Competencies of Infant and Toddler Teachers and Caregivers:
A Review of the Literature

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Acknowledgments

OVERVIEW

Introduction

Although the first three years of a child's life are a distinct developmental period, little information is available about the specific knowledge, skills, and other attributes (that is, competencies) that are essential to the practice of teaching and caring for infants and toddlers (I/T) and are needed to support optimal development. Identifying the competencies essential to a given profession may help to provide a common language and lens for assessing job performance and provide a clear structure for professional growth and development.

In 2017, the Office of Planning Research, and Evaluation (OPRE) in the Administration for Children and Families (ACF) funded Mathematica Policy Research to conduct the Infant and Toddler Teacher and Caregiver Competencies (ITTCC) project. The project aims to examine existing efforts across states, institutions of higher education, professional organizations, and early care and education (ECE) programs related to competencies for I/T teachers and caregivers who work in group (center-based and family child care) settings and build a conceptual foundation to inform future measurement, research, and evaluation.

Key Terminology

The ITTCC project defines competency, competency framework, and competency domain in the following way:

Competency: a piece of knowledge (K), a skill (S), or an attribute (A) essential to the practice of teaching and caring for infants and toddlers.

- *Knowledge* is information that may be applied to practice.
- Skills are strategies or abilities that may be applied to practice.
- Attributes are attitudes, beliefs, or other characteristics that may influence the application of knowledge and skills to practice.

Competency framework: a compilation of competencies intended to convey the range of knowledge, skills, and attributes essential to a particular area of practice, job, or profession.

Competency domain: competency frameworks often group competencies (that is, KSAs) by domain. That is, individual KSAs focused on a similar topic may be clustered within a framework by competency domain. Examples of a competency domains include "support for language and literacy," "support for social-emotional development,", "health and safety," "working with families," or "arts and creativity."

Purpose of the Literature Review

The goal of this review was to examine what is known about the links between I/T teacher or caregiver competencies and outcomes in several areas (child, family, teacher/caregiver, classroom, and/or program). Specifically, we aimed to answer the following research questions:

- What competencies of I/T teachers and caregivers have been examined in the literature?

- What does evidence say about associations between I/T teacher and caregiver competencies and child, family, teacher/caregiver, classroom, and/or program outcomes?

- Where are the gaps in the knowledge base pertaining to connections between I/T teacher/caregiver competencies and outcomes?

Methods

We identified potential studies for review by conducting a database search and drawing on recent research reviews and recommendations from experts. We screened studies to ensure that they were conducted in the United States in or after 2008 and that each one examined associations between competencies of I/T teachers and caregivers in group settings and child, family, teacher/caregiver, classroom, and/or program outcomes. We summarized information about each study including the characteristics of the study sample, I/T teacher and caregiver competencies assessed, and specific outcomes examined.

Key findings and highlights

Our review suggests that the knowledge base pertaining specifically to links between I/T teacher or caregiver competencies and outcomes is currently limited in scope. Although many studies focus on describing competencies, our literature search yielded only 30 studies conducted in the United States in or after 2008 that examined associations between I/T teacher or caregiver competencies and outcomes. We found two categories of studies that sought to link I/T teacher/caregiver competencies to outcomes:

- Studies that examined interventions targeting I/T teacher/caregiver competencies; and

- Studies that examined associations between existing I/T teacher/caregiver competencies and outcomes

Most of the studies we found examined multiple types of competencies (most commonly knowledge and skills together) rather than knowledge, skills, or attributes in isolation. Overall, studies more commonly examined I/T teacher's or caregiver's knowledge or skills than their attributes:

- 22 studies analyzed teacher or caregiver skills

- 19 studies analyzed teacher or caregiver knowledge

- 8 studies analyzed teacher or caregiver attributes (such as attitudes and beliefs)

Studies that examined interventions suggest that competencies of I/T teachers and caregivers may be malleable. In particular, some interventions that targeted professional development activities were linked to increased teacher/caregiver knowledge and/or skills. Although there is variation in the competencies and outcomes addressed in the studies reviewed, there are several gaps in the recent knowledge base pertaining to connections between teacher/caregiver competencies and outcomes:

- *The available research specific to I/T teachers and caregivers in group settings does not yet fully support the content included in existing competency frameworks targeted to this population.* Other research not reviewed, such as research on the competencies of parents or the competencies of teachers/caregivers of preschool aged children may provide additional support for the wide array of competencies included in existing I/T teacher and caregiver competency frameworks. However, teaching and caring for infants and toddlers may require specialized competencies specific to the unique developmental needs of children birth through three. Further research would be needed to examine whether findings from research on competencies of parents or teachers/caregivers of preschool aged children are applicable to I/T teachers and caregivers.

- *Much of the existing literature simultaneously examines the contributions of multiple competencies within a particular domain (e.g., a combination of knowledge, skills, or other attributes that support children's socioemotional development) to outcomes.* There is currently not enough information to link specific I/T teacher and caregiver competencies to outcomes. Many of the intervention studies reviewed simultaneously targeted multiple competencies (sometimes across multiple competency domains). Studies also tended to conduct analyses at the level of a summary score or subscale reflecting multiple competencies. These studies were not designed to, and often do not provide sufficient information to directly link an outcome with a specific competency.

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I.   INTRODUCTION

The first three years of a child's life are a distinct developmental period, characterized by rapid brain development, reliance on relationships with adults, and extreme responsiveness to environmental variation (Bernier et al. 2012; Horm et al. 2016; Martin et al. 2013; National Scientific Council on the Developing Child 2004). Research shows that high quality infant/toddler (I/T) programs can support positive outcomes for all children, especially those from disadvantaged backgrounds (ACF 2006; Aikens et al. 2015a, 2015b; Li et al. 2013; Love et al. 2013; Yazejian et al. 2017). The quality of care that children receive as infants and toddlers has long-term effects (Vandell et al. 2010).Yet little information is available about the specific knowledge, skills, and other attributes (that is, competencies) that are essential to the practice of teaching and caring for infants and toddlers (I/T) and are needed to support optimal development. Identifying the competencies essential to I/T teaching and caregiving may offer a common language and lens for assessing job performance and provide a clear structure for professional growth and development.

In 2017, the Office of Planning Research, and Evaluation (OPRE) in the Administration for Children and Families (ACF) funded Mathematica Policy Research to conduct the Infant and Toddler Teacher and Caregiver Competencies (ITTCC) project. The project aims to examine existing efforts across states, institutions of higher education, professional organizations, and early care and education (ECE) programs related to competencies for I/T teachers and caregivers who work in group (center-based and family child care) settings and build a conceptual foundation to inform future measurement, research, and evaluation. Box 1 defines key terms as operationalized for the ITTCC project; these definitions were developed in consultation with experts from industrial-organizational psychology as well as I/T care and education.

The ITTCC project includes:

- A scan of existing competency frameworks, to examine approaches to implementation and assessment as well as alignment across various competency frameworks

- A scan of measures aligned with competencies, to examine potential tools for assessing competencies for research or practice

- A literature review and development of a conceptual model, to examine and depict the associations between competencies and key program, teacher/caregiver, family, and child outcomes

- An examination of other fields that have successfully developed and implemented competency frameworks, to identify key lessons that can be applied to infant and toddler care and education

This literature review focuses specifically on studies examining associations between the knowledge, skills and attributes (that is, competencies) of I/T teachers and caregivers in group settings (centers and family child care homes) and child, family, teacher/caregiver, classroom, and/or program outcomes. Although relevant, this review does not include studies on

competencies of parents, preschool teachers, or other early childhood professionals (such as home visitors and mental health consultants). This review aims to examine the current state of evidence as well as identify gaps in the literature.

In the rest of this chapter, we discuss key challenges facing the I/T care and education workforce and describe the emergence of competency frameworks (that is, compilations of competencies that are intended to convey the range of knowledge, skills, and attributes essential to a particular area of practice, job, or profession) as a tool intended to improve the quality of care provided to infants and toddlers. We conclude this chapter with a discussion of the purpose of this knowledge review.

Box 1. Key definitions

The ITTCC project defines competency, competency framework, competency domain, and proficiency levels in the following way:

Competency: a piece of knowledge (K), a skill (S), or an attribute (A) essential to the practice of teaching and caring for infants and toddlers.

- *Knowledge* is information that may be applied to practice.
- *Skills* are strategies or abilities that may be applied to practice.
- *Attributes* are attitudes, beliefs, or other characteristics that may influence the application of knowledge and skills to practice.

Competency framework: a compilation of competencies intended to convey the range of knowledge, skills, and attributes essential to a particular area of practice, job, or profession.

Competency domain: competency frameworks often group competencies (that is, KSAs) by domain. That is, individual KSAs focused on a similar topic may be clustered within a framework by competency domain. Examples of a competency domains include "support for language and literacy," "support for social-emotional development,", "health and safety," "working with families," or "arts and creativity."

Proficiency levels: Some competency frameworks identify competencies (that is, KSAs) that are essential for practice at various career stages (e.g., entry, mid-career, advanced).

A.   Supporting the I/T care and education workforce

1.   Challenges and efforts to improving I/T care and education

The current state of the I/T workforce. Although there is great interest in improving the quality of I/T care and education, questions remain about how best to accomplish this goal. In 2015, the Institute of Medicine and National Research Council (IOM and NRC) released a seminal report on the state of the workforce serving children from birth through age 8. The IOM and NRC report emphasized the gap between the extensive research base pointing to the critical role that ECE professionals play in the development of young children and the current state of supports and resources that ECE teachers and caregivers can access. The report also highlighted

challenges to quality improvement efforts including the lack of unified standards for qualifications and practice within and across states as well as the relatively low levels of compensation, training and education of the I/T workforce (Institute of Medicine and National Research Council [IOM and NRC] 2015; Madill et al. 2016).

Quality improvement efforts must attend to the diverse backgrounds and needs of the I/T workforce. I/T teachers and caregivers work in a range of settings. According to the National Survey of Early Care and Education (NSECE), in 2012, there were over 300,000 I/T teachers and caregivers in center-based settings and about 100,000 listed family child care providers who served at least one child under the age of 3 (Madill et al. 2016).[1] These settings have large variation in their standards and regulations – including differing requirements and guidelines for staff training and development (IOM and NRC, 2015). This variation can make it challenging to coordinate and align workforce supports. Quality improvement efforts must also be responsive to the diverse racial, ethnic, and linguistic backgrounds of the ECE workforce and the children and families being served (Aikens et al. 2016).

I/T teachers and caregivers tend to be paid less than others in the ECE workforce and to have lower levels of education. In 2012, average wages for teachers and caregivers for children ages 3 to 5 were 28 percent higher than wages for teachers of children ages 0 to 3 (NSECE, 2013). I/T teachers and caregivers, on average, also have lower levels of education than other ECE staff. Only 19 percent of I/T teachers and caregivers have a bachelor's degree or higher compared to 45 percent of teachers and caregivers working with children ages 3 to 5 (Madill et al. 2016).

The I/T workforce has limited access to professional development resources. Although a majority of I/T teachers and caregivers participate in professional development, most do so in the form of workshops (81 percent of center-based staff and 80 percent of family child care staff). Only a small percentage of teachers and caregivers receive coaching or ongoing consultation (21 percent of center-based staff and 37 percent of family child care staff; Madill et al. 2016). Research on professional development for those already working in the field shows a lack of focus on I/T content (U.S. DOE 2010) or opportunities for sustained or systematic PD (Snyder et al. 2012; Ochshorn 2011).

The policy focus on I/T care and education. Recent policy efforts aim to directly address the quality of I/T care and education. At the federal level, the Head Start Program Performance Standards (HSPPS) set quality standards for Early Head Start, outline requirements for the professional qualifications and competencies of staff, and require programs to provide training and professional development to help staff increase their qualifications and competencies (HSPPS Final Rule, 45 CFR Chapter XIII, RIN 0970-AC63, 2016). The Early Head Start–Child Care Partnership program was designed to provide comprehensive and continuous services to low-income infants and toddlers by leveraging the strengths of Early Head Start and community-based child care settings. The most recent reauthorization of the Child Care and Development Block Grant includes a set-aside for increasing both the supply and quality of I/T care and the

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[1] Listed providers are those that are paid to care for at least one child with whom they have no prior personal relationship and appear on national or state administrative lists (such as for Early Head Start or child care licensing).

Child Care and Development Fund (CCDF) Final Rule requires state/territory lead agencies to develop a plan for a progression of professional development, training, and post-secondary education for caregivers, teachers, and directors that, among other things, addresses professional standards and competencies (CCDF Final Rule, 45 CFR 98, RIN 0970–AC67, 2016). The Preschool Development Grant Birth through Five program (authorized under the Every Student Succeeds Act) focuses specifically on improving the coordination, continuity, and quality of birth to five early childhood delivery systems in states and territories.

At the state level, a focus on quality can be seen in credentialing efforts. As of April 2018, 35 states had I/T credentials or certificates (NCECDTL 2018). Some states have also aligned initial credentials with more advanced ones to build a career pathway for I/T practitioners (ZTT 2012). Quality rating and improvement systems (QRIS) have increasingly included standards and supports specific to I/T care and education (Mayoral 2013). Finally, nearly all states have developed "early learning guidelines" applicable to infants and toddlers (ECQA 2016).

2.   Competencies: a possible way forward for I/T care and education

A focus on competencies may be beneficial to the I/T care and education field, because competencies allow members of a profession – regardless of background – to have a common language and lens for assessing their job performance (Brittain and Bernotavicz 2014; Campion et al. 2011) and provide a clear structure for professional growth and development as individuals progress through their careers (Campion et al. 2011). Competencies may help (1) define what I/T teachers and caregivers need to know and be able to do to provide quality care and education, (2) support the professionalization of the field by establishing a set of common standards, and (3) inform a comprehensive professional development system (adapted from the Washington State Department of Early Learning, n.d.).

The use of competency-based approaches initially grew out of industrial-organizational (I-O) psychology. Competency-based approaches define the knowledge, skills, and abilities necessary to perform certain activities or job responsibilities and tailor education and training initiatives to align with those competencies. Competency-based approaches have been viewed as a potentially cost-effective way to deliver high quality education and training programs at a pace that meets an individual's needs (Johnstone and Soares 2014; Porter and Reilly 2014; Steele et al. 2014). They are used widely in employer-driven and workforce training programs (Ford 2014; Hodge 2007; Tuxworth 1989) as well as in the higher education of future teachers and health professionals (Ford 2014; Koo and Miner 2012; Tuxworth 1989).

In recent years, the ECE field has embraced the notion that identifying competencies essential to practice may help support the professionalization of its workforce. The IOM and NRC report recommended a set of competencies for educators and professionals working with children from birth to age 8 needed to support child development and early learning. The report also discussed how professional development systems may support the development of competencies that all staff working with young children should have as well as the specific, specialized competencies that vary across sectors and roles. Following the publication of the IOM and NRC workforce report (2015), the National Academy of Medicine (NAM) created the B8 State Pathways to

Implementation Project to support state or regional teams working to implement the report's recommendations (NAM, 2019). Additionally, building from the report's recommendations, the National Association for the Education of Young Children's (NAEYC) launched the Power to the Profession initiative. Power to the Profession aims to define ECE as a profession by developing a framework for career pathways, knowledge and competencies, qualifications, standards, and compensation for professionals working with children birth to age 8 (NAEYC, 2019). Further, there has been extensive state-level work developing competency frameworks (i.e., compilations of competencies) for ECE caregivers and teachers (Limardo et al. 2016).

The development and use of competencies in ECE has grown in recent years but the development and use of competencies specifically for I/T teachers and caregivers has lagged behind. Although 94 percent of states have developed ECE competency frameworks, only a small number have developed competency frameworks specific to I/T teachers and caregivers (Limardo et al. 2016). For the ITTCC project, we conducted a scan of existing competency frameworks for I/T teachers and caregivers (see Appendix). We found 58 competency frameworks for ECE teachers and caregivers but identified only 14 frameworks that include at least 3 competencies specific to I/T teachers and caregivers in group settings. Competencies for I/T teachers and caregivers warrant separate consideration from broader ECE competencies given the unique characteristics and needs of the I/T workforce and of infants and toddlers themselves. As described earlier, I/T teachers and caregivers tend to enter the profession with lower levels of education and have less access to training and professional development than teachers of 3- to 5-year olds. Teaching and caring for infants and toddlers may require specialized competencies specific to the unique developmental needs of children birth through three. That is, there may be particular knowledge, skills, and attributes required to care for and support the development of infants and toddlers that are distinct from what a teacher of older children needs to know and be able to do (Halle et al. 2011; Horm et al. 2013; Horm et al. 2015).

B.   Purpose of knowledge review

The goal of this review was to examine what is known about the links between I/T teacher or caregiver competencies and outcomes in several areas (child, family, teacher/caregiver, classroom, and/or program). Specifically, we aimed to answer the following research questions:

- What competencies of I/T teachers and caregivers have been examined in the literature?

- What does evidence say about associations between I/T teacher and caregiver competencies and child, family, teacher/caregiver, classroom, and/or program outcomes?

- Where are the gaps in the knowledge base pertaining to connections between I/T teacher/caregiver competencies and outcomes?

It is important to recognize that there has been extensive research in ECE and parenting that informs the field's current understanding of competencies for I/T teachers and caregivers. Notably, much research points to the importance of positive relationships and interactions for the development and well-being of young children, in both the short and long-term (IOM and NRC, 2015; National Scientific Council on the Developing Child 2010, 2015; Vandell et al. 2010).

However, most of this work has focused on parents or on caregivers and teachers in preschool settings (and therefore does not specifically address associations between I/T teacher and caregiver specific competencies and relevant outcomes).[2]

Although research on parent-child interactions and teacher-child interactions in preschool settings can help inform our understanding of the links between I/T teacher and caregiver competencies and key outcomes, they do not directly address the unique challenges and opportunities of teaching and caring for infants and toddlers in group settings. While extensive literature with parents focuses specifically on the care of infants and toddlers, the non-parental caregiver-child relationship is quite different. Although research that includes preschool teachers may focus on the same context (i.e., group care and education settings) as research on I/T teachers and caregivers, it takes place at a different stage of child development, with important implications for the competencies needed to promote optimal development. Work in both ECE and neuroscience in the last two decades has established the importance of the infant to toddler years as a key developmental period during which children are greatly affected by their relationships with adults and environmental influences (Bernier et al. 2012; Horm et al. 2016; Martin et al. 2013; Marshal and Kenney 2009; National Scientific Council on the Developing Child 2010).

This report describes the current state of the knowledge base pertaining to links between teacher/caregiver competencies and outcomes. In Chapter II, we describe the methodology of the knowledge review. Chapter III describes the results of our review and analysis. In Chapter IV, we conclude with key findings and implications for future ITTCC project activities.

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[2] For a broader review of caregiver-child interactions and I/T outcomes, see Halle et al. (2011). For a broader review of teacher-child interactions, see Hamre (2014) and Yoshikawa et al. (2013).

II.   METHODS

The review consisted of three steps: (1) identifying potential studies, (2) screening studies for review, and (3) summarizing information about each study.

Step 1: Identifying potential studies

We drew on multiple sources to assemble a list of potential studies for review. We implemented a literature search using the keywords and databases identified in Table II.1. We searched for literature on I/T teachers and caregivers in group (center-based and family child-care) settings, and focused on competencies by combining sets of keywords as listed in Table II.1. We assembled a list of keywords by consulting with a librarian and experts on the project team. In addition to using terms included in the competency definition developed for this project, the "competencies search set" includes verbs and adjectives that are likely to define skills, knowledge, and attributes of teachers and caregivers. We limited the search by study design ("study design search set" in Table II.1) and by year of publication (in or after 2008). Based on this literature search, we identified 626 potentially relevant articles.

We identified 5 additional studies drawing from the project team's and expert consultants' substantive expertise and experience in the relevant fields. We also identified 21 potentially relevant studies from 12 research reviews that we found from the literature search or were recommended by members of the project team. We included studies suggested by experts and references in existing reviews that were published prior to 2008.

Table II.1. Keywords and databases used for literature search

Search areas		Keywords
Population search set		Infant OR toddler
		AND
		Teacher* OR train* OR caregiv* OR child care OR educator OR professional
Setting search set		(group care) OR (center-based) OR (home-based) OR (nonparental care) OR (non-parental care) OR (child care center) OR (Head Start) OR (family child care)
Competencies search set	Skills	Skill OR Support* OR develop OR touch OR share OR hold OR atten* OR gaze OR stroke OR position OR close* OR respon* OR contingent OR talk OR listen OR communicat* OR demonstrat*
	Knowledge	Know* OR recognize OR identify OR understand* OR learn*
	Attributes	Belief* OR believe OR attitude* OR warm OR sensitiv* OR attach* OR open OR attentive OR relationship

Table II.1 *(continued)*

Search areas	Keywords
Study design search set	assess* OR evaluat* OR examin* OR estimat* OR (Review n3 (literature OR studies OR interventions OR systematic OR scoping)) OR "meta-analys*" OR metaanalys* OR "meta-regression" OR metaregression
	OR
	Regression OR "quasi-experiment*" OR quasiexperiment* OR nonexperimental OR "non-experimental" OR experimental OR cause OR causa* OR statistical* OR correlat* OR (random* n2 assign*) OR (random* n2 trial) OR associate* OR compar*
	OR
	Efficac* OR effect* OR impact OR benefit OR improv* OR progress OR growth OR increas* OR gain OR decreas* OR reduc* OR affect* OR higher OR lower
Databases searched	
	Academic Search Premier, Campbell Collaboration, CINAHL with Full Text, Cochrane Database of Systematic Reviews, Education Research Complete, ERIC, PsycINFO, SocINDEX with Full Text, Scopus

Note: * is appended to keywords to include plural forms or other keyword endings in the search. For example, "support*" yields references that include the words support, supports, supporting, etc.

Step 2: Screening studies for review

We applied several criteria to determine whether studies were within the scope of the review. We screened out studies that:

- Did not include I/T teachers or caregivers in group settings – we included studies of teachers in mixed age classrooms and family child care homes as long as they served infants and/or toddlers;

- Did not examine teacher or caregiver (nonparent) knowledge, skills, or attributes;

- Did not examine associations of competencies with child, family, teacher/caregiver, classroom, and/or program outcomes; and

- Were not conducted in the United States – we excluded these studies out of concern about the more limited applicability of findings to I/T teachers and caregivers in the United States.

Based on these criteria, 30 studies (out of the 652 potentially relevant articles identified in the search) were further reviewed.

Step 3: Summarizing information about each study

Two reviewers summarized information about each study, documenting characteristics as described in Table II.2.

Table II.2. Key study characteristics documented in reviews

Key characteristics	Information documented
Teacher/caregiver characteristics and sample size	Number and characteristics of teachers/caregivers, including age groups served, pre-service/in-service status, education, years of experience
Program characteristics and sample size	Number and characteristics of programs/settings, including whether the sample includes community-based centers, family child care homes, and Head Start/Early Head Start programs
Child/family characteristics and sample size (if applicable)	Number and characteristics of children, if child/family outcomes are examined in relation to teacher/caregiver competencies
Data source	If secondary data analysis, which dataset
Specific teacher/caregiver competencies examined	The teacher/caregiver competencies assessed in the study and whether they are knowledge, skills, or attributes (including abilities, beliefs/attitudes, or behavioral indicators)
Dimensions and sub-dimensions of competencies	Dimensions are construct areas reflected in or related to competencies essential to the practice of teaching and caring for infants and toddlers, and sub-dimensions are a more detailed breakdown of those constructs. We applied these codes to competencies examined in studies to get a broader sense of the areas covered by studies. The list of dimensions and sub-dimensions was initially developed by combining expert input on the range of constructs reflected in the practice of teaching and caring for infants and toddlers with a preliminary review of competency frameworks. Dimensions and sub-dimensions were further refined to address gaps identified during the coding process.
Specific outcomes examined	Child, family, teacher/caregiver, and program outcomes examined
Sampling strategy	Whether teachers/caregivers in the study are a random sample, convenience sample, purposive sample
How are competencies assessed?	Specific measures and mode of assessment/data collection
How are outcomes assessed?	Specific measures and mode of assessment/data collection
How are associations between competencies and outcomes examined?	Specific approach (for example, mean differences, correlations, multivariate analysis)
Results of analysis	Results of the analysis examining associations between competencies and outcomes

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III. FINDINGS

Our review revealed two categories of studies that sought to link I/T teacher or caregiver competencies to outcomes. The first group of studies examined teacher or caregiver competencies within an intervention that aimed to improve those competencies. The second group of studies examined links between existing teacher or caregiver competencies and outcomes.

In this chapter, we discuss findings for each group of studies and provide accompanying tables with specific details about each study reviewed. Tables 3 and 4 list specific teacher or caregiver competencies examined in each study and outcomes examined. We describe competencies, outcomes, and their associations based on information provided by study authors. The studies varied in level of detail provided but, at minimum, we describe whether an association was examined and for which competency-outcome pairings as well as whether the association was statistically significant at $p < .05$. We provide key information about study design and sample, and include effect sizes if authors reported them.

A. Studies that examined I/T teacher or caregiver competencies within an intervention

The first group of studies examined I/T teacher/caregiver competencies within an intervention and associations with outcomes. Many of the studies focused on professional development interventions designed to change teacher/caregiver competencies although outcomes assessed were not always aligned with targeted competencies. A few of the interventions were broader quality improvement initiatives designed to improve program quality as a whole, with teacher/caregiver training included as a component.

1.   Research design

About half of the studies we reviewed (15) were studies of interventions, and they varied in terms of the rigor of research designs (Table III.1). Eight of the interventions were evaluated with a randomized controlled trial (Benjamin-Neelon et al. 2014; Bryant et al. 2009; Landry et al. 2014; Moon et al. 2008; Moreno et al. 2015; Ota and Austin 2013; Weinstock et al. 2012; Yazejian et al. 2017). Two studies used quasi-experimental designs to compare intervention group outcomes to the outcomes of a control group (Biringen et al. 2012; Gray 2015). Three studies analyzed pre- and post-intervention outcomes of participants to infer the intervention effect, without a comparison group (Brown et al. 2008; Donegan-Ritter and Van Meeteren 2018; Heller et al. 2011). Two studies used single case designs (Friedman and Woods 2015; Romano and Woods 2018).

Table III.1. Studies that examined teacher or caregiver competencies within an intervention

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Benjamin Neelon et al. 2014	**g** is an intervention to improve policies and practices in child care to help prevent obesity in children younger than two years old.	**Knowledge and skills:** Knowledge and skill in assessing nutrition and physical activity environments, identifying areas for improvement, and making changes with the help of a trained interventionist	Randomized controlled trial of 32 centers. Teacher characteristics were not provided. Linear regression used to estimate outcomes.	**Program outcomes:** Intervention centers increased their total scores on the Environment and Policy Assessment and Observation, which assesses child care nutrition and physical activity environments, policies, and practices. Analysis of sub-scores indicated that the difference in scores was primarily driven by changes in physical activity environment.
Biringen et al. 2012	**Project Secure Child in Child Care** includes informational sessions for I/T caregivers and their coaches related to emotional availability and its links with attachment.	**Knowledge and skills:** Knowledge of emotional availability and child attachment; how to recognize different types of attachments in their classrooms	Purposive sample of 57 I/T teacher and child pairs in centers. Teachers had at least some college education (74 percent in intervention group, 90 percent in control group) and taught children between the ages of 11 to 23 months. Control group received intervention later (delayed intervention). Analysis of covariance was used to estimate outcomes.	**Teacher outcomes:** Care providers' overall caregiving improved significantly in the intervention group. The control group showed a negative trajectory: • Supportiveness increased in the intervention group but decreased in the control group. • Hostility decreased in the intervention group but increased in the control group. • Detachment decreased in the intervention group but increased in the control group. **Child outcomes:** Infants and toddlers in the intervention group became more emotionally responsive and more emotionally secure compared with the control group.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Brown et al. 2008	**BASIC spaces** aims to improve the physical environments of infant and toddler rooms. The program provided 36 hours of training to I/T teachers.	**Knowledge and skills:** Knowledge of developmental milestones and ways to support child growth and development; culturally responsive caregiving; developmentally appropriate routines; working with families as partners; health and safety issues; anticipatory guidance	In all, 10 center directors, 2 owners, and 19 I/T teachers associated with the 10 centers. The infant and toddler classrooms served 121 children. Teacher characteristics were not provided. Paired t-tests were used to estimate outcomes pre- and post-intervention.	**Program outcomes:** In all areas, post-intervention ITERS-R scores (subscale and total) were significantly higher than pre-intervention scores.
Bryant et al. 2009	**PFI** is a model of assessment-based, individualized, on-site consultation; collaborative consultation as a method of working with direct service providers; and stages of consultation and consultation techniques.	**Knowledge and skills:** Specific areas for improvement identified based on Environment Rating Scales	Randomized controlled trial of 258 FCCs serving infants and toddlers. A majority of caregivers were White (76 percent in intervention group, 82 percent in control group) and had at least some college education (38 percent in intervention group, 54 percent in control group). Hierarchical linear models were used to estimate outcomes.	**Teacher outcomes:** PFI consultation had no significant effects on any measures of FCC provider beliefs and attitudes. PFI consultation had no significant effects on quality as measured by the FDCRS. **Child outcomes:** PFI consultation had no significant effects on outcomes of children in FCCs.
Donegan-Ritter and Van Meeteren 2018	Workshops and practice-based coaching	**Knowledge and skills:** Knowledge of development and milestones, importance of responsive interactions, and how to recognize and use language facilitation strategies	Convenience sample of 16 I/T teachers in 5 centers (3 EHS, 2 community-based centers). 68 percent of caregivers were White and all had at least some college education. Teacher behaviors were observed and compared over time.	**Teacher outcomes:** Increases in teachers' use of parallel talk and some increases in encouraging turn-taking were observed in infant teachers after the workshops. After two rounds of coaching and video-based reflection (third coaching), all teachers demonstrated gains in self-talk, parallel talk, imitate/model, and encouraging turn-taking.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Friedman and Woods 2015	**KidTalk Tactics Project** is a situated coaching approach focused on directly teaching, demonstrating, observing, offering feedback, and facilitating teacher reflection related to child language development	**Knowledge and skills:** Supporting child communication and language development using naturalistic communication strategies	Purposive sample of three I/T teachers in EHS classrooms. All teachers were African American. One teacher had a HS diploma, one had an AA, and one had a BA. Single-case design was used to assess outcomes.	**Teacher outcomes:** Teacher satisfaction with the approach and belief that coaching helped them support communication across the child's day.
Gray 2015	**Circle of Security-Parenting** is a group-based, attachment-focused professional development program	**Knowledge and skills:** Reflective functioning and emotion-regulation skills (including understanding children's need for responsive caregiving, exploration, and care seeking; how to read children's behavior; how to become aware of own reaction to children's behavior; and strategies for responding to challenging behavior)	Convenience sample of 51 FCC providers serving zero to five year olds. A majority (78 percent) of caregivers were Non-White and had either a HS diploma or some college education (76 percent). Participants self-selected into intervention group. Comparison of means over time for intervention and comparison group was used to estimate outcomes. The comparison group was randomly selected from a public listing of licensed FCC providers in the area.	**Teacher outcomes:** Participating providers' mean self-efficacy (in managing challenging behaviors) increased (ES = .78), whereas comparison providers' mean ratings of efficacy were significantly lower at the post-test. Providers who completed the Circle of Security-Parenting program reported higher rates of improvement in their competencies in supporting children's socioemotional development (ES = .56) over the three-month period than did comparison providers. No significant intervention impacts on reflective functioning detected.
Heller et al. 2011	**Mental Health consultation model** provides program and case consultation to support socioemotional development of children in center-based programs.	**Knowledge and skills:** Establishing positive relationships; creating supportive environments; using socioemotional teaching strategies; working with families; addressing challenging behaviors	Purposive sample of 2 cohorts of center teachers (Cohort 1 = 511; Cohort 2 = 649). About half of teachers were White (40 percent Cohort 1; 48 percent Cohort 2) and the other half were African American (55 percent Cohort 1; 46 percent Cohort 2). A majority of teachers had a HS diploma or GED (41 percent Cohort 1; 37 percent Cohort 2). Random effects models were used to estimate outcomes.	**Teacher outcomes:** Teachers reported that they experienced an improvement in all the skills listed on the *Goal Attainment Scale*, a 14-item scale to measure teacher competencies on general mental health activities or program goals.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Landry et al. 2014	**RECC** is a professional development and curriculum intervention which aims to improve teachers' ability to use responsive teacher– child interactions.	**Knowledge and skills:** Responsive teaching practices (for example, sensitively and promptly respond to child's signals; label and help children cope with feelings); use of effective strategies for toddler challenges (for example, sharing, tantrums, transitions); and maintaining, rather than redirecting, children's focus of attention	Randomized controlled trial of 65 child care classrooms serving two and three year olds from low-income families. Teachers were predominantly African American (83 percent) with a HS diploma or GED (50 percent). Hierarchical linear models were used to estimate outcomes. Classrooms were randomized into three conditions: (1) Business-as-usual control; (2) RECC; (3) RECC plus explicit social–emotional classroom activities (RECC+).	**Teacher outcomes:** Teacher–child relationship quality. The average closeness of teachers and children in RECC+ and RECC groups was greater than for the control group (ES = 0.42). Teacher–child conflict in both the RECC+ and RECC group was lower than for controls (ES = 0.49). Child outcomes: Children in the combined intervention groups had stronger social and emotional development (expressive emotion understanding, ES = 0.47; and receptive emotion understanding, ES = 0.25) than the control group. No significant differences found between the RECC and RECC+ groups on any of the outcomes. No significant differences detected between groups in language, literacy, and math outcomes.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Moon et al. 2008	Intervention provided training on safe sleep practices versus a control group which did not receive the intervention until after follow-up observation.	**Knowledge and skills:** Knowledge of the relationship between sleep position and SIDS, and knowledge of SIDS risk factors	Randomized controlled trial of 1,212 I/T teachers in 264 mixed-age classrooms. About half of teachers (55 percent) were white; most (91 percent) had at least a HS diploma and 23 percent had a BA. Control group received delayed intervention (after follow-up observation). Pre-post univariate analyses were used to estimate outcomes.	**Teacher outcomes:** Use of safe sleep practices improved in both the control and intervention groups. The intervention group demonstrated more improvement but it is unclear if the difference in gains was statistically significant. Increased caregiver awareness of the American Academy of Pediatrics recommendation of supine as the preferred position for infants. There was no significant difference detected between groups in belief that prone placement increases infant risk for SIDS.
Moreno et al. 2015	**Expanding Quality for Infants and Toddlers (EQ)** Intervention provided 48 hours of courses plus varying levels of one-on-one coaching to infant–toddler community child care providers.	**Knowledge and skills:** Knowledge of relationship-based care, cultural and familial inclusion, support for language development and exploration. Skill in establishing the routine, responding to child communication, expanding child utterances, modeling language at the child's level, and using environmental arrangement strategies.	Randomized controlled trial of 183 teachers/caregivers of infants and toddlers in centers and FCC settings. Teachers and caregivers were predominantly White; 25 percent had some college education and 20 percent had a BA. Repeated measures analysis of covariance were used to estimate outcomes. Participants were randomly assigned to these coaching conditions: (1) no intervention; (2) 0 hours; (3) 5 hours; (4) 15 hours (EQ15); comparison group made up of students from the community college course	**Teacher outcomes:** Knowledge of best practices: the EQ15 group demonstrated a small significant increase in knowledge of child development. No significant increases detected on job-related self-efficacy, attitudes, or beliefs for any other coaching groups or the control group. The EQ15 group demonstrated both highest scores at follow-up and greatest improvement for CLASS emotional-behavioral support and support for language and learning.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Ota and Austin 2013	Two professional development models were tested: The first model consisted of Training Only (TO) a 10-hour in-service training focused on supporting early language development. The second model included the same 10-hour in-service training program plus mentoring (TM).	**Knowledge and skills:** Language stimulation strategies	Randomized controlled trial of 48 FCC providers. A majority of caregivers were White (69 percent in Control group; 50 percent in TO group; 63 percent in TM group). Most providers were HS graduates (56 percent in Control group; 44 percent in TO group; 50 percent in TM group). Hierarchical linear modeling was used to estimate outcomes.	**Teacher outcomes:** Both models increased linguistically stimulating inputs compared with the control group. The second model was related to greater increases in providers' use of informational talk and teaching utterances over the first model of in-service training without mentoring.
Romano and Woods 2018	**SSOOPPRR (Setting the Stage, Observation and Opportunities to Practice, Problem Solving and Planning, and Reflection and Review)** is a coaching approach that uses Part C providers to coach caregivers to support their child's communication development in natural environments.	**Knowledge and skills:** Use of responsive communication strategies with toddlers with communication delays	Purposive sample of three I/T teachers in EHS. Two teachers were White, 1 was African American. Two of the teachers had a CDA and one had a Master's degree. Single-case design was used to estimate outcomes.	**Teacher outcomes:** Teachers increased their use of the responsiveness strategies in play and caregiving routines during intervention and maintenance sessions. **Child outcomes:** Child participants also had increased rates of communication during intervention and maintenance sessions.
Weinstock et al. 2012	**Program for Infant/Toddler Care** combines direct caregiver training and on-site coaching or other tailored assistance. It promotes practices that facilitate healthy development and sensitivity to children's home communities, cultures, and languages.	**Knowledge and skills:** Knowledge of infant and toddler development and diversity and practices to support social-emotional, cognitive, and language development	Randomized controlled trial of 92 centers and 159 family child care homes. Teacher and caregiver characteristics were not provided. Linear regression models were used to estimate outcomes.	**Program outcomes:** No effects detected on global program quality (as measured by the ITERS-R and the FCCERS) or on staff–child interactions. **Child outcomes:** No significant effects found on children's cognitive/language scores or behavior scores, measured about six months (on average) after it ended.

Table III.1 *(continued)*

Study	Intervention	Specific teacher or caregiver competencies targeted	Teacher or caregiver sample and analytic approach	Outcomes
Yazejian et al. 2017	**Educare** is a program and intervention that incorporates the use of data for program improvement; coaching and professional development, and strong family partnerships.	**Knowledge and skills:** knowledge of research-based best practices for nurturing children's learning and development; use of curriculum-based assessments to track children's development and individualize teaching; supporting positive parent–child relationships, family engagement, and family well-being	Randomized controlled trial of 239 children/families, 118 of whom were randomly assigned to participate in Educare. All 31 lead teachers in the study had at least a BA. Hierarchical linear models were used to estimate outcomes.	**Child outcomes:** Treatment effects found for receptive (ES = .56) and expressive language (ES = .35) skills, parent-reported problem behaviors (ES = -.28), and positive parent–child interactions (ES = .42). No significant effects on observer-rated child behaviors or parent-rated social competence.

Notes: All outcomes that are described as significant are significant at $p < .05$. We provide author-reported effect sizes when available. All effect sizes included in the table are significant at $p < .05$.

AA = Associate's degree; BA = Bachelor's degree; CDA = Child Development Associate credential; EHS = Early Head Start; ES = effect size; FCC = family child care; FDCRS = Family Day Care Rating Scale; FCCERS = Family Child Care Environment Rating Scale; HS = High school; I/T = infant/toddler; ITERS-R = ITERS- R = the Infant/Toddler Environment Rating Scale-Revised; PFI = Partnerships for Inclusion; RECC = Responsive Early Childhood Curriculum; SIDS = sudden infant death syndrome.

2.   Study samples and settings

Only two studies were conducted in settings serving only infants and toddlers (Friedman and Woods 2015; Romano and Woods 2018). The rest of the studies were conducted in mixed age settings.

The studies included teachers and caregivers from different types of programs. Five studies included a mix of teachers and caregivers working in center-based settings (including Early Head Start) and family child care settings (Landry et al. 2014; Moon et al. 2008; Moreno et al. 2015; Yazejian et al. 2017; Weinstock et al. 2012). The remaining nine studies focused more narrowly on teachers and caregivers working in a particular type of setting. Four studies included only caregivers in community-based child care settings (Heller et al. 2011; Biringen et al. 2012; Brown et al. 2008; Benjamin Neelon et al. 2014). Three studies included only teachers from Early Head Start classrooms (Donegan-Ritter and Van Meeteren 2018; Friedman and Woods 2015; Romano and Woods 2018). Two studies included only family child care providers (Bryant et al. 2009; Gray 2015; Ota and Austin 2013).

The studies varied considerably in terms of the racial and ethnic backgrounds of the teacher or caregiver samples. Four studies had teacher and/or caregiver samples that were mostly White (Bryant et al. 2009; Donegan-Ritter and Van Meeteren 2018; Moreno et al. 2015; Ota and Austin 2013). Three studies had teacher and/or caregiver samples that were mostly non-White (Friedman and Woods 2015; Gray 2015; Landry et al. 2014). Three studies had similar proportions of White and non-White teachers and/or caregivers in their samples (Heller et al. 2011; Moon et al. 2008; Romano and Woods 2018). Five studies did not provide information about teacher and caregiver race/ethnicity (Benjamin Neelon et al. 2014; Biringen et al. 2012; Brown et al. 2008; Weinstock et al. 2012; Yazejian et al. 2017).

The educational backgrounds of teacher/caregiver samples also varied. Another four studies included teachers or caregivers who had some college education (Biringen et al. 2012; Bryant et al. 2009; Donegan-Ritter and Van Meeteren 2018; Gray 2015). Three study samples consisted mostly of teachers or caregivers with a high school diploma (Heller et al. 2011; Landry et al. 2014; Ota and Austin 2013). Only one study sample had a majority of teachers with a Bachelor's degree (Yazejian et al., 2017). Three studies did not provide any information about teacher and caregiver education levels (Benjamin Neelon et al. 2014; Brown et al. 2008; Weinstock et al. 2012). Four studies included teachers with more varied educational levels in their study (Friedman and Woods 2015; Moon et al. 2008; Moreno et al. 2015; Romano and Woods 2018).

3.   Competencies examined

All of the interventions targeted teacher and caregiver knowledge and skills, with varying specificity in terms of substantive focus (Table III.1). Several interventions were broad quality improvement initiatives designed to improve program quality as a whole. Other interventions targeted knowledge and skills in more-specific domains.

Four studies were of interventions that targeted teacher/caregiver knowledge and skills across a wide range of topics. The BASIC Spaces intervention provided supports for facilities

improvements (that is, assessments of the physical space and resources for construction and renovation) and teacher training to increase knowledge and skills related to child development, curriculum, and health and safety (Brown et al. 2008). The Program for Infant/Toddler Care (PITC; Weinstock et al. 2014), Expanding Quality for Infants and Toddlers intervention (Moreno et al. 2015), and Educare (Yazejian et al. 2017) provided training to increase knowledge and improve skills across a range of infant and toddler developmental domains, particularly social-emotional, language, and cognitive development. The Educare model also emphasized knowledge and skills in collecting and using data to track children's progress, and nurturing family engagement and well-being (Yazejian et al. 2017).

Four interventions focused exclusively on teacher/caregiver competencies in supporting children's social emotional development. Biringen et al. (2012) studied the Project Secure Child in Child Care intervention which provided training and coaching to increase knowledge of and skills in recognizing different types of child attachment. Gray (2015) examined the Circle of Security intervention which trained teachers and caregivers to better understand children's emotions and behavior. Heller et al. (2011) studied a Mental Health consultation model through which teachers received ongoing consultation on supporting social-emotional development in the classroom. Landry et al. (2014) focused on the Responsive Early Childhood Curriculum which provided in-class coaching and training to support responsive teaching practices.

Another four interventions exclusively targeted competencies related to supporting language development. Donegan-Ritter and Van Meeteren (2018) focused on workshops and coaching to increase knowledge and skills in the use of language facilitation strategies. Friedman and Woods (2015) studied the KidTalk Tactics Project which provided coaching to improve knowledge and skills in supporting language development, specifically the use of naturalistic communication strategies. Ota and Austin (2013) studied a PD model that provided a combination of training and mentoring related to language stimulation strategies. Finally, Romano and Woods (2018) examined the SSOOPPRR (Setting the Stage, Observation and Opportunities to Practice, Problem Solving and Planning, and Reflection and Review) coaching intervention which focused on the use of responsive communication strategies.

Two interventions aimed to improve competencies related to health, safety, and nutrition. Benjamin-Neelon et al. (2014) examined the Baby Nutrition and Physical Activity Self-Assessment for Child Care intervention which focused on improving nutrition and physical activity practices to prevent obesity. Moon et al. (2008) focused on knowledge of and skills in implementing safe sleep practices.

The final study we reviewed in this group was of the Partnership for Inclusion model of assessment-based individualized on-site consultation (Bryant et al. 2009). This intervention does not target specific competencies across participants. Rather, on-site consultations are guided by providers' needs as identified using the Environment Rating Scales.

4.   Associations between competencies and outcomes

Teacher outcomes. Only one study found that the studied intervention improved teachers' job-related attitudes, beliefs, and feelings of self-efficacy. Gray (2015) found that participants in the

Circle of Security intervention, which sought to improve family child care providers' reflective functioning and emotion-regulation skills, had higher self-efficacy at the end of the intervention, relative to a comparison group. Moreno et al. (2015) also tested for but did not find significant effects on job-related self-efficacy, attitudes, or beliefs associated with participation in coursework and on-site coaching related to supporting social-emotional and language development. Bryant et al. (2009) did not find significant effects of individualized consultation through the Partnership for Inclusion model on family child care providers' beliefs, attitudes, and motivation.

Several interventions increased the very competencies they targeted. An intervention focused on family child care providers' use of language simulation strategies found an increased use of those strategies (Ota and Austin 2013). Two studies found that Early Head Start teachers who received coaching about language facilitation strategies increased their use of such strategies (Donegan-Ritter and Van Meeteren 2018; Romano and Woods 2018).

Three studies found improvements on broader measures of teacher-child interactions as a result of participating in interventions. Biringen et al. (2012) found increased supportiveness and reductions in hostility and detachment among teachers who received training and coaching about emotional availability and attachment. Landry et al. (2014) found improvements in teacher-child relationship (in terms of increased closeness and lower conflict) among teachers who received coaching and training on responsive teaching practices. Moreno et al. (2015) found that teachers who received coursework and 15 hours of coaching related to supporting children's social-emotional, language, and cognitive development had increased knowledge of child development and higher scores on Emotional and Behavioral Support and Support for Language and Learning.

Program outcomes. Three studies examined program-level outcomes. Brown et al. (2008) found that programs' average Infant/Toddler Environment Rating Scales–Revised Edition (ITERS-R) scores increased following the BASIC Spaces intervention. Benjamin-Neelon et al. (2014) found that centers that participated in the Baby Nutrition and Physical Activity Self-Assessment for Child Care increased their scores on an assessment that measured nutrition and physical activity environments, policies, and practices. Bryant et al. (2009) tested for differences in program quality between centers and family child care providers that did and did not participate in PITC, but did not find significant differences.

Child outcomes. Six studies examined potential changes in child outcomes resulting from the interventions, and five of these document some positive impacts on at least some outcomes and/or subgroups. Biringen et al. (2012) found that children in the care of teachers who participated in the Project Secure Child intervention demonstrated improvements in emotional responsiveness. Children whose teachers received Partnership for Inclusion consultation had better receptive language skills in spring and greater change in language skills from fall to spring, although the result was limited to children in centers (Bryant et al. 2009). Children in classrooms that used the Responsive Early Childhood Curriculum had better social-emotional outcomes but did not demonstrate significant advantages in language, literacy, or math (Landry et al. 2014). Children whose teachers received coaching related to responsive communication strategies demonstrated increased rates of communication (Romano and Woods 2018). The fifth

study that documented a change in child outcomes is also the only study that did not conduct any analysis of teacher outcomes. Yazejian et al. (2017) found sizable positive impacts on child language and behavior. However, it is less clear in this study whether the child outcomes were linked to teacher/caregiver outcomes or to other aspects of Educare.

B.   Studies that examined associations between existing competencies and outcomes

The second group of studies examined associations between existing competencies (in the absence of a particular intervention designed to improve teacher/caregiver practices) and outcomes.

1.   Research design

Fifteen studies examined associations between existing teacher/caregiver competencies and outcomes, using multivariate methods to estimate associations (Table III.2). Nine studies used survey instruments to assess competencies. Seven studies used observational measures to assess competencies (Benjamin-Neelon et al. 2018). Six of the seven observational measures were quality measures typically used to assess classroom quality; however, they also assess teacher/caregiver competencies by measuring specific teacher/caregiver skills and behaviors. Although the process of conducting assessments using these measures entails assessing teacher skills and behaviors, the analysis of these measures is typically limited to a summative score or set of scores. As such, these studies were not designed to, and often do not provide sufficient information to directly attribute an outcome to a specific competency.

Table III.2. Studies that examined associations between existing competencies and outcomes

Study	Specific teacher or caregiver competencies examined	Teacher or caregiver sample and analytic approach	Measurement approach: mode, instrument	Outcomes
Belsky et al. 2007	**Skills:** Positive caregiving rating composite consists of seven scales: Sensitivity to non-distress, stimulation of cognitive development, positive regard, detachment, flatness of affect, fostering exploration, and intrusiveness.	Secondary data analysis of NICHD Study of Early Child Care data. Average caregiving rating was calculated across all nonmaternal caregivers of children between ages 3 to 54 months. Caregiver characteristics were not provided. Hierarchical linear models were used to estimate associations.	**Observation:** Observational Record of the Caregiving Environment (NICHD Early Child Care Research Network 1996)	**Child outcomes:** Average caregiving rating (across 3 to 54 months) was positively and significantly associated with vocabulary but not reading, math, or teacher-reported behavior and social-emotional outcomes at fifth grade.
Benjamin-Neelon et al. 2018	**Knowledge and skills:** Assessing nutrition and physical activity environments, identifying areas for improvement, and making changes with the help of a trained interventionist	Convenience sample of 166 family child care providers serving infants and toddler only. 74 percent of caregivers were African American. 42 percent of caregivers had an AA, 24 percent had a HS diploma, 23 percent had a BA. Linear regression was used to estimate associations.	**Observation:** EPAO modified to assess the family child care home nutrition environment (Vaughn et al. 2017)	**Child outcomes:** Teachers' total nutrition score on the EPAO was associated with increased child healthy eating index score.
Cassidy et al. 2017	**Attributes:** Teachers' professional well-being: teacher perception of fairness in pay, teacher feelings about work, involvement in decision making in their workplaces	Purposive sample of 94 lead teachers serving infants and toddler only. 49 percent of teachers were White and 46 percent were African American. The average teacher had some college education. Generalized linear models were used to estimate associations.	**Survey:** Teacher Satisfaction Inventory (Cassidy 2016)	**Teacher outcomes:** Teachers' involvement in decision making was associated positively with CLASS-Toddler Emotional Support. Teachers who had negative perceptions of their salary compared with others in the profession were in classrooms rated lower in CLASS-Toddler Emotional Support.

Table III.4 *(continued)*

Study	Specific teacher or caregiver competencies examined	Teacher or caregiver sample and analytic approach	Measurement approach: mode, instrument	Outcomes
Castle et al. 2016	**Attributes:** Beliefs about child-rearing	Convenience sample of 71 lead teachers serving infants and toddlers only. 47 percent of teachers were White and 34 percent were African American. 92 percent of teachers had a BA. Structural equation models were used to estimate associations.	**Survey:** Parent Modernity Scale (Schaefer and Edgerton 1985)	**Teacher outcomes:** Beliefs were not significantly associated with CLASS-Toddler Emotional and Behavioral Support and Engaged Support for Learning.
Elicker et al. 1999	**Skills:** Caregiver's interactive involvement with the child, ranging from: 0 (absent, adult not present in the room), 1 (ignores), 2 (routine caretaking, no verbalization), 3 (minimal, answers direct request, disciplinary), 4 (simple, non-elaborated response), 5 (elaborated), to 6 (intense, adult hugs or holds child, engages in conversation, or plays interactively)	In all, 23 FCC providers (in 22 homes) serving at least one child age 10 to 21 months. All caregivers were White and the average caregiver had some college education. Bivariate correlations were used to estimate outcomes.	**Observation:** Adult Involvement Scale (Howes and Stewart 1987)	**Child outcomes:** Infant–child care provider interactive involvement and child attachment security were significantly correlated.
Jeon et al. 2018	**Attributes:** Caregiver–parent relationship	Secondary analysis of Baby FACES 2009 data. Sample included families in home- and center-based program options. Teacher and caregiver characteristics were not provided. Multilevel modeling was used to estimate associations.	**Survey:** PCRS (Elicker et al. 1997)	**Family outcomes**: Caregiver perceived parent–caregiver relationships were positively associated with family involvement.
Kranz et al. 2011	**Knowledge:** Oral health knowledge Attributes: Oral health values, self-efficacy	Purposive sample of 231 EHS teachers. Teacher characteristics were not provided. Multivariate regression was used to estimate associations.	**Survey:** Author-developed measures	**Teacher outcomes:** Teachers' perceived oral health self-efficacy was positively associated with the frequency of performing oral health activities.

Table III.4 *(continued)*

Study	Specific teacher or caregiver competencies examined	Teacher or caregiver sample and analytic approach	Measurement approach: mode, instrument	Outcomes
La Paro et al. 2014	**Skills:** Emotional and Behavioral Support (Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Child Perspective, and Behavior Guidance) Engaged Support for Learning (Facilitation of Learning and Development, and Language Modeling)	In all, 93 teachers from center-based programs with toddler-age children. 15 percent of teachers had a BA or more, 46 percent had some college education. Bivariate correlations were used to estimate outcomes.	**Observation:** Classroom Assessment Scoring System, Toddler Version (La Paro et al. 2009)	**Teacher outcomes:** All CLASS-Toddler dimensions except for Negative Climate were significantly and positively correlated with all ITERS-R subscales (space and furnishings, personal care routines, listening and talking, activities, interaction) and total score. CLASS-Toddler Negative Climate was significantly and inversely correlated with ITERS-R listening and talking, activities, interaction, and total.
Manlove et al. 2008	**Knowledge:** Degree of cognitive complexity in reasoning about child developmental issues	Convenience sample of 56 I/T teachers in center classrooms serving infants and toddler only. 26 percent of teachers had a BA or more, 26 percent had some college education, 38 percent had a HS diploma. Multivariate analysis of variance was used to estimate associations.	**Survey:** Concepts of Development Questionnaire (Sameroff and Feil 1985)	**Teacher outcomes:** Teachers' complexity of thinking was not related to teacher sensitivity or detachment.
Mortensen and Barnett 2018	**Skills:** Teacher sensitivity (warmth; detached behaviors; punitive behaviors; and permissive behaviors)	Secondary data analysis of Early Head Start Research and Evaluation Project data. Random sample of teachers of 310 toddlers in center-based (EHS and non-EHS) child care. Teacher characteristics were not provided. Bivariate correlations were used to estimate outcomes.	**Observation:** Caregiver Interaction Scale (Arnett 1989)	**Child outcomes:** Teacher sensitivity at 14 and 24 months was not correlated with child emotion regulation measured during the same time period.

Table III.4 *(continued)*

Study	Specific teacher or caregiver competencies examined	Teacher or caregiver sample and analytic approach	Measurement approach: mode, instrument	Outcomes
NICHD Early Child Care Research Network 1996	**Attributes:** Beliefs about child-rearing	Purposive sample of 576 infants observed in their child care settings at six months. Caregiver characteristics were not provided. Multivariate regression was used to estimate associations.	**Survey:** Parent Modernity Scale (Schaefer and Edgerton 1985)	**Teacher outcomes:** Caregivers with more nonauthoritarian beliefs about childrearing had higher positive caregiving ratings as measured by the ORCE.
NICHD Early Child Care Research Network 2000	**Skills:** Frequency of language simulation composite consists of a subset of items measuring how often the caregiver asks questions of child, responds to child's vocalizations, and other (nonnegative) talk to child.	Longitudinal study of purposive sample of 1364 families. Analytic sample was children in at least one nonmaternal care setting and with complete data for analysis, ranging from 595 to 856 children. Caregiver characteristics were not provided. Hierarchical regression was used to estimate associations.	**Observation:** Observational Record of the Caregiving Environment (NICHD Early Child Care Research Network 1996)	**Child outcomes:** Frequency of language stimulation was positively correlated with Bayley scores and CDI vocabulary and sentence complexity scores at 15 and 24 months.
Thomason and La Paro 2012	**Attributes:** Commitment to and satisfaction with job as early childhood teacher	Secondary analysis of NICHD Study of Early Child Care data. Analytic sample included 740 teachers in center classrooms. 82 percent of teachers were White. Information on teachers' level of education was not provided. Multivariate regression was used to estimate associations.	**Survey:** Teachers were asked if they viewed their jobs to be a short term or long-term career and their level of satisfaction with their present position as an early childhood teacher.	**Teacher outcomes:** Teachers' commitment and satisfaction were both significant predictors of teachers' emotional and cognitive support as measured by the ORCE.

Table III.4 *(continued)*

Study	Specific teacher or caregiver competencies examined	Teacher or caregiver sample and analytic approach	Measurement approach: mode, instrument	Outcomes
Vallotton et al. 2015	**Knowledge:** Knowledge of child development **Attributes:** Attitudes related to optimistic view of development, child-focused supports for learning, strict and controlling guidance	Convenience sample of 207 students taking early childhood courses at four universities. 68 percent of students were White. Linear regression and mediation analysis were used to estimate associations.	**Survey:** Knowledge of Infant Development Inventory (MacPhee 1981); Beliefs About Infant Toddler Education and Care scale (Anderson and McMullen 2013); Trust in Organismic Development Scale (Landry et al. 2008); Parental Opinion Survey (Luster and Rhoades 1989)	**Teacher outcomes:** Knowledge is associated with attitudes. Knowledge and attitudes are positively associated with students' interaction skills as measured by 12 vignettes. Attitudes mediate the relationship between knowledge and interaction skills.
Vogel et al. 2015	**Skills:** Emotional and Behavioral Support (Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Child Perspective, and Behavior Guidance) **Attributes:** Caregiver–parent relationship	Analysis of teacher outcomes included 169 to 305 teachers. Hierarchical linear models were used to estimate associations. Analysis of child outcomes included 257 to 269 two and three year olds enrolled in the center-based option from the Baby FACES 2009. Multivariate regression was used to estimate outcomes. 32 percent of teachers had a BA and 38 percent had an AA. 49 percent of teachers were White, 17 percent were African American, 27 percent were Hispanic/Latino.	**Observation:** Classroom Assessment Scoring System, Toddler Version (La Paro et al. 2009); **Survey:** PCRS (Elicker et al. 1997)	**Teacher outcomes:** Caregiver–parent relationship was not significantly associated with CLASS Emotional and Behavioral Support. **Child outcomes:** Positive, statistically significant association between the CLASS-Toddler Emotional and Behavioral Support was positively and significantly associated with language and vocabulary outcomes and negatively and significantly associated with problem behaviors at age three.

Notes: All outcomes that are described as significant are significant at $p < .05$. We provide author-reported effect sizes when available. All effect sizes included in the table are significant at $p < .05$.

Baby FACES 2009 = Early Head Start Family and Child Experiences Survey; CLASS-Toddler = Classroom Assessment Scoring System, Toddler Version; EHS = Early Head Start; EPAO = Environment and Policy Assessment and Observation; I/T = infant/toddler; NICHD = National Institute of Child Health and Human Development; ORCE = Observational Record of the Caregiving Environment; PCRS = Parent-Caregiver Relationship Scale.

2.   Study samples and settings

Eight studies included only center-based (including Early Head Start) I/T teachers in their sample (Cassidy et al. 2017; Castle et al. 2016; Kranz et al. 2011; LaParo et al., 2014; Manlove et al. 2008; Mortensen and Barnett, 2018; Thomason and La Paro 2012; Vogel et al. 2015). Four studies included teachers and caregivers working in both center-based and family child-care settings (Belsky et al., 2007; Jeon et al. 2018; NICHD ECCRN 1996, 2000). Two studies focused on family child care providers only (Benjamin-Neelon et al. 2018; Elicker et al., 1999). The final study sample consisted of university students taking early childhood courses (potential I/T teachers and caregivers) (Vallotton et al. 2015).

Five studies were conducted in classrooms serving only infants and/or toddlers (Cassidy et al. 2017; Kranz et al. 2011; LaParo et al., 2014; Manlove et al. 2008; Thomason and La Paro 2012; Vogel et al. 2015). Three studies included children from both mixed age settings and classrooms serving only infants and/or toddlers (Belsky et al., 2007; NICHD ECCRN 1996, 2000). One study was conducted with pre-service teachers who were not yet working with children (Vallotton et al. 2015). Another study was conducted with caregivers of infants and toddlers receiving center-based services or home visiting (Jeon et al. 2018). The rest of the studies were conducted in mixed age settings (Benjamin-Neelon et al. 2018; Castle et al. 2016; Elicker et al., 1999; Mortensen and Barnett, 2018).

Less information was available about the teacher and caregiver samples in this group of studies. Eight studies did not provide any information about racial backgrounds of teachers or caregivers (Belsky et al., 2007; Jeon et al. 2018; Kranz et al. 2011; LaParo et al., 2014; Manlove et al. 2008; Mortensen and Barnett, 2018; NICHD ECCRN 1996, 2000). Of the seven studies that provided this information, three studies had teacher or caregiver samples that were mostly White (Elicker et al., 1999; Thomason and La Paro 2012; Vallotton et al. 2015). Another three studies had similar proportions of White and non-White teachers and/or caregivers in their samples (Cassidy et al. 2017; Castle et al. 2016; Vogel et al. 2015). One study had a sample that was mostly non-White (Benjamin-Neelon et al. 2018).

Seven studies did not provide any information about teacher and caregiver education levels (Belsky et al., 2007; Jeon et al. 2018; Kranz et al. 2011; LaParo et al., 2014; Mortensen and Barnett, 2018; NICHD ECCRN 1996, 2000). Three studies included teachers or caregivers who had some college education but not a Bachelor's degree (Cassidy et al. 2017; Elicker et al., 1999; LaParo et al., 2014). The sample in Vallotton et al.'s study (2015) consisted of students who were currently enrolled in college. Only one study sample had a majority of teachers with a Bachelor's degree (Castle et al. 2016). The remaining three studies had teachers or caregivers with more varied educational levels in their study (Benjamin-Neelon et al. 2018; Manlove et al. 2008; Vogel et al. 2015).

3.   Competencies examined

Eight studies focused on teacher/caregiver attributes. Two studies looked at teacher perceptions of their relationship with parents (such as whether they can readily talk to a child's parents when there is a problem, and whether a child's parents gives suggestions about working with the child)

using data from the Early Head Start Family and Child Experiences Survey (Baby FACES 2009) (Vogel et al. 2015; Jeon et al. 2018). Two other studies considered teachers' perceptions about their work and career. Cassidy et al. (2017) examined teachers' perceptions of their level of involvement in decision making at their program and whether their salary was competitive compared to others in the profession. Thomason and La Paro (2012) explored teachers' commitment to and satisfaction with their job. Beliefs about child-rearing and child development were examined in three studies. Castle et al. (2016) and the NICHD ECCRN (1996) measured authoritarian beliefs about child rearing. Vallotton et al. (2015) examined child-focused attitudes about learning and development. One study focused on teacher's confidence in their ability to perform oral health activities (Kranz et al. 2011).

Four studies examined teacher/caregiver knowledge. Two of the four studies examined knowledge in health-related topics. Benjamin-Neelon et al. (2018) assessed family child care providers' knowledge about nutrition practices and policies, and Kranz et al. (2011) examined Early Head Start teachers' knowledge related to children's oral health. The other two studies examined knowledge of child development: Vallotton et al. (2015) assessed knowledge of infant development among university students enrolled in early childhood courses, and Manlove et al. (2008) examined I/T teachers' depth of understanding of child development concepts.

Six studies examined teacher skills through observational measures of quality. Elicker et al. (1999) assessed child care provider's responsiveness to children based on observations of the caregiver's presence, level of verbalization and elaboration, and intensity of engagement and interaction using the Adult Involvement Scale (Howes and Stewart 1987). Mortensen and Barnett (2018) examined teacher sensitivity in terms of warmth and the absence of detached, punitive, and permissive behaviors using the Caregiver Interaction Scale (Arnett 1989). La Paro et al. (2014) examined individual dimensions of the Classroom Assessment Scoring System, Toddler Version (CLASS-Toddler; La Paro et al. 2009): Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Child Perspective, Behavior Guidance, Facilitation of Learning and Development and Language Modeling. Vogel et al. (2015) also analyzed the CLASS-Toddler but only overall scores on Emotional and Behavioral Support domain which summarizes scores across the individual dimensions examined by La Paro et al. (2014). Belsky et al. (2007) assessed caregiver sensitivity to non-distress, stimulation of cognitive development, positive regard, detachment, flatness of affect, fostering exploration, and intrusiveness using the Observational Record of the Caregiving Environment (ORCE; NICHD ECCRN, 1996). The NICHD ECCRN (2002) also used the ORCE to examine caregivers' frequency of language stimulation.

One other study examined caregiver skills. Benjamin-Neelon and colleagues' (2018) measured caregiver skills in assessment of nutrition practices and policies these areas (in addition to their knowledge in these same areas).

4.   Associations between competencies and outcomes.

Teacher outcomes. Three of four studies that examined teachers' perceptions about their work or their ability to do their work found positive, significant associations with teacher outcomes.

Cassidy et al. (2017) found that teachers' who felt more involved in decision making at their workplace and had more positive perceptions of their salary tended to demonstrate higher levels of emotional support in the classroom. Similarly, Thomason and La Paro (2012) found that teachers' commitment to and satisfaction with their jobs were positively associated with emotional and cognitive support. Kranz et al. (2011) found that teachers who were more confident in their ability to perform oral health activities such as having children brush their teeth also performed such activities more frequently. Vogel et al. (2015) examined whether teachers' perception of their relationship with parents is related to classroom quality in center-based Early Head Start but they did not find significant associations.

Child-focused attitudes and beliefs about child-rearing were not consistently related to teacher outcomes in the three studies that examined it. The NICHD ECCRN (1996) found that nonauthoritarian beliefs about child-rearing were associated with more-positive caregiving scores among caregivers of 6-month-old infants. Vallotton and colleagues (2015) found that more child-focused attitudes about child-rearing were related to knowledge about child development and that attitudes explained the relationship between knowledge and skills of potential caregivers. Castle et al. (2016) did not find significant associations between authoritarian beliefs about child-rearing and the quality of teachers' interactions with children in their sample of infant and toddler teachers.

Teacher/caregiver knowledge was not consistently linked to teacher outcomes in the studies we reviewed. Kranz et al. (2011) did not find significant associations between teachers' oral health knowledge and their performance of oral health activities. Manlove et al. (2008) also did not find significant associations between teachers' understanding of child development issues and teacher sensitivity or detachment. However, Vallotton et al. (2015) found that potential teachers' knowledge of child development was significantly associated with attitudes about child-rearing.

Teacher skills in supporting social and emotional, cognitive, and language development were significantly associated with classroom quality in one study. LaParo et al. (2014) found that teachers' Emotional and Behavioral Support and Engaged Support for Learning were positively correlated with measures of classroom quality including Space and Furnishings; Personal Care Routines; Listening and Talking; Activities; and Interaction. Note, however, that this finding can be interpreted as showing an association between behavioral indicators of competencies as measured by two different observational assessments (rather than as an association of competencies with outcomes).

Family outcomes. Only one study examined family outcomes. Jeon et al. (2018) found significant associations between teachers' and home visitors' perception of their relationship with parents and families' length of enrollment in Early Head Start; however, it is challenging to identify the unique association for teachers in group settings and the families they serve, given that the sample also included home visitors and the families they work with.

Child outcomes. Seven studies explored links between competencies and child outcomes. One of the seven studies found significant associations between family child care providers' knowledge

of appropriate nutrition and physical activity environments and children's healthy eating (Benjamin-Neelon et al. 2018).

Five studies examined whether responsive caregiving skills and behaviors (as assessed using observational quality measures) are related to child outcomes, with mixed results. Elicker et al. (1999) found that family child care providers' interactive involvement was significantly correlated with infant-caregiver attachment security. Mortensen and Barnett (2018) found that teacher sensitivity was not significantly correlated with children's emotion regulation at ages 14 or 24 months. Vogel et al. (2015) examined whether teachers' emotional and behavioral support were associated with child outcomes at age 3 and found positive associations with language and vocabulary outcomes and negative associations with problem behavior outcomes. Finally, Belsky et al. (2007) found that caregiver sensitivity was positively associated with vocabulary scores at 5th grade. It is somewhat difficult to interpret this finding, however, given that the quality measure is averaged across time points (including some beyond infant/toddler age), and across a range of various nonmaternal caregivers.

One study explored the link between language stimulation and child outcomes. The NICHD ECCRN (2002) found that frequency of language stimulation at 15 and 24 months was positively associated with concurrent child cognitive and language outcomes.

C.   Types and content of competencies across studies examined

Among the studies that we examined, there was variation in the type of competencies (Ks, Ss, or As,) examined and the competency domain examined. In terms of the types of competencies:

- 22 studies analyzed teacher or caregiver skills

- 19 studies looked at teacher or caregiver knowledge

- 8 studies looked at teacher or caregiver attributes (such as attitudes and beliefs)

To get a better sense of the content, we coded the competencies examined in studies using the domains and sub-domains listed in Table III.3. The domains and sub-domains were developed through expert input and a preliminary review of competency frameworks. The ITTCC project also scanned existing competency frameworks that contained specific competencies for I/T teachers and caregivers for these domains (see Appendix). The studies we reviewed examined 9 of the 12 domains and 17 of the 27 sub-domains on our list (domains that do not have sub-domains under them are counted as both a domain and a sub-domain). The domain "*Professionalism*" was most commonly examined, included across 13 studies. This is mainly due to the large number of intervention studies reviewed that included a coaching component, all of which we coded as addressing the sub-domain "*Reflective Practice*" (examined in 11 studies) because coaching typically engages teachers or caregivers in reflective practice. The second most commonly studied domain was "*Supporting Social-Emotional Development,*" which includes the sub-domain *"Relationships With Adults."*

Table III.3. Domains and sub-domains captured by I/T specific frameworks and studies reviewed

Domain/sub-domain	Number of frameworks capturing (n=14)	Total studies examining (n=30)[a]
Instructional planning, child assessment, and progress monitoring	**14**	**5**
Assessment	13	2
Individualization	13	2
Curriculum use, planning activities/experiences	14	4
Arts and creativity	**9**	**0**
Health, safety and nutrition	**13**	**5**
Health and safety	13	3
Nutrition	9	2
Supporting social-emotional development	**14**	**11**
Relationships with adults	14	11
Relationships with peers	12	2
Sense of self	11	0
Self-regulation	13	5
Supporting cognitive development	**12**	**1**
Early cognitive development	11	1
Problem solving	9	0
Representation, pretend play	4	0
Free play	12	0
Supporting language and literacy	**11**	**7**
Expressive language	11	7
Receptive language	9	3
Literacy	11	0
Supporting motor development	**11**	**0**
Fine motor development	9	0
Gross motor development	11	0
General child development[b]	**12**	**6**
Cultural identity and responsiveness	**13**	**2**
Family communication and engagement	**14**	**6**
Family communication	13	1
Family engagement	14	6
Community partnership	**12**	**0**

Table III.5 (continued)

Domain/sub-domain	Number of frameworks capturing (n=14)	Total studies examining (n=30)[a]
Professionalism	**13**	**13**
Reflective practice	12	11
Ethical decision making	10	0
Continuous improvement	13	4
Fulfilling role as member of organization	13	1

[a] One study was classified as both a quality measure study and an observational study and is reflected in each of those columns but counted only once in the total column.

[b] This domain was coded when competencies did not refer to specific aspects of child development.

The domain of "*Supporting Cognitive Development*" was only examined in one study and "*Cultural Identity and Responsiveness*" was only examined in two studies. The only domains for which we did not find any studies were "*Arts and Creativity,*" "*Supporting Motor Development,*" and "*Community Partnership.*"

Several domains captured in many or all of the competency frameworks reviewed in our scan do not appear to have been studied extensively in the literature examined as part of this review. In fact, the domains for which we did not find competencies examined in any studies were included in a majority of the frameworks reviewed: "*Arts and Creativity*" was included in 9 frameworks, "*Supporting Motor Development*" in 11 frameworks, and "*Community Partnership*" in 12 frameworks.

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IV. CONCLUSION

As noted at the start of this report, the goal of this review was to assess the evidence for links between I/T teacher/caregiver competencies and outcomes in several areas (child, family, teacher/caregiver, and/or program). In this section, we provide a high-level summary of the types of studies and their focus, and consider the implications of the findings for measurement, research, and evaluation generally, and the ITTCC project specifically.

A.   What types of studies have been conducted on the connections between I/T teacher or caregiver competencies and outcomes?

In the last 10 years, a limited number of studies have focused on associations between competencies of I/T teachers or caregivers in group settings and teacher, child, family or program-level outcomes. Our literature search yielded only 30 such studies conducted in the United States. We found two categories of studies that sought to link teacher/caregiver competencies to outcomes:

- Studies that examined teacher/caregiver competencies within an intervention

- Studies that examined associations between existing teacher/caregiver competencies and outcomes

There was considerable variation in the types of teachers and caregivers in the studies:

- 12 studies focused on teachers in centers only

- 9 studies included teachers or caregivers from at least 2 different types of settings (center-based child care, FCC, and/or Early Head Start)

- 5 studies focused on EHS teachers only

- 4 studies focused on FCC providers only

B.   Key Findings

Overall, our review suggests that the knowledge base pertaining specifically to I/T teacher or caregiver competencies in association with outcomes is currently limited in scope. It is important to keep in mind that this review does not include studies conducted in other countries or studies more than 10 years old. In addition, this study did not include relevant research from the parenting or preschool care and education literatures. Based on the studies this review does include, findings indicate that available research does not yet fully support the content covered in the reviewed I/T care and education competency frameworks (see Appendix).

There is currently not enough information to link specific infant/toddler teacher and caregiver competencies to outcomes. Not only is the body of literature still relatively small, but many of the intervention studies we examined target multiple competencies—for example, providing training and coaching to increase both knowledge and skills and/or seeking to improve skills in multiple areas of practice. Studies that used observational measures of quality to assess

competencies often only conducted analyses at the level of a summary score or subscale which were typically calculated by combining information across multiple indicators. These studies were not designed to, and often do not provide sufficient information to directly link an outcome with a specific competency.

The limited number of studies may be due in part to the lack of available measures. There are likely measurement limitations when it comes to assessing teacher and caregiver competencies. There are several published, validated measures of caregiver-child interactions, for example, but measures focusing on specific competencies are less common. The availability of published, validated measures may also be a reason why much of the research has focused on teacher and child outcomes, rather than program outcomes.

Further research is needed to better understand the importance of specific competencies for key outcomes and how competencies are related to each other in practice in producing those outcomes. Identifying the specific competencies that matter most for outcomes, and the relationships among those competencies, is complex. For example, there are many types of knowledge—knowledge of infant and toddler development, of practices that help infants and toddlers learn, and which situations require a particular skill to be applied. The importance of each of these specific competencies may differ depending on the outcome of interest. Notably, research needs to attend to both the content of a particular competency (what we have referred to as the domains and sub-domains in this review), but also whether it is a K, S, or A.

A majority of the studies we reviewed demonstrated that competencies of I/T teachers and caregivers may be malleable. Intervention studies show that it may be possible to increase knowledge and/or skills in particular areas through targeted professional development activities. In fact, many of the studies we reviewed examined teacher/caregiver outcomes which were competencies in and of themselves. Many of the intervention studies measured change over time in knowledge and skills as their outcomes of interest, but only over a brief period (that is, studies did not address whether the change was durable over a period longer than the intervention itself).

There is still much to learn about how competencies and competency frameworks are developed and used, as this on-the-ground implementation has implications for measurement, research, and evaluation needs. Our review of frameworks (summarized in Appendix) indicated that frameworks are commonly designed to be used for developing professional development goals and evaluating staff performance. However, we do not know the extent to which these goals are successfully achieved in practice and whether and how the availability of research or measurement tools influences actual and potential implementation.

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* Denotes a research review article.

† Denotes a source included in an in-depth review.

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Yoshikawa, H., C. Weiland, J. Brooks-Gunn, M. Burchinal, L. Espinosa, W. Gormley, … M. J. Zaslow. "Investing in our future: The evidence base on preschool education." New York: Foundation for Child Development and Ann Arbor, MI: Society for Research in Child Development, 2013.

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APPENDIX

Competency Frameworks for
Infant and Toddler Teachers and Caregivers

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Pia Caronongan, Katherine Niland, Mikia Manley, Sally Atkins-Burnett, Emily Moiduddin

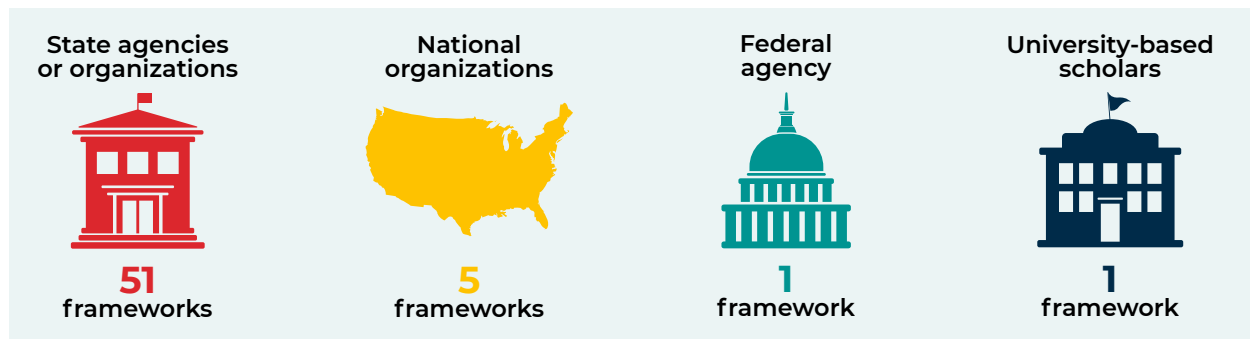# Competency Frameworks for Infant and Toddler Teachers and Caregivers

In 2017, the Office of Planning, Research, and Evaluation in the Administration for Children and Families funded Mathematica to conduct the Infant and Toddler Teacher and Caregiver Competencies (ITTCC) project. The project aims to examine existing efforts across states, institutions of higher education, professional organizations, and early care and education programs related to competencies for infant and toddler (I/T) teachers and caregivers who work in group settings and build a conceptual foundation to inform future measurement, research, and evaluation. The findings described in this brief are based on a scan of competency frameworks conducted as part of the ITTCC project.

Definitions for key terms as operationalized for this project can be found on page 5.

Identifying the knowledge, skills, or attributes (that is, competencies) essential to a given profession may help provide a common language and lens for assessing job performance and provide a clear structure for professional growth and development.

The Infant and Toddler Teacher and Caregiver Competencies (ITTCC) project conducted an Internet search to identify competency frameworks relevant to teaching and caregiving of infants and toddlers in group (center-based and family child care) settings. We found 58 frameworks relevant to I/T teachers and caregivers, some of which include competencies specific to I/T care and education and others that include competencies more broadly for the care and education of children from birth to age 5.

Who led development of the competency frameworks?

State agencies or organizations	National organizations	Federal agency	University-based scholars
51 frameworks	**5** frameworks	**1** framework	**1** framework

Who are the target audiences for the competency frameworks?

Targeted specifically to I/T teachers and caregivers?

Teachers or caregivers in early childhood group settings

44
frameworks

Early childhood professionals

8
frameworks

Early childhood professionals include teachers and caregivers, as well as administrators, coaches and other staff

Teachers or caregivers specifically for infants and toddlers in group settings

6
frameworks

Targeted to a specific locality?

Those working in a particular state

51
frameworks

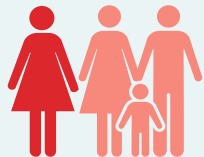**Those working across the United States**

7
frameworks

Targeted to early childhood professionals working with a particular population or in a particular setting?

Not targeted to a specific subgroup

55
frameworks

Those working with families

1
framework

Those working with children at risk for developmental delays or disabilities

1
framework

Those in family child care settings

1
framework

Are frameworks aligned with other frameworks or standards?

29 frameworks describe alignment with other frameworks or standards. The most common included the following:

• The National Association of the Education of Young Children Standards for Initial and Advanced Early Childhood Professional Preparation Programs

• The Child Development Associate Competency Standards

• The Division for Early Childhood Recommended Practices in Early Intervention/Early Childhood Special Education

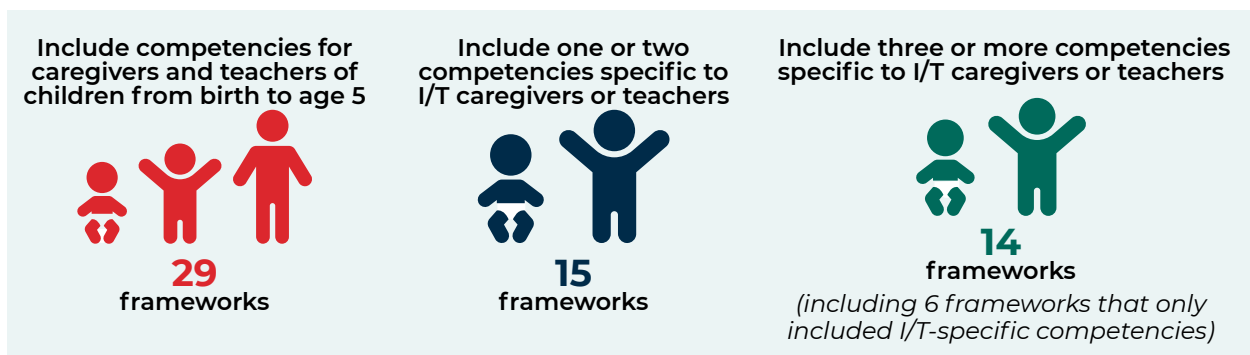## Do frameworks identify competencies essential for practice at various career stages (for example, entry, mid-career, advanced)?

41 frameworks include competencies for different levels of advancement or career stages.

3 levels of advancement	4 levels of advancement	5 levels of advancement	6 levels of advancement
Level 3	Level 4	Level 5	Level 6
14 frameworks	**13** frameworks	**11** framework	**3** frameworks
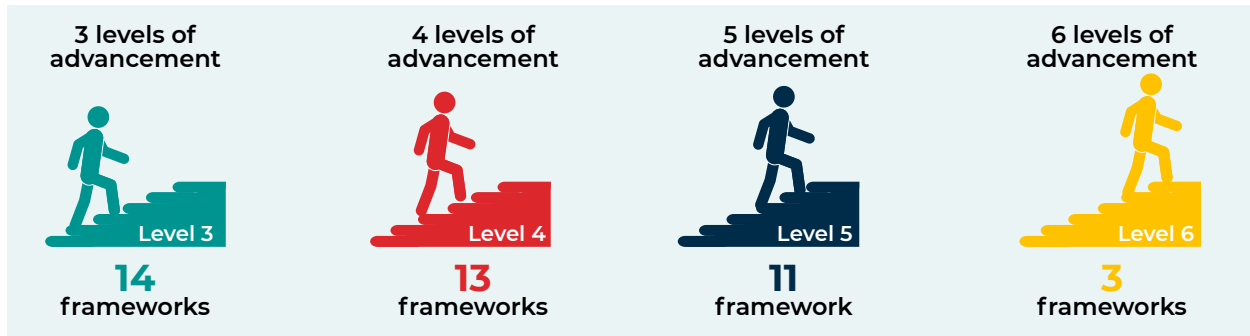
Are competencies in the frameworks specific to caregivers or teachers of infants and toddlers?

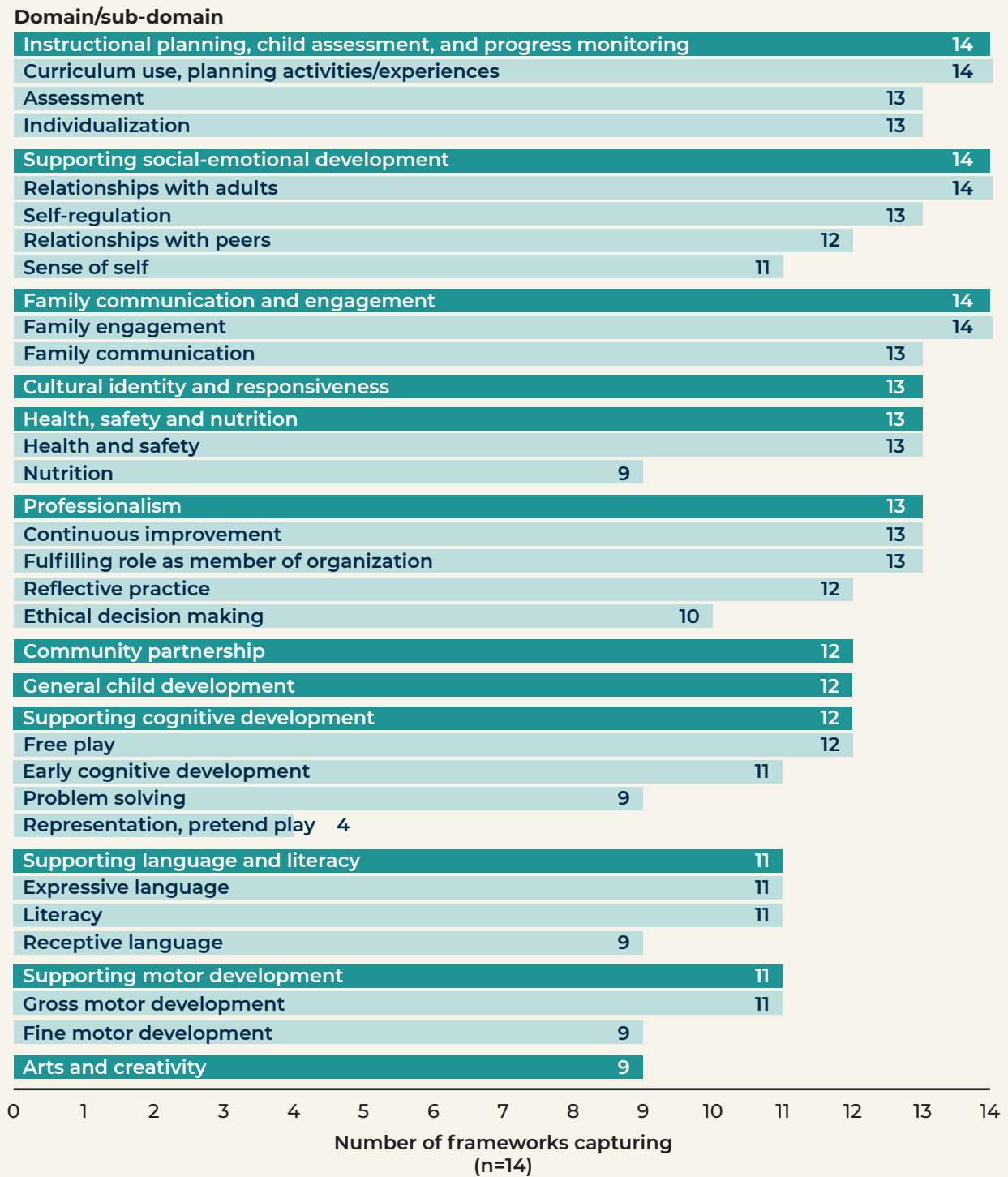| Include competencies for caregivers and teachers of children from birth to age 5	Include one or two competencies specific to I/T caregivers or teachers	Include three or more competencies specific to I/T caregivers or teachers
29 frameworks	**15** frameworks	**14** frameworks *(including 6 frameworks that only included I/T-specific competencies)*

The ITTCC project conducted an in-depth review of the 14 frameworks that included at least 3 competencies specific to the care or education of infants and toddlers.

Are the competencies identified in the frameworks knowledge, skills, or other attributes?

All 14 frameworks include knowledge- and skill-based competencies. Thirteen of the 14 frameworks include attribute-based competencies

Figure 1: What domains (and sub-domains) are reflected by the competencies included in the frameworks?

Domain/sub-domain

Domain/sub-domain	Value
Instructional planning, child assessment, and progress monitoring	14
Curriculum use, planning activities/experiences	14
Assessment	13
Individualization	13
Supporting social-emotional development	14
Relationships with adults	14
Self-regulation	13
Relationships with peers	12
Sense of self	11
Family communication and engagement	14
Family engagement	14
Family communication	13
Cultural identity and responsiveness	13
Health, safety and nutrition	13
Health and safety	13
Nutrition	9
Professionalism	13
Continuous improvement	13
Fulfilling role as member of organization	13
Reflective practice	12
Ethical decision making	10
Community partnership	12
General child development	12
Supporting cognitive development	12
Free play	12
Early cognitive development	11
Problem solving	9
Representation, pretend play	4
Supporting language and literacy	11
Expressive language	11
Literacy	11
Receptive language	9
Supporting motor development	11
Gross motor development	11
Fine motor development	9
Arts and creativity	9

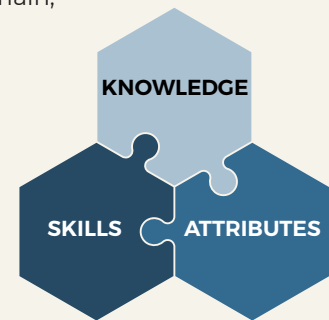**Number of frameworks capturing**
(n=14)

Note: Frameworks organize and refer to competencies in different ways. In order to code the content consistently across different frameworks, we developed a list of domains and sub-domains. The list was developed through expert input and a preliminary review of competency frameworks. Domains and sub-domains were further refined to address gaps identified during the coding process. In the figure, domains are captured in the darker bars and sub-domains in the lighter bars.

Key definitions

The ITTCC project defines competency, competency framework, competency domain, and proficiency levels in the following way:

Competency: A piece of knowledge (K), a skill (S), or an attribute (A) essential to the practice of teaching and caring for infants and toddlers

- **Knowledge** is information that may be applied to practice.
- **Skills** are strategies or abilities that may be applied to practice.
- **Attributes** are attitudes, beliefs, or other characteristics that may influence the application of knowledge and skills to practice.

KNOWLEDGE

SKILLS   **ATTRIBUTES**

Competency framework: A compilation of competencies intended to convey the range of knowledge, skills, and attributes essential to a particular area of practice, job, or profession.

Competency domain: Competency frameworks often group competencies (that is, KSAs) by *domain*. That is, individual KSAs focused on a similar topic may be clustered within a framework by competency domain. Examples of a competency domains include "support for language and literacy," "support for social-emotional development,", "health and safety," "working with families," or "arts and creativity."

Proficiency levels: Some competency frameworks identify competencies (that is, KSAs) that are essential for practice at various career stages (for example, entry, mid-career, advanced).

List of frameworks included in scan

Frameworks that include three or more competencies specific to infant/toddler caregivers or teachers

Arizona Department of Education, Department of Economic Security, and Department of Health Services. "Arizona Early Childhood Workforce Knowledge and Competencies." AZ: Department of Education, 2015.

California Department of Education, First 5 California. "California Early Childhood Educator Competencies." CA: Department of Education, 2011.

Council for Professional Recognition. "The Child Development Associate Competency Standards." Washington, DC: Council for Professional Recognition, 2013.

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Minnesota Department of Human Services. "Infant–Toddler Companion Guide to the Minnesota Core Competencies." MN: Department of Human Services, 2010.

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New York Association for the Education of Young Children. "New York State Infant and Toddler Care and Education Credential Competencies." NY: NYAEYC, 2014.

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Vermont Northern Lights Professional Development Center. "VT Early Childhood Core Knowledge and Competencies." VT: Agency of Human Services, Child Development Division, 2017.

Washington State Department of Early Learning. "Washington State Core Competencies for Early Care and Education Professionals." WA: Department of Early Learning, 2009.

Frameworks that include 1 or 2 competencies specific to infant/toddler caregivers or teachers

Alabama Department of Human Resources. "Alabama Pathways to Quality Care and Education: Alabama Child Care and Education Professional Development System." AL: Department of Human Resources, 2009.

Alaska System for Early Education Development, Alaska's Early Childhood Professional Development System. "Alaska's Early Care and Learning Core Knowledge and Competencies." AK: System for Early Education Development, 2015.

Colorado's Early Childhood Professional Development Advisory Group. "Colorado's Competencies for Early Childhood Educators and Administrators." CO: Early Childhood Professional Development Advisory Group, 2016.

Delaware Department of Education. "Delaware Competencies for Early Childhood Professionals." DE: Department of Education, 2009.

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Nebraska Department of Education. "Nebraska's Core Competencies for Early Childhood Professionals: Knowledge and Skills Needed to Effectively Work with Children Ages Birth to Five Years." NE: Department of Education, 2013.

New Mexico Early Childhood Higher Education Task Force. "Common Core Content Early Childhood Educator." NM: Office of Child Development Children, Youth and Families Department, 2002.

Oliveira, Peg. "Connecticut Core Knowledge and Competency Framework for Professionals Working with Young Children and Their Families." CT: Office of Early Childhood, 2016.

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Rhode Island Department of Health, Exceed, Executive Office of Health and Human Services, Rhode Island Department of Human Services, and Rhode Island Department of Education. "Rhode Island's Workforce Knowledge and Competencies for Family Child Care Educators." RI: Department of Health, 2013.

Texas Early Learning Council and the Texas Head Start State Collaboration Office. "Texas Core Competencies for Early Childhood Practitioners and Administrators." TX: Early Learning Council and Head Start State Collaboration Office, 2013.

Virginia Department of Social Services. "Competencies for Early Childhood Professionals Virginia's Early Childhood Development Alignment Project." VA: Department of Social Services, 2008.

Frameworks that include competencies for caregivers and teachers of children from birth to age five

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Office of Head Start. "Head Start and Early Head Start Relationship-Based Competencies for Staff and Supervisors who Work with Families." Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, 2012.

Oklahoma Department of Human Services. "Oklahoma Core Competencies for Early Childhood Practitioners." OK: Department of Human Services, 2008.

Pennsylvania Department of Education and Department of Public Welfare. "Pennsylvania Core Knowledge Competencies for Early Childhood & School-Age Professionals." PA: Department of Education and Department of Public Welfare, 2005.

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