicating sadness or pleasure, comfort or discomfort, (4) High: obvious signs of satisfaction, however, these signals are not constantly present with the same intensity as in level 5, and (5) Very high: clear signals of joy, happy, cheerful, smiles, beams, cries out of fun; is spontaneous, expressive; talks to him/herself, plays w/sounds, hums, sings; is relaxed, shows no signs of stress/tension; is open/accessible to environment; lively, full of energy, radiates; expresses self-confidence-self-assurance.

Analysis of Cronbach's alpha $\alpha = .83$ and mean scores were computed across the sample with higher scores indicating more well-being and involvement in the child. PSIC is an easy scale to use and learn and observations are usually conducted in ten-minute cycles. Interrater reliability is .083-.089 reported in the literature. There is limited psychometric data at this time.

The Classroom Assessment Scoring System-Toddler (CLASS-T). (Thomason & La Paro, 2009). The CLASS-T primarily focuses on interactions in the classroom setting at the global level and is intended for use with children ages 15-36 months. Observations of two specific domains, rated in 20-minute cycles are completed in 2-hour periods followed by 10-minute coding and note entry on the score sheets. Certified, reliable observers, for each dimension assigns a score rated on a 7-point scale for quality and frequency of teacher-child interactions. A score of 1-2 indicates low quality interactions. Scores of 1-2 reveal ineffective or minimal teacher-child interactions with children, rote teaching instruction, and inappropriate behavior management practices. Scores in the 3-5 range indicate a mixed quality of teacher interactions, for example, at times teachers implement effective interactions while at other times, rarely. A 6-7 score range is documenting consistent, effective interactions during the observational cycles. The domains in the CLASS-T are comprised of Emotional Behavior Support (EBS) with 5 dimensions; Positive and Negative Climate, Teacher Sensitivity, Regard for Child Perspectives, and Behavior Guidance. The Engaged Support for Learning domain with 3 dimensions includes, Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. Good reliability is reported for the two domains of the CLASS-T with a range of .92 - .86 respectively (La Paro et al., 2014).

The Infant Toddler Environment Rating Scale-Revised (ITERS-R). (Harms, Cryer, & Clifford, 2006). The ITERS-R assesses global quality and focuses on the physical elements of the environment for health, safety, warm, supportive interactions and appropriate stimulation through language (Bisceglia et al., 2009). Measuring overall quality in center-based infant and toddler classrooms the ITERS-R is utilized for children birth to 30 months (Harms, Cryer, & Clifford, 2006). ITERS-R is comprised of 39 items with 7 subscales; Space and Furnishings, Language, Activities, Interaction, Personal Care Routines, Program Structure, and Parents and Staff, the ITERS-R measures sub dimensions with 1 "Inadequate" to 7 "Excellent". Validity showed high internal consistency for global quality with an alpha score of .88 (Bisceglia et al., 2009; Harms, Cryer, & Clifford, 2006). Extant data subscales used in this study included: (1) Program Structure; Schedule, (2) Interaction; Staff-child interaction, Discipline, (3) Personal Care Routines; Diapering/toileting, Health practices, (4) Listening and Talking; Helping children understand language, helping children use language, (5) Parents and Staff; Staff continuity, (6) Space and Furnishings; Furniture for routine care and play.

As previously mentioned, extant data were utilized to assess classroom quality based on commonly-used, global classroom quality measures: Toddler Classroom Assessment Scoring System (CLASS-Toddler), CLASS-T Emotional and Behavior Support sub scales of Positive and Negative Climate, Teacher Sensitivity, Regard for Child Perspectives, and Behavior Guidance. Engaged Support for Learning subscale included Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. The Infant/Toddler Environment Rating Scale-Revised (ITERS-R) dimensions

and subscales included in this study were Space and Furnishings, Personal Care Routines, Listening and Talking, Activities, Interactions, and Program Structure.

Ethical Considerations

Conducting ethical research was at the core of this study and respected and adhered to by the researcher and research associate. Infants and toddlers are a vulnerable population, and required parental consent to participate in the study. IRB approval for accessing extant data on classroom quality was already in place, and the researcher's name was added to the study IRB documents, and CITI training requirements were met. Conducting ethical research was at the core of this study proposal and was respected and adhered to by the researcher and research associate. Study participants were made aware of their right to refuse to participate and withdraw from the study. Confidentiality and anonymity were addressed with study participants and outlined in the information literature and consent form package, unless otherwise indicated.

Summary

Chapter 3 provided the study design, procedures, participants, measures, assessor training information and ethical consideration for this study. TABLE 1 presents the research questions and measure procedures and analyses.

Table 1. *Analysis Plan*

Research Questions	Dissertation Measures Observational	Extant data Measures	Analysis	Procedure
What types of interactions does the caregiver demonstrate during the diapering routine?	PICCOLO measurement of four behavioral domains • Affection • Responsiveness • Encouragement • teaching PSIC measures five categories of domains w/items indicating • child's level of activity • concentration • absorption • discomfort • pleasure in the child	ITERS-R CLASS-Toddler	SPSS – Description of results of PICCOLO, ITERS-R and CLASS-T	IRB application modification for additional measures and researcher is submitted for approval/confirmation prior to study implementation. Parent consents s obtained. Data is entered daily after observations in Excel to be entered into SPSS for analysis.
What is the child's involvement and well-being during the diapering routine?			SPSS – Description of results of PSIC	
What is the relationship of caregiver interaction and child behavior?		ITERS-R CLASS-T	SPSS – Multiple Regression Analysis between PICCOLO, PSIC, ITERS-R, CLASS-T,	

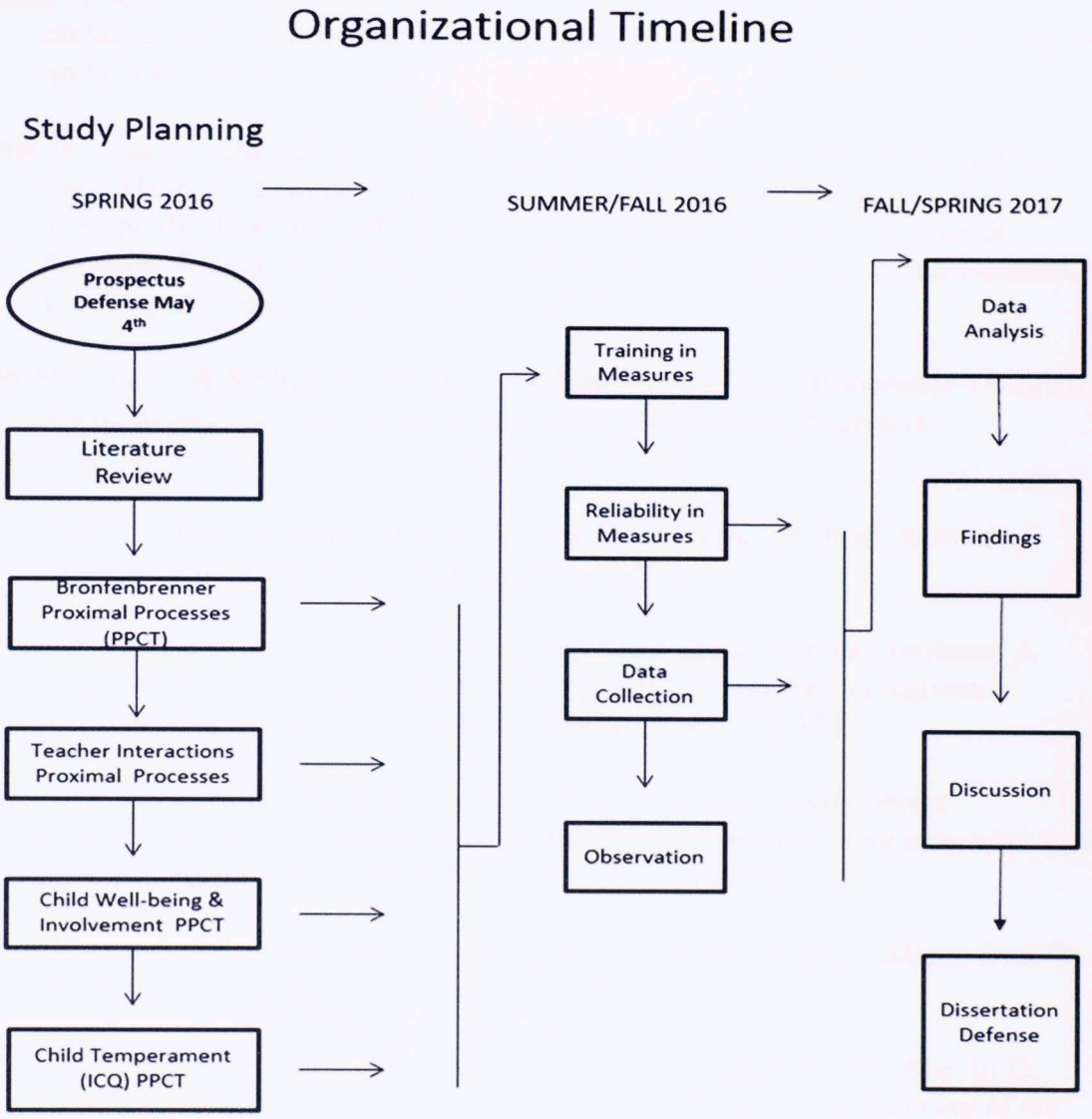

Figure 2. Organizational Plan

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Appendix B: Internal Review Board Study Approval Letter

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Approval of Initial Submission – Exempt from IRB Review – AP01

Date: August 23, 2016 **IRB#:** 7177

Principal Investigator: Deborah Elaine Laurin-Phelan **Approval Date:** 08/23/2016

Exempt Category: Category 1

Study Title: Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement

On behalf of the Institutional Review Board (IRB), I have reviewed the above-referenced research study and determined that it meets the criteria for exemption from IRB review. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

As principal investigator of this research study, you are responsible to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Request approval from the IRB prior to implementing any/all modifications as changes could affect the exempt status determination.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
- Notify the IRB at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,

[redacted]

Aimee Franklin, Ph.D.
Chair, Institutional Review Board

The UNIVERSITY of OKLAHOMA
Jeannine Rainbolt College of Education



Caregiver-infant/Toddler Interactions during Diapering Routines: Associations with Child Well-Being and Involvement

About the Study: The goal of the *Caregiver-Child Interactions during Diapering Routines* study is to describe the experiences between a caregiver and infant/toddler during diapering. Given that a sizable amount of an infant's or toddler's day is involved in bodily care routines, including diapering, research about the quality of caregiver interactions and the child's experience during diapering may provide important information.

Procedures: Observations of 5-10 minutes of the caregiver-infant/toddler interactions that occur during 2-3 diapering changes between 8:30-11:30 AM in your child's infant/toddler classroom.

Risks of Participation: There are no risks associated with this study which are no greater than those ordinarily encountered in daily life of your child.

Benefits of Participation: One long-term goal is to utilize findings to create a training that promotes optimal shared, participatory experiences for the caregiver and infant during diapering routines.

Confidentiality: If you agree to participate in this study, all information is kept private and confidential. Code numbers, not names will be used. The list of names and corresponding numbers will be kept separate.

Appendix D: Spanish Study Information Letter

The UNIVERSITY of OKLAHOMA
Jeannine Rainbolt College of Education



Interacciones durante las Rutinas de Cambio de Pañales: Asociación con el bienestar del niño y la Participación

Acerca del Estudio: El objetivo del estudio *Caregiver-Child Interactions during Diapering Routines* (*Interacciones entre Cuidador-Niño Durante el Cambio de Pañales*) es para describir las experiencias entre un cuidador y el bebé/niño pequeño durante el cambio de pañales. Teniendo en cuenta que una cantidad considerable del día de un bebé o niño pequeño está involucrado en las rutinas de cuidado corporal, incluyendo el cambio de pañales, investigaciónes sobre la calidad de interacciones del cuidador y la experiencia del niño durante el cambio de pañales puede proporcionar información importante.

Procedimientos: Observaciones de 5-10 minutos de las interacciones entre cuidador-bebé/niño pequeño durante 2-3 cambios de pañales entre 8:30-11:30 AM en el aula de su niño.

Los riesgos de Participación: No existen riesgos asociados con este estudio que sean mayores que aquellos encontrados en la vida diaria de su hijo.

Beneficios de Participación: Un objetivo a largo plazo es utilizar los resultados para crear un entrenamiento que promueve experiencias compartidas sobre la participación entre el cuidador y el niño durante las rutinas de cambio de pañales.

Confidencialidad: Si acepta participar en este estudio, toda la información se mantendrá privado y confidencial. Números de código serán utilizados, no se utilizarán nombres. La lista de nombres y números correspondientes se mantendrá separada.

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

ID # _____ Name: _____ Child's birth date: ____/____/____ Today's date: ____/____/____

PICCOLO™

Parenting Interactions with Children
Checklist of Observations Linked to Outcomes

INSTRUCTIONS: Look closely to see behaviors in a quiet parent. Frequency is more important than complexity, but complexity often includes several examples.

SCORING: 0 "Absent"—no behavior observed
1 "Barely"—brief, minor, or emerging behavior
2 "Clearly"—definite, strong, or frequent behavior



ENCOURAGEMENT

Active support of exploration, effort, skills, initiative, curiosity, creativity, and play

#	Parent . . .	Observation guidelines	Absent	Barely	Clearly
1	waits for child's response after making a suggestion	Parent pauses after saying something the child could do *and* waits for child to answer or do something, whether child actually responds or not.	0	1	2
2	encourages child to handle toys	Parent offers toys or says positive things when child shows obvious interest in toys. (Does not include preventing children from mouthing toys.)	0	1	2
3	supports child in making choices	Parent allows child to choose activity or toy *and* gets involved with activity or toy child chooses.	0	1	2
4	supports child in doing things on his or her own	Parent shows enthusiasm for things child likes to do without help, lets child choose how things are done, *and* lets child try to do things before offering help or suggestions. Parent can be engaged in activities child does on his/her own.	0	1	2
5	verbally encourages child's efforts	Parent shows verbal enthusiasm, offers positive comments, *or* makes suggestions about child's activity.	0	1	2
6	offers suggestions to help child	Parent gives hints or makes comments to make things easier for child without interfering with child's play.	0	1	2
7	shows enthusiasm about what child is doing	Parent makes positive statements, claps hands, or shows other clear positive response to what child is *doing*, including quiet enthusiasm such as patting child, nodding, smiling, or asking child questions about activities.	0	1	2

COMMENTS:

Encouragement total:

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ID # _____ Name: _____ Child's birth date: ___/___/___ Today's date: ___/___/___

PICCOLO™

Parenting Interactions with Children

Checklist of Observations Linked to Outcomes

INSTRUCTIONS: Look closely to see behaviors in a quiet parent. Frequency is more important than complexity, but complexity often includes several examples.

SCORING: 0 "Absent"—no behavior observed
1 "Barely"—brief, minor, or emerging behavior
2 "Clearly"—definite, strong, or frequent behavior



RESPONSIVENESS

Responding to child's cues, emotions, words, interests, and behaviors

#	Parent...	Observation guidelines	Absent	Barely	Clearly
1	pays attention to what child is doing	Parent looks at and reacts to what child is doing by making comments, showing interest, helping, or otherwise attending to child's actions.	0	1	2
2	changes pace or activity to meet child's interests or needs	Parent tries a new activity or speeds up or slows down an activity in response to where child looks, what child reaches for, what child says, or emotions child shows.	0	1	2
3	is flexible about child's change of activities or interests	Parent accepts a child's choice of a new activity or toy or shows agreeableness about the change or about child playing in unusual ways with or without toys.	0	1	2
4	follows what child is trying to do	Parent both responds to *and* gets involved with child's activities.	0	1	2
5	responds to child's emotions	Parent reacts to child's positive or negative feelings by showing understanding or acceptance, suggesting a solution, reengaging the child, labeling or describing the feeling, showing a similar feeling, or providing sympathy for negative feelings.	0	1	2
6	looks at child when child talks or makes sounds	When child makes sounds, parent clearly looks at child's face or (if eyes or child's face are not visible) parent's position and head movement face toward child.	0	1	2
7	replies to child's words or sounds	Parent repeats what child says or sounds child makes, talks about what child says or could be saying, or answers child's questions.	0	1	2

COMMENTS:

Responsiveness total:

ID # _____ Name: _____ Child's birth date: ___/___/___ Today's date: ___/___/___

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Parenting Interactions with Children
Checklist of Observations Linked to Outcomes

INSTRUCTIONS: Look closely to see behaviors in a quiet parent. Frequency is more important than complexity, but complexity often includes several examples.

SCORING: 0 "Absent"—no behavior observed
1 "Barely"—brief, minor, or emerging behavior
2 "Clearly"—definite, strong, or frequent behavior



AFFECTION

Warmth, physical closeness, and positive expressions toward child

#	Parent . . .	Observation guidelines	Absent	Barely	Clearly
1	speaks in a warm tone of voice	Parent's voice is positive in tone and may show enthusiasm or tenderness. A parent who speaks little but very warmly should be coded highly.	0	1	2
2	smiles at child	Parent directs smiles toward child, but parent and child do not need to be looking at each other when smile occurs. Includes small smiles.	0	1	2
3	praises child	Parent says something positive about child characteristics or about what child is doing. A "thank you" can be coded as praise.	0	1	2
4	is physically close to child	Parent is within easy arm's reach of child, comfortably able to soothe or help. Consider context: Expect more closeness for book reading than for playing house.	0	1	2
5	uses positive expressions with child	Parent says positive things or uses words like "honey," "kiddo," or an affectionate nickname. (*Note:* Emphasis on verbal expressions.)	0	1	2
6	is engaged in interacting with child	Parent is actively involved together *with* child, not just with activities or with another adult.	0	1	2
7	shows emotional warmth	Parent shows enjoyment, fondness, or other positive emotion about child and directed to child. (*Note:* Includes verbal but emphasis on nonverbal.)	0	1	2

COMMENTS:

Affection total:

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ID #: _____ Name: _____ Child's birth date: ____/____/____ Today's date: ____/____/____

PICCOLO™

Parenting Interactions with Children
Checklist of Observations Linked to Outcomes

INSTRUCTIONS: Look closely to see behaviors in a quiet parent. Frequency is more important than complexity, but complexity often includes several examples.

SCORING: 0 "Absent"—no behavior observed
1 "Barely"—brief, minor, or emerging behavior
2 "Clearly"—definite, strong, or frequent behavior



TEACHING

Shared conversation and play, cognitive stimulation, explanations, and questions

#	Parent . . .	Observation guidelines	Absent	Barely	Clearly
1	explains reasons for something to child	Parent says something that could answer a "why" question, whether child asks a question or not.	0	1	2
2	suggests activities to extend what child is doing	Parent says something child could do to add to what child is already doing but does not interrupt child's interests, actions, or play.	0	1	2
3	repeats or expands child's words or sounds	Parent says the same words or makes the same sounds child makes or repeats what child says while adding something that adds to the idea.	0	1	2
4	labels objects or actions for child	Parent names what child is doing, playing with, or looking at.	0	1	2
5	engages in pretend play with child	Parent plays make believe in any way— for example, by "eating" pretend food.	0	1	2
6	does activities in a sequence of steps	Parent demonstrates or describes the order of steps or does an activity in a way that a definite order of steps is clear even if parent does not say exactly what the steps are. Book reading counts *only* if parent makes the steps explicit by exaggerating or explaining the steps while reading.	0	1	2
7	talks to child about characteristics of objects	Parent uses words or phrases that describe features such as color, shape, texture, movement, function, or other characteristics.	0	1	2
8	asks child for information	Parent asks any kind of question or says, "tell me," "show me," or other command that requires a yes/no response, short answer, or longer answer—whether or not child replies. Does not include questions to direct attention ("See?") or suggest activities ("Wanna open the bag?").	0	1	2

COMMENTS:

Teaching total:

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Appendix F: Well-Being Tool

WB/INV Notes Diaper Cycle: 1 2 Room: _____ Child's ID: _____

Diaper End:	
Int End:	

Child's DOB: _____ Today's Date: _____

Teachers' ID: LT _____ AT: _____ TA: ____

WELL-BEING										
Level	Observation guidelines	1	+	2	+	3	+	4	+	5
1 Extremely Low	Child clearly shows signals of discomfort: -whines, sobs, cries, screams; -looks dejected, sad or frightened, panic; -is angry or furious; -wriggles, throws objects, hurts others; -sucks its thumb, rubs its eyes; -doesn't respond to the environment, avoids contact, withdraws; -hurts him/herself; bangs its head, throws him/herself on the floor.									
2 Low	Observation guidelines	1	+	2	+	3	+	4	+	5
	The posture, facial expression and actions indicate that the child does not feel at ease. However, the signals are less explicit than under level 1 or the sense of discomfort is not expressed the whole time.									
3 Moderate	Observation guidelines	1	+	2	+	3	+	4	+	5
	The child has a neutral posture. Facial expression and posture show little or no emotion. There are no signals indicating sadness or pleasure, comfort or discomfort.									
4 High	Observation guidelines	1	+	2	+	3	+	4	+	5
	The child shows obvious signs of satisfaction (see list level 5). However, these signals are not constantly present with the same intensity.									
5 Extremely High	The child enjoys, & feels great: -it looks happy, cheerful, smiles, beams, cries out of fun; -is spontaneous, expressive and is really him/herself; -talks to him/herself, plays w/sounds, hums, sings; -is relaxed, shows no signs of stress/tension; -is open/accessible to environment; -lively, full of energy, radiates; -expresses self-confidence-self-assurance	1	+	2	+	3	+	4	+	5

Appendix G: Involvement Tool

Diaper Cycle: 1 2 Room: _____ Child's ID: _____

Diaper End:	
Int End:	

Child's DOB: _____ Today's Date: _____

Teachers' ID: LT _____ AT: _____ TA: ____

INVOLVEMENT											
Level	Observation guidelines	1	+	2	+	3	+	4	+	5	
1 Extremely Low	Shows hardly any activity: -no concentration: staring, daydreaming; -an absent, passive attitude; -no goal-directed activity, aimless actions, not producing anything; -no signs of exploration & interest -not taking anything in, no mental activity										
2 Low	Observation guidelines	1	+	2	+	3	+	4	+	5	
	Shows some degree of activity but which is often interrupted: -limited concentration: looks away during activity, fiddles, dreams; -is easily distracted; -action only leads to limited results.										
3 Moderate	Observation guidelines	1	+	2	+	3	+	4	+	5	
	Busy whole time, but without real concentration: -routine actions, superficial attention; -not absorbed in activity, short-lived; -limited motivation, no real dedication, no challenge; -not gaining deep-level experiences; -not using his/her capabilities to full extent -activity does not address child's imagination										
4 High	Observation guidelines	1	+	2	+	3	+	4	+	5	
	Clear signs of involvement-not always present to full extent: -engaged in activity w/out interruption; -frequent concentration, brief moments attention is superficial; -child feels challenged & motivated; -capabilities, imagination mostly addressed in this activity.										
5 Extremely High	Child is continuously engaged, absorbed in activity: -absolutely focused, concentrated w/out interruption; -highly motivated, perseveres; -strong stimuli does not distract child -is alert, has attention for details, shows precision; -intense mental activity -all mental capabilities, imagination high -clearly enjoys being engrossed in activity.	1	+	2	+	3	+	4	+	5	

701-A-1

Signed Caregiver Consent to Participate in Research

Would you like to be involved in research at the University of Oklahoma?

I am Debbie Laurin from the Early Childhood Education program and I invite you to participate in my research project entitled Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement. This research is being conducted at [redacted] schools. You were selected as a possible participant because you are an [redacted] infant/toddler caregiver. You must be at least 18 years of age to participate in this study.

Please read this document and contact me to ask any questions that you may have BEFORE agreeing to take part in my research.

What is the purpose of this research? The purpose of this research is to observe and describe caregiver-infant/toddler interactions during diapering. We will observe caregiver affection, encouragement, teaching, and responsiveness toward the child and observe a child's well-being and involvement during diapering.

How many participants will be in this research? About 102 caregivers, approximately, 34 lead infant/toddler teachers, 34 assistants, and 34 floaters. Approximately 272 infants/toddlers will participate in this study.

What will I be asked to do? If you agree to be in this research, you will not be asked to do anything.

How long will this take? I will observe typical, everyday classroom activities that occur during a typical diapering routine. Observations will capture 2-3 morning diapering routines for one morning visit.

What are the risks and/or benefits if I participate? There are no risks and no benefits from being in this research.

Mandated Reporting. State law requires reporting information about suspected or known sexual, physical, or other abuse to the appropriate authorities. By law, if we as evaluators discover information of abuse, we are obligated to make a report to DHS.

Will I be compensated for participating? You will not be reimbursed for your time and participation in this research. As an [redacted] infant/toddler caregiver you will receive a $5 gift card for returning your signed consent form and there is no penalty for refusal to participate. Your choice of whether or not to participate in this study will in no way affect your employment at [redacted].

Who will see my information? In research reports, there will be no information that will make it possible to identify you. Research records will be stored securely and only approved researchers and the OU Institution Review Board will have access to the records.

You have the right to access the research data that has been collected about you as a part of this research. However, you may not have access to this information until the entire research has completely finished and you consent to this temporary restriction.

Do I have to participate? Regardless of your decision to participate or not, you will receive $5 for returning the consent form. If you do not participate, you will not be penalized or lose benefits or services unrelated to the research.

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

Will my identity be anonymous or confidential? Your name will not be retained or linked with your responses. The data will be retained in confidential form at the end of the research. Code numbers, not names will be used. The list of names and corresponding numbers will be kept separate. If you agree for data retention or retention of contact information at the end of the research. Please check all of the options that you agree to:

I agree for the researcher to use my data in future studies. ___Yes____No

Will my personal records be accessed? I am interested in you and your background and am asking permission to access information data about your background that you have already provided to the [redacted] Study. If you approve, your confidential records will be used as data for this research. The records that will be used include [redacted] Study data previously collected. These records will be used for the following purpose(s): to describe caregiver race, ethnicity, education, age and years of experience in infant/toddler classrooms.

I agree for my records to be accessed and used for research purposes. ___Yes____No

Will I be contacted again? The researcher would like to contact you again to recruit you into this research or to gather additional information.

_____I give my permission for the researcher to contact me in the future.

_____I do not wish to be contacted by the researcher again.

Who do I contact with questions, concerns or complaints? If you have questions, concerns or complaints about the research or have experienced a research-related injury, contact me at [redacted] or [redacted] or faculty advisor, Dr. Diane Horm, at [redacted] or [redacted]

You can also contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu if you have questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than the researcher(s) or if you cannot reach the researcher(s).

You will be given a copy of this document for your records. By providing information to the researcher(s), I am agreeing to participate in this research.

Participant Signature	Print Name	Date
Signature of Researcher Obtaining Consent	Print Name	Date

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

701-A-4

Signed Parental Permission to Participate in Research

Will you allow your child to be involved in research at the University of Oklahoma?

I am Debbie Laurin from the Early Childhood Education program at the University of Oklahoma and I invite your child to participate in my research project entitled Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement. This research is being conducted at [redacted]. Your child was selected as a possible participant because he/she is between 6 weeks and 3 years and is enrolled in an infant/toddler classroom at [redacted].

Please read this document and contact me to ask any questions that you may have BEFORE allowing your child to participate in my research.

What is the purpose of this research?

The purpose of this research is to observe and describe caregiver-infant/toddler interactions during diapering. We will observe caregiver affection, encouragement, teaching, and responsiveness toward the child and observe a child's well-being and involvement during diapering.

How many participants will be in this research?

About 102 caregivers, approximately, 34 lead infant/toddler teachers, 34 assistants, and 34 floaters. Approximately 272 infants/toddlers will participate in this study.

What will my child be asked to do?

If you allow your child to be in this research, s/he will not have to do anything.

How long will this take?

I will observe typical, everyday classroom activities and your child's participation will occur during a typical diapering routine. Observations will capture 2-3 morning diapering routines for one morning visit.

What are the risks and/or benefits if my child participates?

There are no risks and no benefits from being in this research.

Mandated Reporting. State law requires reporting information about suspected or known sexual, physical, or other abuse to the appropriate authorities. By law, if we as evaluators discover information that you are abusing your child, we are obligated to make a report to DHS. Please note that the [redacted] program staff are bound by this same reporting requirement.

Will my child be compensated for participating?

Your child will not be reimbursed for her/his participation in this research.

As the parent/family you will receive a $5 gift card. Participants will be able to withdraw at any time and there is no penalty for refusal to participate, and you are free to withdraw your consent and child's participation in this study at any time without penalty. Your choice of whether or not to participate in this study will in no way affect services received at [redacted].

Who will see my child's information? In research reports, there will be no information that will make it possible to identify you or your child. Research records will be stored securely and

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IRB APPROVAL DATE: 08/23/2016

only approved researchers and the OU Institution Review Board will have access to the records.

You have the right to access the research data that has been collected about your child as a part of this research. However, you may not have access to this information until the entire research has completely finished and you consent to this temporary restriction.

Does my child have to participate? Regardless of your decision to participate or not, families will receive $5 for returning the consent form. No. If your child does not participate, s/he will not be penalized or lose benefits or services unrelated to the research.

Will my child's identity be anonymous or confidential? Your child's name will not be retained or linked with her/his responses. The data will be retained in confidential form at the end of the research. Code numbers, not names will be used. The list of names and corresponding numbers will be kept separate.

Will my child's personal records be accessed? With your permission, I will access your child's existing [redacted] data set information for this research. The records that will be used include (age, sex, ethnicity, race, home language, start date/exit date [redacted] This information will be used to help us understand potential relationships between my study variables and your child's/family's characteristics. For example, this information will allow me to answer questions such as -- do boys or girls engage more in self-help routines such as diapering, or to describe length of participation in the program, and the diversity of participants to provide information about infant/toddler [redacted] classrooms.

I agree for my child's records to be accessed for research purposes. ___Yes____No

Will I be contacted again? The researcher would like to contact you again to recruit your child into this research or to gather additional information.

_____I give my permission for the researcher to contact me in the future.

_____I do not wish to be contacted by the researcher again.

Will my personal records be accessed?

I am interested in you and your background and am asking permission to access information data about your background that you have already provided to the [redacted] Study. If you approve, your confidential records will be used as data for this research. The records that will be used include [redacted] data previously collected from existing records. The records I will use contain information you provided to [redacted] at the time of your child's enrollment or other forms you have completed as part of the [redacted] Program, for example, the parent interview survey and general information about parent age, race, ethnicity, home language, and education. The results will be used to refine and improve the [redacted]—so you will be contributing to children and parents who will receive [redacted] programming in the future.

I agree for my records to be accessed and used for research purposes. ___Yes____No

Will I be contacted again? The researcher would like to contact you again to recruit you into this research or to gather additional information.

_____I give my permission for the researcher to contact me in the future.

_____I do not wish to be contacted by the researcher again.

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

Who do I contact with questions, concerns or complaints? If you have questions, concerns or complaints about the research or have experienced a research-related injury, contact me at [redacted] or faculty advisor, Dr. Diane Horm, at [redacted]

You can also contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu if you have questions about your child's rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than the researcher(s) or if you cannot reach the researcher(s).

You will be given a copy of this document for your records. By providing information to the researcher(s), I am allowing my child to participate in this research.

Parent's Signature	Print Name	Date
Child's Name		
Signature of Researcher Obtaining Consent	Print Name	Date

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

701-A-4

Consentimiento de los Padres para Participar en el Estudio de Investigación

¿ Permitiría a su hijo a participar en la investigación en la Universidad de Oklahoma?

Soy Debbie Laurin del Early Childhood Education program at the University of Oklahoma (Programa de Educación Infantil de la Universidad de Oklahoma) y invito a su niño a participar en mi proyecto de investigación titulado Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement (*Interacciones entre Cuidador-Niño Durante el Cambio de Pañales*: Asociación con el bienestar y la Participación del niño). Esta investigación se lleva a cabo en las escuelas [redacted] Su niño fue seleccionado como posible participante porque él/ella es entre 6 semanas y 3 años de edad y está inscrito en un aula de bebés/niños pequeños en [redacted].

Por favor lea esta forma y contácteme con cualquier pregunta que tenga ANTES DE decider en participar en este estudio.

¿Cuál es el propósito de este estudio de investigación?

El propósito de este estudio es observar y describir las interacciones entre un cuidador y el bebé/niño pequeño durante el cambio de pañales. Observaremos el afecto, ánimo, la enseñanza y la respuesta del cuidador hacia el niño, y también el bienestar y la participación del niño durante el cambio de pañales.

¿Cuántos participantes estarán en este estudio?

Acerca de 102 cuidadores, aproximadamente 34 maestros principales de bebés/ninos pequeños, 34 asistentes, y 34 flotadores. Aproximadamente 272 bebés/niños pequeños van a participar en este estudio.

¿Qué le van a pedir a mi niño que haga?

Si permite que su niño participe en esta investigación, él/ella no tendrá que hacer nada.

¿Cuánto tiempo se llevará?

Observaré típicas actividades de clase diarias y la participación de su niño va a ocurrir durante una rutina típica de cambio de pañales. Observaciones capturarán 2-3 rutinas de cambio de pañales durante una visita por la mañana.

¿Cuáles son los riesgos y/o beneficios si participa mi niño?

No hay riesgos ni beneficios de estar en esta investigación.

Reporte Obligatorio. Ley del Estado exige reporte de información sobre el presunto o conocido abuso sexual, físico u otros abusos a las autoridades apropiadas.

¿ Mi niño será compensado por participar? Su niño no será compensado por su tiempo ni participación en esta investigación.

Como padre/familia recibirá una tarjeta de regalo de $5. Los participantes podrán retirarse en cualquier momento y no hay penalidad por no participar, y usted puede retirar su consentimiento y la participación del niño en este estudio en cualquier momento sin penalización. Su elección si desea o no participar en este estudio de ninguna manera afectará sus servicios recibidos en [redacted]

IRB NUMBER: 7177
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¿Quién verá el información de mi niño? los informes de investigación, no habrá ninguna información que permita identificar a usted o a su niño. Los registros de investigación se conservarán de forma segura, y sólo los investigadores autorizados y OU Institution Review Board (la Junta de Revisión Institucional OU) tendrán acceso a los registros.

Usted tiene el derecho de acceder sus datos recopilados de esta investigación. Sin embargo, usted no tendra acceso a esta información hasta que la investigación esté completamente terminada y usted autoriza la utilización de esta restricción temporal.

¿Tiene que participar mi niño? No. Si usted o su niño no participa, el/ella no será penalizado ni perderá los beneficios o servicios que no son relacionados con está investigación. A pesar de su decisión de si participar o no, familias todavía recibirán $5 por devolver el formulario de consentimiento.

¿ Será anónima o confidencial la identidad de mi niño? El nombre du su niño no estará vinculado con sus respuestas; Se utilizarán números de código en lugar de nombres. Los datos que nos proporciona serán retenidos en formas seguras y confidenciales. La lista de nombres y números correspondientes se mantendrá separada.

¿Se tendrá acceso a los registros personales de mi niño? Con su permiso, voy a acceder los datos existentes en [redacted] de su niño para esta investigación. Los registros que se pueden usar incluyen: edad de su niño, raza, género, fecha de inscripción, idioma del hogar, y [redacted] Esta información será utilizada para ayudarnos a entender las posibles relaciones entre mis variables del estudio y las características de su familia/su niño. Por ejemplo, esta información me permitirá responder a preguntas como – sí los niños y niñas se involucran más en las rutinas de auto-ayuda, tales como el cambio de pañales, o para describir la duración de la participación en el programa, y la diversidad de los participantes para proporcionar informacion sobre aulas infantiles en [redacted]

Estoy de acuerdo que los registros de mi niño sean accesados y utilizados para motivos de investigación.____Si ___No

¿Voy a ser contactado de nuevo? Al investigador le gustaría contactarlo de nuevo para reclutarte en esta investigación o para obtener información adicional.

_____Doy mi permiso para que el investigador me contacte en el futuro.

_____No deseo ser contactado por el investigador de nuevo.

¿Se tendrá acceso a mis registros personales?

Estoy interesado en usted y sus antecedentes y estoy pidiendo permiso para acceder a datos de información acerca de sus antecedentes que usted ya ha proporcionado para el [redacted] ([redacted]). Si aprueba, sus registros confidenciales serán utilizados como datos para esta investigación. Los registros que se pueden usar incluyen los datos de [redacted] recogidos previamente a partir de los registros existentes. Los registros que uso contienen información que ha proporcionado a [redacted] en el momento de la inscripción de su niño u otras formas que han completado como parte del programa, por ejemplo, la encuesta entrevista con los padres e información general sobre la edad de los padres, su raza, su etnia, su lengua materna, y su educación. Los resultados serán utilizados para refinar y mejorar el [redacted] — entonces usted estará contribuyendo a los niños y los padres que recibirán programación de [redacted] el futuro.

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Estoy de acuerdo que mis registros sean accesados y utilizados para motivos de investigación.____Si ___No

¿A quién contacto con preguntas, inquietudes o quejas? Si tiene preguntas, inquietudes o quejas sobre la investigación, o han sufrido un daño relacionado con la investigación, contacta: [redacted] o consejera de la facultad, Dr. Diane Horm [redacted]

Usted tambien puede llamar a la Universidad de Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) al 405-325-8110, o puede enviar un correo electrónico a irb@ou.edu, si usted tiene una pregunta acerca de sus derechos como participante de la evaluación, y desea hablar con alguna persona que no sea un evaluador o si usted no puede contactar el equipo de evaluación

A usted se le dará una copia de esta información para que la mantenga en sus registros. Al proporcionar información a los investigador(es), estoy de acuerdo con participar en esta investigación.

Firma del padre	Nombre escrito	Fecha
Nombre del niño	Nombre escrito	Fecha
Firma del Investigador obteniendo consentimiento	Nombre escrito	Fecha

IRB NUMBER: 7177
IRB APPROVAL DATE: 08/23/2016

Appendix K

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Final Report – Inactivation

Date: May 12, 2017 **IRB#:** 7177

To: Deborah Elaine Laurin-Phelan **Inactivation Date:** 05/12/2017

Study Title: Caregiver-Infant/Toddler Interactions during Diapering: Associations with Well-Being and Involvement

On behalf of the Institutional Review Board (IRB), I have reviewed the Final Report for the above-referenced research study. You have indicated that this study has been completed and should be inactivated. This letter is to confirm that the IRB has inactivated this research study as of the date indicated above.

Note that this action completely terminates all aspects and arms of this research study. Should you wish to reactivate this study, you will need to submit a new IRB application.

If you have questions about this notification or using iRIS, contact the IRB at (405) 325-8110 or irb@ou.edu.

Cordially,

[redacted]

Ioana Cionea, PhD
Vice Chair, Institutional Review Board

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