# A Review of the Literature on Access to High-Quality Care for Infants and Toddlers

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Child TRENDS

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# Introduction

## Purpose of the Literature Review

Children experience the most rapid rate of development during the first three years of life (Center on the Developing Child, 2017). It is well understood that high-quality learning experiences that begin early in life can promote young children's development and help reduce achievement gaps (Camilli et al., 2010; Duncan & Magnuson, 2013). However, much of the literature has focused on child outcomes related to attendance in early care and education (ECE) programs for preschool-age children; and less is known about how high-quality child care contributes to infant and toddler development. In addition, families' ability to access high-quality child care for infants and toddlers needs to be better understood.

Recent federal policy and program initiatives have provided states with opportunities to expand high-quality care for infants and toddlers. For instance, when the Child Care and Development Block Grant (CCDBG) was reauthorized in 2014, it encouraged states to increase access to child care for infants and toddlers. The grant also raised the amount of the infant and toddler set-aside funds that states must spend on increasing quality for infant and toddler care using their CCDBG funds (Administration for Children and Families, 2014). Furthermore, in 2014, federal funding for Early Head Start–Child Care Partnership grants was awarded to help expand high-quality care for infants and toddlers from low-income families. As federal and state initiatives begin to address the needs for access to high-quality infant and toddler care, it is important to understand the factors that facilitate families' access to care and the practices that strengthen the quality of care for infants and toddlers.

The purpose of this literature review is to review the research on supporting access to quality infant and toddler care and the effectiveness of approaches to improve access to and the quality of infant and toddler ECE. The review focuses on research conducted between 2008 and 2018 and addresses the following questions:

- What factors facilitate or hinder families' access to high-quality care for infants and toddlers?
- What factors contribute to strengthening quality in child care for infants and toddlers and lead to positive outcomes for children under age three?

Throughout the review we assume that access to and quality of infant and toddler care are inherently related. The access section of this review addresses supports for accessing quality care. However, it is difficult to conceptualize how to support access to high-quality care without also examining supports for strengthening the quality of care. Thus, this review focuses on both access and quality; the more the field understands about how to improve the quality of infant and toddler care and implements effective approaches for improving quality, the more accessible that care will be for the families that need it.

## Conceptualization of Access and Quality

As will be described in Sections II and III of this review, we used two separate but interrelated frameworks to guide the review of the literature on access to and quality of infant and toddler care. For guiding this review of the literature on access, we used a definition and framework provided in *Defining and Measuring Access to High Quality Early Care and Education (ECE): A Guidebook for Policymakers and Researchers* (Friese, Lin, Forry, & Tout, 2017).[1] The Guidebook states that:

[1] For more information on this source, please see: https://www.acf.hhs.gov/sites/default/files/opre/cceepra_access_guidebook_final_213_b508.pdf

> *"Access to early care and education means that parents, with reasonable effort and affordability, can enroll their child in an arrangement that supports the child's development and meets the parents' needs"* (Friese et al., 2017, pp. 5).

The literature related to access in this review is thus organized around the four dimensions of access highlighted in this definition: (1) reasonable effort, (2) affordability, (3) meets parents' needs, and (4) supports child development.

For guiding this review of the literature on quality, we expanded on the "supports child development" dimension of access that focuses on increasing the availability of high-quality programs for infants and toddlers (e.g., accredited programs, programs of the highest levels within a quality rating and improvement system [QRIS], or programs providing instruction in multiple languages) to include literature related to approaches that help support quality practices in infant and toddler care. We used the conceptual framework developed for the Quality in Caregiver-Child Interactions for Infants and Toddlers (Q-CCIIT) measure (Atkins-Burnett et al., 2015; Halle et al., 2011a)[2] to guide this section of the review. There is consensus that the definition of quality care for infants and toddlers has some features that are distinct from those established for older children, including preschoolers, and that these features are related to the unique developmental needs and characteristics of infants and toddlers (Chazan-Cohen et al., 2017; Dalli et al., 2011; Thomason & La Paro, 2009). The Q-CCIIT framework highlights several components of quality that include: structural features of care, caregiver-child interactions, caregiver-parent communication, child-peer relationships, and contextual factors.[3] It also includes children's competence as the outcome of these components of quality. The quality section of this review focuses especially on the literature related to structural features of care and caregiver-child interactions, which are the components of quality that most directly support children's development. Literature addressing the other components (e.g., caregiver-parent communication, child-peer relationships, and contextual factors) is also considered. Lastly, we include literature that addresses child outcomes associated with approaches to improving quality in infant and toddler care.

## Organization of the Report

In the following sections, we describe the literature on access to infant and toddler care and the quality of infant and toddler care separately, according to the two frameworks we used to define access and quality described above. Despite this division, we acknowledge the links between these constructs throughout this review. The next section summarizes the current limitations and gaps in the literature on access to and quality of infant and toddler care. Lastly, the final section addresses recommendations for future research on access to high-quality care for infants and toddlers. The review is organized as follows:

- **Section I**: Methodology of the Literature Review. The first section describes the approach used in the literature review, including the search terms used, selection criteria, and process for summarizing findings.
- **Section II**: Findings from the Research on Access to High-Quality Infant and Toddler Care. The second section of this review provides an overview of the framework of access used for the literature review.

[2] For more information, please see: https://www.acf.hhs.gov/opre/resource/measuring-the-quality-of-caregiver-child-interactions-for-infants-and-toddlers-q-cciit

[3] The Q-CCIIT framework includes caregiver characteristics and family/child characteristics as two components that can also influence quality. In this review, caregiver characteristics were addressed in our examination of caregiver's qualifications/education and professional development, which are both included under structural features of care within the Q-CCIIT framework. Information about family/child characteristics and their interactions with care are included throughout rather than in a separate section of the review.

It then summarizes the findings related to access to high-quality infant and toddler care according to the four dimensions of access used in the Access Guidebook (Friese et al., 2017).

- **Section III**: Findings from the Research on the Quality of Infant and Toddler Care. The third section of this review provides an overview of the framework of quality used to examine the literature on infant and toddler care. It then summarizes the findings related to the quality of infant and toddler care according to the components of quality in the Q-CCIIT framework (Atkins-Burnett et al., 2015; Halle et al., 2011a).
- **Section IV**: Gaps in the Literature/Need for Future Research. The fourth section highlights the current gaps in the literature on access to high-quality care for infants and toddlers. It also suggests avenues for additional research.
- **Section V**: Conclusions. Lastly, we share implications for policy and practice drawn from the research presented in this literature review.

In light of federal and state initiatives to address the needs for access to high-quality infant and toddler care, the present review describes the research on the state of families' access to care, as well as the practices that strengthen the quality of care for infants and toddlers. It is expected that policymakers and researchers will be able to use the findings from this review to inform the development of future programs, initiatives, and research studies aimed to facilitate families' access to high-quality care for infants and toddlers. For a high-level summary of findings, please see the executive summary.

# Section I: Methods

The research team reviewed the literature to find academic articles and reports published between 2008 and 2018 related to the access and quality of ECE for infants and toddlers throughout the United States.

## Literature Search Strategies

For the peer-reviewed articles and reports related to access, we used search terms that reflected the four access dimensions referenced by Friese et al. (2017): (1) reasonable effort, (2) affordability, (3) meets parents' needs, and (4) supports child development. We also used search terms related to the indicators of each dimension (see Table 1). Specifically, search terms for the "reasonable effort" dimension included the terms *child care*, *slot(s)*, *availability*, *supply*, *quality*, and *access*. Search terms for the "affordability" category included the terms *cost* and *price*. Search terms for the "meets parents' needs" category included the terms *parent*, *needs*, *child care*, and *decision making*. Search terms for the "supports child development" category included the terms: *quality*, *access*, *support*, *child care stability*, *coordination*, *disability*, *wraparound child care services*, and *language of instruction*. These terms were searched on their own and/or in combination with each of the other terms in the same dimension. The terms "infant" and "toddler" were also added to each search term in order to narrow the results. The terms "care" or "child care" were also added where appropriate to limit results.

**Table 1. Search Terms by Access Dimensions**

| Access dimension | Search terms* |
|---|---|
| ***Reasonable Effort***<br><br>*Indicators of Reasonable Effort:* Supply of ECE programs, Desired capacity, Licensed capacity, Estimated vacancy, Geographical location, Availability of information about ECE programs, Utilization of ECE programs | • Child care<br>• Slot(s)<br>• Availability<br>• Supply<br>• Quality<br>• Access |
| ***Affordability***<br><br>*Indicators of Affordability:* Parents' financial contribution, Portion of parents' income to pay for ECE, Subsidy or scholarship contribution, Program fundraising, Advertised price, Cost to the program to provide ECE | • Child care cost<br>• Child care price |
| ***Supports Child Development***<br><br>*Indicators of Supports Child Development:* Designation of quality, Language of instruction, Specialized services for children with disabilities, Supportive services provided for vulnerable children, Coordination of services, and Stability of ECE | • Quality<br>• Access<br>• Support<br>• Child care stability<br>• Coordination of child care<br>• Designation of child care quality<br>• Disability<br>• Wraparound child care services<br>• Language of instruction |
| ***Meets Parents' Needs***<br><br>*Indicators of Meets' Parents' Needs:* Preferred program type, Age groups served by ECE program, Hours of operation, and Transportation (availability) | • Parent needs child care<br>• Parent decision making child care |

* The search terms above were used alone and/or in various combinations. The terms "infant" and "toddler" and "care" or "child care" were also added to each search term to narrow the results.

Search terms for articles related to quality were developed using the conceptual framework for the Q-CCIIT measure (Atkins-Burnett et al., 2015; Halle et al., 2011a). As noted above, the conceptual framework identifies components that contribute to a high-quality ECE environment for infants and toddlers (i.e., structural features of care, caregiver-child interactions, caregiver-parent communication, child-peer relationships, and contextual factors), and also illustrates that children's competence is the outcome of these constructs of quality in infant and toddler care. Each of these constructs was used to identify search terms, mirroring the original terms used in the Q-CCIIT literature review (Halle et al., 2011a). Search terms for the quality constructs included combinations of the following terms: *warmth*, *support*, *positive regard*, *caregiver-child interaction*, *caregiver-parent relationship*, *and peer interaction* (see Table 2). The terms "infant" and "toddler" were also added to each search term to narrow the search results.

**Table 2.** Search terms for Quality Constructs

| Quality construct search terms* |
| --- |
| • Warmth<br>• Support<br>• Positive Regard<br>• Caregiver-child interaction<br>• Caregiver-parent relationship<br>• Peer interaction |

* Note: All search terms were used in various combinations. The terms "infant" and "toddler" were also added to each search term to narrow the electronic searches

We conducted all searches related to access and quality on Google Scholar, Academic Search Complete, and Research Connections. We limited results to reports and papers published between 2008 and 2018 in the United States.

## Assessment of relevance

When conducting searches, members of the research team reviewed the first 30 results for each search term for potentially relevant literature. If no potentially relevant literature was found from the first 30 results, we moved to the next search term. If any potentially relevant literature was identified from the first 30 results, we continued searching until we encountered 30 results in a row without any relevant literature, or until we reached 100 results.

Article and report titles and abstracts were reviewed for relevance according to the following eligibility criteria: the article or report needed to be published between 2008 and 2018 within the United States and focus on child care that includes infants and toddlers. Literature on child care quality was also restricted to dissertations, peer-reviewed journal articles, and research reports that involved data based on direct experiences in the field that specifically focused on infants and toddlers (i.e., children birth through age three). Because there were fewer peer-reviewed studies of access to child care, grey literature such as research and policy briefs were also included in that part of the literature review. Similarly, having found limited research on access to infant and toddler care specifically, we broadened our criteria to include literature focused on access to care for preschool-aged children in addition to as well as infants and toddlers.

The initial access searches yielded a total of 417,912 hits in Google Scholar, 2,987 hits in Academic Search Complete, and 34,567 hits in Research Connections for a total of 455,466 hits.[4] We determined that 79 articles and reports (including research and policy briefs) were relevant based on our initial criteria. We then pulled the citation and abstract of each article and report into a separate document for the next round of review. Based on reviews of abstracts, we selected 60 articles and reports related to access for further review. Literature was eliminated at this point if the findings did not fit the focus of the review.[5]

The initial quality searches yielded a total of 37,189 hits in Google Scholar and 3,348 hits in Research Connections for a total of 40,537 hits.[5] The combinations of search terms used did not yield any hits in

[4] Please note that this total includes duplicate articles or reports found in more than one database.
[5] We also determined that 50 articles or reports found during the access searches would fit better in the quality section.

Academic Search Complete. We then determined that 98 articles and reports (including dissertations, peer-reviewed journal articles, and empirical research reports) were relevant based on our initial criteria. We then pulled each citation and abstract into a separate document for the next round of review, in which we selected 92 articles and reports related to quality for further review. In addition to searching for quality related articles or reports in the three databases, we also examined 10 literature reviews that resulted from the quality searches for relevant articles and reports related to the quality of care for infants and toddlers.

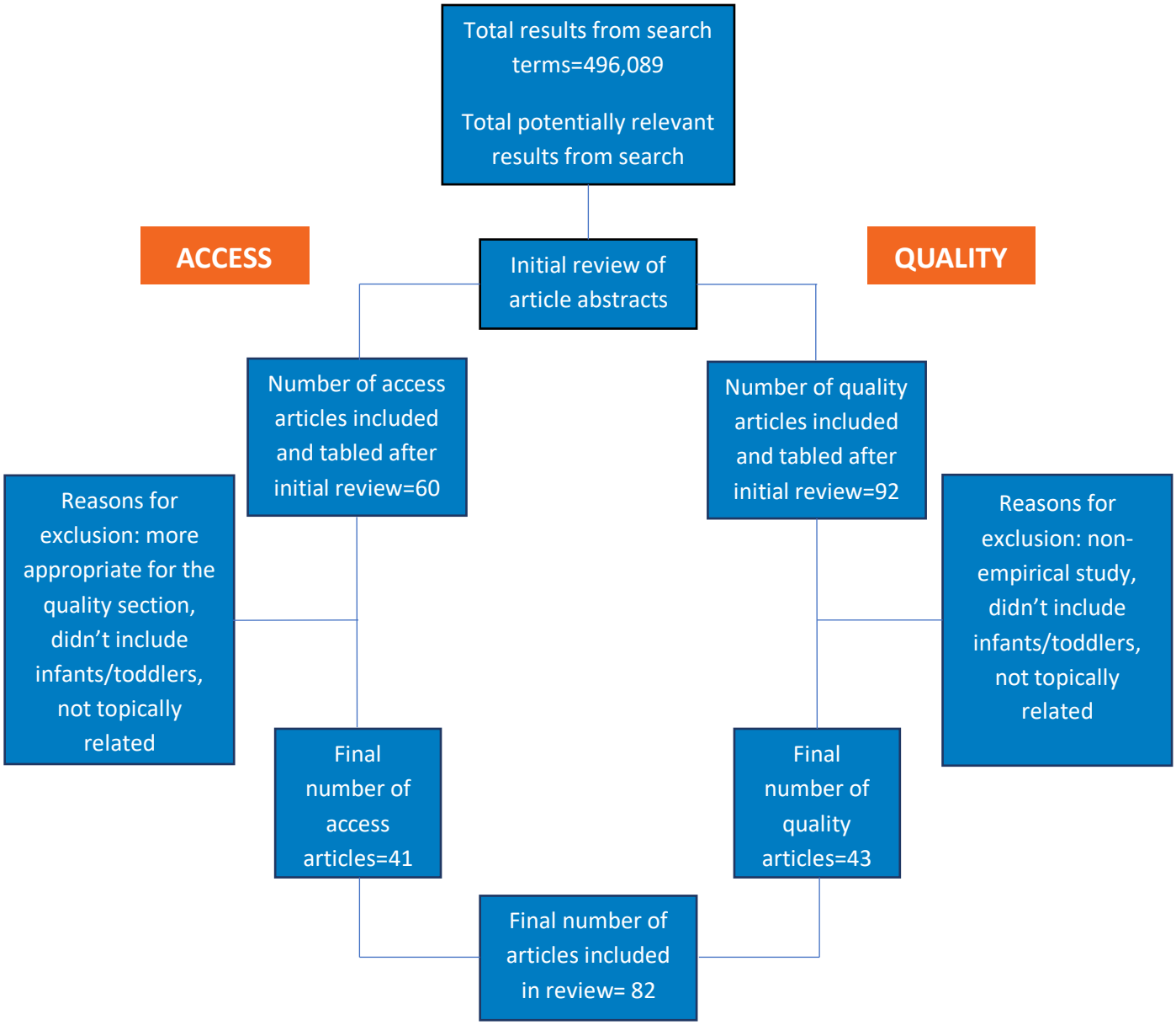
For the next phase of review, a senior reviewer evaluated the literature that met the inclusion criteria to decide which articles and reports would be summarized and included in the review. In this phase, literature was eliminated if it was not relevant (e.g., did not fit the focus of the review), if it was a literature review, or if the text for the article or report could not be accessed. This resulted in a total of 41 articles and reports related to access and 43 articles and reports related to the quality of infant and toddler care that were summarized (see Figure 1).[6]

## Summarizing information across studies

The research team reviewed each article and report and documented research questions, sample characteristics, geographic location, definition of access or quality used, research methods, validity, and findings. Articles or reports were then grouped together by topic area (i.e., access or quality) and their methods and findings synthesized.

[6] Please note that 82 articles were reviewed in total, as two articles met criteria for inclusion in both the access and quality reviews.

**Figure 1.** Search result review process[7]




[7] Please note that while 41 articles fell into the access category and 43 fell into the quality category, only 82 articles were reviewed in total, as two articles met criteria for inclusion in both the access and quality reviews.

# Section II: Access to Infant and Toddler Care

## Definition of Access

The term *access* in ECE has sometimes been used interchangeably with availability of care, as measured by indicators of supply of and demand. In an effort to acknowledge a broader range of factors that affect families' ability to utilize services, the *Access Guidebook* suggests a new, multi-dimensional working definition of access:

> *"Access to early care and education means that parents, with reasonable effort and affordability, can enroll their child in an arrangement that supports the child's development and meets the parents' needs."* (Friese et al., 2017, p. 5)

This definition identifies four primary dimensions of access:

1) **Reasonable effort**—captures whether there is sufficient availability of age-appropriate slots near parents' homes or workplaces, and whether parents have information about these options. It includes indicators about the interaction between the supply of ECE programs (including available slots), the use of ECE programs by families, and the extent to which information about ECE programs is readily available to parents;
2) **Affordable**—reflects a broad definition of the cost of care and includes indicators related to the cost to parents (i.e., out-of-pocket ECE expense), their use of public programs that subsidize child care/ECE costs (e.g., child care subsidies, Head Start, public pre-kindergarten, and scholarships/donations/grants), and the cost to ECE programs of providing ECE services (i.e., the advertised price of an ECE program and fundraising to cover per child costs);
3) **Meets the parents' needs**—captures the necessity of access to care that meets parents' needs across a variety of factors, including preferences for specific program types or features, needs for extended care or care during non-traditional hours, and care for multiple children. It includes indicators like the program type (e.g., center- or home-based), the availability of transportation, and program hours of operation (i.e., ECE features that align with a family's needs; and
4) **Supports the child's development**—captures the need for parents to have access to care that supports their child's development, including care that is high quality and meets children's developmental needs. It includes indicators about the ECE program's designation of quality (e.g., a QRIS rating), coordination of services, practices that support children's stability in ECE arrangements, and program practices that meet children's unique needs (i.e., for children with developmental or physical disabilities, vulnerabilities, and home language differences) (Friese et al., 2017, pp. 6-8).

Friese et al. (2017) suggested this framework could be used by states to track their efforts in increasing access to care for children. A follow-up report, *Conceptualizing and Measuring Access to Early Care and Education*, further examined the extent to which current work at the state and federal level aligns with the multi-dimensional definition of access proposed in the *Access Guidebook* (Thomson, Cantrell, Guerra, Gooze, & Tout, in press). For the purpose of this literature review, we examined evidence from the research field for how these four dimensions of access were being used to inform policy and practice.

# Literature Review Findings on Access to High-Quality Infant and Toddler Care

In this section, we provide a review of the literature from 2008 to 2018 related to infants' and toddlers' access to high-quality child care. We present the literature that relates to access to high-quality infant and toddler care according to the four dimensions of access: 1) reasonable effort, 2) affordability, 3) meets parents' needs, and 4) supports child development. Additionally, as noted in the introduction, we further expand on the literature related to the access dimension—*supports child development*—to describe supports for increasing quality practices in the next section.

In total, we identified 41 articles and reports related to access to care for infants and toddlers (see Appendix A). The majority of these articles and reports were descriptive reports or studies based on secondary data analyses. A few studies included observations of classroom quality, but none of the studies included an experimental or quasi-experimental design or addressed child outcomes related to access. Thirteen of these reports and articles focused on *reasonable effort*, and 15 addressed the *cost/affordability* of care for infants and toddlers. Fewer articles and reports addressed the access dimensions of *meets parents' needs* (9 studies) and *supports child development* (9 studies). Furthermore, the articles and reports focusing on these latter dimensions of access did not always specifically address infants and toddlers (i.e., the reports might have addressed access for children birth to five years, but not access for infants and toddlers in particular).

## Reasonable Effort

The effort required to find and enroll a child in an ECE program is one of the four key dimensions of access. Specifically, as related to access of child care for infants and toddlers, the *reasonable effort* dimension captures the availability of ECE programs for infants and toddlers, the licensed capacity of center-based programs for infants and toddlers, the estimated vacancy for infants and toddlers in a given area, and the availability of information to families about ECE programs for infants and toddlers (Friese et al., 2017). This review of the literature found twelve articles and reports related to *reasonable effort* as this dimension of access pertains to child care for infants and toddlers (Ackerman & Barnett, 2009; Advocates for Children of New Jersey, 2017; BBC Research & Consulting, 2010; DeGuzman et al., 2015; Downs, 2013; IFF, 2015; Halle et al, 2009; Jessen-Howard et al., 2018; Let's Grow Kids, 2016; Los Angeles County Child Care Planning Committee, 2017; Nores & Barnett, 2014; Schmit & Walker, 2016). Of the thirteen articles, findings from one source (IFF, 2015) discussed reasonable effort to find care for a broader age range (i.e., 0 to 5). We did not find any sources on the estimated vacancy for infant and toddler slots or on the availability of information to families about ECE programs serving infants and toddlers. Most of the articles and reports described the availability of infant and toddler care either nationally (4 studies) or in a particular state or locality/city (8 studies). The authors utilized a variety of data collection methods, such as interviews, surveys, and state/federal policy reviews. None of the articles and reports we found that addressed reasonable effort provided evidence for approaches to facilitate access to programs and information about programs for infants and toddlers. The subsection below on availability of ECE programs reflect the availability of research on reasonable effort and emphasize the need for work on further indicators for this dimension.

### Availability of ECE Programs

The availability of ECE programs generally refers to the balance between the supply of and demand for ECE programs. Prior research focusing broadly on demographic changes in maternal employment highlights that increases in women's labor force participation (in the 1990s and early 2000s) for mothers

with children under the age of 18 and quicker re-entry in the labor force after giving birth affected the demand for early- and school-age care (Guzman et al., 2009). In particular, this change increased the need for infant and toddler care and affordable care for children in low-income, working families (Guzman et al., 2009). While public funding increased for child care subsidies and public ECE programs (e.g., Head Start, Early Head Start, and state-funded preschool) during this time, which helped low-income families access care, the supply of affordable care still remained too small to meet demand (Guzman et al., 2009). Additionally, as previous research has tended to focus on the supply and demand of ECE programs for preschool-aged children, likely because public funding for preschool programs has seen the biggest gains (Ounce of Prevention Fund, 2017), less is known about the availability of care for infants and toddlers. Guzman and colleagues (2009) highlight that investments in ECE have raised several questions about the supply and demand of ECE, including:

- Is the supply of center-based infant and toddler care declining as the funding for and supply of Head Start and public preschool is increasing?
- Is the overall number of child care slots increasing for both preschoolers and infants and toddlers, or is the distribution across child care types changing without an overall expansion?

Such questions are relevant since some unique requirements for infant and toddler care (e.g., a higher caregiver-child ratio) make infant and toddler care more costly to provide for programs (Workman & Jessen-Howard, 2018). The cost of providing infant and toddler care can have several consequences. For example, it could incentivize child care providers to offer more preschool-age slots than infant and toddler slots. Indeed, the prices parents pay for a preschool-age slot often offsets the costs of providing infant and toddler care within a program. Nonetheless, with no-cost options available to families through Head Start and public pre-kindergarten, center-based providers may have fewer preschoolers in their centers and thus may need to reduce the number of infant and toddler slots accordingly (Stoney, 2020).

The thirteen articles identified from this review all highlight an overall shortage of infant and toddler care both nationally and across states and localities. Nationally, a large percentage of infants and toddlers have at least one non-parental care arrangement. An examination of data from the Early Childhood Longitudinal Birth Cohort (ECLS-B) found that 49% of children between the ages of 0 and 2 were enrolled in a regular form of non-parental care in 2003 (Nores & Barnett, 2014). Similarly, researchers have reported that half of all 9-month old infants have some type of regular non-parental care arrangement (Halle et al., 2009). In a report on high-quality infant and toddler care in the United States, secondary data analysis by Ackerman and Barnett (2009) described how the supply of licensed child care slots for children in child care and family child care centers has risen in response to increased demand following (1) growth in maternal employment rates (from 34% in 1975 to 60% in 2005) and (2) increased numbers of infants and toddlers (from 11.6 million in 1995 to 12.2 million in 2005) in the United States. The authors report that while there was a two-fold increase in the use of center-based and family, friend, and neighbor (FFN) care for children birth to school entry between 1995 and 2005, the percentage of infants and toddlers with an out-of-home care arrangement remained stable during this time. Similarly, while there was an increase in the supply of licensed child care slots, specifically between 1995 and 2005, the percentage of licensed child care slots for infants and toddlers remained much lower than the percentage for 3- to 5-year-olds (Ackerman & Barnett, 2009). Finally, one study examining the availability of Early Head Start programs, through analysis of Head Start and CCDBG administrative data and data from the Census Bureau's American Community Survey, found that only a small percentage (5%) of eligible children under the age of 3 were served by Early Head Start (Schmit & Walker, 2016).

Several state- and local-level reports also highlight the limited supply of licensed/regulated child care or child care of high quality for infants and toddlers. For example, a report on the status of licensed child care in New Jersey documented a severely limited supply of licensed slots for infants and toddlers (Advocates for Children of New Jersey, 2017). They found that licensed programs had the capacity for approximately 55,600 infants and toddlers, leaving an additional 150,000 infants and toddlers in the state without licensed care. A report focusing on Connecticut documented a total licensed capacity for approximately 15,000 young children in regulated family child care settings and nearly 74,000 young children in center-based and regulated group homes; of the 6,973 of the infants and toddlers in the state receiving a subsidy, 22% were reported to be in regulated family child care, about half are in center-based or group homes, and 28% in unregulated home-based/relative care (Downs, 2013). In another study on the supply of and demand for child care, researchers in Vermont estimated that there were likely around 12,846 infants and toddlers that required child care and approximately 6,764 licensed spaces for them, with only 2,664 of the slots at high-quality programs. It was noted that 79% of the state's infants and toddlers who most likely required care did not have access to high quality, regulated child care (Let's Grow Kids, 2016).

A study in Los Angeles County, California noted a severe decline in the availability and capacity of licensed family child care providers between 2011 and 2016 (Los Angeles County Child Care Planning Committee, 2017). The authors found there were only enough licensed programs and family child care homes for infants and toddlers to serve 13% of working parents with infants and toddlers in the area. While there was a limited supply of licensed care for infants and toddlers in L.A. County, the supply of preschool programs was more than adequate for the population of preschoolers (Los Angeles County Child Care Planning Committee, 2017). Another study in Los Angeles County documented that there were 429 licensed child care centers that could accommodate 9,483 infants and toddlers up to age 2, accounting only for 2.4% of the infant and toddler population living in that area. While the report did not break down the licensed capacity in family child care homes for infants and toddlers specifically, it noted that there were 6,909 licensed homes with seats for 73,532 children under age 5, accounting for only about 11.4% of the population in that age group. Furthermore, the authors shared an estimate that there were 57,000 infants and toddlers from working families in the area using license-exempt arrangements (DeGuzman et al., 2015). While not focused on infants and toddlers specifically, a 2015 report on Detroit, Michigan documented the licensed capacity for children up to age five in the city to be 20,674, representing less than half of the population of that age group (IFF, 2015). While the number of slots in licensed facilities fell short of the total number of children in the age group who could need care, licensed child care centers and family child care homes provided 84% of Detroit's total slots. To meet the needs of the entire population up to age five in Detroit, the authors estimated that the city would need an additional 23,239 slots (IFF, 2015). While some findings across these studies included infants and toddlers in a broader ECE age range (i.e., 0- to 5-year-olds), overall, state and local reports highlight the shortage of licensed care available to infants and toddlers across states/localities.

While the studies described above all point to a shortage in the supply of licensed child care slots compared to the number of children in communities across the United States, there is also evidence of increased demand. For example, a study on child care in Utah found that demand for infant and toddler care was also high, with 50% of 400 interviewed households reporting that it was challenging to find arrangements for infants and toddlers. Specifically, these families struggled to find programs that served infants and noted that those programs that did had long waitlists (BBC Research & Consulting, 2010).

In addition to the limited supply of infant and toddler care nationally and locally, studies also identified the presence of child care deserts—defined as places where there are three or more children for each licensed

child care slot. An analysis of the availability of licensed child care for infants and toddlers in nine states and the District of Columbia found that there were more than five infants and toddlers for every licensed child care slot in each of these states; this is more than three times the ratio for 3- through 5-year-olds (Jessen-Howard et al., 2018). Additionally, more than 95% of the counties in this study were infant and toddler child care deserts.

### Summary

This review of the literature highlights an overall shortage of licensed or regulated infant and toddler care both nationally and across states and localities. In addition, studies also identified the presence of child care deserts, defined as the presence of three or more children for each licensed slot. Given the limited supply of licensed or regulated infant and toddler care, as well as the phenomenon of child care deserts, it appears that many families with infants and toddlers are either relying heavily on non-regulated care or are providing care for their infants and toddlers themselves, through coordination of work schedules.

## Affordability

Family income affects how much families can spend on ECE and what care is available to them. Low-income families spend a disproportionate amount of their income on ECE and school-age care—approximately 33% of family income compared to 11% spent by families living above poverty—when they don't have subsidies or public programs available to them (Forry, Madill, & Halle, 2018). Child care subsidies help expand the options available to low-income families (particularly the regulated options available to them). However, child care subsidies currently only serve 15% of eligible children under age 13 (Chien, 2019).

The affordability of a program is a dimension of access reflecting the cost to parents and to ECE programs or providers. Key indicators for affordability include: (1) parents' financial contributions (including tuition, copayments, or subsidy differentials), (2) the portion of parents' income that pays for ECE, (3) subsidy or scholarship contributions, (4) program fundraising, (5) advertised program prices, and (6) the full cost to the program of providing care (Friese et al., 2017).

We found 15 articles and reports related to the affordability dimension of access. Four studies were related to the cost to parents (Downs, 2013; Fraga et al., 2017; Franko et al., 2017; Tanoue et al., 2017). Eight studies were related to subsidy or scholarship contributions (Berman, Bhat & Rieke, 2016; Henly et al., 2015; Matthews & Schumacher, 2008; McKelvey & Chapin-Critz, 2014; Moran et al., 2017; Pilarz, Claessens & Gelatt, 2016; Schmit, Matthews, & Smith, 2013; University of New Mexico, 2015), with studies by Henly et al. (2015) and Pilarz et al. (2016) focusing on families with at least one child between 0 and 5. Four studies were related to advertised price (Fraga et al., 2017; Franko et al., 2017; Public Consulting Group, 2015; University of New Mexico, 2015). Lastly, six studies were related to the cost to programs (Berman, Bhat & Rieke, 2016; Franko et al., 2017; McKelvey & Chapin-Critz, 2014; Mitchell, 2013; Moran et al., 2017; District of Columbia Office of the State Superintendent of Education, 2016). This review of the literature did not yield any studies related to program fundraising.

Most of the studies were descriptive and did not test specific approaches to increasing access via affordability. These studies used administrative data, surveys, and interviews to report the current costs faced by families and providers for infants and toddlers. For example, two studies were state-based market rate surveys (University of New Mexico, 2015; Public Consulting Group, 2015) and one study was a national market rate survey (Fraga et al., 2017). Some studies found evidence for increasing access through affordability using cost-models. While they relied on data from programs serving children from

birth to school entry, four studies used cost models to test the impacts of policy changes or alternate rate-setting, calculate the cost of quality improvement, and identify key cost drivers based on data from centers serving children from birth to school entry (Franko et al., 2017; McKelvey & Chapin-Critz, 2014; Mitchell, 2013; District of Columbia Office of the State Superintendent of Education, 2016).

### Parent's Financial Contribution

Parents' ability to pay for the cost of care can greatly affect their children's access to care. We identified five studies related to the affordability indicator of parent's financial contribution for infant and toddler care. This indicator includes the cost to the parent to pay for ECE services, including tuition, copayments, program fees, or subsidy differentials (Friese et al., 2017). These studies also consider the proportion of parents' income that is going towards ECE payments.

In their Child Care and Development Fund (CCDF) Program proposed rule, the U.S. Department of Health and Human Services suggests that affordable child care should cost no more than 7% of a family's income because, according to the U.S. Census Bureau, the average percent of monthly income families spend on child care has consistently stayed around 7% from 1997 to 2011 (Child Care and Development Fund [CCDF] Program, 2016). However, given the higher cost to provide quality care for infants and toddlers compared to preschoolers, child care is often more of a financial burden for parents with young children (Workman & Jessen-Howard, 2018). One study in this review found that center-based infant care costs are greater than 10% of median household income in 41 states – ranging from 13% in Missouri to 50% in Massachusetts (Fraga et al., 2017). This same study also calculated that in 28 states and the District of Columbia, the average annual cost of center-based infant care is greater than tuition at a public four-year college. For example, in Colorado, families with an infant or toddler pay $14,960 for a year of center-based care; this amount is 44% higher than what they would pay for a year of tuition in the state's public colleges (Franko et al., 2017). Two studies found that costs were significantly lower for family child care than center-based care (Downs, 2013; Franko et al., 2017). Moreover, two studies found that costs were a significantly greater burden for single parents (Fraga et al., 2017; Tanoue et al., 2017), for whom the cost of center-based care for one infant across all 50 states averaged over 40% of the state median income (Fraga et al., 2017). In sum, the cost of care, especially center-based care, is a large financial burden for parents of infants and toddlers, particularly single parents.

### Subsidy or Scholarship Contribution

Another indicator of affordability is the payment per child that is covered by a child care subsidy (e.g., CCDF) or scholarship. We found eight studies related to subsidy and/or scholarship contributions. Several studies noted challenges related to accessing subsidies—including limited funding for the program and difficulties families face in obtaining and keeping a subsidy. Overall, even with recent substantial increases in funding for the CCDF program, federal funding for child care assistance has not kept pace with inflation or increased child care needs, leaving children without access and programs without adequate reimbursement (Berman, Bhat, & Rieke, 2016; Schmit et al., 2013; University of New Mexico, 2015).

Subsidy stability can also be a challenge for families. Two studies in this review identified a pattern of subsidy churning in a sample of families from Illinois and New York. Over half of these sampled families with at least one non-school aged child exited the system within one year of receiving their subsidy, and 40% of them returned within six months (Henly et al., 2015; Pilarz et al., 2016). Both studies found that longer eligibility periods were associated with greater subsidy stability, and preschoolers experienced greater subsidy stability compared to infants and toddlers.

Studies regarding subsidy eligibility periods and subsidy spell duration can and have informed changes to subsidy policy. Specifically, the reauthorization of the CCDBG in 2014 extended the subsidy eligibility period to 12 months, and the Administration for Children and Families has funded a series of state studies to examine the effects of the change in subsidy eligibility period. It will be important to continue to monitor this work in the years ahead.

While child care currently costs 61% more for an infant than for a preschooler, child care subsidy rates are only 27% higher for infants than preschoolers (Workman & Jessen-Howard, 2018). Several studies from this review examined subsidy reimbursement rates for providers caring for infants and toddlers. While vouchers are an important source of income for many providers, they also come with a set of challenges, such as low reimbursement rates and delayed payments (Matthews & Schumacher, 2008). For example, one study in Washington, D.C. found that subsidy rates cover only 66-70% of the median cost for infant and toddler care; this is especially burdensome for programs where the majority of children receive subsidies and few families have incomes that allow them to pay private tuition rates (Berman, Bhat, & Rieke, 2016). Another study based in Pennsylvania found that despite offering tiered reimbursement rates for infant and toddler care, the centers they sampled faced an average shortfall of 38% for each infant served (Moran et al., 2017). Cost modeling in Arkansas found that increasing subsidy voucher rates for infants by 21% would allow programs to provide higher quality care to families in poverty, both in centers and in family child care settings (McKelvey & Chapin-Critz, 2014). The model tested the impact of tiered subsidy reimbursements based on levels in Better Beginnings – the state's QRIS. The model showed that under the current subsidy system, a center implementing evidence-based standards for quality improvement, such as lower teacher-child ratios and hiring staff with greater qualifications, would lose as much as $130,000 in revenue each year. The cost of making these quality improvements could be offset by programs receiving child care vouchers at a higher rate. The authors suggested that tying these subsidy reimbursements to tiers in the QRIS system could provide an additional incentive for programs to continue improving quality (McKelvey & Chapin-Critz, 2014).

Overall, obtaining and keeping child care subsides can be a challenge for families. Even after obtaining subsidies, families may still struggle to afford care because funding amounts do not always match the actual cost of child care leading to higher parent co-payments. Providers also feel this burden, as subsidy reimbursement rates may not cover the entire cost of caring for a child, especially an infant or toddler. However, studies suggest that by increasing subsidy rates and making it easier for families to obtain subsidies, more families would be able to afford and access high quality infant and toddler care.

### Advertised Price

Advertised price (i.e., the price of full-time ECE that is advertised or otherwise publicly available) is another indicator of affordability. Four studies reported findings related to advertised price of care for infants and toddlers. Each study reported on market rate surveys, three at the state level and one at the national level (Fraga et al., 2017; Franko et al., 2017; Public Consulting Group, 2015; and University of New Mexico, 2015). Nationwide, the average cost of center-based care for infants is greater than any other age group or program type (Fraga et al., 2017). Two state-level studies compared prices by program type and found that the market rate was lower for infants and toddlers in family child care than in center-based child care (Franko et al., 2017; Public Consulting Group, 2013). One study found that market prices were increasing for all age groups, including infants and toddlers, for most types of child care as compared to a market rate survey conducted two years prior (University of New Mexico, 2015). Since the cost of care can vary based on age and type, advertised prices can help families determine the type and amount of care that they can afford.

## Cost to the Program

The full cost to a program to provide ECE is another indicator of affordability. Providers may struggle to balance revenue with several program costs that include staff salaries and benefits, building space, curriculum and assessments, classroom materials, food, equipment, administrative supports, and transportation (Hanover Research Council, 2012). Given the different licensing requirements and staffing ratios required to care for young children, the costs for programs will also be affected by the ages of children they serve. In fact, all four cost modeling studies that examined ECE program costs for family child care and center-based providers serving children up to school entry concluded that ECE programs could reduce their costs by accepting fewer infants and toddlers. For example, a study for the Department of Education in the District of Columbia found that center-based programs for infants and toddlers could break even or profit if they enrolled more 3- and 4-year-olds or did not serve children with special needs; they also found that family child care programs could break even if they had consistently full enrollment and families who could always pay (District of Columbia Office of the State Superintendent of Education, 2016). Mitchell (2013) used cost modeling for the QRIS in Delaware, and found that public schools, Head Start, and center-based child care programs could be financially healthy if they did not enroll infants. Franko and colleagues (2017) identified similar observations in their cost modeling study in Colorado – if centers stopped serving infants and toddlers, they could improve their sustainability and profitability. In Arkansas, a cost model developed using existing state data on employment and child care utilization and qualitative insights from focus groups also showed that programs serving infants and toddlers could not operate without a preschool classroom (McKelvey & Chapin-Critz, 2014). They found that enrolling preschoolers and/or increasing rates for child care vouchers could offset the increased cost of operating with fewer children per adult (McKelvey & Chapin-Critz, 2014). While not a cost modeling study, Moran et al. (2017) also found that if programs in Pennsylvania lowered their infant and toddler enrollment and offset it with greater school-age enrollment, they were able to cover their revenue gaps.

Research demonstrates that the costs for providing infant and toddler care in particular are high, often not captured in market rates, and especially difficult for providers to meet if they rely on revenue from the child care subsidy system. This review of the literature identified seven studies that reported the total cost required to provide high quality care to infants and toddlers across various program types and geographic settings. The studies highlight two financial challenges for ECE programs, namely:

- **A persistent gap between the total cost to provide care and total revenue for ECE programs, especially those caring for infants and toddlers**. In many states, child care subsidies and other public programs serving infants and toddlers do not cover the full cost of providing care (Berman, Bhat & Rieke, 2016; District of Columbia Office of the State Superintendent of Education, 2016; Franko et al., 2017; Moran et al., 2017). For example, a typical ECE program in Colorado, serving children from birth to four years, has to cover an average annual gap of $37,000 between their expenses and their revenue (Franko et al., 2017).

  In the District of Colombia, small centers primarily serving infants and toddlers had the widest revenue gaps (District of Columbia Office of the State Superintendent of Education, 2016). While enrolling more families who can pay full tuition is one strategy for offsetting this gap, this may not be sustainable or realistic in areas with more concentrated poverty (Berman, Bhat & Rieke, 2016; District of Columbia Office of the State Superintendent of Education, 2016). Four studies reported that infant and toddler care is costlier to programs, often due to mandated ratios that require more staff (McKelvey & Chapin-Critz, 2014; Mitchell, 2013; Moran et al., 2017; District of Columbia Office of the State Superintendent of Education, 2016). Programs in Pennsylvania have

been enrolling more preschoolers and fewer infants/toddlers to offset the high cost gap (Moran et al., 2017).

- **Limited resources to compensate ECE staff.** Several studies compared the overall costs and allocation of resources across different types of programs, but findings were inconsistent. The most consistent finding across program types was low staff compensation (Franko et al., 2017; Moran et al., 2017; District of Columbia Office of the State Superintendent of Education, 2016).

Overall, providing care to infants and toddlers is a financial challenge. The cost of providing infant and toddler care is costlier to programs due to mandated ratios, which results in a gap between cost and total revenue and low staff compensation.

The recent National Academies of Sciences report *Transforming the Financing of Early Care and Education* (2018) lays out a proposal to provide adequate funding from public and private sources so that all families can afford high-quality ECE for their children. Recommendations made by the NAS committee responsible for the *Transforming the Financing of Early Care and Education*, include, but are not limited to, providing cost-based payments and harmonizing of provider-oriented and family-oriented financing approaches.[8] The total cost of providing high-quality ECE for all children under the recommended plans outlined in the report, once fully implemented, would be at least $140 billion per year (from all sources public and private), equivalent to 0.75% of U.S. gross domestic product (GDP), or slightly less than the current average of 0.8% of GDP allocated to ECE for the nations in the Organization for Economic Cooperation and Development.[9] It should be noted that these recommendations are for the ECE system as a whole, not just for addressing the affordability of infant and toddler care.

### Summary

Some studies found evidence for increasing access through affordability using cost models. Four studies used cost models to test the impacts of policy changes or alternate rate-setting, calculate the cost of quality improvement, and identify key cost drivers (Franko et al., 2017; McKelvey & Chapin-Critz, 2014; Mitchell, 2013; District of Columbia Office of the State Superintendent of Education, 2016). All of these studies concluded that programs could reduce their costs by accepting fewer infants and toddlers. However, one of the studies using cost models found that programs could achieve financial sustainability if subsidy voucher rates were increased. The cost of care, especially center-based care, is a large financial burden for parents of infants and toddlers, particularly single parents—averaging over 40% of the state median for single parents (Fraga et al., 2017). Child care subsidies help offset this cost for low-income parents but under state rules, only 15% of eligible families are served; and the monetary value of the subsidy and the length of the eligibility period are related to subsidy use and stability in care. Nationwide, the average cost of center-based care for infants is greater than any other age group or program type. Providers caring for infants and toddlers experience a gap between total program costs and revenues. They often need to offset this gap by serving additional preschool or school-age children or providing low compensation for teachers. A recent National Academy of Sciences expert panel recommended a major change to how child care is financed in the United States that would balance provider-oriented and family-oriented financing approaches and use public and private dollars in such a way that high quality child care would be affordable not only for infants and toddlers but also for all children in the country. Such a plan would be expensive (at least $140 billion per year) but would be proportionally in line with what other countries invest in the care of their youngest citizens.

[8] See https://www.nas.edu/Finance_ECE
[9] See https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_186654.pdf.

## Meets Parents' Needs

The "meets the parents' needs" dimension of *access* captures the extent to which parents have access to ECE options that align with their family's needs for child care arrangements. It encompasses indicators such as: (a) parent's preference for program type, (b) the location of the program/availability of transportation, and (c) program hours of operation or ECE features that align with a family's needs (Friese et al., 2017).

Prior research indicates that families with infants and toddlers may not always be able to select the care arrangement for their child that takes into account the individual needs families may have when it comes to work schedules, access to transportation, multiple children, and preference for specific types of care (Riley & Glass, 2002). A similar finding arose from this review of the research, with transportation and hours of care emerging as particular challenges to selecting care that meets parents' needs.

We found nine studies that addressed the issue of whether care meets parents' needs. However, not all of these studies examined access to ECE options that meets the needs of families with infants and toddlers specifically, instead encompassing infants and toddlers in studies of the full age range from birth through school entry (Carlin et al., 2009; Kim & Fram, 2009; Marshall et al., 2013; Weber et al., 2018). Seven of the studies addressed parental preferences for different types of care for infants and toddlers and the factors that contribute to those preferences, such as income status and subsidy eligibility (BBC Research & Consulting, 2010; Carlin et al, 2009; Coley et al., 2014; Marshall et al., 2013; Rose & Elicker, 2010; Sosinsky & Kim, 2013;; Madill et al., 2018). The studies used a variety of data collection methods, including surveys or questionnaires, interviews with program staff and parents, and observational measures of quality. Three studies also utilized secondary analysis of longitudinal data, including data from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B) and the NICHD Study of Early Child Care and Youth Development (SECCYD). Most studies were descriptive in nature. None of the studies addressed evidence of an approach to increasing access to programs that meet parents' needs.

### Program Type

While employment is not the only reason that parents utilize ECE, parental employment plays a large role in parents' child care arrangement needs for their infant or toddlers. Similar to prior research showing the high need for non-parental care for infants and toddlers (Halle et al., 2009; Nores & Barnett, 2014), one study in this review found 90% of parents interviewed indicated that they utilize non-parental care for their infants and toddlers so that both parents can work outside of the home (BBC Research & Consulting, 2010). Additionally, while not specific to parents of infants and toddlers, secondary data analysis of the ECLS-B revealed that there is a positive relationship between the number of hours worked and the likelihood that mothers will choose non-parental care for their non-school-aged children (Carlin et al., 2009). However, 88% of mothers of infants and 59% of mothers of toddlers in one study reported that they would prefer parental care for their children in an ideal world scenario (Rose & Elicker, 2010). In two-parent families, working parents may work different shifts so that their child can stay in parental care. Secondary data analysis of the ECLS-B by Coley and colleagues (2014) found that infants were 59% less likely to use home-based child care over parental care and 99% less likely to use center-based child care over parental care, relative to preschool-aged children. Toddlers, on the other hand, were 73% less likely to be in home-based care over parental care and 98% less likely to be in center-based care over parental care. Toddlers were much less likely to be in home-based care over parental care, and infants were much less likely to be in center-based care over parental care (Coley et al., 2014).

Household income can also delimit ECE options that meet families' needs. In one study that analyzed data from the NSECE, Madill and colleagues (2018) found that low-income parents of infants and toddlers (but not of preschoolers) were less likely than higher-income parents to use a care type that met their preferences for nurturing care as the primary care type; low-income parents were more likely to use family, friend, and neighbor care as their primary care type compared to higher-income parents (52% versus 37%).

The availability of child care subsidies for low-income families is meant to increase the ECE options available to families, however (Schmit &Matthews, 2013). Research suggests that families with children ages 0-6 receiving child care subsidies are more likely to use center-based care than non-subsidized families (Guzman et al., 2009). Marshall et al.'s study (2013) of families in Massachusetts also found that center-based care was the most common form of child care among subsidy, low-income, and middle-income families. However, families on the waitlist to receive a subsidy were more likely to choose kith and kin or family child care than center-based care for their children. Families receiving subsidies also were more likely to report having better options for child care that meets their needs than waitlist or middle-income families (Marshall et al., 2013). Coley (2014) also found that higher income families were more likely to use center-based care for their children but noted that the strength of this relationship was not significantly different from infancy to preschool entry.

Some further research focuses on the specific aspects of care that parents of young children indicate as important. Parents of non-school aged children (Kim & Fram, 2009; Weber et al., 2018) and of infants and toddlers specifically (BBC Research & Consulting, 2010; Sosinsky & Kim, 2013) reported that it is important that they trust their child's provider and that their provider has a high level of education and training.

### Program Location and Hours of Operation

While not specific to parents of infants and toddlers, one study conducted in Oregon found that parents with children under age 5 were more likely to choose a family child care home if program location and flexible hours were important to meeting their needs when selecting care (Weber et al., 2018). This study found that parents who had a need for flexible hours that accommodated changing work schedules and non-standard hours were 15% more likely to select a family child care arrangement for their child (Weber et al., 2018). Similarly, Kim and Fram's 2009 study found that parents with children under age 6 whose priorities for selecting a child care arrangement included a focus on practical factors (e.g., cost, location, available time) were more likely to select home-based relative or non-relative care. Coley et al. (2014) also found that mothers working non-standard hours were more likely to select parental care or home-based care over center-based care for their infant or toddler.

### Summary

The literature in this review confirms prior research findings that that the options for infant and toddler care do not always align with parents' needs, particularly for low-income families. Most mothers of infants and toddlers would prefer that their child be in parental care rather than nonparental care. However, given work schedules, many parents of infants and toddlers choose various types of nonparental care for their child. Parents who select nonparental care arrangements for their infants are more likely to prefer home-based settings over centers. However, research indicates that families may not always be able to select the care arrangement they prefer for their infants and toddler, with transportation and hours of care emerging from the literature as particular challenges to selecting care that meets parents' needs.

## Supports Children's Development

The degree to which a program supports child development is another dimension of access. This dimension of access involves assessment of the availability of ECE options that support a child's development according to the following six indicators: (1) a program's designation of quality (e.g., a QRIS rating), (2) coordination of services, (3) practices that support stability in ECE arrangements, and (4) practices that meet the unique needs of children including children with a disability, (5) children who are experiencing homelessness, and (6) children who speak a language other than English (Friese et al., 2017). As noted above, we present the literature related to these indicators of the *supports children's development* dimension here, but we expand on findings about structural and process quality (i.e., caregiver-child interactions) of infant and toddler care in the next section of this review.

Overall, there were fewer articles and reports that focused on the *supporting children's development* dimension of access compared to other aspects of access. We found six articles published between 2008 and 2018 that focused on this dimension during infancy and toddlerhood, and three articles that included infants and toddlers in a broader age-range (Ceglowski et al., 2009; Krafft et al., 2017; Pilarz, Claessens, & Gelatt, 2016). Four studies were related to the designation of quality (e.g., how many infants/toddlers participate in programs with a quality rating; Alexandre et al., 2013a; Alexandre et al., 2013b; DeGuzman et al., 2015; Schmit & Matthews 2013); two studies were related to the availability of services for children with disabilities, vulnerabilities, and home-language differences (Ceglowski et al., 2009; Latino Policy Forum, 2013); and three studies related to the stability of ECE (Choi et al.,2018; Krafft et al., 2017; Pilarz et al., 2016). This review did not identify articles related to access and coordination of ECE services. Seven studies were state or locally-based reports.

### Designation of Quality

This indicator is defined as a child being enrolled in a program that is considered high quality as determined by a state/locality—such as a quality rating that a program receives as part of participating in a QRIS, scores of an observational assessment, or accreditation status (Friese, et al., 2017).

A report by Schmit & Matthews (2013) found that 35 states with QRIS include quality requirements specific to infant-toddler care in their QRIS standards, which can improve the quality of infant and toddler care and help parents better identify and secure quality care (Schmit & Matthews, 2013). Similarly, more recent analysis of data from the Quality Compendium highlighting QRIS features specific to infants and toddlers show that 28 quality initiatives include indicators for infant and toddler curriculum, and 29 initiatives include developmental screening for infants and toddlers (The Build Initiative & Child Trends, 2019). Only one locally-based study reported on the number of infants and toddlers participating in a program with a quality rating. A Los Angeles County-based report found that less than 10% of all centers and 2% of all family child care (FCC) homes participated in and received a rating from one of the three QRIS efforts in the county (DeGuzman et al., 2015). Moreover, fewer providers serving infants and toddlers participated in a QRIS in the county, compared to providers of preschool-aged children (DeGuzman et al., 2015).

While not specific to quality ratings, two other studies reported on observed quality of center-based and home-based care for infants and toddlers in a locality or state. The quality of center-based infant and toddler care – measured by two environmental rating scales (the Infant/Toddler Environment Rating Scale [ITERS] and Family Child Care Environment Rating Scale [FCCERS]) – in the State of New Jersey was primarily of moderate quality, with the vast majority of providers considered less than good (Alexandre et al., 2013b). Additionally, the quality of family child care homes in one NJ county, including care for infants

and toddlers and older children in these settings, was much lower than center-based care (Alexandre et al., 2013a). Overall, authors found quality designations to be in the low to medium category for infant and toddler care in the county (Alexandre et al., 2013a).

### Availability of Services for Children with Disabilities, Vulnerabilities, and Home-Language Differences

Program practices that meet children's unique needs, including provision of supports for children with a developmental or physical disability, children who are experiencing homelessness, and children who speak a language other than English, were included as indicators in the *Access Guidebook* to acknowledge the importance of high-quality ECE for children who may face additional challenges to accessing high-quality care. For instance, parents of children with developmental and physical disabilities report challenges finding high-quality care and face logistical challenges as settings lack special equipment and staff with specialized training (Booth-LaForce & Kelly, 2004). Families experiencing homelessness may benefit from ECE settings that offer streamlined enrollment without standard documents in order to facilitate their participation in ECE (ACF, 2014); and children experiencing homelessness may be particularly likely to benefit from having a stable and high-quality care environment apart from home. Children whose native language is Spanish may experience enhanced social and cognitive development when participating in ECE programs with staff who speak Spanish (Chang et al., 2007; Halle et al., 2011b). This review identified only two studies related to this indicator, only one of which focused specifically on infants and toddlers. One study addressed the need for instruction in a language other than English for infants and toddlers (Latino Policy Forum, 2013) and the other addressed supporting children (including but not limited to infants and toddlers) with a disability (Ceglowski et al., 2009).

A study in Illinois found that 29% of all 0-3-year-olds enrolled in programs funded by the Illinois State Board of Education (ISBE) spoke languages other than English in the home; and 80% of those children were from Spanish-speaking homes. However, providers working with Latino families reported a need for more qualified bilingual, bicultural providers to serve infants and toddlers in Illinois. Moreover, the 10 municipalities with the largest Latino populations in Illinois accounted for over 31% of the total demand for infant and toddler care, yet those same municipalities had only 19% of the available infant and toddler slots (Latino Policy Forum, 2013).

Another study encompassing infants and toddlers in a broader age range addressed access to services for children with a disability. Specifically, a study of 16 families in Minnesota found that families of children with disabilities used a range of available child care options (e.g., family child care programs, school-aged child care programs, and afterschool programs), but faced challenges accessing care. These families also had fewer child care options that would provide optimal care for their child(ren) with special needs, especially in rural areas (Ceglowski et al., 2009). Furthermore, this study found that parents of young children with disabilities were best cared for in Head Start, school-based Early Childhood Special Education Programs, and other therapeutic programs offered by the state. However, based on an account from one parent, Head Start programs, while sometimes the only care option for families, were not always equipped to care for children with significant disabilities. Furthermore, the study reported that some providers charged higher rates for children with disabilities, which was especially burdensome for low-income families (Ceglowski et al., 2009).

### Stability of ECE

Practices that support children's stability in ECE arrangements are another indicator of supporting children's development. Specifically, stability in an ECE arrangement relates to the importance of

continuity of care for children's social-emotional well-being and their ability to form strong relationships with their caregivers.[10] This review on access identified three sources related to the stability of ECE arrangements. One study that conducted secondary data analysis of The Early Head Start Family and Child Experiences Study (BabyFACES) data found that 29% of EHS programs serving infants and toddlers reported that none of their centers were implementing continuity of care (CoC) practices, which refers to infants and toddlers staying with an assigned caregiver for an extended period of time (typically up to three years; Choi et al., 2018). However, 57% of EHS programs reported that all of their centers implemented CoC (Choi et al., 2018). Moreover, 29% and 34% of children in EHS programs experienced no or only one teacher change, respectively, while 37% of children experienced two to six teacher changes in two consecutive years (Choi et al., 2018).

While not specific to infants and toddlers, two recent reports highlighted the relationship between subsidy receipt and the stability of care. In one study, the majority of children in two states (NY and IL) exited the subsidy program by the end of the 18-month period of study (generally, parents exited at the redetermination point—6 months in IL and 12 months in NY; Pilarz et al., 2016). Program churning (i.e., exiting and re-entering the subsidy program) was greater among TANF recipients. More than two-thirds of children across both states stayed with the same provider over the 18-month period (Pilarz et al., 2016). In another study, participation in the subsidy program did not affect the stability of care or the number of concurrent providers (Krafft et al., 2017). As mentioned in the affordability section above, the CCDBG reauthorization in 2014 increased the redetermination period for subsidy receipt to 12 months to support continuity of care. As of October 2014, almost half of the CCDF programs had redetermination periods of less than 12 months, with most states/territories using a six-month period (Minton, Stevens, & Blatt, 2016). Increasing the redetermination period for child care subsidies aimed to support child care stability for families participating in the subsidy program. Research funded by the Office of Planning, Research, and Evaluation as part of the Center for Supporting Research on CCDBG Implementation looks to examine the implementation of policies such as these put in place as a response to the CCDBG Act of 2014.[11]

### Summary

Little information is available about the number of infants and toddlers enrolled in an ECE program participating in QRIS. Some locally-based research indicates that providers of infants and toddlers participate in QRIS at lower rates compared to providers of preschool-age children. While this review identified few studies related to access to quality care for infants and toddlers with special needs and those who speak a language other than English, some studies of families of infants and toddlers with special needs indicated that they had more limited options for their children and higher costs. The limited number of studies with a focus on non-English speaking families with infants and toddlers indicate that parents have more difficulty finding a provider who speaks their home language. This holds true even in communities where there is a sizable population of infants and toddlers from families who speak a language other than English.

# Conclusion

Overall, the literature on infants' and toddlers' access to quality care is limited. As mentioned above, most of the studies we identified on access focused on the dimensions of *reasonable effort* (i.e., the supply of and demand for care for infants and toddlers) and the *cost/affordability* of care for infants and toddlers.

[10] We also discuss the literature found on continuity of care and how it relates to child outcomes and program quality later in the report. See Section 2 on quality of infant and toddler care.
[11] See https://www.acf.hhs.gov/opre/research/project/center-for-supporting-research-on-child-care-and-development-block-grant-ccdbg.

Fewer studies addressed the access dimensions of *meets parents' needs* and *supports child development*; and the studies identified for these dimensions did not always specifically address infants and toddlers. For further limitations identified in the literature, see Section IV on gaps in the literature and future research needs.

The current literature related to infants' and toddlers' access to quality care suggests the following conclusions:

- There is an overall shortage of licensed and regulated infant and toddler care available both nationally and within states and localities.
- Infant and toddler care is very costly to parents. In 41 states, center-based infant care costs are greater than 10% of the median household income (3% more than the HHS recommendation), ranging from 13% in Missouri to 50% in Massachusetts.
- There is little reported evidence for approaches that facilitate access to programs for infants and toddlers, other than the overall availability of subsidies to reach a higher proportion of eligible families; increasing subsidy reimbursement rates is also a promising practice.
- Recent research (e.g., Thomson et al., in press) echoes previous studies that use of care often does not match parental needs for infant and toddler care. There is a need for more research that considers the range of factors, aside from availability of care, that influence utilization of care (e.g., affordability, location, transportation, hours of operation, ability to provide specialized services, stability of care). In particular, additional research is needed specific to infants and toddlers on the dimensions of *meets parent's needs* and *supports child development*.

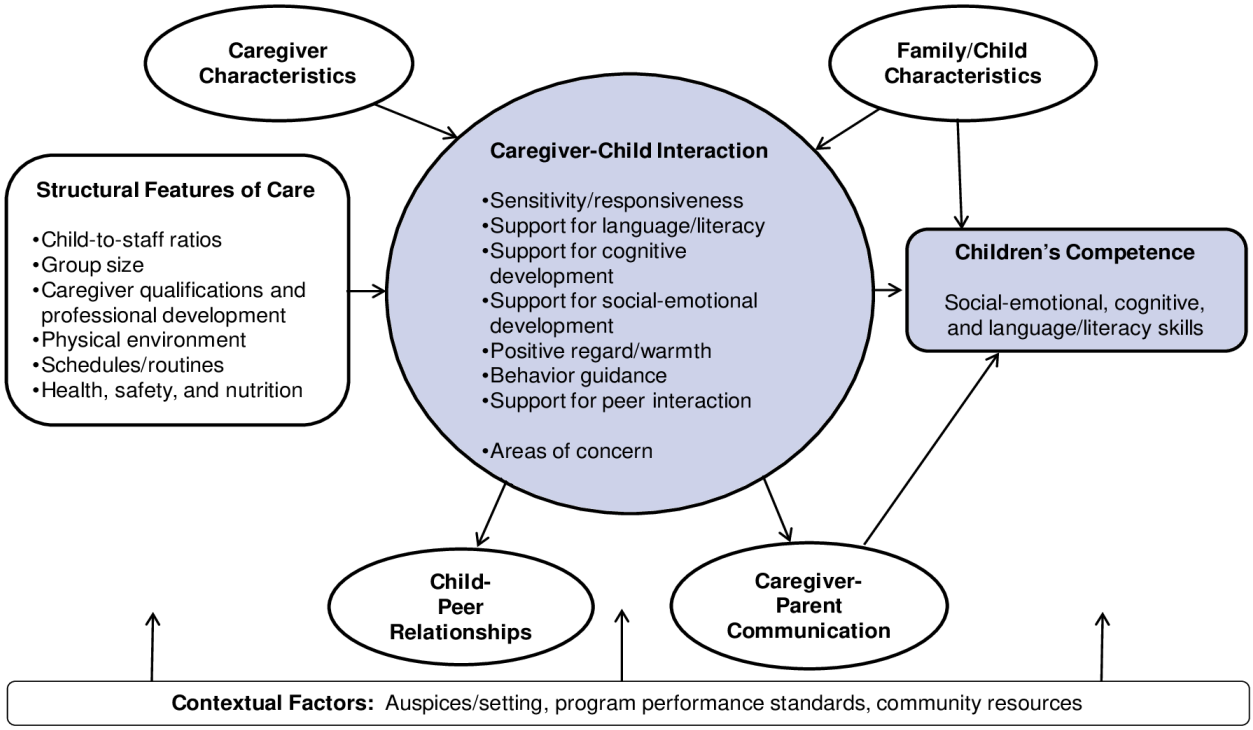
# Section III: Quality of Infant and Toddler Care

## Definition of Quality for Infant and Toddler Care

For this literature review, we adopt the framework of high-quality ECE for infants and toddlers outlined within the Quality of Child Caregiver Interactions with Infants and Toddlers (Q-CCIIT) project (Halle et al., 2011a). We use this conceptualization of quality because it was developed with a specific focus on the elements of quality that would support optimal development among infants and toddlers. There is consensus that the definition of high-quality care for infants and toddlers has some features that are distinct from those established for older children, including preschoolers, and that these features are related to the unique developmental needs and characteristics of infants and toddlers (Chazan-Cohen et al., 2017; Dalli et al., 2011; Thomason & La Paro, 2009). The Q-CCIIT conceptual model of quality for infants and toddlers is illustrated in Figure 2 and contains the following components: *structural features of care*, *caregiver-child interaction*, *caregiver-parent communication*, *child-peer relationships*, and *contextual factors*, with the ultimate goal of supporting *children's competence* in multiple developmental domains. We provide a brief introduction to each of these components of the model for high-quality infant and toddler care below. Although we focus on the structural features of care and caregiver-child interactions, we group the other components—caregiver-parent communication, child-peer relationships, and contextual

factors—together as other components that influence a child's development.[12] Following the description of these components of the Q-CCIIT model, we provide a review of the literature related to approaches that promote quality in infant and toddler care and thereby support the development of child competence.

**Figure 2.** Q-CCIIT Research-Based Conceptual Model for Infant-Toddler Quality of Care




Note: Figure 2 reproduced from Halle, T., Anderson, R., Blasberg, A., Chrisler, A., & Simkin, S. (2011). *Quality of Caregiver-Child Interactions for Infants and Toddlers (QCCIIT): A Review of the Literature, OPRE 2011- 25*. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

## Structural Features of Quality for Infants and Toddlers

Research on the quality of ECE environments for young children typically categorizes the features of quality into two broad components: *structural* and *process* features of quality (Zaslow, Anderson, Redd, Wessel, Tarullo, & Burchinal, 2010). Structural features of quality are "more enduring characteristics" of ECE environments with which standards or levels of acceptable practice are associated; because of these established standards, structural features of quality can potentially be regulated (Zaslow et al., 2010, p. 32). The structural features of quality for infants and toddlers highlighted in the Q-CCIIT conceptual model include: (a) staff-to-child ratios and group size, (b) caregiver qualifications and professional development (PD), (c) physical environment, (d) schedules/routines, and (e) health, safety, and nutrition (Halle et al., 2011a). As the Q-CIIT model depicted in Figure 2 indicates, structural features of quality are hypothesized to support process-oriented features of quality in the infant and toddler child care setting that are more proximally associated with child competencies. In addition to the indirect effect of structural features of quality on child outcomes via process features, research has also found some direct effects. For example, teacher-child ratio has been found to be related to the development of communication skills in infants and

[12] In this review, caregiver characteristics such as caregiver's qualifications/education and professional development are included under structural features of care rather than as a separate component of high-quality care. We do not address family/child characteristics in this review other than focusing, as possible, on families with infants and toddlers.

toddlers (Burchinal, Roberts, Nabors & Bryant, 1996).[13] Below, we share more about these structural features of quality highlighted in the Q-CCIIT framework.

- **Staff-to-child ratios** and **group size** are often considered in relation with one another. Smaller group sizes and lower staff-to-child ratios ensure that infants' and toddlers' needs are met in a timely fashion. Standards for teacher-child ratios and group sizes have been established by the National Association for the Education of Young Children (NAEYC) and the Office of Head Start (OHS). Early Head Start classrooms are not allowed to have more than eight children per room for children up to 36 months of age, whereas other ECE programs abiding by NAEYC standards can have group sizes of up to twelve for children 12 to 36 months of age.[14] For infants and toddlers up to 28 months of age, both NAEYC and OHS permit a 1:4 ratio in classrooms with up to eight children; a 1:3 ratio is required for group sizes of six children per classroom. For children 21 to 36 months of age, NAEYC requires two teachers in the classroom, with ratios of 1:5 in a classroom of ten children, and 1:6 in a classroom of twelve children.[14]

- **Caregiver qualifications and professional development** are often included in measures of high-quality care for infants and toddlers; they are also considered indicators of quality, or associated with indicators of quality, for caregivers of older children as well (National Survey of Early Care and Education Project Team, 2015). *Caregiver qualifications* can include characteristics such as educational attainment, completion of a higher education degree related to ECE or child development, years of experience, or certifications (conferred by national professional associations and/or state agencies). *Professional development* can include participation in training outside of a degree-conferring program such as a one-time workshop, a series of workshops, or a semester-long course; or ongoing coaching/consultation and supervision. Although it is believed that more specialized qualifications (e.g., specialized degrees or ongoing training specifically in infant and toddler development) will result in better outcomes for infants and toddlers, research on the effects of professional development and workforce preparation for those caring for infants and toddlers has been slim and the results are mixed (Epstein, Halle, Moodie, Sosinsky, & Zaslow, 2016). In addition, there are currently low levels of qualification among center-based teachers of infants and toddlers, as well as limited participation in professional development activities among these teachers. Specifically, data from the 2012 National Survey of Early Care and Education (NSECE) showed that only 21% of center-based teachers who care for infants and toddlers participated in more intensive PD activities, such as coaching, consultation, or mentoring during their most recent professional development activity (Madill, Blasberg, Halle, Zaslow, & Epstein, 2016). Also, over half of these caregivers lacked a college degree; 36% had "some college" and 28% had a high school degree or less (Madill et al., 2016).

- **Physical environment** includes indoor and outdoor play equipment, age-appropriate toys and books, the size and arrangement of materials within a room to provide easy and safe movement, and the elimination of safety hazards such as open electrical sockets. The physical environment is one of the ten NAEYC standards for early childhood programs and an important aspect of accreditation (NAEYC, n.d.).

- **Schedules/routines** such as regular sleep and feeding schedules, as well as bedtime rituals, provide predictability and help to regulate infants' and toddlers' behavior (Mindell & Williamson, 2017).

[13] A more extensive review of the literature, albeit not exclusively focused on infants and toddlers, found mixed results with regard to direct effects of structural features of quality on child outcomes (Zaslow et al., 2010).
[14] See http://www.naeyc.org/academy/files/academy/file/Teacher_Child_Ratio_Chart.pdf and http://www.earlychildhood.org/standards/ratios.cfm.

- **Health, safety, and nutrition** are basic needs for all children, especially infants and toddlers. An example of an indicator for health and safety is handwashing before and after diaper changes. Health and safety standards are assessed as part of ECE licensing; and the reauthorization of the CCDBG Act of 2014 specified that all subsidy-receiving programs (including unregulated child care homes) need to have an annual health and safety monitoring visit by November 2016.[15]

## Caregiver-Child Interactions

The *process* aspect of quality is operationalized as the nature of interactions between caregiver and child. Caregiver-child interactions thought to be important for the development of infants and toddlers include: sensitivity/responsiveness, support for language/literacy, support for cognitive development, support for social-emotional development, positive regard/warmth, behavior guidance, and support for peer interaction (Halle et al., 2011a). Caregiver-child interactions may also include negative interactions that are posited to be detrimental to infants' and toddlers' development. These interactions are elaborated upon below.

- **Sensitivity/responsive caregiving** means responding to the needs of individual children and acknowledging their thoughts and feelings. Sensitivity/responsiveness is represented by emotional availability and contingent responding to infants' and toddlers' subtle and often nonverbal cues. Responsive interactions and supportive relationships are posited to be at the core of high-quality infant and toddler curricula (Chazan-Cohen et al., 2017).

- **Support for language/literacy** means providing opportunities for children to develop language and is represented by activities such as joint attention, turn-taking and reciprocity, labeling, use of questions, reading or storytelling, and encouraging the child to speak (Halle et al., 2011a)

- **Support for cognitive development** means providing opportunities for children to develop cognitive skills through activities such as exploration and scaffolding or providing children with the right kind and amount of support to help them solve a problem beyond their current abilities (Gillespie & Greenberg, 2017).

- **Support for social-emotional development** means providing opportunities for children to develop their social and emotional skills by acknowledging and labeling emotions and supporting the child's emotional and behavioral self-regulation.

- **Positive regard/warmth** occurs when positive interactions are individualized. Positive regard and warmth are represented by positive verbal interactions as well as physical signs of affection such as gentle touch and special looks (Halle et al., 2011a).

- **Behavior guidance** means providing behavioral guidelines that support children's self-regulation. Instances of behavior guidance include providing positively-worded directions and clear expectations (Halle et al., 2011a).

- **Support for peer interaction** includes fostering prosocial behavior towards other children. Instances of support for peer interaction include encouraging sharing, turn-taking, and cooperating with other children in everyday situations (Halle et al., 2011a).

[15] For more information, see https://www.acf.hhs.gov/sites/default/files/occ/stam_final_rule_health_and_safety_sept_2016.pdf

- **Negative caregiver-child interactions** include detachment (i.e., an inability to emotionally connect), intrusiveness (i.e., interrupting the child's activities rather than supporting the child's engagement), and negative regard (i.e., negative interactions that are targeted toward the child).[16]

## Other Components that Support Child Development

**Caregiver-parent communication and relationships:** Although the Q-CCIIT model focuses on caregiver-parent *communication*, recent theory suggests that the broader category of caregiver-parent *relationships* is a significant component of the quality of ECE settings (Kim et al., 2015). New measures of the caregiver-parent relationship have been developed to capture the *knowledge*, *practices*, *attitudes*, and *environmental features* that are specific to fostering positive and responsive relationships between parents and caregivers in support of child development (Kim et al., 2015). Specific subscales related to these components of the caregiver-parent relationship are noted below.[17]

### Knowledge

- **Family-specific knowledge** is demonstrating understanding of families' culture, the context in which they live, and the situations that affect them.

### Practices

- **Collaboration** refers to engaging families in the ECE setting through joint goal-setting, decision-making, and development of action plans.
- **Responsiveness** represents engaging in sensitive, flexible, and responsive support of families' needs and goals.
- **Connecting to services** means advocating for and connecting families to peer and community supports and resources.
- **Communication** means two-way, positive communication that is responsive to families' preferences and providers/teachers' personal boundaries.
- **Family-focused concern** is represented by communication that demonstrates interest in the family as a unit.

### Attitudes

- **Commitment** means having intrinsic motivation, as well as being sincere, honest, encouraging, accessible, and consistent.
- **Understanding context** means having an appreciation for the broader context in which families' lives are situated.
- **Openness to change** means being willing to alter normal practices to address an individual child, parent, or family's needs.
- **Respect** means valuing the child and family and being considerate of parents' divergent opinions.

### Environmental Features

- **Welcoming** means that the ECE setting invites parent participation in all aspects of the program.

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[16] For further definitions and examples of caregiver-child interactions, see Table 1. Definitions and Examples of Caregiver-Child Interactions in Halle et al. (2011a), pp. 9-10.

[17] These definitions come from Kim et al. (2015), p. 2. See https://www.acf.hhs.gov/sites/default/files/opre/fptrq_users_manual_brief_508.pdf

- **Communication systems** means that the ECE program uses multiple methods and strategies to communicate with families and providers.
- **Culturally-diverse materials** reflect the diversity of American families in common areas of the ECE setting, especially areas used for children.
- **Information about resources** are offered by the ECE program or in the community that may be helpful for families are available and accessible.
- **Peer-to-peer parent activities** are offered for parents to get to know one another, share information, and strengthen their connections to the program.

**Child-peer interactions and relationships:** As noted above, fostering positive peer relationships among infants and toddlers is an important part of high-quality ECE. There are developmental stages to peer interactions during infancy and toddlerhood. For example, social play with peers starts out as simple social bids (e.g., a smile from one child eliciting a vocalization in another) that progress to parallel play (e.g., playing with similar or the same toys side by side) and ultimately to structurally complex play (e.g., taking on roles in pretend play and engaging in role reversal during play; Howes & Matheson, 1992). At least one study found higher-quality care environments to be associated with infants and toddlers moving to complex play at a faster pace compared to their peers in lower-quality ECE settings (Howes & Matheson, 1992).

Similarly, prosocial behavior shows rapid development over the first few years of life. For example, toddlers can demonstrate helping behaviors that progress from instrumental helping (i.e., helping others achieve an action-based goal, such as getting something out of reach) at around 18 months, to empathic helping (i.e., responding prosocially when others are in emotional distress), to altruistic helping (i.e., placing others' interests ahead of their own) by 30 months of age (Svetlova, Nichols, & Brownell, 2010). Caregivers can play a role in advancing the development of empathy and cooperation among very young children by explicitly communicating about other's emotions and motivations to young children in everyday situations.

**Contextual factors:** In the Q-CCIIT conceptual model, contextual factors include community resources (e.g., QRIS), program performance standards, and auspice (e.g., Head Start, community-based child care). For example, Early Head Start Program Performance Standards recommend limiting transitions to ensure continuity of care. Early Head Start programs may therefore differ from programs serving infants and toddlers under other auspices in the level of continuity of care that infants and toddlers experience.

## Children's Competencies

Children's competencies in all developmental domains relevant for school readiness start developing during infancy and toddlerhood (Horm, Norris, Perry, Chazan-Cohen, & Halle, 2016). The five domains of development associated with school readiness include:

- **Perceptual, Motor, and Physical Development** which is inclusive of early brain development.
- **Social and Emotional Development** which includes aspects of temperament; emotional and behavior regulation; attachment; and friendship formation
- **Approaches to Learning** which includes both social and cognitive developmental skills manifested in attitudes (e.g., interest) and behaviors (e.g., persistence related to learning). Executive functioning (i.e., the ability to regulate attention and behavior) is also considered fundamental to approaches to learning.
- **Language and Communication** which is inclusive of early communication efforts (e.g., looking, crying, babbling, smiling); joint attention; and receptive and expressive language abilities.

- **Cognitive Development**, which is inclusive of information processing mechanisms (attention, memory, categorization); imitation; and pretend play.

The Q-CCIIT conceptual model of quality care for infants and toddlers posits that all of the aforementioned elements (i.e., structural features of quality, caregiver-child interactions, caregiver-parent relationships, child-peer interactions and relationships, and contextual factors) collectively influence the development of competencies in all five developmental domains for infants and toddlers. However, caregiver-child interactions are posited to be the most proximal and influential of these factors for the development of infant and toddler competence (see Figure 2).

# Literature Review Findings Regarding Quality in Infant and Toddler Care

In this section, we provide a review of the literature from 2008 to 2018 related to approaches that promote quality in infant and toddler care and thereby support the development of child competence. As mentioned in the introduction, we used the conceptual model from the Q-CCIIT to guide this review of the literature and to structure this section of the review (Halle et al., 2011a). We organize the literature by the components of quality in the Q-CCIIT conceptual model that support children's development: structural features of care, caregiver-child interactions, and other components of quality caregiving (i.e., caregiver-parent communication, child-peer relationships, contextual factors, and supporting children's competence).

In total, we identified 43 studies related to approaches that promote quality in infant and toddler care. Ten studies were experimental or quasi-experimental. Most studies were descriptive or conducted secondary-data analyses. Eleven of the studies examined child outcomes. Most studies focused on structural features of care, caregiver-child interactions, and children's competence. Fewer studies addressed child-peer relationships, parent-caregiver communication, and contextual factors.

## Structural Features of Care

The structural features of a child care setting are one aspect of child care quality that contributes to child development. Structural features include group size, staff-to-child ratios, caregiver qualifications or professional development, the physical environment, schedules and routines, and health, safety, and nutrition.[18] This review yielded 13 studies that examined structural features of care. The majority of studies (11 out of 13) focused on caregiver qualifications or professional development. None of the studies in this review focused on physical environment, schedules/routines, health and safety, or nutrition.

The studies varied in their designs and approaches. Two studies were experimental (Moreno, et al., 2015; Weinstock, et al., 2012) and two used a pre/post study design (Abell et al., 2014; Shivers, 2011). The remaining studies were secondary data analyses or descriptive studies. Of the 13 studies, the majority focused on both center-based and home-based care for infants and toddlers.

Several studies evaluated specific professional development activities, such as infant and toddler credentials or staff training programs (Abell et al., 2014; Chen et al., 2017; Moreno, Green, & Koehn, 2015; Shivers, 2011; Weinstock et al., 2012). These studies aimed to understand the implementation of the program (e.g., whether it was rated favorably by participants), as well as the outcomes (e.g., whether the program increased knowledge or impacted quality). Other studies aimed to understand how, if at all, structural features such as caregiver qualifications were associated with quality, and how this varied across

[18] Please refer to the "Structural features of quality for infants and toddlers" section above for more information on these dimensions.

different settings (Antle et al., 2008; Dowsett et al., 2008; Halle et al., 2009; King et al., 2016; Madill et al., 2016; Romeyn, 2010; Schaack et al., 2017; St. Claire-Christman, 2011). We synthesize the findings from the recent studies of structural features of infant and toddler care in the subsections below.

### Staff-to-Child Ratios

Experts recommend that staff-to-child ratios should be 1:3 for infants and 1:6 for toddlers, with a maximum group size of 12 (Lally, 2009). States set ratio licensing regulations according to age and type of setting, which leads to much variability (National Center on Child Care Quality Improvement, 2013). Two studies that examined patterns in staff-to-child ratios across types of care found that centers had higher staff-to-child ratios for toddlers compared to home-based settings. Dowsett et al. (2008) used data from the Study of Early Child Care and Youth Development (SECCYD) to compare characteristics of child care centers, family child care homes, and relative care. They found that centers had the highest child-to-staff ratios for children ages 2, 3, and 4. Similarly, Halle et al. (2009) examined data from the ECLS-B, a nationally-representative sample of toddlers in multiple caregiving contexts, and found that the average child-to-adult ratio for toddlers (i.e., children 24 months old) was twice as large in center-based care as in family-based care. These studies did not report the actual child-to-adult ratios found, nor did they investigate child-to-adult ratios for infants by types of care.

One study of mixed-aged classrooms, including toddlers, considered the relationship between quality and ratios. Romeyn (2010) compared child-to-adult ratios in ECE classrooms (with children ages 2 ½ to 5) in Colorado with different quality ratings based on ECERS-R scores. The study found that 100% of classrooms with high ratings met quality adult-child ratios (which the author defined as 1:8 for children in this age group), compared to only 50% of classrooms with low ratings. Smaller staff-to-child ratios allow for the personalized needs of infants and toddlers to be met in a timelier fashion and are thereby presumed to increase the quality of care provided by staff.

### Group Size

Like staff-to-child ratios, states set their licensing standards for group size according to age groups and child care settings. Child care programs choose whether they maximize their group size to licensing regulations or set smaller group sizes. Smaller group sizes also allow for children's developmental needs to be met and are presumed to increase the quality of care provided. Only two studies in this review considered group size. Dowsett et al. (2008) compared group sizes across three types of child care for children ages 2-4. Child care centers had larger groups compared to family child care or care by a relative for all ages. The study sample included children from 1,394 families in nine states. Romeyn (2010) found that programs with poor quality ratings tended to maximize group size to licensing regulation limits (10 children to one adult in Colorado), and in turn, maximize adult-to-child ratios allowed.

### Caregiver Qualifications & Professional Development

As noted earlier, research examining the influence of caregiver qualifications and professional development on the quality of care for infants and toddlers is still small, and findings are mixed (Epstein, Halle, Moodie, Sosinsky, & Zaslow, 2016). Seven studies in this review considered how provider qualifications (e.g., caregiver level of education or credentials) are associated with program quality for infants and toddlers. Three additional studies examined how training interventions were related to program quality. While these studies did not examine the qualifications that providers brought to their work or the impacts of program training requirements, they are included in this section as they provide some evidence of the associations between participation in a specific coaching or professional development program and global classroom quality.

Similar to previous studies, findings on the association between the education level of infant and toddler teachers and program quality are mixed. A study using data from the ECLS-B found that home-based providers with a higher education degree (defined as either an associate's degree, a bachelor's degree, or higher) had higher program quality, as measured by the Family Day Care Rating Scale (FDCRS), compared to home-based providers without a higher education degree (Schaack et al., 2017). However, using the same dataset, Halle et al. (2009) found that the amount of training providers received was a better indicator of program quality for home-based care providers than education level (Halle et al., 2009). Two studies using state-level data also had different findings on the association between a caregiver's education level and program quality. St. Clair-Christman et al. (2011) used data from the Delaware ECE Baseline Quality Study to explore relationships between teacher characteristics and quality of care among programs that served preschoolers or infants and toddlers. They found no relationship between teacher education level and program quality but did find an association between teacher salary and program quality (St. Clair-Christman et al., 2011). Another study used state-level administrative data from North Carolina to test associations between structural factors of quality and observed quality in infant and toddler classrooms (King et al., 2016). The authors found that teachers' education was significantly associated with quality, as measured by the Infant/Toddler Environment Rating Scale Revised (ITERS-R). Specifically, teachers with greater education levels had higher scores on three ITERS-R subscales: safety/organization, language/interactions, and parents/staff (King et al., 2016). However, another study found that while teacher education level was a predictor of classroom quality at the preschool level (as measured by the Early Childhood Environment Rating Scale [ECERS]), it did not predict the quality of language and literacy in the classroom as measured by the Early Language and Literacy Classroom Observation (ELLCO; Antle et al., 2008).

Two studies examined state-level infant and toddler credential programs (Chen et al., 2017; Shivers, 2011). In Tennessee, global environmental quality—as measured by the ITERS-R or FDCRS—significantly improved after caregivers completed the Infant Toddler Credential (Shivers, 2011). In New Jersey, Chen et al. (2017) evaluated the New Jersey Infant Toddler Credential (NJITC). Though the study was much smaller and less rigorous – only 12 out of 177 credentialed providers participated – survey participants expressed a positive regard for the program. Providers identified a range of professional changes the credential had influenced, including increased competence, job promotion, increased salary, and continuous engagement in college courses (Chen et al., 2017).

One study used data from the National Survey of Early Care and Education (NSECE), a series of nationally representative surveys of ECE programs, the workforce, and households that address non-parental care for children birth through school-age to explore differences of professional development received between home- and center-based care (Madill et al., 2016). The authors found that home-based providers were more likely to do one-time professional development events, and they most often received professional development on health and safety or curriculum. For both home- and center-based providers, higher levels of education were associated with greater participation in professional development. Additionally, they found that center-based providers had more support for attending professional development, such as time release or assistance with cost (Madill et al., 2016). This study suggests that child care setting plays a role in provider qualifications and pursuit of professional development.

As noted above, three studies examined the impact of individual coaching for infant and toddler caregivers on classroom quality. While coaching is not a structural feature of care, these studies are included in this section to summarize findings from the literature on the associations between caregiver's participation in professional development or coaching and global classroom quality. Moreno, Green, & Koehn (2015)

randomly assigned caregivers to receive different doses of individual coaching (0, 5, or 15 hours) after attending a 48-hour course on infant and toddler development. The group with the greatest amount of coaching (15 hours) showed the largest improvement from baseline to follow-up and scored between the high end of mid-range scores (3, 4, 5) and the low-end of the high-range scores (6, 7) on the CLASS (Moreno, Green, & Koehn, 2015). In another experimental study, Weinstock et al. (2012) randomly assigned programs to receive the Program for Infant Toddler Care (PITC) onsite training/coaching. The authors found no significant differences in quality between PITC-trained programs and comparison group programs due partly to issues with implementation (i.e., the treatment programs had lower than expected levels of staff participation in the PITC training; Weinstock et al., 2012). Finally, providers who participated in Family Child Care Partnerships, a mentor–delivered quality enhancement and professional development program in Alabama, demonstrated a statistically significant increase in the quality of their caregiving practices, as measured by the FDCRS (Abell et al., 2014). As most interventions have shown positive impacts, there is promising evidence that training in infant-toddler development influences the quality of care for infants and toddlers.

### Summary

Overall, the studies on structural features of care and their association with high-quality infant and toddler care found that centers tended to have higher staff-to-child ratios and larger group sizes than home-based settings. Additionally, child care programs with higher ratings of observed quality had lower staff-to-child ratios and smaller group sizes. Similar to previous research, studies reviewed here had mixed results regarding the associations between both the educational level and the professional development of infant and toddler caregivers and the quality of infant and toddler care. There is some promising evidence from rigorous intervention evaluations of improvements in observed quality following participation in individual coaching. However, the evidence is similarly somewhat mixed. While the research on the associations between education or professional development and the quality of infant and toddler care is limited, below we discuss additional research on how these aspects of structural quality relate to caregiver-child interactions.

## Caregiver-Child Interactions

The Q-CCIIT conceptual model suggests five positive behaviors and three negative behaviors that characterize caregiver-child interactions. The positive constructs are *sensitivity/responsiveness*, *language and cognitive stimulation*, *positive regard/warmth*, *behavior guidance*, and *support for peer interactions*. The negative constructs are *detachment*, *intrusiveness*, and *negative regard*.

We identified 14 studies in the literature related to caregiver-child interactions. Three of the studies used an experimental design (Biringen et al., 2012; Rudd et al., 2008; Ruprecht et al., 2016); one study used a quasi-experimental design (Gloeckler et al., 2014); seven were descriptive studies (Ackerman, 2008; Hallam et al. 2009; Honig et al., 2013; Hooper & Hallam, 2017; Hossain et al., 2012; McMullen et al., 2016; Recchia & Shin, 2012); three studies utilized mixed methods (Pluess & Belsky, 2009; Rudd et al., 2008; Thomason & La Paro, 2013); and two studies conducted secondary data analysis (Pluess & Belsky, 2009; Thomason & La Paro, 2013). Additionally, five studies investigated caregiver-child interactions in relation to program quality (Hallam et al., 2009; Horm et al., 2018; Pluess & Belsky, 2009; Rudd et al., 2008; Thomason & La Paro, 2013); four studies examined caregiver-child interactions in relation to child outcomes (Horm, et al. 2018; Pluess & Belsky, 2009; Rudd et al., 2008; Ruprecht et al., 2016); and one study examined caregiver-child interactions with respect to relationship quality (Ruprecht et al., 2016).

The studies in this section addressed the following topics related to caregiver-child interactions:

- how training focused specifically on supporting caregiver-child interactions influences program quality and child outcomes;
- the relationship between continuity of care, which helps to develop strong caregiver-child relationships, and program quality and child outcomes;
- how caregiver characteristics influence caregiver-child interaction; and
- how caregivers scaffold peer interactions.

Findings from the 14 studies of caregiver-child interactions are summarized below, according to the subcategories noted in the Q-CCIIT conceptual model.

### Sensitivity/Responsiveness

Sensitive and responsive caregiver interactions with a child are an important indicator of high-quality caregiving (Halle et al., 2011a). We identified five studies that explored various factors associated with caregiver's sensitivity and responsiveness to infants and toddlers.

Two of these studies examined how caregiver characteristics are tied to caregiver's sensitivity and responsiveness. For example, one study found that teacher education was significantly related to infant and toddler distress duration. This study found that caregivers with a high-school education were less responsive to infants and toddlers than caregivers with a graduate education, but no different from caregivers with a bachelor's degree (Honig et al., 2013). The study also found that distress episodes lasted significantly longer for the younger (0 to 12-month-old) infants and older (25- to 36- month-old) toddlers when compared with 13- to 24-month-old toddlers. Teacher verbal and non-verbal positive responses to distress also varied significantly with child age. The youngest group (0 to 12-month-infants) received significantly more positive caregiver responses when distressed compared with children aged 13-24 months and children aged 25-36 months (Honig et al., 2013). Likewise, correlation analyses in another study revealed that teachers' job satisfaction was positively related to their interaction with children, whereas teachers' burnout and quitting behavior were negatively correlated to their interaction with children (Hossain et al., 2012).

One study examined how training specifically related to sensitivity and responsiveness can impact teacher-child interactions (Biringen et al., 2012). The experimental study found that teacher training on emotional availability, or caregiver attentiveness, supportiveness and encouragement of young children, led to improved emotional availability between teachers and children (as measured by emotional availability scales capturing caregiver-child relational quality) and children's attachment (as measured by the Attachment Q-Sort [AQS] capturing children's attachment behaviors). Infants of teachers receiving the intervention improved significantly in their attachment security and emotional availability (becoming more emotionally connected and responsive to their care providers). In contrast, infants of teachers in the control group did not show this enhancement toward their teachers in child care (Biringen et al., 2012).

Other studies of teacher-child interactions and teacher-parent relationships have implications for caregiver sensitivity and responsiveness to children's and families' needs. For example, one study found that caregiver-child relationships were more positive for girls, younger children, and children in home-visiting programs (Elicker et al., 2013). The study also found that caregiver–parent relationships were generally positive and temporally stable. The quality of the caregiver–parent relationship was a stronger predictor of both child and parent outcomes than was the quality of the caregiver–child relationship (Elicker et al., 2013). Another pilot study by Hallam and colleagues that examined the individual experiences of four focal children in a child care center classroom rather than the overall classroom environment found low levels of teacher-child interaction, with very little talking or responding occurring during the observation period.

Researchers corroborated the low level of teacher-child interaction with ITERS-R subscale data that measured global classroom quality. They found that the Listening and Talking subscale and the Interaction scale scores were both in the low range, with scores of 2.0 and 2.75 respectively. However, this finding was somewhat obscured when compared to the teacher's ITERS-R mid-range composite score of 4.0. The authors suggested that even in classrooms with mid-range overall quality, individual children may receive limited individual interaction. When measuring classroom quality and teacher's responsiveness and sensitivity to children's needs, it may be important to also consider children's unique daily experiences (Hallam et al., 2009).

Another descriptive study examining caregiver responsiveness explored how infants and caregivers communicated at two developmental time points (Recchia & Shin, 2012). Researchers reviewed interactions between caregivers and infants for evidence of reciprocity (e.g., turn-taking between caregivers and infants), meaningful joint understanding (e.g., caregivers and infants were "in sync" in their understandings of situations at hand), and synchronous communicative processes (e.g., communication lead to a positive resolutions). Based on these in-depth observations of three infants and their teachers, the authors found that infant teachers were more "in sync" with infants when they established reciprocal and meaningful joint understandings that were differentiated according to infants' individual developmental needs. Infant teachers could also be "out of sync" with an infant when they missed infants' subtle cues or when infants did not easily adapt to caregivers' expectations and styles. The authors suggested that in order to provide responsive caregiving, teachers needed to attend to individual differences in infants' needs and interaction styles (Recchia & Shin, 2012).

Collectively, these studies, particularly the studies examining attachment outcomes and observed teacher-child interactions associated with trainings promoting sensitive and responsive caregiving, support previous research that finds that responsive interactions and supportive relationships are central to high-quality infant and toddler care (Chazan-Cohen, 2017).

### Language and Cognitive Stimulation

Providing infants and toddlers with opportunities for language and cognitive stimulation through joint-attention, reciprocity, and reading or storytelling is also another indicator of high-quality care and has been shown to lead to positive language and cognitive outcomes for infants and toddlers (Li, Farkas, Duncan, Burchinal, & Vandell, 2013). Only two studies in this review focused on caregiver-child interactions and language and cognitive stimulation for infants and toddlers. One experimental study of low-quality child care centers examined if professional development on joint attention had a positive effect on children's language acquisition (Rudd et al., 2008). They found that providers who received the intervention engaged in significantly more episodes and longer bouts of joint attention than those who had not received training. However, as there was a lot of variability in the implementation of professional development on joint attention in the treatment group, a post hoc analysis was conducted to examine the relationship between level of implementation and children's language outcomes. The authors found that the frequency and duration of joint attention was significantly related to the child's language outcomes on the MacArthur Communicative Development Inventory (MCDI) measure, such that the children of providers who received the intervention and engaged in more frequent and longer bouts of joint attention received higher MCDI scores than their within-group counterparts (Rudd et al., 2008).

Another study examined the associations between characteristics of commitment to the field and observed teacher-child interactions in the areas of emotional and cognitive support provided in the classroom (Thomason & La Paro, 2013). While teachers' education and years of experience were related to

the overall quality of caregiver-child interactions, measures of commitment to the field significantly predicted the quality of teachers' emotional and cognitive support provided to children as measured by the Observational Record of the Caregiving Environment (ORCE). Characteristics of commitment to the field were stronger predictors of the cognitive support than of the emotional support teachers provided in classrooms (Thomason & La Paro, 2013).

### Positive Regard/Warmth

The Q-CCIIT literature review found that most previous studies examining positive regard/warmth involved parent-child interactions rather than caregiver-child interactions (Halle et al., 2011a). Similarly, the current review did not find any studies that looked specifically at positive regard/warmth between caregivers and infants or toddlers published between 2008 and 2018. Studies focused, instead, on characteristics related to but distinct from positive regard and warmth, such as warm and responsive caregiving and high-quality relationships.

### Behavior Guidance

Caregiver interactions with infants and toddlers can affect children's behavior in the classroom environment (Gloeckler et al., 2014). We only found one study that examined behavior guidance from child care providers. Similar to positive regard/warmth, the Q-CCIIT literature review of this construct mostly found studies on parent-child interactions and behavior guidance compared to studies specific to child care providers (Halle et al., 2011a).

A study by Gloeckler and colleagues (2014) examined a professional development intervention for teachers that intended to (1) raise teachers' awareness of and motivation for regulating their own emotions before helping toddlers self-regulate and (2) encourage teachers to view behavioral problems as problem solving opportunities. Researchers found that teachers' participation in this specific intervention resulted in improved teacher interactions with the toddlers in their care. It also resulted in a more socially positive classroom environment as measured by the Toddler CLASS, with improved scores related to positive climate, negative climate, teacher sensitivity, and behavior guidance. The intervention did not result in a decrease in problem behaviors as expected; rather, problem behaviors increased after the intervention. To explain this unexpected finding, the authors suggested that caregivers' skill in facilitating children's communication when they observed behavior problems occurring may be a better marker of a successful intervention than decreased levels of behavior problems (Gloeckler et al., 2014).

### Support for Peer Interactions

Fostering prosocial behavior toward other children, such as encouraging sharing, turn-taking, and cooperating with other children, is another indicator of high-quality caregiving (Halle et al., 2011a). While no studies identified in this review focused on ways to foster providers' intentional and targeted support for peer interactions, we found related literature on different provider practices that encourage and hinder relationships between peers. These studies are discussed in the child-peer relationships section below.

### Detachment, Intrusiveness, and Negative Regard

While the conceptual model for quality indicates that caregiver detachment (i.e., inability to emotionally connect), intrusiveness (i.e., interruption of children's activities), and negative regard (i.e., negative or harsh interactions) toward children contribute to the overall definition of quality (and are, indeed, included in global measures of observed quality) as they can negatively impact children's development, few studies single out these specific aspects of quality for systematic study.

Although no studies were found that explicitly focused on caregiver's detachment, intrusiveness, and negative regard towards children during infancy and toddlerhood, two studies addressed the complex associations between observed child care quality (which includes measures of detachment and negative regard) and children's outcomes in infancy, toddlerhood, and beyond (Hooper & Hallam, 2017; Pluess & Belsky, 2009). Pluess and Belsky (2009) found that low-quality care in infancy and toddlerhood, characterized by caregivers' high emotional detachment, flatness of affect, low sensitivity to children's nondistress signals and low stimulation of cognitive development[19], was associated with more behavior problems at 54 months and in kindergarten for children with histories of difficult temperament compared to children without histories of difficult temperament. In another study, Hooper and Hallam (2017) found that among the 30 classrooms sampled, children in toddler classrooms with lower global quality (as measured by the ITERS-R) were more likely to spend time disengaged or acting in ways that were not contextually appropriate, whereas children in classrooms with higher global quality spent more time actively engaged with adults, peers, and materials.

### Continuity of Care

Continuity of care (CoC), or the practice of children experiencing consistency in caregivers over time, is recommended for center-based group settings with infants and toddlers (Horm et al., 2018). CoC can mean keeping a child with the same caregiver even when children may transition to new physical spaces with more age-appropriate materials as they develop. CoC, while also a structural feature of care, is included in this section on caregiver-child interactions as it has foundations in attachment research and is therefore central to discussions about caregiver-child relationships. Previous research has shown the importance of establishing long-lasting and secure relationships with a few key adults at a young age (McMullen, 2018). CoC is intended to facilitate strong and secure relationships between children and their caregivers by ensuring continuous relationships between them. Indeed, a meta-analysis found that infants' and toddlers' experience of CoC is associated with providers' observed group-related sensitivity and children's secure attachments (Anhert, Pinquart, & Lamb, 2006).

Two studies from this review described caregivers' perspectives on the benefits of CoC, and two studies examined child outcomes associated with CoC. A small descriptive study of CoC at a military child care site that served infants and toddlers and required caregivers to complete a CoC training examined the benefits of CoC from a caregiver's perspective. The two caregivers interviewed reported that CoC practices meant there was no readjustment for the caregiver or child; CoC practices allowed caregivers to better know their children's needs; and they facilitated better relationships with families (Ackerman, 2008). Similarly, interviews with caregivers and parents on the benefits of CoC at two programs serving infants, toddlers, and preschoolers revealed that caregivers valued the length of time they had in the context of CoC. Caregivers noted that CoC enhanced their understanding of a particular child's development and assisted with individualizing care; supported strong relationships with parents; and assisted with caregiver's helping children to "gear up" for the transition to preschool classrooms (McMullen et al., 2016). Moreover, preschool teachers reported that children who had experienced CoC were more social and advanced in self-help skills. Additionally, children better understood how to relate to their teachers, at least initially during the first few weeks in preschool (McMullen et al., 2016). One of the studies that examined child outcomes associated with CoC compared children who stayed with the same lead teacher during the infant and toddler years and children who changed lead teachers during this time. The authors found that CoC was related to higher teacher ratings of self-control, initiative, and attachment, and lower levels of teacher-reported behavior concerns (Ruprecht et al., 2016). Additionally, CoC practices were also related

[19] Cognitive development was measured by the Observational Record of Caregiving Environment (ORCE)

to higher observed quality, when classroom quality was measured by the ITERS-R or ECERS-R. However, this study also found that CoC practices in infant and toddler classrooms were not related to changes in teacher-rated social skills during the infant and toddler years or in preschool, or to vocabulary development in preschool (Horm et al., 2018). In another quasi-experimental study, toddlers observed in CoC rooms experienced higher levels of interactive involvement with their caregivers. Caregivers also rated toddlers in CoC rooms as having fewer behavior problems compared with toddlers in non-continuity rooms. Researchers did not find evidence that the level of involved caregiving mediated the association between continuity of care and toddlers' social competence or problem behaviors (Ruprecht et al., 2016).

### Summary

Previous research has established that relationships and interactions between caregivers and children is the base for learning and development in infancy and toddlerhood (Lally, 2009). Additional research is emerging on the characteristics of caregiver-child interactions that influence cognitive and social emotional learning. While the research on the associations between caregiver-child interactions in infant and toddler classrooms and child outcomes is still sparse, this review adds to the literature in the following ways:

- Trainings for teachers on emotional availability were associated with significant improvement in infant's and toddler's emotional attachment and emotional security; and training on a social-emotional development framework was associated with high observed quality using the ITERS.
- Professional development for teachers on joint attention had a positive effect on the frequency and length of joint attention; more frequent and longer bouts of joint attention also had a positive effect on children's language acquisition (Rudd et al., 2008).
- Characteristics of commitment to the field significantly predicted teacher's support for children's emotional and cognitive development (Thomason & La Paro, 2013).
- Professional development on the topic of teacher's emotional regulation and toddler's self-regulation led to improved interactions between teachers and toddlers in their care (Gloeckler et al., 2014).
- Teachers in continuity of care classrooms reported enhanced understanding of the needs and development of children in their care and stronger relationships with parents (Ackerman, 2008; McMullen et al., 2016).

## Other Components that Support Child Development

### Child-Peer Relationships

Supportive, responsive caregiving can help encourage positive peer relationships. We identified two studies related to child-peer relationships as a construct of child care quality. Both studies were descriptive, involving observations of infants and toddlers in their naturally occurring environments.

Shin (2010) observed one infant dyad and the caregivers' role in infants' friendship experience. This study found that infant friendships were favorable, caring, affective, playful, and humorous, and that infants responded to each other's feelings, needs, and troubles. Shin (2010) suggested that caregivers should also be playful to support peer interactions, create an environment that is safe and stimulating to encourage a positive classroom climate, and build the development of peer friendships into the curriculum in early childhood settings. As noted above in the behavior guidance section, Gloeckler and colleagues (2014) found that a caregiver's skill at facilitating children's communication may reduce behavior problems among toddlers and affect the frequency and type of child peer relationships within the classroom.

Conversely, other caregiving behaviors and strategies can reduce the likelihood of positive peer relationships and peer sociability during infancy and toddlerhood. Williams, Matergeorge, and Ontai (2010) examined the strategies caregivers used to scaffold infants' social encounters with their peers in group child care settings. Peer sociability in infants can include their tendency to play with peers or respond to peers' social behaviors; and peer refusal includes refusing peers' attempts to play or moving away from peers'. While the study consisted of a small sample size (36 infants), Williams and colleagues (2010) found that infants who experienced "above average amounts" of adult-centered scaffolding (i.e., giving directives or interrupting peer play), showed significant reductions in peer sociability during follow-up observations 6 months later. The study also found that group-based scaffolding (i.e., caregivers providing opportunities for peer interactions when interacting with two or more children at one time) from caregivers predicted reductions in infants' peer sociability and increased their peer refusal over time. While adult-centered scaffolding (e.g., telling children what to do or distracting children away from one another) is an important classroom management technique, results suggest that it may interfere with infants' social opportunities. By setting up opportunities for peer interaction, caregivers may be increasing infants' reliance on others to provide social opportunities rather than seeking them out themselves. This suggests that adult and group-centered scaffolding can have a negative influence on the development of social competence during infancy (Williams, Mastergeorge, & Ontai, 2010).

### Caregiver-Parent Communication and Relationships

Caregiver-parent communication and relationships can influence the quality of care that infants and toddlers receive. Strong, mutually respectful relationships between caregivers and parents can help to strengthen the connection between home and school and establish partnerships between parents and caregivers. According to the Q-CCIIT conceptual model, caregiver-parent *communication* is a marker of quality infant-toddler care (Halle et al., 2011a). However, the literature also discusses the importance of caregiver-parent *relationships* more broadly. The conceptualization of relationships between caregivers and parents includes demonstrating family-specific *knowledge*, collaborative and responsive *practices*, *attitudes* that are conducive to flexibility and change, and *environments* that are welcoming and supportive of reciprocal communication (Kim et al., 2015). This review of the literature resulted in five articles related to caregiver-parent relationships as a dimension of quality.

Three of the five studies examined the effectiveness of the *Getting Ready Intervention* that supports caregiver-parent communication and relationships. The purpose of the *Getting Ready Intervention* is to promote school readiness by enhancing parenting engagement for children from birth to age five. The intervention involves an exchange in "ideas and developmentally appropriate expectations for children between parents and early childhood professionals (ECPs)" in home visits, socializations, and center activities in which parents are present (Knoche et al., 2010, p. 300). Findings from two studies by Knoche and colleagues suggested that the use of the intervention led to an increased rate of contact between parents and ECPs (Knoche et al., 2010; Knoche et al., 2015). Specifically, caregivers receiving the intervention were observed utilizing *Getting Ready* strategies (e.g., establishing/re-establishing positive relationships with parents, asking parents to share their observations, and making suggestions) in 59% of the 10-minute intervals recorded during home visits. In contrast, caregivers who did not receive the intervention engaged in strategy use in 48% of the home visit intervals (Knoche et al., 2010). Brown et al. (2009) found that ECPs who used the intervention perceived that the program helped them strengthen the home-school connection, improve parent-teacher communication, and establish a partnership with parents. Another study found that when ECPs used the *Getting Ready Intervention* practices in their home visits with families, two indirect and one direct strategy were related to the ECP's overall success in engaging with parents (Knoche et al., 2015). The indirect strategies included affirming parent's

competence and the ECPs' efforts to focus the parents' attention on children's strengths. The direct strategy included eliciting parent observations and ideas (Knoche et al., 2015).

Two studies centered on factors that support or hinder parent-caregiver relationships during infancy and toddlerhood. While both parents and providers value communication and intentional information sharing (Lang et al., 2016), multiple factors can hinder caregiver and parents' ability to share information. One of these factors is the child's temperament, as caregivers reported less frequent communication from parents of children with difficult temperaments. Nonetheless, child temperament difficulty was unrelated to parents' views of parent-provider relationships and communication (Swartz & Easterbrooks, 2014). Disagreements between caregivers and parents over childrearing practices (e.g., behavior guidance, displays of affection, or readiness for new developmental stages such as toilet training) was also negatively associated with caregiver-parent communication (Lang et al., 2016). Both parents and caregivers reported a need for alignment in their caregiving practices across home and child care; and the degree of alignment in practices affected the relationship between the parent and caregiver (Lang et al., 2016).

Swartz & Easterbrooks (2014) also found that parents' views of their relationship with caregivers tended to be more favorable when they had worked with the caregiver before, suggesting that trusting relationships take time to develop. Additionally, while the direction of the relationship was uncertain, parents who were more anxious about placing their child in care (i.e., expressing more feelings of guilt, worry, and sadness; beliefs that children would be better off in parental care; and beliefs about children's abilities to adapt to child care) viewed the relationship with their caregivers as less favorable (Swartz & Easterbrooks, 2014). Caregivers' knowledge of child development (as measured by the Knowledge of Child Development Inventory) and their education level were associated with their view of parents. Caregivers who had never worked with parents before but had more knowledge of child development tended to perceive their relationships with parents more positively than the caregivers who had higher levels of experience working with parents and greater knowledge of child development (Swartz & Easterbrooks, 2014). However, caregiver education, training, and length of experience in child care were not associated with parents' view of their relationships. One possible explanation for this finding is that these characteristics may be less influential when compared to other characteristics, such as caregiver attitudes. Child age was not associated with the caregiver-parent relationship (Swartz & Easterbrooks, 2014).

### Contextual Factors

Contextual factors capture any additional aspects and systems that may influence or contribute to the quality of infant and toddler care. Some examples include program performance standards, QRIS, and community resources (e.g., institutes of higher education and child care networks). We identified five studies about contextual factors that relate to the quality of infant and toddler care. While most of these studies did not examine associations between the availability of education supports in local contexts and observed quality, many described the kinds of educational supports that are available in specific contexts or perceived as needed and useful.

It is important to note that all five of these studies around contextual factors focused on pre-service or in-service professional development of the early childhood workforce. Other contextual factors, such as program performance standards or QRIS, are at the level of system supports for quality. Early Head Start/Head Start child care partnerships aim to increase access to high-quality care and comprehensive services for families by supporting the adoption of Head Start Program Performance Standards in community child care centers and family child care homes. While not identified through this review, studies have found associations between EHS/HS partnership involvement and improvements in observed

quality (Banghart et al., 2019). Future work could more directly examine the linkages between the availability and characteristics of contextual/educational resources and quality of care in localities.

### Higher Education

An important context for quality infant and toddler care is the availability of higher education coursework and degree programs to train infant and toddler teachers. No studies identified in this review examined the availability of education supports in local contexts in relation to observed quality. Instead, recent studies describe the kinds of educational supports that are available in specific contexts or that are perceived as needed and useful.

Three studies addressed the likelihood of higher education programs having content specific to infants and toddlers. In a report on early childhood higher education, Austin, Whitebook, and Amanta (2015) examined how common it is for programs to offer a specific training focus on infants and toddlers. The authors used the Early Childhood Higher Education Inventory[20] to gather information offerings and requirements. In terms of curriculum, all seven states for which data were available showed that higher education programs were less likely to teach content specific to infants and toddlers and less likely to expose students to field-based training involving infants and toddlers (Austin et al., 2015). Furthermore, in three of the seven states, associate degree programs required coursework focused on teaching infants and toddlers much more frequently than bachelor's degree programs did. Similarly, the majority of programs across states that required practicum experiences in the field implemented them in preschool classrooms, rather than infant and toddler groups. The authors noted that states played a critical role in shaping ECE training programs by defining requirements and expectations for early childhood teachers in licensed facilities, and they added that states might also consider financial motivations to encourage infant and toddler teachers to pursue further education (Austin et al., 2015).

In a study of classroom quality in 47 programs in Kentucky, researchers found a significant correlation between teacher degree level and the observed quality of infant and toddler classrooms (Antle et al., 2008). As a result, the authors suggested that boosting the incentives and opportunities for teachers to pursue education could be an effective strategy to improve classroom quality. They also asserted the importance of creating incentives for teachers with higher levels of education to work in high need programs (Antle et al., 2008). In fact, when state child care administrators in all 50 states were asked to indicate the most promising strategies to boost the quality of infant and toddler care in their state supported by CCDBG funding, twelve administrators selected professional development, education, and training for providers (Schulman, 2011). Additionally, child care administrators in nine states discussed offering financial incentives to encourage providers to seek additional education and to retain these highly trained providers once they have completed further education. In a separate question about the most effective infant and toddler initiatives, child care administrators in eight states also deemed education and training as most important. Child care administrators in two states also discussed their partnership with higher education programs to financially support teachers and directors enrolled in infant and toddler programs (Schulman, 2011).

### Network Affiliation

Networks of child care providers have emerged as an important strategy for supporting the quality of infant and toddler care in the recent literature. Networks connect child care providers to resources, information, and specialists to facilitate shared knowledge and boost capacity to provide high quality care.

[20] The Early Childhood Higher Education Inventory is a tool created to summarize early childhood degree program offerings across the country at various levels and highlight the differences in course offerings and practical learning experiences.

Child care administrators in twelve states considered networks of infant and toddler specialists to be their most effective CCDBG infant and toddler-oriented initiative (Schulman, 2011). Two studies specifically examined the role of networks in improving quality for family child care providers. Bromer et al. (2009) examined 150 licensed family child care programs in Chicago, using a matched control design with network-affiliated providers and a smaller control group of unaffiliated providers with similar characteristics. The researchers specifically focused on staffed networks, which hire at least one paid employee to facilitate the support and services to family child care programs participating in the network. The study found that programs participating in staffed networks scored higher on observed quality assessments (Bromer et al., 2009). Furthermore, the study found that certain components of the networks were related to better results, such as regular communication and meetings with staff, coordinators with training and education focused on infants and toddlers, and the provision of direct services and training to providers. Networks that utilized a formal quality assessment tool, offered frequent site visits to the affiliated members, and/or provided training to newly-licensed providers also had higher quality scores, suggesting criteria for networks working to improve quality for infants and toddlers in family child care programs (Bromer et al., 2009). Similarly, in a report on the status of family child care in Connecticut, interviewed stakeholders reported that they believed creating staffed family child care networks would be a critical way to support the quality of family child care providers (Downs, 2013). They specified that networks would need to provide customized professional development and technical assistance, provide frequent visit sites, and assess quality with formal measurement tools. The interviewees suggested that staffed networks should be expanded in Connecticut but be placed in certain areas of the state, rather than expected to cover family child care programs across the state (Downs, 2013).

### Summary

Overall, these studies that focused on other aspects of care that support child development (i.e., child-peer relationships, caregiver-parent communication and relationships, and contextual factors) contribute to the literature in the following ways:

- Taken together, the two studies on child-peer interactions show that caregivers can encourage positive child-peer interactions by (1) creating a supportive environment where children can connect and (2) by scaffolding infant and toddler behaviors to encourage peer sociability. However, certain caregiver behaviors, such as giving directives more frequently, can discourage peer interaction and negatively influence the development of social competency, raising the possibility that some caregiver behaviors meant to encourage sociability can have the opposite effect.
- The research on caregiver-parent communication and relationships indicated that programs such as the *Getting Ready Intervention* can support increased caregiver-parent communication and improved relationships.
- Contextual factors, including community resources such as institutes of higher education that offer coursework and specialized degrees in infant and toddler development, as well as staffed networks that support community-based ECE providers, are two important factors that influence the quality of infant and toddler care. However, coursework and practicum opportunities specifically focused on infants and toddlers are still not as readily available as are training opportunities focused on older preschoolers in several states. Additionally, research is mixed on the relationship between provider educational attainment and observed quality. Future work could more directly examine the linkages between the availability and characteristics of contextual/educational resources and quality of care in localities.

## Supporting Children's Competence

The Q-CCIIT conceptual model highlights children's competence as a key outcome of high-quality caregiver-child interactions. We reviewed the literature related to how quality caregiving practices and contextual factors influence infant and toddlers' competence in three developmental areas: social-emotional, cognitive, and language/communication. While studies discussed in this section overlap slightly with those noted earlier in the sections on caregiver-child interactions and structural features of care, here we consider broader aspects of quality (including, but not limited to caregiver-child interactions and structural features) that may influence child outcomes.

We identified 11 studies that examined supports for infant and toddler's competence. Nine studies included measures of children's social-emotional skills (Elicker et al., 2013; Horm et. al, 2018; La Paro, Williamson, & Hatfield, 2014; Pluess & Belsky, 2009; Pluess & Belsky, 2010; Ruprecht et al., 2016; Schaack et al., 2017; Tsao, 2015; Weinstock et al., 2012), four studies included measures of children's cognitive development (Elicker et al., 2013; Ruzek et al., 2014; Schaack et al., 2017; Weinstock et al., 2012), and four studies included measures of children's language and literacy development (Horm et. al, 2018; Pluess & Belsky, 2010; Rudd et al., 2008; Weinstock et al., 2012).

While all 11 studies share a focus on children's outcomes, they explore a variety of research questions. Two studies examined the effects of caregiver characteristics on infant and toddler outcomes (Tsao, 2015; Schaack et al., 2017). Two additional studies examined the effect of child care on children with histories of difficult temperament (Pluess and Belsky, 2009; Pluess and Belsky, 2010). Seven studies focused on the relationships between high-quality child care environments or practices and child outcomes (Elicker et al., 2013; Horm et al., 2018; La Paro et al., 2014; Ruzek et al., 2014; Rudd et al., 2008; Ruprecht et al., 2016; Weinstock et al., 2012).

### Social-Emotional Skills

The literature in this review highlights that high-quality teaching practices, such as warm and responsive caregiving, effective redirection strategies, and high-quality relationships are related to children's social-emotional outcomes (Elicker et al., 2013; La Paro et al., 2014; Tsao, 2015). Two studies that examined the association between global classroom quality and infant and toddler's social-emotional outcomes had differing findings. La Paro and colleagues' (2014) secondary analysis of the Comparison of Quality Assessment Tools (CQAT) found no association between global classroom quality and children's social-emotional competence. However, the study did find that Positive Climate and Behavior Guidance scores on the CLASS-Toddler predicted fewer behavior problems in children. Pluess and Belsky's (2010) secondary analysis of the NICHD Study of Early Child Care[21] found that the effect of global quality on children's social-emotional competence was moderated by children's temperament at 6 months (Pluess & Belsky, 2009). Children with histories of difficult temperaments exhibited more behavior problems when faced with low-quality care and fewer behavior problems when faced with high-quality care compared to their non-difficult/easy tempered peers (Pluess & Belsky, 2009), with effects persisting into 6$^{th}$ grade (Pluess & Belsky, 2010).

In addition to global classroom quality, three studies from this review explored the association between skills and qualifications of caregivers and children's social-emotional skills. In one study, children of caregivers with access to more self-reported emotion regulation strategies (as measured by a subscale of the Difficulties in Emotional Regulation Scale) demonstrated decreased anxious mood; and children in their

[21] The NICHD Study of Early Child Care enrolled over 1,300 children in a longitudinal study from birth to age 7 to examine impacts of child care arrangements. The study methods involved home visits, parent interviews, and child care observations.

care showed better attentional regulation skills (Tsao, 2015). In the study examining caregiver qualifications, researchers found few relationships between the degree level of home-based providers and toddler's social-emotional outcomes, except that toddlers with home-based providers who held an associate's degree were more likely to be rated by their providers as having a negative disposition compared to children with providers without a higher education degree (Schaack et al., 2017). Finally, a cluster-randomized trial evaluation of a professional development model designed to provide on-site consultation or support to providers (the Program for Infant/Toddler Care [PITC]), did not find a statistically significant effect on children's composite behavior scores approximately six months after providers' completion of the training program (Weinstock et al., 2012).

Findings on the relationship between children's social-emotional development and program practices, such as continuity of care, are mixed. A study by Ruprecht et al. (2016) found an association between continuity of care and decreased behavior problems among toddlers, but no association between continuity of care and observed toddler social competence. On the other hand, a study by Horm et al. (2018) found evidence for a relationship between continuity of care and toddler social competence in the form of increased levels of self-control, initiative, and attachment in the infant and toddler years. However, these effects were not sustained into preschool (Horm et al., 2018).

Lastly, a study of the quality and impact of Early Head Start relationships by Elicker and colleagues (2013) found that in Early Head Start centers, caregiver–parent relationship quality was significantly associated with higher parent-rated Brief Infant-Toddler Social and Emotional Assessment (BITSEA) scores.

### Cognitive Skills

Few studies have examined factors that contribute to positive cognitive outcomes among infants and toddlers in child care settings. Four studies examined cognitive outcomes for infants and toddlers. They explored associations between either (a) global classroom quality, (b) a professional development model, (c) caregiver-parent relationships, or (d) provider qualifications and infant and toddler cognitive skills. While the research noted above found that global classroom quality may not predict children's social-emotional development in all contexts, another study suggested that it may be related to children's early cognitive development. Through propensity score matching on child and family characteristics at 9 months, Ruzek and colleagues' (2014) analysis of data from the nationally representative ECLS-B found that child care quality in home-based and center-based care settings was significantly associated with cognitive skills at 24 months. Two-year-olds with higher Bayley mental scores were more likely to be in high- or medium-quality toddler care, as assessed using the ITERS and FDCERS, than in low-quality care (Ruzek et al., 2014). The cluster-randomized trial evaluation of PITC did not find a statistically significant effect on children's cognitive/language scores approximately six months after completion of the training program (Weinstock et al., 2012). Another study found that caregiver-parent relationship quality was also significantly associated with children's higher early learning composite scores as measured by the Mullen Scales of Early Learning (Elicker et al., 2013). Though providers' higher education may be associated with children's social-emotional outcomes, a study by Schaack et al. (2017) found no significant relationships between children's cognitive outcomes and providers' field of degree or higher education degree.

### Language/Communication Skills

Children's language and communication skills are also promoted in high-quality early care environments. As noted above, Pluess and Belsky (2010) found that infants with histories of difficult temperament experienced fewer behavioral problems in high-quality care environments (and more behavioral problems in low-quality care environments). Additionally, infants with histories of difficult temperament

demonstrated better reading ability when exposed to high-quality care environments than their peers with histories of easy temperaments. More specific high-quality practices and targeted interventions, however, were not found to affect language and communication outcomes for young children. For example, while continuity of care is a high-quality practice associated with improved social-emotional skills, it was not found to be related to improved vocabulary in preschool (Horm et. al, 2018). Furthermore, the PITC professional development model was found not to have a statistically significant effect on children's cognitive/language scores approximately six months after completion of the training program (Weinstock et al., 2012). Finally, a study examining the effects of professional development for child care staff on the language acquisition of children aged 14-36 months did not find greater gains in language development for children in the treatment group compared to those in the control group (Rudd et al., 2008). However, children of providers in the treatment group who engaged in more frequent and longer bouts of joint attention episodes scored higher on the MacArthur Communicative Development Inventory (MCDI)[22] than their within-group counterparts six months after the intervention (Rudd et al., 2008).

### Summary

Taken together, these studies show that aspects of children's competence such as social-emotional, cognitive, and language skills are supported by a variety of factors. High-quality care may be positively related to children's early cognitive development; and children's language and communication skills are also promoted in high-quality care environments. Further, although the connection between global quality and children's social-emotional development is unclear, high-quality teaching practices such as warm and responsive caregiving have been linked to children's positive social-emotional development. Few studies have examined the direct effects of interventions supporting children's competence on child outcomes in evaluation studies; and the findings suggest mixed evidence that the supports have significant effects on outcomes.

## Conclusion

Overall, the literature on the quality of care for infants and toddlers is still limited. As mentioned above, most of the studies we identified from our literature review focused on structural features of care and caregiver-child interactions. Fewer studies addressed the other aspects of quality such as caregiver-parent communication, child-peer relationships, and contextual factors. We also only found 11 studies that examined child outcomes during infancy and toddlerhood.

The current literature related to the quality of care for infants and toddlers finds the following:

- Structural features:
    - Centers tend to have larger group sizes and higher child-to-adult ratios for infants and toddlers compared to family child care settings (Dowsett et al., 2008; Halle et al., 2009).
    - There is an association between receipt of a state-level infant and toddler credential and increased classroom quality (Chen et al., 2017; Shivers, 2011).
    - There is an association between higher dosages of coaching for infant and toddler teachers and increased observed classroom quality (Moreno, Green, & Koehn, 2015), but professional development programs may not always influence classroom quality (Weinstock et al., 2012).

[22] The MacArthur Communicative Development Inventory (MCDI) is a measure of communication skills in children aged 10 to 33 months.

    - Findings on the association between education levels of infant and toddler teachers and classroom quality are mixed (Halle et al., 2009; King et al., 2016; Schaack et al., 2017; St. Clair-Christman et al., 2011).
- Caregiver-child interaction:
    - Caregiver characteristics (e.g., education level and job satisfaction) may be associated with caregivers' sensitivity and responsiveness with infants and toddlers.
    - Research on the relationship between caregiver-child interactions and language/cognitive stimulation for infants and toddlers was sparse. Nonetheless, one experimental study found that professional development on joint attention had a positive effect on children's language acquisition (Rudd et al., 2008).
    - We did not find any studies that examined caregiver-child interactions and behavior guidance.
    - Studies investigating child outcomes and continuity of care (CoC) practices were mixed on whether CoC is associated with development of social competence among infants and toddlers (Horm et al., 2018; Ruprecht et al., 2016).
- Other components of quality:
    - *Child-peer relationships*: two studies suggest that supportive, responsive caregiving can help encourage positive peer relationships (Shin, 2010). In contrast, interactions that are overly directive may impede social competence with peers. Nonetheless, such interactions may grow out of concerns about the nature of peer interactions rather than contribute to less positive peer interactions (Williams, Mastergeorge & Ontal, 2010).
    - *Caregiver-parent communication*: evaluations of interventions that promote school readiness through enhancing parenting engagement suggest the interventions each had a positive effect on caregiver-parent relationships (Brown et al., 2009; Knoche et al., 2010). Additionally, research has identified multiple factors that can hinder caregiver and parents' ability to share information. Children's temperament (Swartz & Easterbrooks, 2014) and disagreement between parents and caregivers around childrearing practices (e.g., behavior guidance, displays of affection, or readiness for new development states) are both barriers to information sharing between caregivers and parents (Lang et al., 2016).
    - *Contextual factors*: higher education programs across several states were less likely to teach content specific to infants and toddlers than for older preschool-age children; they were also less likely to expose students to field-based training involving infants and toddlers than older preschool-age children (Austin et al., 2015). Of the bachelor's degree programs that required practicum experiences in the field, most implemented them in preschool classrooms only, rather than in infant and toddler classrooms. Additionally, family child-care programs participating in staffed networks scored higher on observed quality assessments than family child care providers who did not participate in staffed networks (Bromer et al., 2009).
- Supporting children's competence:
    - High-quality teaching practices, such as warm and responsive caregiving, effective redirection strategies, and high-quality relationships are related to children's social-emotional outcomes (Elicker et al., 2013; La Paro et al., 2014; Tsao, 2015).
    - There is evidence that global classroom quality may be related to children's early cognitive development (Ruzek et al., 2014). However, the associations between global quality and children's social and emotional outcomes were more complex. While one study found no relationship between global quality and children's social emotional outcomes (La Paro et al., 2014), another found a relationship between global quality and children's social-

emotional competence that was moderated by children's temperament at 6 months (Pluess & Belsky, 2009), with effects persisting into 6th grade (Pluess & Belsky, 2010).

In summary, the literature shows that supportive, responsive caregiving for infants and toddlers promotes better social emotional outcomes and child-peer relationships. While we turn next to an in-depth discussion of gaps in the literature and further research needs, we briefly note here that more research is needed to understand how teacher qualifications, professional development, and other quality improvement efforts (e.g., networks for family child care providers) influence program quality and child outcomes for infants and toddlers, and how this may vary by child care setting (i.e., center-based versus home-based settings). Additionally, more research is needed to understand how program quality influences child outcomes for infants and toddlers.

# Section IV: Gaps in the Literature and Future Research Needs

## Remaining Research Gaps

Three main categories of research gaps emerged from the review of the literature on access to high-quality infant and toddler care: (1) overarching gaps, (2) data and measurement gaps for constructs where this review found relevant research, and (3) gaps within our understanding of the dimensions of *access* and *quality* covered in the recent literature. Overarching gaps included whole dimensions or constructs in the frameworks we used for access and quality for which the research team was unable to identify any relevant studies. The overarching gaps also included areas of inquiry that appeared to be understudied based on the research team's assessment of the literature. In contrast, the research gaps noted under the categories of data and measurement, as well as in understanding the dimensions of access and quality, were mostly identified by the research articles and reports covered in this review themselves. In the following sections, we summarize what we saw for each of the three types of gaps, organized by the two overarching areas covered in our literature review—*access* to care and *quality* of care for infants and toddlers.

## Overarching Gaps in Research

### Access to Care

There were several areas where the research team found it difficult to identify studies related to whole dimensions or constructs for access. First, although numerous studies revealed that infant and toddler care is especially challenging to access, our literature review found that most of the studies on access to high-quality child care were not specific to infants and toddlers. Many of the studies on access to ECE for young children focused on children ages 0-4 more broadly or exclusively focused on issues of access facing older preschool-aged children and their families.

Second, as is noted in the introduction to this review of the literature on access, we identified fewer studies that focused on the *supports child development* dimension as compared to the other dimensions of access. This could be because the conceptual framework for access to care (Friese et al., 2017) is so new to the field that researchers have not adjusted their research designs to incorporate this dimension of

access in their investigations. Additionally, national, state, and local data on infant and toddler enrollment in child care programs participating in QRIS or programs serving vulnerable populations has been sparse.

Third, a limited number of studies used rigorous correlational or causal research methods to explore a range of research questions examining the factors that facilitate or hinder access to high-quality infant and toddler care. This review identified studies that were largely descriptive in nature.

Lastly, this review of the literature on access found there is limited research on the extent to which the characteristics (e.g., race, ethnicity, socioeconomic status, housing status, geographic location) of families, children and communities affect how or whether families of infants and toddlers have access to quality care. Instead, most of the studies we reviewed focused predominantly on a specific population, sample, or region of interest and did not explore deeply whether patterns differed across various subpopulations or geographic locations.

Similarly, only some of the literature fully integrated a racial equity approach, as indicated by the lack of disaggregation of data for different racial and ethnic groups. Few of the studies explored or referenced the extent to which structural and historical racial discrimination in policies across sectors might contribute to disparities in access to high-quality infant and toddler care across racial and ethnic groups.

### Quality of Infant and Toddler Care

Similar to the research on access to care, the research on caregiver-child interactions is largely descriptive. Only four experimental studies were identified in this review. Future research should more rigorously explore how interventions focused on improving caregiver-child interactions influence program quality and child outcomes.

## Data, Measurement, and Methodological Gaps

### Access to Care

Researchers have identified a number of gaps in the literature related to data, measurement, and methodological rigor. In particular, researchers noted that studies focusing on infant and toddler access to child care lack estimates of vacancies, possibly due to measurement challenges (Downs, 2013; Guzman et al., 2010). For instance, many studies focused on the supply of and demand for services – most often within states and local jurisdictions – by focusing on the number of slots available in licensed centers. National child care survey data has been used to highlight that more slots are available for older, preschool-aged children as opposed to infants and toddlers, and that many child care providers, particularly centers, do not serve infants and/or young toddlers. It is difficult to estimate all the providers, including family child care providers, who serve infants and toddlers; and it is even more difficult to estimate the number of providers with vacancies for this young age group. Indeed, it would require a high level of effort to collect this information even at a local level, and it is likely that the information gathered on vacancies would change within each provider during the data collection period. As noted above, our literature review may have yielded more information if we included "vacancy" as a search term, but researchers have still noted the challenge of accurately documenting the vacancy rate and enrollment. Some programs may also intentionally not operate at full capacity – thereby serving fewer infants and toddlers than they could – as a cost savings strategy (Downs, 2013).

*Rigorous quantitative analysis methods and policy analysis.* While a number of studies document the challenges families face in accessing care – due to affordability, difficulty finding programs with reasonable effort, or challenges meeting the developmental needs of their children and the logistical needs of their

families – few provide critical information on the effectiveness of strategies that aim to increase access to infant and toddler care. More studies using rigorous quantitative methods, such as experimental or quasi-experimental methods, are needed to address this information gap. Future studies could also use propensity score matching or other statistical matching techniques to compare outcomes for communities using differing strategies to improve the affordability of infant and toddler care. Studies could employ approaches such as comparative interrupted time series (CITS) or natural experiments to explore whether there are differences in affordability and accessibility of infant and toddler care in the years before and after an intervention is introduced, as compared to matched programs or communities that are not implementing approaches to increase affordability. In addition, this review did not identify many studies that empirically examined how policies influence access to high-quality care among infants and toddlers. Such studies could explore the extent to which access improved after changes in federal, state, or local ECE policies went into effect. Additionally, these studies could identify policies for which there is considerable variation in implementation across regions and assess whether those differences in implementation are associated with systematic differences in access to high-quality care across states or localities.

*Definitions.* The research on access to high-quality care for infants and toddlers lacks a common taxonomy and definitions. To the extent that researchers are not using the same language to describe similar factors related to accessing child care, it may be challenging to codify the literature to summarize common and unique findings across studies. For example, the lack of common data elements and use of differing definitions and measures across states' administrative data systems make it difficult to link similar data across states (Guzman et al., 2010). Efforts to assess the effects of state policies are limited if similar data cannot be explored for cross-state comparisons.

### Quality of Infant and Toddler Care

Similar to the studies on access, there is an overall lack of rigorous studies examining associations between the quality of care and infant and toddler outcomes. This is likely due to challenges in capturing outcome data for infants and toddlers. As a result, many studies must rely on parent or teacher report. This review only found 11 studies that examined child outcomes during infancy and toddlerhood. These studies often only assessed in a single domain of development (i.e., social-emotional development or cognitive development) rather than measuring outcomes across multiple domains of development.

## Gaps within our Understanding of the Dimensions of Access and Quality

### Access to care

#### Reasonable Effort

Understanding more about the information that is readily available to parents, as well as the information parents use to inform selection of care for their children, would help to shed light on the extent to which families can find quality care for their infants and toddlers with reasonable effort. Researchers have noted that more studies need to focus on how parents access information about ECE. Studies have reported that parents' decisions about child care are sometimes constrained by their perceptions of having a limited number of options that meet certain key criteria they may be considering, such as provider type, cost, location and quality (Forry et al., 2013). Future work that considers how parents access and use information about ECE based on their selection criteria is needed.

### Affordability

Several studies found that ECE programs can reduce costs and increase profitability by serving fewer, or no, infants and toddlers (District of Columbia Office of the State Superintendent of Education, 2016; Franko, et al., 2017; Mitchell, 2013; Moran et al., 2017). Through CCDBG reauthorization, states are now required to develop plans for increasing access to infant and toddler care in those programs serving children with subsidies. One study found that raising reimbursement rates for providers serving infants and toddlers receiving a subsidy increased access (McKelvey & Chapin-Critz, 2014). Future studies could focus on identifying and understanding the effects of states' approaches to increase availability of infant and toddler care while maintaining programs' sustainability and profitability (e.g., generous tiered reimbursement rates for infants and toddlers).

### Meets Parents' Needs

A small but consistent body of literature examined parental preferences for infant and toddler care, as well as the factors that parents of infants and toddlers considered in search of programs that met their needs (e.g., location, hours, and cost). However, only nine studies focusing on this dimension of access were identified. Our understanding is limited because most of the studies were descriptive and focused on young children through school entry, as opposed to infants and toddlers. Furthermore, none of the studies provided evidence of an approach that improved parents' access to programs that met their needs. As expected, parental employment influences parental preferences and choices for early childhood programs. Thus, it is important for future studies to examine the extent to which there are differences in access by employment status and schedule (Marshall et al., 2013).

### Supports Child Development

More research is needed to understand the availability of high-quality programs serving infants and toddlers, as evidenced by the QRIS designation of quality indicator and/or accreditation. It is also important to understand whether programs serving infants and toddlers generally offer the same level of quality as programs serving preschool children. However, this is difficult to assess because providers serving infants and toddlers, particularly family child care providers, are less likely to participate in QRIS efforts (DeGuzman et al., 2015).

This review also found a limited number of studies focusing on the availability of infant and toddler care for children from vulnerable populations or those with special needs, such as children with disabilities, speakers of languages other than English, or children experiencing homelessness. More studies that focus on the number of programs available to serve infants and toddlers are needed. Additionally, the policies and strategies that may increase the capacity of programs to effectively serve more infants and toddlers with special needs remains to be determined.

## Quality in Infant and Toddler Care

### Structural Features

The research on infant and toddler teacher qualifications, such as education level, and their influence on program quality was mixed. Likewise, the findings on whether professional development initiatives for infant and toddler teachers influence program quality were mixed. More research is needed to understand how infant and toddler teachers' education level and professional development affect program quality and child outcomes. Future research should also explore how qualifications and professional development might vary by the provider's program setting (i.e., center-based or home-based care). Specifically, researchers should explore the types of qualifications and professional development most likely to

influence quality of care provided by home-based providers, as well as effective delivery methods for professional development (Abell et al., 2014).

## Caregiver-Child Interaction

Within the literature reviewed on caregiver-child interactions, researchers identified several research needs:

- **Sensitivity/responsiveness***:* Future research on sensitivity and responsiveness of caregivers should examine multiple child outcomes in addition to attachment (e.g., externalizing behavior problems, aggression; Biringen et al., 2012; Honig et al, 2013). Future research should also explore if a degree in early childhood education (e.g., AA or BA) might translate into better quality caregiver-child interactions and emotional attachment or attachment security; future research should also more carefully control for training experiences (Biringen et al., 2012; Honig et al., 2013).
- **Language and cognitive stimulation:** While research on teacher–child interactions related to language and cognitive stimulation is growing in preschool and elementary classrooms, research specific to infant and toddler classrooms is still sparse. Additional research specific to factors influencing teacher–child interactions related to language and cognitive stimulation in infant and toddler classrooms is warranted (Thomason & La Paro, 2013).
- **Continuity of care (CoC):** Future research must continue to address how best to define and operationalize CoC, including the timeframes for continuity (Horm, et al., 2018) and whether a child stays with the same teacher, the same classmates, or both (McMullen et al, 2016). The potential interaction of CoC with teacher attitudes and behaviors should also be considered. Specifically, it is important to consider whether CoC encourages teachers to be more sensitive and interactive. Future research should also include assessment of the potential effects of CoC on families and teachers (Horm, et al., 2018)

## Other Components of Quality

### Child-Peer Interaction

There is an opportunity for further research into the nature of infants' and toddlers' peer relationships, and the impact that caregiving has on the development of positive peer relationships (Shin, 2010). Given that classroom group-size and the presence of young children of varying ages in family child care may also influence infant-peer interactions, future research should include observations of infant interactions with their peers in different group size settings (Williams, Mastergeorge, & Ontai, 2010), as well as in settings involving young children of somewhat varying ages. There is also an opportunity to better understand how professional development can be used to encourage children's self-expression during social problems in interactions with peers (Gloeckler et al., 2014).

### Caregiver-Parent Communication

Further research should explore other aspects of parent-provider communication beyond the frequency of communication (Swartz & Easterbrooks, 2014), such as the types of communication styles that work best for parents (Lang et al.,2016).

### Contextual Factors

Future research should explore how content and fieldwork specific to infants and toddlers in degree programs influences child care program quality and child outcomes. Future studies regarding networks could examine: (1) the implementation of best practice models and the impact of network services on quality of care over time; (2) the effectiveness of networks for different groups of providers including

family, friend, and neighbor providers/license-exempt providers serving low-income families; and (3) the impact of network affiliation on child outcomes and parent outcomes in addition to program quality outcomes (Bromer et al., 2009).

### Children's Competence

Most often, authors highlighted a need to include multiple child outcome measures and employ longitudinal study designs in examining the impact of quality supports/practices on infants' and toddlers' competence. For example, Ruzek et al. (2014) relied on Bayley's scores to measure child development but noted that studies evaluating children's cognitive skills development would ideally implement multiple measures. Similarly, La Paro, Williamson, and Hatfield (2014) included only one brief, teacher-report measure of child behavioral problems and cited a need for multiple child outcome measures from varied reporters. They also noted that longitudinal studies following children into kindergarten and examining child care quality dosage would help researchers understand the role of child care quality during the toddler years. Other suggestions for future research included assessing whether parent-teacher relationship quality or consistency in peers (i.e., maintaining the same groups of classmates over time) could help explain the relationship between continuity of care and child outcomes (Horm et al., 2018). While Ruzek et al. (2014) found no evidence to indicate that higher-quality child care was more beneficial for low-income children than middle- and high-income children, the authors did find that low-income children were still much less likely to experience medium- or high-quality care at 24 months of age. Ruzek et al. (2014) highlighted a need for future research examining whether increasing the supply of high-quality care for low-income children might help narrow the cognitive skills gap at two years of age.

## Summary

Overall, this review found that infant and toddler's access to high-quality care is understudied. Few access studies have focused exclusively on infants and toddlers; most studies were descriptive and did not use causal or correlational research methods to explore the factors that facilitate or hinder access to high-quality infant and toddler care; and there was limited research on the extent to which the characteristics (e.g., race, ethnicity, special needs, socio-economic status, housing status, geographic location) of families, children and communities affect infants' and toddlers' access to quality care. The authors of studies also highlight the challenge with examining child care slot vacancies as a method of measuring infants' and toddlers' access to care, and the need to study how policy changes can affect access.

Moreover, the research on the quality of infant and toddler care highlight that additional research examining the effects and dosage of quality supports/practices on infants' and toddlers' longitudinal outcomes in multiple developmental domains is key.

# Section V: Implications for Policy and Practice

Important recent early childhood policy initiatives place a particular emphasis on improving access to and high-quality of infant and toddler care. For example, CCDBG reauthorization in 2014 set new goals around access to quality care, identified infants and toddlers as a prioritized group of children (through increased infant and toddler quality set-aside), and increased the time period that families remained eligible for child care subsidies before they needed recertification, thereby supporting continuity of care. The Early Head Start-Child Care Partnerships, established in 2014, were created to increase access to high-quality care for

infants and toddlers. It is therefore a particularly important time to be able to inform these initiatives with guidance on how best to improve access to and the quality of ECE for infants and toddlers, as well as inform benchmarks for high-quality programs.

In order to better understand the factors that facilitate access to high-quality ECE programs and improve quality in existing programs for infants and toddlers, it is important to be able to provide guidance on the professional qualifications of teachers and caregivers that support high-quality interactions. Yet, this review identified a limited research base to provide this guidance. Based on this review of the literature, we suggest the following in order to better understand infant and toddler's access to high-quality care:

- *Track infant and toddler participation in quality care:* To better understand infants' and toddlers' participation in and access to quality rated programs participating in state QRIS, states should better track children's participation in quality rated programs by age and/or the number of programs serving infants and toddlers by quality level. While some states currently link their licensing data (which has information about ages of children served) with their QRIS data, more states might want to take steps to link data in this way to be able to consider infant and toddler participation in care rated to be of higher quality. Public reporting and sharing of such state data would help to work towards a national understanding of infant and toddler participation in quality care. While there has been increasing program participation in QRIS over time (Tout et al., 2017), continued growth in program participation particularly by programs serving infants and toddlers, is an important foundational step to tracking infant and toddler participation in quality care.
- *Explore the range of factors that influence parents' decisions about care:* By acknowledging the range of factors that influence parents' decisions about care and establishing a better understanding of how parents balance the access dimensions (i.e., reasonable effort, affordability, meeting parents' needs, and supporting children's development) in selecting a care arrangement, policymakers can better address how to make higher quality care more accessible to families.
- *Increase reimbursement rates for providers caring for infants and toddlers receiving a subsidy*: While this review found little evidence of strategies that facilitate access to high-quality care for infants and toddlers, increasing reimbursement rates for infants and toddlers was one exception. Given the evidence in the literature and the CCDBG reauthorization law's encouragement that infants and toddlers be seen as a prioritized group, states should consider raising reimbursement rates for providers caring for infants and toddlers receiving subsidies to help expand access.
- *Build professional development supports for the infant and toddler workforce:* This review suggests several areas of professional development for infant and toddler teachers that were associated with improved child outcomes, including: emotional attachment, social-emotional development frameworks, joint attention, and the role of teacher's own emotional regulation and toddler's self-regulation. This review also found positive associations between parent engagement curricula and improved caregiver-parent relationships and communication. States may consider using their CCDBG infant and toddler funds or their other quality set-aside funds to help expand professional development supports.
- *Improve higher education for infant and toddler teachers:* This review of the literature highlights that higher education programs need to expand content and fieldwork specific to infant and toddler care.
- *Expand networks that support family child care providers:* The small body of research on family child care networks suggests that family child care providers participating in family child care networks have higher global quality scores. States may consider also using their CCDBG infant and toddler set-aside and other quality set-aside funds to help expand FCC networks as a support for FCC providers serving infants and toddlers.

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# Appendix A: Literature Review Tables

**Table 1.** Reviewed literature by access dimension

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| Ackerman & Barnett, 2016 | To summarize information on trends in supply and demand, access, cost and quality, and state and federal policies. To describe potential influences of preschool policies on the supply of quality infant/toddler care and preschool policy changes that might benefit infant/toddler care and avoid unintended negative consequences. | | Brief | X | | | |
| Advocates for Children of New Jersey, 2017 | To examine the supply of available slots com pared to the number of young children likely to need care in order to better understand the availability of center-based child care for infants and toddlers. | | Report | X | | | |
| Alexandre et al., 2013 - Essex Infant/Toddler Quality Improvement Project (EQUIP) | To determine (1) the overall quality of infant/toddler care in Essex County, (2) the quality of child care centers, (3) the quality of child care homes, (4) the quality of infant/toddler care in each of the four towns, and (5) some common strengths and weaknesses of infant/toddler care. | | Report | | | | X |
| Alexandre et al., 2013 - The state of infant-toddler care and education in New Jersey | To determine (1) the quality of infant and toddler center-based care in New Jersey, (2) the quality of infant/toddler care in each of the twenty-one counties, and (3) common strengths and weaknesses of infant and toddler center-based care. | | Report | | | | X |
| BBC Research & Consulting, 2010 | To study the supply of and demand for infant and toddler child care services across Utah in order to better understand (1) who cares for the state's very young children when they are not with a parent or guardian, (2) the quality of care | | Report | X | | X | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| | provided to them, and (3) how the state can help parents and providers best care for its youngest children. | | | | | | |
| Berman, Bhat & Rieke, 2016 | To determine (1) the full cost per slot to operate a "high quality" program (center and home) in DC, (2) the sources of revenue for programs, including in-kind and volunteer resources and additional resources for children with disabilities, and (3) how programs manage when there is a shortfall between revenues and cost of quality. | | Report | | X | | |
| Carlin et al., 2009 | To determine factors affecting parents' decisions about employment, use of non-parental child care, and type of child care used and the role of child care subsidies in these decisions by (1) summarizing state and territory policies related to increasing access to ECE for specific populations defined by the state, determining payment rates for care, and building the supply of high-quality care, (2) highlighting innovative state/territorial policies and practices, and (3) providing recommendations for how states might further address access through more comprehensive data collection and analysis to inform future child care development plans. | | Brief/ Report | | | X | |
| Ceglowski et al., 2009 | To determine the child care experiences and perceptions of Minnesota families with children with a disability. | | Journal article | | | | X |
| Choi et al., 2018 | To investigate (1) the national percentage of EHS programs with centers implementing CoC, (2) potential differences between EHS programs with all or none of their operating centers implementing CoC, (3) the number of teacher changes children experienced during two consecutive years in EHS (as an indicator of early care stability), and (4) child and family characteristics of children having | | Report | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| | different levels of care stability during their EHS programs. | | | | | | |
| Coley et al., 2014 | To examine predictors of home and center-based ECE and determine whether they differ by developmental period, using data from the ECLS-B. | | Journal article | | | X | |
| DeGuzman et al., 2015 | To determine (1) where children 0-5 are located and the socioeconomic characteristics of those children and their families as they relate to access to ECE, (2) where ECE programs (child care center or family child care homes) are located overall and by types of seats (licensed, subsidized, and license-exempt), (3) what and where the gaps are between families needs for ECE services and the availability of ECE services, and (4) the existence of child care policies at the federal, state, or local levels that enhance or detract from families' access to ECE services in terms of availability of licensed seats for children in Los Angeles County. | | Report | X | | | X |
| Downs, 2013 | To examine the current efforts and future opportunities to support and enhance the quality of family child care across the state of Connecticut, particularly for infants and toddlers from low-income families. | | Report | X | X | | |
| Fraga et al., 2017 | To provide information on the cost of child care across the country and the strategies that states and communities are using to help parents afford child care. | | Report | | X | | |
| Franko et al., 2017 | To (1) describe the role of the ECE sector in Colorado's economy, (2) explore the cost of ECE in Colorado, (3) explain the implications of low wages and turnover in Colorado's ECE industry, and (4) identify the extent to which Colorado's ECE sector operates as a market-based industry. | | Report | | X | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| Halle et al., 2009 | To determine (1) the primary type of arrangement used by families with 9-month-old infants, (2) if there are differences in the types of primary care used by demographic characteristics such as race/ethnicity, family structure, home language, and maternal education, (3) if there are differences in the types of primary care used based on mothers' employment status and work schedule, and (4) if there are differences in the types of primary care used based on receipt of financial assistance for child care. | | Brief/ Executive Summary | X | | | |
| Henly et al., 2015 | To determine (1) the patterns of subsidy use and stability over time, (2) the extent to which subsidy program characteristics and parental work circumstances influence subsidy use and stability, (3) how stable child care providers are for subsidy-receiving families both during a subsidy spell and over time, and (4) the extent to which subsidy program characteristics and parental work circumstances influence the stability of child care providers. | | Report | | X | | |
| IFF, 2015 | To determine which neighborhoods in Detroit have the greatest need for child care slots. | | Report | X | | | |
| Jessen-Howard et al., 2018 | To investigate factors contributing to child care deserts. | | Report | X | | | |
| Kim & Fram, 2009 | To (1) expand current thinking about parents as child care decision-makers, (2) explore the patterns of priorities that parents bring to the task of choosing a best-fit child care arrangement and the parental characteristics that may be associated with these holistic patterns, and (3) examine how parental patterns of priorities may shape actual choice of child care arrangement. | | Journal article | | | X | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| Krafft et al., 2017 | To determine (1) how subsidy receipt alters the stability of child care arrangements, (2) whether subsidy receipt relates to number of concurrent child care arrangements for a particular child, and (3) how perceived quality of care differs depending on subsidy receipt. | X | Journal article | | | | X |
| Latino Policy Forum, 2013 | To determine (1) the array of services available for infants and toddlers in Illinois, (2) the barriers Latinos face in accessing these services, and (3) how the state can more effectively address the challenges that contribute to adverse educational and developmental outcomes. | | Report | | | | X |
| Let's Grow Kids, 2016 | To describe Vermont's challenges with supplying high-quality, affordable child care. | | Report | X | | | |
| Los Angeles County Child Care Planning Committee et al., 2017 | To conduct a needs assessment on access to ECE, quality learning environments, and the ECE workforce in Los Angeles county and provide policy recommendations to improve system. | | | X | | | |
| Madill et al., 2018 | To examine the differences between children's access to ECE by income and how child care subsidy policies can help close this gap. | | Report | | | X | |
| Marshall et al., 2013 | To determine (1) if child care subsidy use is associated with higher rates of maternal employment and school enrollment and reduced work-family conflict, (2) if child care is more affordable for families using child care subsidies, (3) if families with child care subsidies report greater access to child care, and (4) if the quality of child care used by families with subsidies is higher than that used by other families. | | Journal article | | | X | |
| Matthews & Schumacher, 2008 | To explore the potential of contracts (through CCDBG funding) to address issues | | | | X | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| | of supply and quality in the provision of infant and toddler child care. | | | | | | |
| McKelvey & Chapin-Critz, 2014 | To prepare a series of cost models identifying impacts of potential regulatory and policy changes in order to inform The Arkansas Division of Child Care and Early Childhood Education (DCCECE) on how to increase the quality of care provided throughout the state without harming the financial well-being of child care businesses. | | Report | | X | | |
| Mitchell, 2013 | To assist the Office of Early Learning to develop a set of dynamic models for estimating the cost of implementing Delaware's QRIS, Delaware Stars for Early Success, and the cost of operating various types of early learning programs at the five quality levels of Stars. | | Report | | X | | |
| Moran et al., 2017 | To determine how six early education providers of different shapes, sizes, and community contexts from across the Commonwealth financed high-quality child care. | | Report | | X | | |
| Nores & Barnett, 2014 | To determine the extent to which there are "opportunity gaps" in the ECE services that may be associated with readiness gaps. | | Brief | X | | | |
| District of Columbia Office of the State Superintendent of Education, 2016 | To (1) identify the fiscal impact of the District's QRIS standards on centers and homes, (2) identify key cost drivers that cut across all QRIS levels, (3) explore differential costs between programs that serve primarily (or exclusively) infants and toddlers and those that serve primarily (or exclusively) 3- and 4-year-old children, (4) create greater transparency on how the child care market operates, and (5) provide information that will allow key stakeholders and policymakers in the District to test a range of alternative rate-setting and subsidy policy | | Report | | X | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| | recommendations with a clear understanding of the fiscal impact of these decisions. | | | | | | |
| Pilarz, Claessens, & Gelatt, 2016 | To further knowledge on children's trajectories of subsidy program use and the stability of subsidized care arrangements by (1) describing patterns of subsidy use and the stability of subsidized care arrangements across four sites in two states and (2) investigating the relationship between subsidy use patterns and stability of subsidized care arrangements. | | Journal article | | X | | X |
| Public Consulting Group, 2015 | To determine the child care market rates and state subsidy access rates by region and type of care. | | Report | | X | | |
| Rose & Elicker, 2010 | To determine how family demographic factors and family role ideology relate to the types of child care (parental and non-parental forms) mothers prefer "in an ideal world." | | Journal article | | | X | |
| Schmit & Matthews, 2013 | To learn and share how states are meeting the challenges of providing quality infant-toddler care. | | Report | | | | X |
| Schmit & Walker, 2016 | To (1) highlight state-level data by race and ethnicity about differential access to Head Start preschool, Early Head Start (EHS), and CCDBG-funded child care and (2) identify potential policy implications and gaps in the data that limit our ability to more comprehensively analyze the findings. | | Policy brief | X | | | |
| Schmit et al., 2013 | To (1) provide information about the percentages of young children in each state experiencing risks related to poor educational outcomes and (2) identify trends in federal and state investments in ECE programs and state policies related to both access and quality. | | Brief | | X | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Reasonable effort | Affordability | Meets parents' needs | Supports child development |
|---|---|---|---|---|---|---|---|
| Sosinsky & Kim, 2013 | To (1) identify profiles of child care utilizing multiple dimensions of child care type, quantity, and quality (capturing a full picture of the child care arrangement of the child care arrangement on the basis of profile patterns of related variables), and (2) examine associations between these profiles and family factors. | | Journal article | | | X | |
| Tanoue et al., 2017 | To identify (1) the child care deserts in the greater Tucson area, (2) the sociodemographic characteristics of these local areas that have limited access to child care, (3) the high quality child care and early education deserts in the region, and (4) the accessibility of high quality early education programs for preschool-age children, considering cost as well as location. | | Report | X | X | | |
| University of New Mexico, 2015 | To ensure that subsidy rates are set high enough that families eligible for subsidy have access to a range of child care services comparable to those available to families not eligible for CCDF assistance. | | Report | | X | | |
| Weber et al., 2018 | To determine the extent to which family and community characteristics are associated with the selection of a type of child care among low-income parents who currently or previously used subsidies. | | Journal article | | | X | |

**Table 2.** Reviewed literature by quality dimension

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| Abell et al., 2014 | To determine (1) whether participants in the family child care partnership program showed a significant increase in the observed overall quality of their child care practices over the course of their participation and (2) whether participants' increases in observed overall quality were associated with increases in their self-reported professional engagement. | | Journal article | X | | | | | |
| Ackerman, 2008 | To determine (1) the benefits of CoC, (2) the impact of CoC on caregivers' professional development and collegial relationships, and (3) other organizational and policy factors that also appear to enhance caregivers' professional growth. | | Journal article | | X | | | | |
| Antle et al., 2008 | To determine (1) the relationship between subsidy density and classroom quality, (2) the relationship between subsidy density and classroom quality (controlling for teacher education/salary), and (3) other structural variables associated with classroom quality. | | Journal article | X | | | | X | |
| Austin, Whitebook, & Amanta, 2015 | To determine the extent to which an infant/toddler focus is included in early | | Report | | | | | X | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | childhood education programs. | | | | | | | | |
| Biringen et al., 2012 | To determine whether an attachment and Emotional Availability (EA) training for child care professionals would help enhance the emotional climate of the classroom. | X | Journal article | | X | | | | |
| Bromer et al., 2009 | To determine (1) the effect of network affiliation on quality of care among affiliated providers and (2) the characteristics or services of staffed networks associated with quality child care. | X (Quasi) | Report/Executive Summary | | | | | X | |
| Brown et al., 2009 | To determine (1) practitioners' understanding of a parent engagement intervention, including their perspectives on the professional development and supports received, (2) how the parent engagement intervention was experienced by the ECPs, (3) how self-reported attitudes and behaviors of practitioners toward work with families changed as a function of the professional supports they received. | X | Journal article | | | | X | | |
| Chen et al., 2017 | To examine (1) how a course instructor, a center director, and practitioners describe the process of the New Jersey Infant/Toddler | | Journal article | X | | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | Credential (NJITC) coursework, and (2) the impact of NJITC on practitioners' professional growth and practice. | | | | | | | | |
| Downs, 2013 | To examine the current efforts and future opportunities to support and enhance the quality of family child care across the state of Connecticut, particularly for infants and toddlers from low-income families. | | Report | | | | | X | |
| Dowsett et al., 2008 | To determine (1) how centers, family child care homes, and relative care differs at both the structural and process levels and whether these differences are consistent or inconsistent for children of different ages, (2) if family and child characteristics account for type of care differences in structure and process across settings, and if children from different family income levels experience different characteristics of child care at both the structural and the process levels, (3) if the features of different types of care are similar or different for children from different family income levels, and (4) if Head Start centers differ from other child care centers attended | | | X | | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | by children from low-income families. | | | | | | | | |
| Elicker et al., 2013 | To determine (1) the nature of relationships among Early Head Start program caregivers, children, and families, and how these relationships change over time, (2) the characteristics of the program, caregivers, and families that are associated with Early Head Start relationship quality, (3) if qualities of these Early Head Start relationships are associated with child and parent outcomes, and (4) if characteristics of program caregivers and families moderate the associations between Early Head Start relationships and child and parent program outcomes. | | Journal article | | | | | | X |
| Gloeckler et al., 2014 | To (1) explore and identify teacher practices and child responses during problem-solving opportunities with a qualitative, descriptive measure of social problems and to (2) determine the efficacy of a professional development intervention with toddler teachers. | X (Quasi) | Journal article | | X | X | | | |
| Hallam et al., 2009 | To examine the relationship between quantity and type of teacher-child interactions from naturalistic observations of children and | | Journal article | | X | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | a classroom assessment conducted in a young toddler classroom with 10 children ages 12- through 24- months in a low-income area of a mid-size city in Tennessee. | | | | | | | | |
| Halle et al., 2009 | To determine (1) the primary type of arrangement used by families with 9-month-old infants, (2) if there are differences in the types of primary care used by demographic characteristics such as race/ethnicity, family structure, home language, and maternal education, (3) if there are differences in the types of primary care used based on mothers' employment status and work schedule, and (4) if there are differences in the types of primary care used based on receipt of financial assistance for child care. | | Brief/ Executive Summary | X | | | | | |
| Honig et al., 2013 | To determine whether (1) infant/toddler distress levels and/or duration are related to the teacher educational level, (2) infant/toddler gender is related to teacher positive or negative strategies in response to distress, and (3) distress level and/or duration are related to infant/toddler age or gender. | | Journal article | | X | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| Hooper & Hallam, 2017 | To examine how global quality relates to children's engagement in toddler child care classrooms by determining (1) the relationship between the percentage of children engaged and a classroom's global quality as measured by the ITERS-R and (2) whether engagement levels vary across different classroom contexts. | | Journal article | | X | | | | |
| Horm et al., 2018 | To determine if (1) continuity of care experienced in infant-toddler center-based classrooms relates to children's social-emotional development during the infant-toddler period and children's social-emotional and language skills at entry to pre-school, and if (2) continuity of care is more strongly (or weakly) related to early development when infants and toddlers experience higher quality classrooms. | | Journal article | | X | | | | X |
| Hossain et al., 2012 | To explore (1) the degree to which infant-toddler child-care teachers are involved in their caregiving tasks, (2) the nature of their current job condition, including job satisfaction, burnout, and quitting behavior, and (3) the relationship among caregiving involvement, job | | Journal article | | X | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | condition, and SES variables (e.g., age, income, education, work hours). | | | | | | | | |
| King et al., 2016 | To determine (1) if ITERS-R factor scores vary based on age of the children in the classroom, (2) if ITERS-R factor scores vary based on program type, (3) if teachers' education is associated with ITERS-R scores, and (4) if teachers' experience in the program is associated with ITERS-R scores. | | Journal article | X | | | | | |
| Knoche et al., 2010 | To examine the implementation efforts of early childhood professionals (ECPs) across both treatment and comparison conditions for individuals involved in the Getting Ready intervention, and (2) to specify the relationship between fidelity to structure/process and participant responsiveness as measured by parent engagement. | X (RCT) | Journal article | | | | X | | |
| Knoche et al., 2015 | To determine (1) the rate with which ECPs use each of the *Getting Ready* strategies to facilitate parent engagement during home visits, (2) how the use of specific individual *Getting Ready* strategies by ECPs relates to the frequency of interaction between parents and early childhood | X | Journal article | | | | X | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | professionals and parents and children in each program, (3) how the use of specific individual *Getting Ready* strategies by ECPs relates to the overall quality of the parents' engagement during home visits with early childhood professionals and their children in each program, and (4) how the specific individual *Getting Ready* strategies relates to ECPs overall success in conducting home visits to facilitate parent engagement. | | | | | | | | |
| Lang et al., 2016 | To determine (1) the key dimensions within the co-caring relationships of families utilizing full-time, subsidized, infant or toddler childcare, and (2) the evidence of childrearing agreement (vs. disagreement) or support (vs. undermining) between parents and teachers. | | Journal article | | | | X | | |
| LaParo, Williamson & Hatfield, 2014 | To explore (1) the observed quality of teacher–child interactions in toddler classrooms using the CLASS-Toddler and global quality using the ITERS-R, (2) the differences in observed quality when different assessments of quality are used, and (3) whether observed quality is | | Journal article | | | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | associated with teacher-reported social-emotional outcomes for toddler-age children. | | | | | | | | |
| Madill et al., 2016 | To help the field better understand the strengths and needs of the I/T workforce in center-based and home-based early ECE programs. | | Brief/Report | X | | | | | |
| McMullen et al., 2016 | To determine what CoC looks like in infant toddler programs in which CoC is a well-established, long-running practice. | | Journal article | | X | | | | |
| Moreno, Green & Koehn, 2015 | To document the effectiveness of two types of infant–toddler caregiver professional preparation efforts in Colorado at improving the participants' knowledge, self-efficacy, and interactions with children relative to a community comparison group that experienced neither intervention. | X | Journal article | X | | | | | |
| Pluess & Belsky, 2009 | To investigate interactions between difficult/negative child temperament and childcare type, quantity, and quality on teacher-rated behavior problems and social competence at 54 months and in kindergarten. | | Journal article | | X | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| Pluess & Belsky, 2010 | To determine whether those with infants with histories of difficult temperament proved more susceptible to early rearing effects at ages 10 and 11. | | Journal article | | | | | | X |
| Recchia & Shin, 2012 | To determine (1) how infants and their infant care teachers communicate to establish a reciprocal relationship and co-construct meaning as infants develop, and (2) what adaptations infant care teachers make as they respond to developmental changes/individual differences in infants over time. | | Journal article | | X | | | | |
| Romeyn, 2010 | To determine (1) if and how the professional development experiences of teachers in 10 high quality ECE classrooms differ from those of teachers in 10 classrooms rated as poor quality and (2) if any interesting between-group differences emerge regarding other factors that influence classroom quality. | | Dissertation | X | | | | | |
| Rudd et al., 2008 | To determine whether increased frequency and quality of joint attention bouts between child-care staff and children in low-quality child-care centers has a positive effect on children's language acquisition. | | Journal article | | X | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| Ruprecht et al., 2016 | To determine if (1) toddlers who experience continuity of care for at least 9 months receive more involved, responsive caregiving compared with toddlers who are not in continuity of care classrooms, (2) toddlers in continuity of care classrooms exhibit higher levels of social competence and fewer problem behaviors compared with toddlers in classrooms that are not implementing continuity of care, and (3) the quality of caregiving mediates the association between continuity of care and toddler social competence and behavior problems. | X (Quasi) | Journal article | | X | | | | X |
| Ruzek et al., 2014 | To extend our understanding of the impact of child care experiences for infants and toddlers by analyzing a nationally representative data source on children's early development, the ECLS-B cohort of children born in 2001 (Flanagan & West, 2005). The study aims to (1) provide descriptive information about toddler care experiences and (2) address the understudied question of whether early cognitive development is related to the quality of toddler care. | | Journal article | | | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| Schaack et al., 2017 | To explore whether a provider's educational attainment and coursework specific to children's development and learning is related to more sensitive caregiving, better global quality, and toddlers' social-emotional and cognitive functioning. | | | X | | | | | X |
| Schulman, 2011 | To obtain a snapshot of notable state quality improvement initiatives by asking child care administrators in each of the fifty states and the District of Columbia to identify their states' most promising quality initiative, as well as their most promising infant and toddler initiative, supported by CCDBG funding. | | Report | | | | | X | |
| Shin, 2010 | To describe (1) what kind of friendship an infant dyad had with each other and (2) the infant caregivers' roles in infants' friendship experiences. | | Journal article | | | X | | | |
| Shivers, 2011 | To discover whether Tennessee's Infant and Toddler Credential Pilot Project was successful in reaching its desired outcomes – that is, whether there were demonstrable changes in participants' beliefs, practices with | | Report | X | | | | | |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | children, and environmental quality. | | | | | | | | |
| St. Clair-Christman, Buell, & Gamel-McCormick, 2011 | To determine the relationship among specific teacher characteristics, a program's acceptance of federal child care subsidy funds, and the quality of language and reasoning and learning activities provided by the program. | | Journal article | X | | | | | |
| Swartz & Easterbrooks, 2014 | To determine characteristics of parents, providers, and children that contribute to variance in parents' and providers' perceptions of their relationships with each other. | | Journal article | | | | X | | |
| Thomason & La Paro, 2013 | To determine (1) the associations between characteristics of commitment to the field and observed teacher–child interactions in the areas of emotional and cognitive support provided in the classroom, and (2) whether characteristics of ECE teachers' commitment to the field predict teacher emotional support and/or cognitive support in ECE classrooms. | | Journal article | | X | | | | |
| Tsao, 2015 | To examine the effects of intrapersonal caregiver characteristics on infant/toddler social-emotional outcomes and whether these relations are | X | Dissertation | | | | | | X |

| Source | Research Question(s)/Objective | Experimental design? | Article type | Structural features | Caregiver-child interaction | Child-peer relationships | Caregiver-parent communication | Contextual factors | Children's competence |
|---|---|---|---|---|---|---|---|---|---|
| | mediated by the level of sensitive and responsive care within the context of center-based child care by assessing (1) the relation of caregivers' self-reported difficulties in emotion regulation to children's attentional and emotion-related regulation, (2) the relation of caregivers' internal representations of care to children's attachment security, (3) the relation of caregiver sensitivity and responsiveness to children's social-emotional outcomes, and (4) the extent to which the associations between caregiver characteristics and child outcomes were mediated by sensitivity and responsiveness. | | | | | | | | |
| Weinstock et al., 2012 | To determine whether PITC onsite training impacts child development (i.e., children's cognitive/language skills and children's social/behavioral skills) and program quality (i.e., child care quality and quality of staff-child interactions). | X | Report | X | | | | | X |
| Williams, Mastergeorge, & Ontai, 2010 | To examine the strategies through which adult caregivers scaffold and guide infants' naturally occurring social encounters with their peers in group-based child care settings. | | Journal article | | | X | | | |

**Table 3.** Summary of child outcome study findings

| Source | Study design | Article type | Child outcome measure | Findings (specific to child outcomes) |
|---|---|---|---|---|
| Elicker et al., 2013 | Longitudinal | Journal article | BITSEA | A composite measure of caregiver-parent relationships was found to be significantly associated with 3 child outcome measures; more positive caregiver-parent relationships were associated with (1) lower levels of object play (an unexpected relationship), (2) higher early learning scores, and (3) higher parent rated Brief Infant-Toddler Social and Emotional Assessment (BITSEA) scores. More positive caregiver-parent relationships were also associated with observed positive parent behaviors. The authors did not find that the quality of caregiver-child relationships predicted children's cognitive or social development. |
| Horm et al., 2018 | Longitudinal/ secondary data analysis | Journal article | DECA | Infant-toddler social-emotional skills (as measured by teacher-reported DECA scores) were rated higher when they experienced continuity of care with one lead teacher compared to when they had two or more lead teachers, however continuity of care was not related to rates of change in children's DECA scores. Children with continuity of care were rated by infant-toddler teachers as showing lower levels of behavioral concerns and higher levels of self-control, initiative, and attachment; and continuity of care was more positively related to self-control ratings when classroom quality was higher. Regardless of whether children received continuity of care or not, longer enrollment in Educare was correlated with lower behavioral concern scores and higher self-control, initiative, and attachment scores. No relationship was found between classroom quality and child outcomes. The study also reported that continuity of care experienced in the infant-toddler years was not related to social or receptive vocabulary outcomes when the children transitioned to preschool, however, higher classroom quality across the infant-toddler years was related to increased receptive vocabulary and decreased behavioral concerns in the first year of preschool. |
| La Paro, Williamson & Hatfield, 2014 | Secondary data analysis | Journal article | BITSEA | The study found that children in classrooms rated lower on the CLASS-Toddler were reported to have more behavior problems than children in higher quality classrooms on average. Specifically, lower ratings of Positive Climate, Teacher Sensitivity, Regard for Child Perspective, Behavior Guidance, and Language Modeling on the CLASS-Toddler were associated with higher teacher reported behavior problems. The authors also found that the CLASS-Toddler Emotional and Behavioral Support domain predicted differences in teacher-reported child behavior problems on the BITSEA. Children were reported to have more behavior problems in classrooms rated lower on Interaction and Listening and Talking. None of the indicators of classroom quality from either the ITERS-R or the CLASS-Toddler were associated with toddlers' competence scores as reported by teachers on the BITSEA. |

| Source | Study design | Article type | Child outcome measure | Findings (specific to child outcomes) |
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| Pluess & Belsky, 2009 | Secondary data analysis/Longitudinal | Journal article | Child Behavior Checklist, California Preschool Social Competency Scale, Social Skills Questionnaire (Social Skills Rating System) | The study found that child care quality (as measured by the ORCE both in and out of the home) significantly interacted with infant temperament (assessed by material report) in predicting teacher reported behavior problems and social competence at 54 months and teacher reported behavior problems, but not social competence, in kindergarten. While child care quality had no significant effect on problem behavior and social competence at 54 months or in kindergarten for children with no difficult/easy temperaments as infants, children with difficult temperaments as infants exhibited more behavior problems when faced with low-quality care and fewer behavior problems when experiencing high quality care. The authors found no interactions between infant negativity and child care quantity or type in predicting behavior problems before and after entrance to preschool. |
| Pluess & Belsky, 2010 | Secondary data analysis/Longitudinal | Journal article | Woodcock–Johnson Psycho-Educational Battery–Revised Child Behavior Checklist Teacher Report Form Student–Teacher Relationship Scale: Short Form Questionnaire on children's work habits from Madison (Wisconsin) Metropolitan School District report cards Teacher-reported socioemotional functioning from the Teacher Checklist of Peer Relations | The study found that temperament at 6 months interacted with child care quality (determined through observational assessments at 6,15, 24, 36, and 54 months) in predicting behavior problems, teacher–child conflicts, and reading ability at ages 10 and 11. While virtually no relationship was found between quality of care and behavior problems or teacher–child conflicts for children who did not have difficult temperaments as infants, greater quality of child care predicted significantly fewer behavioral problems and less conflict for children with histories of difficult temperaments—suggesting differential susceptibility to child care quality where outcomes for children with histories of difficult temperament are significantly related to the quality of care they receive. |
| Rudd et al., 2008 | Experimental | Journal article | MacArthur Communicative Development Inventory | In this study, teachers were randomly assigned to a treatment condition where they received professional development on children's language acquisition. The study found that while there was no difference in the MCDI scores of children in the treatment and control groups, treatment group children whose child care providers engaged in more frequent and longer bouts of joint attention episodes acquired more language. |

| Source | Study design | Article type | Child outcome measure | Findings (specific to child outcomes) |
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| Ruprecht et al., 2016 | Quasi-experimental | Journal article | BITSEA | The study found that toddlers observed in continuity rooms experienced higher levels of interactive involvement with their caregivers and were rated by their caregivers as having fewer problem behaviors compared with the toddlers in noncontinuity rooms. Toddlers in rooms with higher staff–child ratios also experienced more involved caregiving. There was no evidence that the level of involved caregiving mediated the association between continuity of care and toddlers' social competence or problem behaviors. |
| Ruzek et al., 2014 | Secondary data analysis | Journal article | Bayley Short Form-Research Edition (BSF-R) | The study found that low-quality care (ITERS/FDCRS score < 3) was associated with significantly lower Bayley scores than medium-quality care (ITERS/FDCERS score $\geq$ 3 and < 5), and high-quality care (ITERS/FDCRS $\geq$ 5) was associated with significantly higher Bayley scores than medium-quality care. |
| Schaack et al., 2017 | Secondary data analysis | Journal article | Bayley Short Form-Research Edition (BSF-R)<br>Negative Disposition Scale | The authors found no significant relationships between children's cognitive or social-emotional outcomes and teacher education. No differences emerged based on the field of degree or higher education degree across providers. The study did find that children of providers with an associate's degree were less likely to be rated as having a negative disposition compared to those without a higher education degree. The authors speculate that this difference may have emerged because (1) providers with a higher education degree perceive child negativity differently due to their different training and understanding of what is developmentally appropriate or (2) providers with a higher education degree may help children to manage their distress and negative emotions better. |
| Tsao, 2015 | Experimental | Peer-reviewed dissertation | M-ORCE Attachment Q-Set | The study found that children of caregivers who reported having greater access to emotion regulation strategies demonstrated lower levels of Anxious Mood. Different from the literature on the relationship between parents' internal representations of care and children's attachment security, the study found no direct effect of caregivers' internal representations of care. Caregivers level of Attunement during caregiver child interactions also predicted children's attention, as well as their security, avoid, and resist scores. Comparisons between Early Head Start classroom and community, campus-based, and lab school classrooms demonstrated that children in Early Head Start classrooms were less likely to demonstrate Unhappy Mood than children in other settings. For all three measures of child self-regulation, effects of caregiver emotion regulation were mediated through the level of Attunement at the between level (classroom context) but not at the within level (individual child context) suggesting that caregivers' ability to form a positive affective and relational community within the group of infants and toddlers was more important than their ability to attend to children solely on an individual basis. |

| Source | Study design | Article type | Child outcome measure | Findings (specific to child outcomes) |
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| Weinstock et al., 2012 | Experimental, Longitudinal | Report | Bayley Scales of Infant and Toddler Development, Third Edition, Cognitive Subscale (BSID)<br>Bracken School Readiness Assessment, Third Edition (BSRA)<br>Preschool Language Scale, Fourth Edition (PLS-4)<br>Infant-Toddler Social and Emotional Assessment (ITSEA)<br>Positive Behavior Scale Child Behavior Checklist | The study found that the Program for Infant/Toddler Care (PITC), an early childhood professional development model, did not have a statistically significant effect on a composite measure of children's cognitive/language scores or a composite measure of children's social/behavioral scores (at 6 months post) 6 months after the program. |