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Project Summary

Project Title: Interagency Training to Promote Culturally Responsive, Family-Centered Home Visiting and Pediatric Service Integration
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Early childhood is characterized by rapid cognitive, language, and social-emotional development that is associated with long-term health and educational outcomes (Shonkoff et al., 2009). However, the experience of poverty can considerably limit children's development during these formative years (Morris et al., 2017). As such, it is crucial for infant- and toddler-serving agencies to promote positive outcomes for populations at-risk for delays or disorders due to their socioeconomic status.

Two prominent infant/toddler service systems, home visiting and pediatric primary care, share in their goals to provide culturally responsive, family-centered, coordinated care in order to promote health and development. However, guiding empirical literature on fostering care coordination for infants and toddlers is limited. One potential solution is the implementation of interagency training, whereby professionals from both agencies engage in joint training experiences aimed at developing consistent communication between agencies and a clearer understanding of each system's roles in the care of infants and toddlers. As such, the proposed project seeks to implement a collaborative interagency training for home visitors and pediatric residents that focuses on 1) agency-specific information regarding the mission, goals, infrastructure, roles and responsibilities of staff, and procedural information for collaboration efforts; and 2) culturally responsive family-centered care practices. The interagency training, *Linking for Little Ones*, will be developed using community based participatory research methods (Israel et al., 2005) in partnership with two home visiting and two pediatric residency training programs. *Linking for Little Ones* comprises five components: 1) a collaborative joint training session; 2) a home visiting case conference with pediatric residents; 3) a well-baby visit with a home visitor; 4) a home visit with a pediatric resident; and 5) a collaborative reflection session. Each component brings together home visitors and pediatric residents in interactive activities. *Linking for Little Ones* will be repeatedly implemented with small groups of home visitors and pediatric residents as part of naturally occurring training opportunities embedded within community health rotations in the pediatric residency training programs.

Measured outcomes at pre- and post-training and month follow up will include knowledge of each agency and its professionals' roles and responsibilities, utilization of culturally responsive family-centered care practices, competency to engage in collaborative practices with professionals from the other agency. Usability of *Linking for Little Ones* will be measured once at post-training. It is hypothesized that home visitors and pediatric residents will demonstrate increased, sustained knowledge of each other's agencies, utilization of culturally responsive family-centered practices, and competency for interagency collaboration when comparing scores 1) pre- and post-training and 2) post-training and 1 month follow-up. Given that *Linking for Little Ones* will be developed in partnership based on the agencies' preferred content and procedures, it is also hypothesized that participants will rate usability dimensions favorably.

Approach

A. Background, Significance, and Objectives

Literature Review

Infancy and Toddlerhood as Critical Developmental Periods. The first five years of life are characterized by rapid cognitive, language, and social-emotional development that is crucial for later health and educational success (Shonkoff, 2010). Decades of research have demonstrated the importance of this early development for school readiness, which is strongly correlated with higher graduation rates, lower-risk behaviors, and better adult health (Peterson et al., 2018). For example, greater working memory (Fitzpatrick & Pagani, 2012), larger vocabularies (Tamis-LeMonda et al., 2014), and higher emotion regulation skills (Brophy-Herb et al., 2013) during infancy and toddlerhood are all related to school readiness at kindergarten entry. Given that school readiness is so critical for long-term success, these findings underscore the importance of promoting early development during infancy and toddlerhood when the brain is most flexible and able to establish and maintain new neuronal connections (Shonkoff & Phillips, 2000).

Influence of Poverty on Development. Though early healthy development is imperative, it is not equally attainable for all infants and toddlers. The experience of poverty can considerably limit young children from accessing necessary resources to promote their development. This is especially problematic in the United States, where infants and toddlers make up the largest percentage of economically disadvantaged individuals, with recent estimates showing that about 20% of infants and toddlers live in poverty (Child Trends, 2022).

Poverty can adversely affect early development due to the effects of chaotic environments, high levels of familial stress and mental health concerns, and the lack of control

that is common to economically disadvantaged households (Duncan & Magnuson, 2013; Morris et al., 2017). Neurobiological research has demonstrated that these stressful early experiences can have detrimental impacts on children's neurological, metabolic, and immunologic systems (Miller et al., 2011). In addition, poverty conditions limit parents' abilities to interact with their children and foster learning environments that are crucial for development. Altogether, poverty conditions during early childhood have negative implications for school readiness, academic achievement, health, and employment across the lifespan (Brooks-Gunn & Duncan, 1997; Duncan & Magnuson, 2013; Linver et al., 2002).

Service Systems for Infants and Toddlers. Decades of research support the positive outcomes of early prevention and intervention for young children with or at risk for developmental delays and health conditions due to low socioeconomic status (Blair & Raver, 2016). Two prominent health and developmental service systems for infants and toddlers include home visiting programs and pediatric primary care. Both service systems focus on promoting optimal outcomes for children through prevention and intervention practices. While pediatric primary care serves the general population of children, which includes at-risk infants and toddlers, home visiting programs intentionally serve infants and toddlers with or at-risk for developmental delays and health concerns.

Child Development-Focused Home Visiting. The Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program is administered by the Health Resources and Services Administration as a means to identify and support implementation of evidence-based home visiting programs (Health Resources and Services Administration [HRSA], 2022). MIECHV supports expectant and new parents and their infant and toddler children who are at-risk for poor maternal and child health outcomes due to low socioeconomic status. Home visiting programs

promote health equity by supporting positive parenting, child health and development, and school readiness skills. Home visitors address these topics in a variety of ways, such as promoting healthy pregnancy practices, providing education on safety needs (e.g., safe sleeping positions), encouraging early language development and learning at home, teaching positive parenting behaviors (e.g., praise), supporting families' access to healthcare, promoting attendance at well-baby visits as well as visits for illnesses and injuries, and connecting families with additional beneficial resources (United States Department of Health and Human Services [USDHHS], 2022; Office of Head Start, 2022). Home visiting operates according to a two-generational theory of change, meaning that home visitors are distinguished from other early childhood service providers by their primary role to educate and facilitate parents' promotion of their children's development and health outcomes.

There are a variety of evidence-based child development-focused home visiting models. The Home Visiting Evidence for Effectiveness (HomeVee) review, carried out by the USDHHS, is an ongoing assessment of the evidence of effectiveness for home visiting models for MIECHV. Out of the total of 24 evidence-based models identified, there are currently 15 that measure child development outcomes (USDHHS, n.d.). Programs are evaluated based on improved child and family outcomes within eight different domains: 1) maternal health, 2) child health, 3) positive parenting practices, 4) child development and school readiness, 5) reductions in child maltreatment, 6) family economic self-sufficiency, 7) linkages and referrals to community resources and supports, and 8) reductions in juvenile delinquency, family violence, and crime. All program models share characteristics, but they may take different approaches and follow different structures (USDHHS, 2022). In regard to shared characteristics, home visiting program models are collectively founded on the evidence that parenting practices are associated

with positive child outcomes (Shonkoff & Phillips, 2000). As such, the goal of home visiting is to promote these positive child outcomes through parent-mediated interventions and family-centered practice. This emphasis on parenting is central to the theory of change described by Raikes and colleagues (2014) which asserts that home visiting programs serving infants and toddlers can have the largest impacts on children's development by influencing parenting skills.

Different program models serve different age ranges (e.g., birth to two-years-old versus birth to three-years-old) and provide different schedules of home visits (e.g., weekly versus biweekly). Differences in structures are noted in the components of the program models. For example, Early Head Start Home-Based Option (EHS) and Parents as Teachers (PAT) are two evidence-based child-development focused home visiting programs; EHS includes weekly home visits and monthly family group socialization opportunities while PAT includes one to two home visits per month and family group connections focused on parenting and child development concerns.

EHS home-based option is one of the most prominent child-development focused home visiting programs. EHS was established in 1994 as part of a reauthorization of Head Start (HS), an organization that provides preschool children and families with a fully comprehensive program that helps them meet their unique health and educational needs in the face of socioeconomic disadvantage. EHS was developed as an extension of HS to provide health and educational services for pregnant women and children between birth to three-years-old (infants/toddlers; Office of Head Start, 2021). Head Start Program Performance Standards (HSPPS; Office of Head Start, 2016) were established to ensure foundational quality across type and location of services. EHS aims to promote child wellbeing and development by supporting families' involvement in play and learning activities with their infants/toddlers, conducting

ongoing developmental and health screenings, ensuring that children participate in routine pediatric primary care, and connecting families to necessary services (e.g., housing assistance, educational programs; Office of Early Childhood Development, 2020). A recent published report showed that EHS served nearly 840,000 families in 2021, calling attention to the program's wide reach and the nation's continued need for the support it provides (Office of Head Start, 2022b).

Aligned with Bronfenbrenner's (2001) ecological systems theory, the HSPPS reflect an emphasis on building micro- and mesosystem relationships to support child development. Specifically, the performance standards set expectations for the delivery of services within EHS programs, in addition to EHS's integration with other child development service agencies, including pediatrics (Office of Head Start, 2016). These performance standards are rooted in evidence that demonstrates the significance of parent-child, program staff-child, and program staff-parent relationships for both child and adult outcomes (Elicker et al., 2013) as well as the knowledge that service integration and collaboration across agencies promotes efficient, non-duplicative, and effective service delivery (Roberts et al., 1996). Such positive micro- and mesosystem influences show promise in mitigating the damaging effects of poverty on early child development.

With regard to health outcomes, there is limited evidence to suggest that receipt of EHS home visiting has a positive effect. In a national evaluation of EHS, Love and colleagues (2001) found that when compared to children in a control group, children in EHS were significantly more likely to be referred to early intervention services when there were identified signs of a developmental delay. In addition, children in EHS were more likely to visit a doctor for illness, attend a sufficient number of well-baby pediatric visits, and receive immunizations and hearing

screenings, though these differences were not statistically significant. These results coupled with the lack of more recent studies indicates a need for an examination of contemporary ways to promote coordinated care between home visiting programs and PPC that leads to improved child outcomes.

Pediatric Primary Care. Pediatric primary care (PPC) providers (e.g., pediatricians, nurse practitioners) promote children's health and development through preventative care (e.g., well-baby visits), illness treatment, various screenings (e.g., vision, hearing, developmental), and monitoring for appropriate nutrition and growth (Williams & Okamoto, 2016). For infants and toddlers specifically, PPC providers are responsible for developmental screening and monitoring, providing appropriate referrals to early intervention and education services, and encouraging positive parenting practices and strategies. The American Academy of Pediatrics (AAP) recommends that well-baby visits during infancy and toddlerhood occur at the ages of one week, one month, two months, four months, six months, nine months, 12 months, 15 months, 18 months, 24 months, 30 months, and 36 months (AAP, 2023). Attendance at these visits is especially important for infants and toddlers from low socioeconomic backgrounds who are at greater risk for developmental delays and health conditions (Nguyen, 2020). However, recent data suggest that only about 65% of low-income infants and toddlers attended six or more well-baby visits in the first 15 months of life, when a total of nine visits are recommended (Centers for Medicare and Medicaid Services, 2021).

Within healthcare systems, a medical home is considered the goal standard of care for both children and adults (Turchi et al., 2014). Specific to children, the AAP first described the medical home in 1967 as "a central location for children's medical records" and has expanded this definition over time to be "an approach to providing comprehensive and high-quality

primary care," demonstrating the conceptualization change from a place to a process (Sia et al., 2004, pp. 1473). The medical home is further defined as accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective (Sia et al., 2004). The establishment of medical homes for all children has been highlighted as a national priority since the passage of the Patient Protection and Affordable Care Act in 2010. Medical home evaluations have shown that this model is associated with reductions in emergency department utilization and outpatient care (Saynisch et al., 2021), increased patient satisfaction (Rosenthal, 2008) and health-related quality of life (John et al., 2020), improved access and quality of care, and reduced healthcare costs (Christensen et al., 2013).

Culturally Responsive Family-Centered Care

Both home visiting programs and PPC are guided by family-centered practices. Family-centered care has been defined as a standard of practice that promotes the health and wellbeing of children and their families by building family-professional partnerships that demonstrate respect for families' strengths, perspectives, and contributions (Dunst, 1997; Wells et al., 2015). As a result, family-centered care builds on family strengths, shows an appreciation for the skills and expertise that each partner offers, promotes shared decision making, develops trust in the partnership, facilitates open conversation between partners, and honors cultural diversity (Bishop et al., 1993; Wells et al., 2015).

Family-centered care principles are at the heart of home visiting programs' theory of change (Raikes et al., 2014). Central to child-development-focused home visiting is a two-generational approach in which home visitors' primary role and responsibility is to educate and foster parents' promotion of their children's development and health (CUPID, 2019). Home visitors set collaborative goals and make decisions with parents and connect family members to

additional necessary resources, all with the primary intent to formulate a parenting and home environment that optimizes child development and health. Using data from a national evaluation of EHS home visiting, Raikes and colleagues (2014) empirically demonstrated that child language outcomes are mediated by parenting enhancements. Likewise, family-centered care principles are demonstrated by PPC providers when they recognize families as the experts on their children's care, support families in making decisions, and consistently communicate clear and unbiased information (AAP, 2004). Implementing family-centered care practices in the pediatric setting has led to increased patient/family and staff satisfaction, quality of family-provider communication, and cost-effectiveness, illustrating positive effects at the individual- and systems-levels (Eichner & Johnson, 2012; Wells et al., 2015).

Though both home visiting and pediatric service provision are rooted in family-centered practices, there is a recognition that these practices can be improved upon with training. Peterson and colleagues (2021) found that interactive approaches to learning, such as engagement in role play activities, were related to increased knowledge of family-centered care practices specifically related to communication strategies. Similarly, Miller and colleagues (2016) found that when training pediatric residents about patient-centered care using didactic materials and interactive training components (e.g., case vignettes), the residents reported that the training helped them think differently about the cases and increased their motivation to become more patient-centered. In addition, training an interprofessional team on family-centered practices has yielded positive effects for provider knowledge and self-efficacy (Laird-Fick et al., 2011).

Family-centered care honors families' cultures, traditions, and values (Bishop et al., 1993). Consequently, family-centered care requires that professionals acquire cultural competence and humility to serve children and families from various cultural backgrounds.

According to Calzalda and Suarez-Balcazar (2014), cultural competence is defined as "an ongoing, contextual, dynamic, experiential and developmental process that impacts one's ability to understand, communicate with, serve, and meet the needs of individuals who look, think, and/or behave differently from oneself" (p. 3). Calzalda and Suarez-Balcazar integrate three key dimensions of cultural competence development in their model: 1) critical awareness of one's biases and knowledge of specific cultural groups, 2) skills development focused on effective communication with diverse children and families, and 3) the organizational support necessary to implement culturally competent practices. Similarly, cultural humility incorporates self-reflection of personal biases and assumptions, active listening to others' cultural narratives, and partnership-building with others from diverse backgrounds. Development of cultural humility requires that professionals continuously engage in conversations with the individuals they serve to learn from them and develop shared goals (Tervalon & Murray-Garcia, 1998). Professionals who develop cultural competence and humility are well prepared to implement family-centered practices with families from a variety of cultural backgrounds.

The development of cultural competence has been highlighted as a need for both early childhood development professionals (e.g., home visitors; Banerjee & Luckner, 2014) and PPC providers (Like, 2011), as both types of professionals serve diverse populations. In a survey examination of 574 early childhood development professionals (e.g., home visitors, early childhood education teachers, early intervention providers), Banerjee and Luckner (2014) found that participants identified the following as some of their top training needs related to working with culturally diverse families: strategies to collaborate, methods for sharing assessment results, methods for collaborating with other professionals serving the child, and creation of supportive environments that communicate value for children's and families' cultural heritage, traditions,

and values. Likewise in pediatrics, cultural competence has been identified as a training need at both individual and systems levels. At the individual level, Macdonald and colleagues (2007) conducted focus groups with pediatric residents and faculty; findings revealed that these providers expressed a need for training on 1) specific knowledge on different cultural groups, 2) skills and strategies for engaging in interactions with patients of different cultures, and 3) individual differences within cultures. At the systems level, a variety of federal and state regulations promote culturally competent healthcare service provision in the United States, indicating that the need for medical providers to partake in cultural competence training is widely acknowledged (Truong et al., 2014).

Care Coordination

In addition to family-centered practices, coordinated care is a goal of both home visiting and medical home models. The AAP (2004) described coordinated care as having 1) a plan of care that is shared among a child's providers, 2) an accessible central database that contains all medical information, 3) a physician's explanation for any referrals to other providers, 4) physician assistance with communicating clinical issues to referred providers, 5) linkages to family support groups and other resources, 6) consistent implementation of recommendations among providers, and 7) collaboration with educational and other community organizations to ensure consistency across systems. Effectively coordinated care within a medical home has significant implications for child outcomes, including increased accessibility to satisfaction of necessary services, improved overall health, and greater quality of life (McAllister et al., 2007; Turchi et al., 2009). It has also been shown to reduce the frequency of patient hospitalizations (Cooley et al., 2009), school absences, and out-of-pocket healthcare expenses (Turchi et al., 2009).

The empirical support for the benefits of care coordination within pediatric medical homes is compelling, though limited research has focused on the infant and toddler population specifically (Manz et al., 2019; Paradis et al., 2013). However, this population is in need of effective care coordination given that approximately 25% of United States children experience developmental delays (U.S. Census Bureau, 2019). Developmental delays often affect multiple areas (e.g., expressive language, fine motor skills) indicating a potential need for multiple service providers across systems. Further, the rate of developmental delay increases with poverty level, with recent estimates showing that young children experiencing deep poverty (i.e., below 50% of the federal poverty line) are almost three times as likely to have a developmental delay. Children who experience poverty (i.e., 50% to 99% of the federal poverty line) or low-income conditions (i.e., 100% to 199% of the federal poverty line) have about a 50% increased chance of having a developmental delay (Nguyen et al., 2020). In addition, approximately 80% of children with a developmental delay have co-existing medical conditions and needs (CAHMI, 2010), with the same pattern across income groups. However, those experiencing deep poverty have an even greater rate of having a physical medical condition, at about four times the rate of non-poor children (Nguyen et al., 2020). With high rates of both developmental delay and co-occurring medical conditions in this population facing disproportionate rates of poverty, it is critical that effective care coordination practices are empirically identified to promote optimal development and health outcomes as well as later school success.

In addition to the medical home model, home visiting program models aim to promote coordinated care with community agencies, as coordination is both a federal benchmark and a priority of the national Home Visiting Research Agenda (Home Visiting Applied Research Collaborative, 2017). Head Start (HS)/EHS program performance standards reflect an emphasis

on building mesosystem relationships (e.g., relationship between a child's home visitor and pediatrician; Bronfenbrenner, 2001) to support child development. Specifically, the performance standards emphasize the establishment and maintenance of collaborative partnerships between HS/EHS and community organizations such as healthcare systems, school districts, and cultural institutions (Office of Head Start, 2016). These performance standards are rooted in evidence that service integration and collaboration across agencies promotes efficient, non-duplicative, and effective service delivery (Roberts et al., 1996). Such positive mesosystem influences may work to mitigate the damaging effects of poverty on early childhood development.

Although both the medical home model and home visiting models seek to achieve coordinated care, evidence suggests that such coordination is not regularly occurring. In a national survey evaluation of 80 home visitors, Paradis and colleagues (2018) found that only 38% of home visitors reported having frequent contact with children's PPC provider, and most (80%) of this contact was via phone as compared to in-person (17%). The lack of consistent care coordination between home visiting and PPC is likely due to the lack of empirical guidance for effectively doing so (Manz, 2020; Paradis et al., 2018).

There is preliminary evidence to suggest that the goal of coordinated care between home visiting and PPC can be achieved by promoting interagency collaborations that involve consistent communication between agencies, joint goal and intervention planning, and training workshops and coaching (Cooper et al., 2016; Paradis et al., 2018). Sides and Baggett (2015) reported anecdotal results of a case study that involved the integration and co-location of home visiting within a primary health care setting. As part of the co-location agreement, all PPC patients' medical teams included a home visitor, and home visitors and PPC providers engaged in a variety of aligned responsibilities including 1) using the same standardized measurement and

developmental screening tools, and 2) using shared electronic health records. The researchers anecdotally reported that this care coordination yielded several benefits, including reduced patient risk factors for health conditions, reduced costs related to emergency department visits, and reduced duplication of efforts and services. Similarly, Linton and colleagues (2018) effectively coordinated care between home visiting and PPC through co-located services that included referrals from PPC providers to on-site home visitors who provided parenting, behavior, and development support for PPC patients and families. In addition, patients with more intense needs were referred for in-home home visiting support. The researchers anecdotally reported that this model of coordinated care led to increased home visiting referral rates and PPC provider familiarization with positive parenting techniques.

One additional study on care coordination demonstrated positive effects for children's health, family functioning, and mental health outcomes. Paradis and colleagues (2013) integrated a home visiting program and PPC, without co-location, by implementing 1) weekly interagency meetings to discuss families' goals and treatment plans, 2) team building activities, and 3) inclusive staff training for both medical and home visiting professionals. A home visiting program pediatric social worker was responsible for uploading comprehensive family assessment and service plans into children's electronic medical records for the purposes of sharing information across agencies. Home visiting professionals had access to the electronic medical record to monitor their families' compliance with recommended preventative well-baby visits. Additionally, pediatric residents at the PPC practice were invited to accompany home visitors during home visits during their community health rotation. A randomized controlled trial demonstrated that children in the coordinated care model had significantly higher attendance at well-baby visits when compared to children in a control group.

Altogether, these three studies show preliminary promise for effective care coordination between home visiting programs and PPC. However, a variety of methodological weaknesses exist. Researchers collectively did not detail their methods to promote replication or use strong and varied evaluation methods. While these studies indicate pathways to successful care coordination (e.g., colocation, interagency meetings, interagency training), there continues to be a need for empirical guidance in effectively coordinating care between home visiting programs and PPC.

Interagency Training. Paradis and colleagues (2013) introduced interagency training as a component of coordinated care between home visiting and PPC. Interagency training is promising for formulating communication between systems and increasing understanding of each system's role in the care of infants and toddlers. Definitions of interagency training have largely aligned with the AAP's (2004) definition of coordination within a medical home, highlighting it as a potential effective practice for meeting coordination needs. The Department for Education and Skills (DfES) of Great Britain (2006) described the purpose of interagency training as to achieve the following for staff from different agencies: 1) a shared understanding of the tasks, processes, principles, roles, and responsibilities for protecting children and promoting their welfare; 2) more effective and integrated services at the systems- and individual-levels; 3) improved communication between professionals including a common understanding of key terms, definitions, and thresholds for action; 4) effective working relationships including an ability to work on multidisciplinary teams; and 5) logical decision-making based on information sharing, thorough assessments, critical analyses, and professional judgment. An interagency training that meets these goals could be a viable solution for coordinating care between EHS home visiting and PPC for infants and toddlers who experience socioeconomic disadvantage.

Though the research on interagency training for infant and toddler service systems is limited, there is some preliminary evidence of effectiveness. In an early study, Gaines and colleagues (1993) studied the effects of integrating a healthcare clinic into a childcare in order to 1) provide healthcare services to children enrolled in the childcare and 2) help childcare staff develop competence in managing children's health issues. Prior to the introduction of the healthcare clinic, childcare staff routinely sent most children demonstrating symptoms of illness home or to their pediatrician. Following training on detection of communicable diseases led by the healthcare clinic staff, it was anecdotally reported that the childcare staff sent fewer children home due to illness symptoms. This study was an early indication of successful interagency training; however, the lack of specificity on the procedures used to support the interagency training left others without empirical guidance on how to replicate the findings.

A more recent study conducted by Grant and colleagues (2019) showed additional promise for interagency training between health and development service systems. Specifically, researchers sought to build a community partnership between HS/EHS and medical homes for young children from low-income households. Their processes included creating a screening protocol and tracking system for the identification of children who met eligibility criteria for HS/EHS programs, developing a specific referral process from medical homes to HS/EHS, and providing a 1-hour training session led by an EHS program manager to medical providers focused on the importance of early childhood education programs and HS/EHS eligibility requirements and referral procedures. Following the intervention, HS/EHS eligibility screening rates rose from 7.6% to 46.4% of children seen during pediatrician visits, and HS/EHS referral rates rose from 1.3% to 20% within one year. Thus, this study is a demonstration of how

interagency training can improve young children's accessibility to services aimed at promoting healthy development and school readiness.

To date, the Paradis et al. (2013) and Grant et al. (2019) studies are the only two to examine interagency training between HS/EHS and PPC. Paradis and colleagues (2013) did not describe their training content or procedures, so guidance on conducting the training is not available. Grant and colleagues' (2019) interagency training specifically focused on how to use the newly developed referral system to ultimately improve referral rates. This was likely effective given the evidence that PPC providers and families have a limited understanding of HS/EHS and the resources these programs provide (Saoud et al., 2022). Teaching providers when and how to refer children to HS/EHS likely increased their understanding of the process. When combined with the structural mechanisms to screen and track children, researchers yielded a rise in HS/EHS referral rates.

Although increasing PPC referral to EHS is valuable, interagency training establishes a context for training in crucial areas of knowledge and competencies expected for providers, irrespective of agency affiliation. In a qualitative study with HS/EHS coordinators, medical providers, and parents, Saoud and colleagues (2022) found that both HS/EHS staff and medical providers reported having difficulty communicating with each other. However, interagency training could focus on specific methods of communication between both agencies, such as information on how, what, and when to communicate between the individual agencies involved. For home visiting and PPC specifically, an interagency training could focus on promoting communication between home visitors and PPC providers during well-baby visits, agency-specific case conferences, or in shared records. Such a training could involve home visitors and pediatricians learning to communicate with one another as well as home visitors learning to

facilitate parent-PPC provider communication. Another commonality between the two agencies is their family-centered service provision for culturally diverse children and families. Cultural competence training has been identified as a need for both pediatric primary care providers (Like, 2011) and early childhood professionals including home visiting staff (Banerjee & Luckner, 2014). Specific topics for training could include social determinants of health and engaging diverse families in services.

Facilitators and Barriers. A variety of facilitators and barriers to interagency collaboration between child service systems have been identified in the literature. In regard to facilitators, Cooper and colleagues (2016) conducted a systematic review and found the following were effective in promoting success in interagency collaboration among child service systems serving children and adolescents with emotional, behavioral, and mental health difficulties: an accurate understanding of the other agency's professionals' services and roles, an emphasis on family-centered care, staff willingness to work together, trust and mutual respect across agencies, transparent and frequent communication between agencies, joint training, and adequate funding, time, and space to support interagency collaboration. Identified barriers were simply the opposite of the facilitators (e.g., lack of communication) as well as a lack of management support. Though this systematic review lacked a study on interagency collaboration between home visiting and PPC, it can be inferred that many of the same facilitators and barriers exist for these two systems. As such, an effective interagency training between these two agencies should leverage these findings by integrating emphases on 1) implementing family-centered care practices and their application to services in both agencies, 2) clearly defining the roles and responsibilities of each agency, 3) garnering staff and administrator willingness to collaborate by incorporating individual agency needs and goals within the training, and 4)

promoting opportunities for ongoing communication and collaboration in natural environments that do not require extensive resources.

***Linking for Little Ones* Interagency Training Program**

The proposed project will be developed using community-based participatory research (CBPR) methodology, which has been defined as "a partnership approach to research that equitably involves community members, organizational representatives, and researchers in all aspects of the research process and in which all partners contribute expertise and share decision making and ownership" (Israel et al., 2005, p. 5). As such, representatives from each participating agency will be involved in all stages of research and development, including method development, the training implementation, data collection and analyses, and the dissemination of findings. The agencies' involvement ensures that the project will be mutually beneficial to all agencies and researchers involved such that the project goals are aligned with the agencies' missions and needs.

Although CBPR methods will develop the training program, *Linking for Little Ones* is expected to focus on two major training areas: 1) agency-specific information regarding the mission, goals, infrastructure, roles and responsibilities of staff, and procedural information for collaboration efforts such as referrals for home visiting and PPC; and 2) culturally responsive family-centered care practices. It is also expected that the training will include five components that each involve home visitor-resident collaborations: 1) a collaborative training session, 2) a home visit with a pediatrician, 3) a well-baby pediatric visit with a home visitor, 4) an EHS case conference, and 5) a collaborative reflection session. These components have been generated from preliminary discussions with partners at Children's Hospital of Philadelphia (CHOP) and Valley Health Partners (VHP; see letters of support from Drs. Ridgeway and Brown) regarding

the existing community services training that pediatric residents receive. The *Linking for Little Ones* procedures are unique from presently available training programs by involving both home visitors and pediatric residents within each stage to increase collaboration, utilizing collaborative training methods as opposed to traditional, didactic professional development, and by incorporating a focus on culturally responsive family-centered care principles.

Linking for Little Ones will commence with a joint training session involving small groups of pediatric residents and EHS home visitors. Prior to the session, the student researcher will create and provide "pre-work" training materials such as short videos or infographics for participants to review beforehand. This will help to minimize didactic training and maximize the amount of interactive training time devoted to collaborative work and discussion during the session. The two-hour training session will be led by the student researcher and feature collaborative activities such as case vignettes and role plays designed to facilitate discussion among home visitors and pediatric residents on 1) how they envision their roles in supporting and coordinating care across their respective agencies and 2) how they might incorporate culturally responsive family-centered care principles in the child's service provision. Interactive learning activities were chosen based on evidence that, in interprofessional contexts, these types of activities have been found to significantly increase participants' attitudes toward interprofessional teams and team care approaches (Morrell et al., 2021). This is rooted in several theories of adult learning which posit that adults need to be actively involved in the learning process (for a review, see Bryan et al., 2009). In regard to active learning, using interactive activities in small groups can promote self-directed learning (Knowles, 1975). This approach also allows for the adult learners to gain some control over the pace and direction of their

learning, which is another aspect of active involvement in the learning process (Bryan et al., 2009).

Following this training session, home visitors will attend a well-baby visit and pediatric residents will attend an EHS home visit. In both scenarios, a home visitor, PPC provider, and child and family will be present. The collective purpose of these two components is to increase participants' knowledge of the other agency, the providers' roles, and their awareness of culturally responsive family-centered care as implemented by the other agency. For home visitors, increased knowledge of well-baby visit structure and communication with PPC providers can help them facilitate communication between families and providers. In addition, during these visits PPC providers will have the opportunity to see how home visitors engage families and use culturally responsive family-centered care principles. Likewise, the same is true for when pediatric residents attend a home visit. Residents will gain knowledge on the structure of home visits and how home visitors support children and families in their natural environments using culturally responsive family-centered care practices. They will also be exposed to various environmental factors (e.g., poor living conditions, limited access to resources such as books) that could pose barriers to the child's health and development. This may help pediatric residents better understand the child's risk and conditions and subsequently provide more family-centered services to families learning to support their children.

The EHS case conferences provide another opportunity for home visitors and pediatric residents to collaborate and learn from each other. During a case conference, home visitors present updates on one or more of their assigned families. Discussions may focus on new environmental factors (e.g., parent gained or lost employment), child health and development updates (e.g., the child is now sitting independently), and successes and challenges of engaging

families in services. During the case conferences, pediatric residents will be encouraged to share relevant information and ask questions. Likewise, home visitors who have health-related questions will be encouraged to engage the pediatric residents by asking questions.

Following the completion of all the first four *Linking for Little Ones* components, EHS home visitors and pediatric residents will participate in a Collaborative Reflection session. During this session, participants will reflect on what they learned during their engagement in *Linking for Little Ones*. The student researcher will lead a group discussion on participants' major takeaways on the following topics: roles and responsibilities of home visitors and pediatricians, cultural competence and responsiveness in service delivery, and family-centered care practices. Participants will also be asked to identify areas that they would like additional training on.

Linking for Little Ones will be developed through an iterative, partnership process. Central to the CBPR approach, this project will formulate a Partnership Team that includes EHS and PPC representatives. The team will comprise one administrator from each participating EHS program and pediatric residency training program, one home visitor from each participating EHS program, and one pediatric resident from each participating training program. Throughout the duration of the project, the Partnership Team will collaborate to help develop, implement, and assess the training.

Guiding Theoretical Frameworks

Ecological Systems Theory

Interagency collaboration research is rooted in Bronfenbrenner's ecological systems theory (2001) which posits that child development is a complex system of bidirectional relationships between multiple levels of their environment (i.e., systems). Thus, it is essential to

consider a child's development in light of their layered environments, from their most immediate, direct environment (e.g., family) to their large, more indirect environment (e.g., cultural beliefs). Each of these systems (i.e., micro-, meso-, exo-, macro-, and chronosystem) and the interaction between them influence young children's developmental trajectories.

Home visiting programs, PPC, and families are distinct and salient microsystems in children's lives. Children have direct contact with their families and with providers from both agencies; the content and quality of this contact can positively or negatively influence child development. For example, receipt of quality healthcare services (e.g., routine vision and hearing screening) from a PPC provider can promote optimal health and prevent adverse outcomes. Likewise, positive parent-child interactions are predictive of early language and literacy development (Dodici et al., 2003).

The relationships between these three microsystems serve as mesosystems in children's lives. The target of interagency training, stronger collaboration between home visiting and PPC, is an individual mesosystem. Similarly, partnerships between home visitors and families as well as between pediatricians and families are additional mesosystems in children's lives. As such, an interagency training that focuses on establishing and maintaining improved collaboration between systems and providing culturally responsive family-centered care to children and their families leverages mesosystems to promote healthy child development.

Barr's Model of Interprofessional Education Benefits

Barr (2005) proposed a model to illustrate the benefits of interprofessional education that suggests a "chain reaction" occurs as a product of participation in interprofessional education (p. 27). In essence, the model posits that effective interprofessional education can reduce the stress of agencies and their staff by creating positive interactions, engendering mutual trust and

support, encouraging collaboration between professions, and limiting the demands on any one profession. This reduced stress would lead to the enhancement of the professions involved, improved recruitment of professionals, and improved client care, which would collectively result in a positive partnership between the two agencies.

Contextual Model of Cultural Competence

Finally, the proposed project is also guided by the Contextual Model of Cultural Competence (Calzalda & Suarez Balcazar, 2014) which illustrates cultural competency development at the individual and broader systems levels. At the individual level, the desire to engage in an ongoing process is essential for the development of cultural competence. Important processes include knowledge and self-awareness for recognizing one's cultural beliefs and identities. In addition, cultural competence includes acquisition of multicultural skills for adapting services according to the salient culture of their clients and to intentionally place culture at the center of all interactions between agency staff and the children and families they each serve (Ingraham, 2000). Echoing principles of cultural humility, this model recognizes that cultural competence is never fully acquired, but an ongoing learning process that continually enhances one's cultural understanding and responsiveness to others (Kelsall-Knight, 2022).

At the systems level, Calzalda and Suarez-Balcazar proposed a three level framework whereby the broadest level of the organization (i.e., organizational climate) influences cultural competence at the next level (i.e., staff and service providers), which influences that of the third level (i.e., programs and program evaluation methods). However, the scholars recognized that each of the levels have the ability to influence each other in a bidirectional manner. An agency that values culturally competent service delivery is likely to instill the same values and goals in its staff; staff that seek to develop cultural competence are likely to develop agency programs

and procedures that promote cultural competence across the agency. The bidirectional nature of the model suggests that in the event that an agency does not value culturally competent service delivery, culturally competent staff have the ability to make organizational changes to effectively promote a climate of cultural awareness and competence as well as programs that align with such values. *Linking for Little Ones* will emphasize family-centered services, which intersects with topics of cultural differences and cultural competency. As such, these topics will be integrated throughout the training program.

Research Questions and Hypotheses

Research Question 1 (RQ1). Do pediatric residents show greater capacity for interagency collaboration immediately following completion of *Linking for Little Ones*?

  a. Does pediatric residents' knowledge of home visiting programs goals, approaches, and infrastructure and home visitors' roles and responsibilities increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

  b. Does the frequency of pediatric residents' use of family-centered care principles increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

  c. Do pediatric residents' perceived competencies in EHS/PPC interagency collaboration (i.e., perceived abilities to communicate, collaborate, understand each other's roles and responsibilities, provide patient-centered care, and improve team functioning) increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

Hypothesized results for RQ1. It is expected that pediatric residents will demonstrate increased knowledge of EHS, use of family-centered care practices, and perceived competencies

to engage in interagency collaboration with EHS as illustrated by p-values less than .05 when comparing scores pre- and post-training. In regard to estimates of effect size, it is expected that there will be a bigger effect for knowledge of EHS when compared to use of family-centered care practices and interagency collaboration competency. This hypothesis is based on prior research that has shown that professional development leads to greater effects on knowledge than it does on implementation or skill (Donath et al., 2023).

Research Question 2 (RQ2). Do pediatric residents sustain their knowledge of EHS, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as measured by a 1 month follow-up assessment?

Hypothesized results for RQ2. It is expected that pediatric residents will sustain their knowledge of EHS, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as illustrated by p-values greater than .05 when comparing scores post-training and at the 1 month follow-up.

Research Question 3 (RQ3). Do home visitors show greater capacity for interagency collaboration immediately following completion of *Linking for Little Ones*?

d. Does home visitors' knowledge of PPC programs goals, approaches, and infrastructure and PPC providers' roles and responsibilities increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

e. Does the frequency of home visitors' use of family-centered care principles increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

f. Do home visitors' perceived competencies in EHS/PPC interagency collaboration (i.e., perceived abilities to communicate, collaborate, understand each other's roles and

responsibilities, provide patient-centered care, and improve team functioning) increase from pre-training assessment immediately following completion of the *Linking for Little Ones* program?

Hypothesized results for RQ3. It is expected that home visitors will demonstrate increased knowledge of PPC, use of family-centered care practices, and perceived competencies to engage in interagency collaboration with PPC from pre-test to post-test assessments as illustrated by *p*-values less than .05 when comparing scores pre- and post-training. In regard to estimates of effect size, it is expected that there will be a bigger effect for knowledge of PPC when compared to use of family-centered care practices and interagency collaboration competency, based on prior research that has shown that professional development leads to greater effects on knowledge than it does on implementation or skill (Donath et al., 2023).

Research Question 4 (RQ4). Do home visitors sustain their knowledge of PPC, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as measured by a 1 month follow-up assessment?

Hypothesized results for RQ4. It is expected that home visitors will sustain their knowledge of EHS, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as illustrated by *p*-values greater than .05 when comparing scores post-training and at the 1 month follow-up.

Research Question 5 (RQ5). Do home visitors and pediatric residents perceive *Linking for Little Ones* as usable, as indicated by endorsing the program as acceptable, readily understood, feasible, and as promoting positive intersystem collaboration, system climate, and system support at its conclusion?

Hypothesized results for RQ5. The *Linking for Little Ones* program will be developed in partnership with representatives from home visiting programs and PPC, who will ensure that each agency's needs, values, and goals in addition to preferred methods of training (e.g., time, duration, modality) are incorporated. As such, it is expected that EHS and pediatric residents will rate usability dimensions favorably.

Significance and Implications

Linking for Little Ones will be strategically developed to be highly significant for EHS and to address key gaps in the field of early care and education. Head Start Program Performance Standards (HSPPS) establish a requirement to formulate community partnerships between HS/EHS and other early childhood service providers including PPC (see Subpart E 1302.43 - Family and Community Engagement Program Services). However, there is a dearth of research on the procedures that facilitate the development of such partnerships. As such, the proposed project seeks to build upon existing knowledge of interagency community partnerships between EHS and PPC and contribute to our understanding of how such partnerships could be sustained in the future. By partnering with PPC, EHS can further develop skills in promoting child health (Subpart D 1302.42 - Child Health Status and Care) and in supporting families seeking and receiving healthcare for their infants and toddlers (Subpart D 1302.46 - Family Support Services for Health, Nutrition, and Mental Health). Finally, EHS prioritizes provision of high quality professional development opportunities for staff (Subpart I 1302.92 - Training and Professional Development); as such, the proposed project will build upon existing training, address the feasible and acceptable procedures necessary to implement and sustain interagency training with pediatric healthcare systems and providers, and add much needed empirical evaluations to the existing knowledge base on interagency training with EHS and PPC.

Findings from the proposed study will likely inform policymakers and program administrators on interagency training practices and procedures that improve collaboration and partnerships between EHS and PPC. This is true for advancement of policies governing PPC as well. Though the medical home model (AAP, 2004) asserts that pediatric services are coordinated, empirical guidance on such coordination is lacking. Evidence for effective coordination practices could stimulate important policy to promote sustained partnerships between service systems. The proposed project is expected to significantly improve knowledge and competence in engaging in interagency collaborations for EHS home visitors and PPC providers and use of culturally responsive, family-centered care practices.

The results from this project are expected to inform interagency training for EHS and pediatric residents. Specifically, results will illuminate ways for improving existing didactic, administrator-led training structures to become interprofessional, interactive, and peer-led training opportunities. Results of the proposed project will indicate which outcomes are effectively improved as a result of participation in *Linking for Little Ones*, which will inform its advancement and guide the generalization. Overall, the communities involved will learn valuable information on barriers and facilitators to interagency collaboration, positive and negative outcomes from interagency collaboration, and the resources necessary to sustain such a collaboration and partnership.

Linking for Little Ones addresses several equity considerations. Foremost, this project aims to unite home visitors and pediatricians in providing services that position and empower parents to advocate for and contribute to the care that they receive for their infant/toddler (e.g., family-centered care). Recognizing that culture shapes parents' perspectives and interpersonal processes for engaging with providers (Jegatheesan, 2009), family-centered care requires

providers to be cognizant and skilled to provide services that are culturally responsive. Through interagency training, home visitors and pediatric residents will be engaged in interactive, collaborative activities and discussions based on experience with families of various racial, ethnic, and linguistic backgrounds in addition to other diverse identities. Participants will reflect upon practices that promote equitable service provision and family-centered care and build upon their existing knowledge base on specific actions to take to promote equity in home visiting and pediatric primary care. A Parent Advisory Board will be established to obtain feedback from parents in the community who are recipients of home visiting and pediatric services for their infants/toddlers (see Table 1). Incorporating parents' perspectives and feedback will elevate the voices of the ultimate consumers of enhanced collaboration between infant/toddler-serving agencies.

Formulating collaboration among home visitors and pediatric residents requires consideration of professional diversity and equity. Home visitors and pediatric residents will differ in terms of educational background, and very likely will differ in terms of socioeconomic status. These differences can create barriers to genuine and full collaboration during the interagency training components (Gergerich et al., 2019). Interagency training presents opportunities to address and dismantle these barriers. *Linking for Little Ones* will include activities that enable home visitors and pediatricians to share their unique expertise and experiences, leading to their joint identification of areas of needed training and appreciation of how they can mutually complement and fulfill one another's emerging competencies. Implementation of *Linking for Little Ones* will require the facilitator (e.g., student researcher) to be skilled in recognizing expressions of this power differential and maintaining equitable engagement of home visitors and pediatricians using strategies such as affirming trainees'

contributions as well as reframing and challenging comments that may be oppressive. A Partnership Team, representing home visitors and pediatricians, will operate throughout this project to guide the development of training materials, content, and strategies to reveal and address equity imbalance (see Table 1).

B. Research Design and Methodology

Linking for Little Ones will be developed through an iterative, partnership process. Central to the CBPR approach, this project will formulate a Partnership Team that includes EHS and PPC representatives. The team will comprise one administrator from each participating EHS program and pediatric residency training program, one home visitor from each participating EHS program, and one pediatric resident from each participating training program. Dr. Evelyn Ridgeway, manager of the Child Development and Mental Health Unit at CHOP EHS, and Ms. Sandra Genzel, Vice President of Preschool Services at Community Services for Children (CSC) EHS have committed to the roles of the administrators to represent each EHS agency on the Partnership Team (see Appendix for letters of support). Dr. Hillary Kruger, developmental pediatrician and organizer of resident training at CHOP, and Dr. Kimberly Brown, Medical Director of Population Health at Valley Health Partners (VHP), have committed to the roles of the administrators (see Appendix for letters of support). At the start of the project, each administrator will nominate one home visitor or pediatric resident from their respective agencies to serve on this team. Throughout the duration of the project, the Partnership Team will participate in five predetermined meetings to help develop, implement, and assess the training (see Table 1 for a brief overview of more objectives for details on each meeting).

Table 1

Descriptions of Partnership Team and Parent Advisory Board Meetings

Meeting Number	Timeline	Purpose	Next Steps
		Parent Advisory Board Meetings	
1	Beginning of proposed project	To learn more about the experiences of parents as recipients of home visiting and pediatric services and gather feedback on desires for improved services; to gain suggestions for *Linking for Little Ones* content and procedures from parent perspective	Compile input and suggestions and prepare to present them to the Partnership Team in Meeting 1
2	One month into project	To gather feedback on draft *Linking for Little Ones* materials	Prepare to present feedback to the Partnership Team in Meeting 2
3	Following completion of the project	To present findings and discuss their meaning to parents; obtain feedback for improvements	Present to share feedback to Partnership Team in Meeting 5
		Partnership Team Meetings	
1	Beginning of proposed project, following Parent Advisory Board Meeting 1	To learn more about the goals and structures in place for pediatric resident training and collaboration between EHS and PPC	Develop drafts of training content for the various components; send to team and parents for review
2	One month into project following Parent Advisory Board Meeting 2	To gather feedback on draft training materials; finalize logistics of *Linking for Little Ones* procedures	Finalize training materials; begin to implement training
3	Following three completed rounds of *Linking for Little Ones*	To assess feasibility of implemented procedures and determine any necessary changes; assess for patterns in the data	Make any necessary adjustments to procedures; continue to implement training
4	Following seven completed rounds of *Linking for Little Ones*	To reassess feasibility of implemented procedures; assess for additional or different patterns in the data	Make any necessary adjustments to procedures; continue to implement training; complete data analyses
5	Following completion of the project and Parent Advisory Board Meeting 3	To present findings and discuss their meaning to EHS and PPC; discuss necessary resources and procedures to sustain the interagency training; elicit feedback on suggestions to improve the interagency training	Provide requested support and resources to both agencies to promote sustainability of the interagency training

Given that young children and their families are the ultimate consumers of home visiting

and pediatric primary care services, a Parent Advisory Board will also be formed. The purpose of

this board will be to incorporate parents' perspectives and needs into the *Linking for Little Ones* content and procedures, especially concerning the aspects that pertain to parents (i.e., culturally responsive care, family-centered care). Parents will be recruited through participating home visiting programs to ensure that all parents have children receiving home visiting services. The Parent Advisory Board will meet a total of three times across the proposed project timeline (see Table 1 for an overview of goals for each meeting). Each meeting will be intentionally scheduled to occur before the corresponding Partnership Team meeting (e.g., Parent Advisory Board Meeting One will occur prior to Partnership Team Meeting One) so that the parents' feedback can be discussed with the Partnership Team. Parents on the Parent Advisory Board will be invited to meet separately so that their engagement in the project can be tailored to their specific experience as parents. As the Partnership Team meetings will be heavily focused on agency specific procedures that would be less relevant to parents, distinguishing the Parent Advisory Board meeting is intended to engage parents in meetings focused on parts of the project that are most relevant to them.

Parent Advisory Board Meeting One will focus on introducing parents to the project, learning more about their experiences in receiving home visiting and PPC for their children, gathering feedback on their desires for improved coordination between home visiting and PPC, and elicit suggestions for *Linking for Little Ones* content and procedures. During the meeting, the student researcher will ask the parents to provide feedback on the training experiences most proximal to them (e.g., family-centered care). Parents will be encouraged to share perspectives on what they would want their home visitor and pediatrician to learn from another. Information gathered from this meeting will be presented to the Partnership Team in the first meeting.

The first Partnership Team meeting will occur following the first Parent Advisory Board meeting. During this meeting, the student researcher will lead a discussion among Partnership Team members about their existing training structures and goals for training. Partnership Team members will share ideas on how to improve their existing training content and procedures. In addition, they will identify preferred procedures for joint training, including logistical information such as days, times, modalities (e.g., in-person vs. online), and session durations.

Importantly, members will discuss desired content for the *Linking for Little Ones* collaborative training session based on their shared goals for training. The team will identify topics that will help meet these goals. If topics related to cultural responsiveness and family-centered care do not come up naturally, the student researcher will suggest topics in these areas (e.g., working with multilingual families). The student researcher will also present feedback obtained from parents on the Parent Advisory Board. Members will also discuss various interactive training activities, such as case vignettes and role plays, and identify preferred activities for the session.

Following the first Parent Advisory Board and Partnership Team meetings, the student researcher will develop draft drafts of the *Linking for Little Ones* materials discussed and upload them to a shared drive for the board and team to review. Then, the Parent Advisory Board will meet for Meeting Two. During this meeting, the student researcher will elicit feedback on the draft materials and compile this information to share with the Partnership Team in their second meeting. Following both meetings, the student researcher will incorporate all feedback into revised versions of the materials and upload them to the shared drive for a final review by the board and team. In addition, Partnership Team members will also finalize the logistics of the *Linking for Little Ones* procedures during Meeting Two based on the agencies' preferred

methods. Following this meeting, the student researcher will first finalize the training materials and upload them to the shared drive for a final review. Once the Parent Advisory Board and Partnership Team confirms agreement with the materials, the first rounds of *Linking for Little Ones* will begin using the finalized materials and preferred procedures.

Partnership Team Meeting Three will take place after three rounds of *Linking for Little Ones* have been completed. The purpose of this meeting will be to elicit feedback from the Partnership Team about the feasibility of the implemented procedures thus far and make adjustments if necessary. In addition, the student researcher will analyze the data collected from the first three rounds of training and share them with the Partnership Team in this meeting. The student researcher will emphasize any initial patterns identified in the data and ask team members to share their interpretations of the patterns.
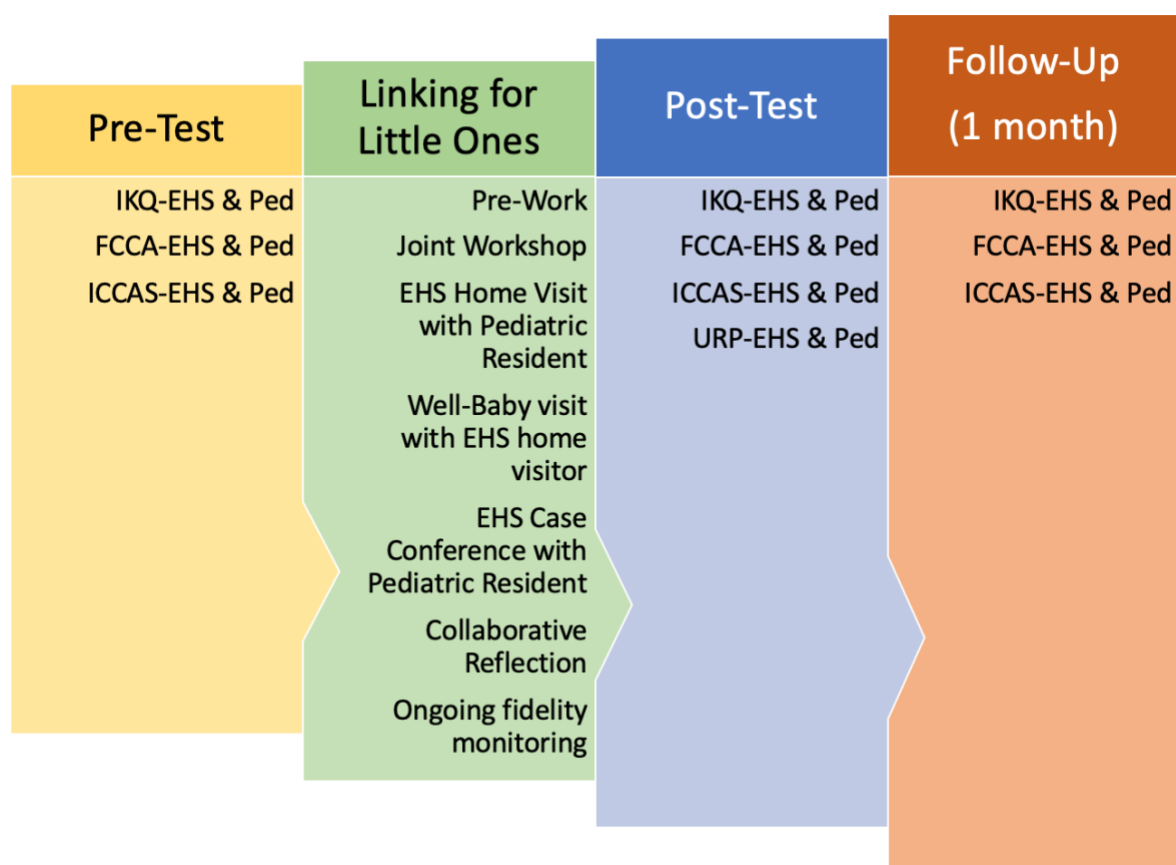
Partnership Team Meeting Four will take place after seven rounds of *Linking for Little Ones*. The team will consider the feasibility of the implemented procedures again, view patterns in the data again, and learn about the parents' feedback provided to the student researcher. Following the meeting, any determined adjustments will be made. Once all participants have completed *Linking for Little Ones*, the student researcher will complete data analyses and prepare to present findings to the Parent Advisory Board and the Partnership Team in the final meetings. The third meeting with the Parent Advisory Board will focus on the findings' meanings to parents and the parents' suggested improvements to Linking for Little Ones. This feedback will be discussed with the Partnership Team in Meeting Five. This meeting will consist of discussion about findings and their meaning to EHS and PPC, resources necessary to sustain *Linking for Little Ones*, and suggestions for improvements to *Linking for Little Ones*. The student researcher

will gather information on desired support and resources for sustainability. Following this final

meeting, the student researcher will provide the requested resources to the participating agencies.

A single-group pre-/post-test design, with a follow-up test will be used to evaluate

Linking for Little Ones with home visitor and pediatric resident samples. As seen in Figure 1,

pre- and post-test measures will be collected immediately before and after the completion of

Linking for Little Ones training components (training is expected to be completed in one month).

Follow-up assessments will be conducted 1 month post-training.

Figure 1

Research Design

Pre-Test	Linking for Little Ones	Post-Test	Follow-Up (1 month)
IKQ-EHS & Ped	Pre-Work	IKQ-EHS & Ped	IKQ-EHS & Ped
FCCA-EHS & Ped	Joint Workshop	FCCA-EHS & Ped	FCCA-EHS & Ped
ICCAS-EHS & Ped	EHS Home Visit with Pediatric Resident	ICCAS-EHS & Ped	ICCAS-EHS & Ped
	Well-Baby visit with EHS home visitor	URP-EHS & Ped	
	EHS Case Conference with Pediatric Resident		
	Collaborative Reflection		
	Ongoing fidelity monitoring		

Varying sample sizes of home visitors and pediatric residents between the different

partnering agencies will result in varied participation frequency across participants. At CHOP,

pediatric residents rotate through the residency training program in groups of 5. Given the expected sample sizes of 55 CHOP pediatric residents (CHOP-Ped), *11 Linking for Little Ones trainings are planned.* With the aim of having similar numbers of pediatric residents and EHS home visitors, the 11 EHS (CHOP-EHS) home visitors will repeat *Linking for Little Ones*. CHOP-EHS home visitors will be divided into three groups and rotate through the 11 *Linking for Little Ones* training sessions. Thus, CHOP-Ped residents will receive one *Linking for Little Ones* training while CHOP-EHS home visitors will participate in *Linking for Little Ones* up to four times. *For the purposes of the evaluation, CHOP-EHS home visitors will complete pre- and post-test measures around their first Linking for Little Ones training, and their follow-up assessment will be collected as the pre-test for their subsequent participation in the training.* The sample sizes at Community Services for Children EHS (CSC-EHS) and VHP pediatric residency (VHP-Ped) reflect an opposite ratio; a bigger sample of CSC-EHS home visitors ($n = 15$) than VHP-Ped residents ($n = 8$) may lead to slightly more home visitors engaged in the collaborative training sessions than pediatric residents. At this site, home visitors will not repeat participation in *Linking for Little Ones*. As seen in Figure 2, CSC/LVHN trainings will be paired with roughly every third CHOP training session. Though these procedures differ from those with CHOP participants, it is reflective of natural variations amongst home visiting and pediatric agencies and partnerships. As such, it is expected that the proposed project will yield valuable information about developing and sustaining partnerships between agencies with varying structures and resources.

Figure 2

Procedural Differences Across Sites

Site	Trainees	Linking for Little One Sessions										
		1	2	3	4	5	6	7	8	9	10	11
CHOP-EHS	Home visitors (*n* = 3 to 4)	X	X	X	X	X	X	X	X	X	X	X
CHOP-Ped	Pediatric Residents (*n* = 5)											
CSC-EHS	Home visitors (*n* = 3 to 4)			X			X			X		X
VHP-Ped	Pediatric Residents (*n* = 2)											

Constructs and Measures

Interagency Knowledge Questionnaire. Knowledge is a direct measure of the factual information participants are expected to obtain following completion of *Linking for Little Ones*. This will include home visitor and pediatric resident awareness of the other agency's mission, procedures, and infrastructure; the other professional's (i.e., EHS or PPC) roles and responsibilities in the care of infants and toddlers, cultural humility and competent practices for engaging families. To measure knowledge, versions of the IKQ will be developed by the student researcher; one for home visitors (IKQ-HV) and one for pediatric residents (IKQ-Ped). All items will be developed to reflect the training content. It is anticipated that these measures will be brief (i.e., about 10 items) and include a mixture of multiple choice and true/false items. Each correct item will be scored as one point and total scores will be used for analyses. Once the measures are developed, feedback from the Partnership Team from CHOP-EHS and CHOP-Ped will be elicited to ensure that the measures are worded appropriately, directions are clear, and that the length and format appear acceptable for home visitors and pediatric residents (e.g., face validity).

Family-Centered Care Assessment (FCCA). Family-centered care has been defined as a standard of practice that promotes the health and wellbeing of children and their families by building family-professional partnerships that demonstrate respect for families' strengths, perspectives, and contributions (Dunst, 1997; Wells et al., 2015). The FCCA (Family Voices,

2008a, 2008b) was developed in partnership with families and pediatric providers to assess family-centered care principles from both families' and professionals' perspectives. Items were developed based on families' feedback of important family-centered care qualities and expert pediatric providers' and policymakers' feedback on the item content. The tool was originally formulated as two assessments: one for family members and a second for pediatric practices (i.e., applicable to multiple, not individual, providers). The family tool contains 98 items and the pediatric tool contains 105 items; both versions cover the following 15 topics: 1) the decision-making team, 2) supporting the family as a constant in the child's life, 3) family-to-family and peer support, 4) supporting transition to adulthood, 5) sharing successes of the family/provider partnership, 6) giving a diagnosis, 7) ongoing care and support, 8) addressing child/youth development, 9) access to records, 10) appointment schedules, 11) feedback on care setting practices, 12) care setting policies to support family-centered care, 13) addressing culture and language in care, 14) information and referral and community-based services, and 15) community systems integration and care coordination.

Initial feedback from families and pediatricians indicated that the usability of the FCCA was constrained by a large number of items (Wells et al., 2015). As such, Wells and colleagues shortened the family version of the tool to 24 items (i.e., FCCA-F). To date, a shortened, published version of the pediatric tool is not available. For each item on the FCCA-F, participants rate the frequency of their healthcare provider engaging in a family-centered care practice (e.g., *My healthcare provider recognizes my strengths in caring for my child*) using a 5-point Likert scale (1 = *almost never*, 5 = *almost always*) . In an examination of the reliability and construct validity of the parent version of the FCCA-F, Wells et al. found excellent internal consistency (Rasch person reliability coefficient = .95) and a one-factor structure, indicating the

items measure one construct reflecting provider use of family-centered care principles from caregivers' perspectives.

For the current study, the FCCA-F will be adapted due to its psychometric properties and reduced item count to form distinct versions for home visitors (FCCA-EHS) and pediatric residents (FCCA-Ped). Modifications will be undertaken to apply the measures to home visitors and pediatric residents; however, changes to family-centered care practices and rating format will not be made. The directions will be altered to identify the professional role of the respondent (e.g., home visitor or pediatric resident). Additionally, items will only list the family-centered care practice omitting the repetition of personal reference (i.e., "I") that is present in the FCCA-F. To assess face validity the FCCA-EHS and FCCA-Ped, administrative representatives from CHOP-EHS and CHOP-Ped will review and provide feedback prior to their use. The student researcher will refine the measures for each agency based upon the feedback.

Items on the FCCA-EHS and FCCA-Ped are scored one to five and aggregated to form a single total score for each questionnaire. Total scores will be used for analyses. Internal consistency will be determined for FCCA-EHS and FCCA-Ped.

Interprofessional Collaboration Competencies Attainment Survey (ICCAS). Competency to engage in interagency collaboration has been divided into six distinct areas including communication (i.e., the ability to communicate effectively in a responsible and responsive manner with others), collaboration (i.e., the ability to establish and maintain collaborative working relationships with other providers), roles and responsibilities (i.e., the ability to explain one's own role and responsibility and to demonstrate an understanding of others' roles and responsibilities), a collaborative patient/family centered approach (i.e., the ability to apply patient-centered principles through interprofessional collaboration), conflict

management/resolution (i.e., the ability to prevent and deal effectively with conflict between other providers and the patient/family), and team functioning (i.e., the ability to continually improve collaboration and quality of care; Canadian Interprofessional Health Collaborative, 2010). The ICCAS (Archibald et al., 2014) assesses interprofessional collaboration competencies which were developed through a Delphi study of previously identified competencies in the literature. Experts on interprofessional collaboration rated the validity of the identified competencies and their associated performance criteria and behavioral indicators (Curran et al., 2009). The original version of the ICCAS included 20 items that align with the six core interprofessional collaboration competencies (i.e., communication, collaboration, roles and responsibilities, collaborative patient/family-centered approach, conflict management/resolution, and team functioning). This original version asked respondents to rate their competencies to engage in interprofessional collaboration before and after completion of an intervention; ratings took place only following completion of the intervention using a retrospective pre-test/post-test design (e.g., Before/after participating in the learning activities, I was/am able to promote effective communication among members of an interprofessional team). Participants rated their agreement with each item using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Archibald and colleagues (2014) examined the facture structure and internal consistency of the measure pre- and post-intervention in a diverse sample of 584 participants that represented 15 different professions who were enrolled in interprofessional education or professional development programs in New Zealand. Researchers found evidence for a two-factor structure at pre-test and a one-factor structure at post-test. The difference in factor-structure for pre- and post-assessment was attributed to the intervention leading to a more concise understanding of how interprofessional competencies are related. Nonetheless, internal consistency was excellent

for items on each factor (i.e., pre-program factor 1 α = .96, pre-program factor 2 α = .94, post-program α = .98).

In a subsequent study, Schmitz and colleagues (2017) found evidence for the reliability of the ICCAS after making two adaptations to the measure. First, they changed the Likert scale to a 5-point scale that reflected quality of ability (1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, 5 = *excellent*) as opposed to agreement. The researchers felt that this scale was more appropriate for the measurement of participants' ability to engage in different interprofessional collaboration tasks. The researchers added an item to measure the participants' assessment of their change in overall ability from pre- and post-intervention. In their study with 1,023 university students, researchers found evidence for the one-factor structure found by Archibald and colleagues. This factor presented with excellent internal consistency (α = .96).

The proposed project will utilize the ICCAS 5-point Likert scale as used by Schmitz and colleagues (2017). ICCAS item wording will be adapted to reflect applications to home visitors' and pediatric residents' reports on competencies in collaborating with each other. This will require two separate versions of the measure (i.e., ICCAS-EHS and ICCAS-Ped). For example, item seven is currently, "Work closely with interprofessional team members to enhance care." This item may be adapted to "Work closely with home visitors to enhance care" (ICCAS-Ped) and "Work closely with PPC providers to enhance care" (ICCAS-EHS). To assess for face validity of the ICCAS-EHS and ICCAS-Ped, administrative representatives from CHOP-EHS and CHOP-Ped will review and provide feedback prior to their use. The primary researcher will refine the URP-EHS and URP-Ped based upon the feedback.

Items on the ICCAS-EHS and ICCAS-Ped are scored one to five and totaled to form a single score. Total scores will be used for analyses. Internal consistency will be determined for the ICCAS-EHS and ICCAS-Ped.

Usage Rating Profile - Intervention Revised (URP-IR). The usability of the interagency training is defined as the likelihood that the intervention would be used beyond the scope of the research study (Briesch et al., 2013). This includes both individual usability (e.g., is the intervention easily understood by participants?) and systems-level usability (e.g., how much system support is required to implement the intervention?). Usability of Linking for Little Ones will be measured with the URP-IR (Chafouleas et al., 2011), which was developed to measure several factors of intervention adoption and usage over time. The measure consists of 29 items. Participants rate their agreement with each item using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Briesch and colleagues (2013) conducted an exploratory factor analysis and found evidence for a six-factor structure with acceptable reliability for each subscale: acceptability (α = .95), understanding (α = .79), feasibility (α = .88), home-school collaboration (α = .78), system climate (α = .91), and system support (α = .67). It was suspected that the reliability of the System Support subscale was low due to only having three items. Nonetheless, a confirmatory factor analysis demonstrated that the six-factor structure had acceptable fit (CFI = .96).

As the URP-IR items are written in regard to direct child intervention, the measure will be adapted for the current study to reflect the content of the *Linking for Little Ones* training without changing the measure's conceptualization of intervention usability. For example, item seven is currently, "The intervention is a fair way to handle the child's problem behavior." This item may be adapted to "Linking for Little Ones is a fair way to handle systems-level problems

related to collaboration between home visiting programs and pediatric primary care." Separate versions of the URP-IR will be modified for home visitors (i.e., URP-EHS) and pediatric residents (i.e., URP-Ped) to ensure that the items accurately ask participants about the other service system. To assess face validity of the URP-EHS and URP-Ped, administrative representatives from CHOP-EHS and CHOP-Ped will review and provide feedback prior to their use. The primary researcher will refine the URP-EHS and URP-Ped based upon the feedback.

Factor scores for the URP-EHS and URP-Ped will be determined as specified for the UPR-IR; ratings will be summed per factor. Items on the measure are scored one to six and totaled. Mean scores for each factor will be used for analyses. Internal consistency will be determined for each factor on the URP-EHS and URP-Ped.

Linking for Little Ones **Fidelity.** Fidelity measurement is the evaluation of adherence to an established intervention protocol (Mowbray et al., 2003). It can be measured in terms of quantity, content, and quality of intervention implementation (Raikes et al., 2006). Fidelity measures will assess all three of these components using a variety of methods including attendance at training sessions, checklists of essential features for each component, and quality ratings (see Table 1). Measures for each component of *Linking for Little Ones* will be developed following the creation of training materials and with feedback from the Partnership Team.

Demographic Survey. Home visitors and pediatric residents will report on the following demographic variables: age, race, ethnicity, first language spoken, educational background, position title, and number of years working in their role. In addition, home visitors and pediatric residents will be asked to report on their prior experiences in collaborating with each other using an open-ended question format. Parents will report on the following demographic variables: age,

race, ethnicity, first language spoken, number of children receiving home visiting, number of years receiving home visiting services, and number of pediatrician visits since the child's birth.

Sample

Home Visiting Professionals. Child development-focused home visitors will intentionally be recruited from two different home visiting programs with varying structures for training, as this will elicit information on varying needs that will help inform sustainability for training in different systems. Approximately 11 home visitors will be recruited from the EHS Home-Based program operated by Children's Hospital of Philadelphia in Philadelphia, Pennsylvania (CHOP-EHS) and 15 home visitors will be recruited from the EHS Home-Based program operated by Community Services for Children in Allentown, Pennsylvania (CSC-EHS). All home visitors who serve infants and toddlers will be eligible to participate. Both EHS programs serve pregnant women and families with children aged birth to three-years-old. The home visitors provide a variety of services including weekly home visits, parent-child socialization groups, childcare, prenatal education, health and nutrition education, and behavioral health education, as well as connections to community resources. Their overall goal is to support families in becoming their children's teachers during early childhood by providing quality early learning experiences (CHOP, n.d.; CSC, n.d.).

Pediatric Primary Care Providers. Pediatric residents will also intentionally be recruited from two different healthcare systems with different training structures in order to yield information about varying needs to inform sustainability. Approximately 55 CHOP residents (CHOP-Ped) will participate in the proposed project. These residents complete a general pediatrics residency program which includes PPC training. A total of 55 residents complete their

training at CHOP each year. All pediatric residents who serve infants and toddlers will be eligible to participate; all 55 residents are expected to be eligible.

At CHOP, pediatric residents engage in a child development rotation, during which they attend training on topics such as developmental pediatrics, autism evaluation, occupational and physical therapy, and community services for children, including EHS. The EHS training rotation is a didactic session provided by the manager of the Child Development and Mental Health Unit at CHOP-EHS, and often accompanied by residents' engagement in an EHS case conference. This combination of didactic training and case conference involvement is implemented with about five residents at a time. The training is repeated throughout the year (e.g., monthly) until all 55 residents have completed it.

In addition, approximately eight pediatric residents from Lehigh Valley Health Partners (VHP-Ped) in Allentown, Pennsylvania will be recruited to participate. There are a total of eight residents that complete their residency training at VHP each year. All eight are expected to be eligible for the proposed project given that they serve infants and toddlers as part of their role. Similar to CHOP residents, VHP residents complete a general pediatrics residency program which includes PPC training in addition to a specific rotation on community services for socioeconomically disadvantaged young children. During this rotation, the pediatric residents receive a didactic presentation on community services such as EHS and complete an observation of a HS classroom. This training is repeated twice throughout the year with four residents at a time.

Parents. Approximately six parents will be recruited to participate on a Parent Advisory Board. Administrators from CHOP-EHS and CSC-EHS (Dr. Ridgeway and Ms. Genzel) will nominate three parents from their programs to serve on the board.

Data Collection

All data will be collected using Qualtrics. Qualtrics automatically collects and stores the data as participants complete the measure. It is expected that the measures will take participants approximately 20 to 30 minutes to complete. Upon completion of measures at all timepoints, the data will be immediately available in the Qualtrics software. At the beginning of the first interagency training session, participants will be provided with a link to the demographic survey, IKQ-EHS/Ped, FCCA-EHS/Ped, and ICCAS-EHS/Ped on Qualtrics. Home visitors and pediatric residents will complete the IKQ-EHS/Ped, FCCA-EHS/Ped, ICCAS-EHS/Ped again, in addition to the URP-LLO, once they have completed all five stages of the program (i.e., collaborative training session, home visit with a pediatrician, well-baby visit with a home visitor, EHS case conference, collaborative reflection). Participants who do not complete all four components of the program will be emailed with the link to complete the measures, and their status of training completion will be recorded. Home visitors will repeat these procedures each time they participate in another round of the training program.

Data Analysis Plan

Preliminary Analyses. Descriptive statistics (means, standard deviations) for each group (i.e., home visitors and pediatric residents) will be calculated for the IKQ-EHS/Ped, FCCA-EHS/Ped, ICCAS-EHS/Ped and URP-EHS/Ped. The reliability of the FCCA-EHS/Ped, ICCAS-EHS/Ped, and URP-EHS/Ped will be evaluated by determining internal consistency (Cronbach, 1951). Alpha levels equal to or above .70 will be considered acceptable.

Assumptions for *t*-tests and repeated measures ANOVA will be tested prior to analyses. For *t*-tests, the following assumptions will be assessed prior to analyses: each observation is independent, the distribution of scores is normal, and the scores do not contain outliers.

Independence is assumed given that each participant is only assigned to one group. Normality will be assessed by creating a histogram of scores and examining the shape of the distribution as well as skewness and kurtosis values; a bell shape, skewness values between -2 and 2, and kurtosis values between -7 and 7 will indicate normal distribution. Outliers will be assessed by creating boxplots of the paired differences.

For repeated measures ANOVA, the following assumptions will be assessed prior to analyses: each observation is independent, the distribution of scores is normal, and the distributions have the same variance (i.e., sphericity). Independence is assumed given that each participant is only assigned to one group. Normality will be assessed by creating a histogram of scores and examining the shape of the distribution; a bell shape, skewness values between -2 and 2, and kurtosis values between -7 and 7 will indicate normal distribution. Sphericity will be assessed by conducting Mauchly's Test of Sphericity; a statistically nonsignificant value ($p >$ .05) will indicate sphericity is not violated.

RQ1 & RQ2: Do pediatric residents show greater capacity for interagency collaboration immediately following completion of the _Linking for Little Ones_ program? Do pediatric residents sustain their knowledge of EHS, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as measured by a 1 month follow-up assessment? Repeated-measures ANOVAs will be performed to assess for a significant effect of time across three timepoints (i.e., pre-training, post-training, and 1 month follow-up) for scores on the IKQ-Ped, FCCA-Ped, and ICCAS-Ped. Any significant main effects of time will be illustrated by an _F_-statistic with a _p_-value less than .05. Pairwise comparisons will be made between pre- and post-training scores as well as between post-training and 1 month follow-up scores. Estimates of effect sizes will be determined by calculating partial

eta squared. These estimates will be descriptively compared; an estimate of effect size of .01 will indicate a small effect, .06 will indicate a medium effect, and .14 will indicate a large effect.

A power analysis was conducted to determine the number of participants necessary to obtain sufficient power. With an alpha level of .05, statistical power level of .80, and medium effect size of .25, the necessary sample size to obtain sufficient power is 9 participants. It is likely that sufficient power will be obtained for the pediatric resident sample.

RQ3 & RQ4: Do home visitors show greater capacity for interagency collaboration immediately following completion of *Linking for Little Ones*? Do home visitors sustain their knowledge of PPC, use of family-centered care practices, and perceived competencies to engage in EHS/PPC interagency collaboration as measured by a 1 month follow-up assessment? Repeated-measures ANOVAs will be performed to assess for a significant effect of time on IKQ-EHS, FCCA-EHS, and ICCAS-EHS scores across six timepoints (i.e., one pre-training and five post-training assessments). A significant main effect of time will be illustrated by an *F*-statistic with a *p*-value less than .05. If the effect of time is statistically significant, pairwise comparisons will be performed to identify timepoints when statistically significant differences in knowledge, family-centered care practices, and perceived competencies for collaboration emerged. Estimates of effect sizes will be determined by calculating partial eta squared. These estimates will be descriptively compared; an estimate of effect size of .01 will indicate a small effect, .06 will indicate a medium effect, and .14 will indicate a large effect.

A power analysis was conducted to determine the number of participants necessary to obtain sufficient power. With an alpha level of .05, statistical power level of .80, and medium effect size of .25, the necessary sample size to obtain sufficient power is 9 participants. It is likely that sufficient power will be obtained for the home visitor sample.

RQ5: Do home visitors and pediatric residents perceive *Linking for Little Ones* as usable, as indicated by endorsing the program as acceptable, readily understood, feasible, and as promoting positive intersystem collaboration, system climate, and system support at its conclusion? Descriptive statistics (means, standard deviations) will be calculated for each of the URP-EHS/Ped subscales. Mean item ratings per factor will be reported for the two participant samples. Mean item scores four (i.e., Slightly Agree) and above indicate favorable review of the usability domain.

Human Subjects and Data Protection

Informed Consent. Informed consent forms will be created using Qualtrics which has a data encryption software and is password-protected. All informed consent forms will include a brief description the study purpose, the procedures for agency staff participants, the risks and benefits of participation, the expected duration for participation, a description of the compensation for participation, the protocols for keeping information confidential, and the contact information for the study researchers (i.e., Ms. Wood and Dr. Manz). In addition, the consent form will detail that participation is entirely voluntary, recruited persons may decide not to participate without penalty, and participants can stop participating in the study at any time without affecting relationships with the researchers. Recruited persons will be prompted to virtually sign the informed consent form. These signed forms will be saved on a password-protected, secure website operated by Lehigh University that only Ms. Wood and Dr. Manz will have access to.

Data. Data from the quantitative measures will be collected via Qualtrics pre- and post-training. The Qualtrics form will ask participants to identify only their agency (i.e., EHS or pediatric primary care); other identifiable information is not necessary on this form. Only Ms.

Wood will have access to these data, which will be exported from Qualtrics into SPSS for data analyses. The SPSS file will be saved on a password-protected, secure website operated by Lehigh University that only Ms. Wood and Dr. Manz will have access to.

The collaborative training sessions will be audio recorded using recording devices for purposes of fidelity measurement. Audio files will be uploaded to the Lehigh University password-protected, secure website that only Ms. Wood and Dr. Manz will have access to.

Sensitivity

The proposed project will be developed using community-based participatory research methodology (CBPR; Israel et al., 2005). As such, community partners (i.e., EHS and pediatric primary care) will be involved within all stages of research, including the methods (i.e., research question development, measures, data collection and analysis), the implementation *Linking for Little Ones*, the interpretation and dissemination of findings. The agencies' involvement ensures that the project will be mutually beneficial to all participating agencies and researchers involved such that the project goals are aligned with the agencies' missions and needs.

Sensitivity will be demonstrated toward the unique cultures of the individuals and larger systems involved in the proposed project. This is especially important given the varying cultural, educational, and training backgrounds of the participants. Pediatricians have extensive higher education and training backgrounds whereas home visitors are more likely to have fewer years of education and training. In addition, medical doctors have frequently been seen as leaders of teams as opposed to equal team members, and marginalization of team members without medical degrees has been reported in previous interprofessional training scenarios (Gergerich et al., 2019). To promote a more equal experience for all participants, all training experiences and Partnership Team meetings will be structured such that each participant has an equal opportunity

to learn from and teach others by sharing perspectives and offering ideas. All perspectives will be equally considered when making shared decisions about *Linking for Little Ones*.

To continue, as a reflection of the culturally, linguistically, and ethnically diverse populations served by EHS and pediatric primary care, *Linking for Little Ones* will solely focus on training professionals to collaborate with one another in the service provision of diverse infants and toddlers from socioeconomically disadvantaged backgrounds. It is expected that this collaboration with one another will enhance the direct services provided to children and families from both agencies (e.g., EHS and pediatric primary care). It is also expected that the home visitor, pediatric resident, and child will vary from one another in different constellations of culture, language, and ethnicity. For example, the home visitor and child may share a language and cultural background, while the pediatric resident varies in their identity backgrounds. In each scenario, it will be important to consider the shared and varying identity backgrounds amongst the participants and children being served. Considerations to the diverse identities of participants will be guided by Ingraham's (2000) recommendations for cultural variations in the consultation constellation. Recommendations include communicating that multiple perspectives are valued, demonstrating empathy for all participants, and balancing the need for partnering versus teaching. Both partnering with and teaching one another are necessary, though they may be needed at different times within the training.

Finally, including a Parent Advisory Board will play an important role in ensuring that *Linking for Little Ones* is aligned with culturally responsive, family-centered practices that are significant to the families that are jointly served by EHS home visiting and pediatric primary care. Families from the participating EHS programs will be invited to participate on this board to

provide feedback on *Linking for Little Ones* content and procedures so that their voices are heard and their perspectives are incorporated into shared decisions.

Scholarly Independence

The proposed project is Ms. Wood's doctoral dissertation (see Appendix for Ms. Wood's CV). Under the mentorship of Dr. Manz, Ms. Wood has designed and prepared this proposal as a representation of her scholarly independence (see Letter of Support from Dr. Manz). Ms. Wood has been a leading member of Dr. Manz's *Synergy of Care* research team which seeks to identify methods to improve collaboration across service systems for infants and toddlers. The proposed project is a reflection of Ms. Wood's personal independent research agenda.

Potential Challenges

The proposed project has a few potential challenges. The first challenge is the small sample size and risk of attrition. As the proposed study is exploratory in nature, a small sample size will be recruited in order to begin to learn more about processes that support interagency training as well as the content that promotes active participation from both agencies. With a small sample size, the risks of attrition and low statistical power present a major challenge that may limit the ability to draw meaningful and significant conclusions from the data. Proactive planning through the use of CBPR methods may help to 1) increase the likelihood that agency staff will participate and 2) reduce attrition by utilizing agency-preferred recruitment efforts and incentives. and 2) reduce attrition. This may also decrease the rate of attrition. Attrition is especially a concern for home visitor participants who will be recruited to participate repeatedly. It is possible that they might lose interest, leading to higher rates of attrition in this participant group. However, as home visitors repeatedly participate, they will be operating in dual roles as learners and trainers. As such, they may become more competent in training pediatricians which

could promote their sustained interest in participation. In addition, as they engage with different pediatricians across the different rounds of training, they are likely to continue to learn new information that will help them guide parents in health promotion activities (e.g., attending well-baby visits and communicating with pediatricians). Additionally, incentives will be provided to participants to increase the sample size and decrease the rate of attrition.

To continue, this project is one of the first known studies to implement an interagency training for home visiting programs and PPC specifically. As such, there is limited empirical guidance for developing training procedures and content. The study was therefore designed to utilize CBPR methods that will yield information from EHS and PPC staff that will guide the training implementation to make it most feasible for their individual agencies. This process may also help with the challenge of recruitment, as feasibility efforts may lead to increased participation.

Finally, is it possible that illness, regulations, and personal levels of comfort due to the COVID-19 pandemic may alter the modality of the Linking for Little Ones components. As such, methods for each component will be determined with guidance from each participating agency in regard to their preferences for video conferencing versus in-person experiences. For all in-person experiences, procedures will include adherence to the local personal protective equipment regulations as well as the preferences of the agencies and participants.

C. Collaborative Partner Plan

Ms. Wood has established a collaborative partnership with each participating agency: CHOP-EHS, CHOP-Ped, CSC-EHS, and VHP-Ped in the formation of this proposed project. Ms. Wood has developed the research questions and methods in collaboration with administrative leaders from each agency (e.g., Drs. Brown, Kruger, and Ridgeway, and Ms. Genzel; see

Appendix for letters of support) and has sought feedback from through conversations about existing training structures and the need for enhanced training experiences. Partnering with these administrators will expand upon the start of the study. A Partnership Team and Parent Advisory Board will be formed as a means for engaging representatives from EHS, pediatrics, and families throughout the development and evaluation of *Linking for Little Ones*. The Partnership Team's and Parent's Advisory Board involvement in developing *Linking for Little Ones* training procedures, content, and materials is described beginning on p. 32. Additionally, the Partnership Team and Parent Advisory Board will be involved in the research methods to evaluate it and disseminate findings. This involvement will include collaboration on the refinement of research questions, data analyses, and dissemination of findings to identified stakeholders. The Partnership Team will provide feedback and suggestions on the proposed project to ensure the goals are relevant to EHS and pediatric residency training, the project benefits families and agencies, and the project is viable and sustainable. Once data analyses are completed, findings will be presented to the Partnership Team and Parent Advisory Board to incorporate their interpretations of the findings and their perceived implications for EHS, PPC, and families. The blend of statistical analyses and stakeholder perceptions will be the foundation for dissemination efforts (detailed in Dissemination Plan, p. 57).

    To improve the accessibility of meeting as a team, it is expected that Partnership Team and Parent Advisory Board meetings will occur via virtual conferencing on days and times that work best for all members. Availability for meetings will be regularly assessed using online scheduling platforms (e.g., When2Meet) and participants will be sent reminders of scheduled meetings via email. All participants' accessibility to internet connection and virtual conferencing will be confirmed at the onset of the team/board formations and will be regularly assessed as

subsequent meetings are scheduled. During all meetings, the student researcher will lead discussions and intentionally provide opportunities for all participants to share thoughts and perspectives. For example, if one team or board member has not spoken during a meeting, the student researcher will specifically ask them if they would like to share any input.

D. Dissemination Plan

The proposed project's findings will be strategically disseminated to enhance home visiting and pediatric training practices and to advance research and policy on interagency training. To this end, dissemination will occur locally to the participating agencies with intent to scale-up *Linking for Little Ones*. National and international dissemination through publications and conference presentations will share findings with researchers, practitioners, and policymakers.

Nationally, Ms. Wood will disseminate findings from the proposed project at The Annual Meeting of the Child Care and Early Education Policy Research Consortium (CCEEPRC; Years 1 and 2), The Annual Early Care and Education Scholars Grant Recipient Meeting (Years 1 & 3), The Administration for Children and Families' National Research Conference on Early Childhood (NRCEC; Year 1), The Society for Research in Child Development (SRCD) Biennial Meeting (Year 2), as well as the American Interprofessional Health Collaborative: Collaborating Across Borders Conference (dates to be determined). In addition, Ms. Wood will seek to publish findings in journals such as *The Journal of Interprofessional Care*, and *Early Childhood Research Quarterly*, and *Pediatrics*. Three primary publications are expected to focus on 1) the partnership process to develop Linking for Little Ones, 2) communicating overall results and implications to early childhood and home visiting audiences, and 3) communicating overall results and implications to pediatric audiences. Home visitor, pediatric, and parent partners in the

development of *Linking for Little Ones* will be invited to co-present and co-author with Ms. Wood and Dr. Manz.

In regard to policy oriented products, Ms. Wood will seek to present and prepare research briefs for both home visiting and pediatric related state programs such as the Pennsylvania (PA) Office of Child Development and Early Learning (OCDEL), the PA Head Start State Collaboration Office (HSSCO), and the PA Chapter of the American Academy of Pediatrics.

In regard to practitioner oriented products, Ms. Wood will seek to present at the Home Visiting Applied Research Collaborative (HARC) and the PA Strengthening Families conference. In addition, Ms. Wood will seek to prepare briefs for the National Home Visiting Resource Center and Zero to Three. Ms. Wood will also seek opportunities at these organizations to publish family friendly materials such as family-oriented briefs, short videos, and infographics.

Ms. Wood will share dissemination efforts with the Federal Program Officer through routine reporting. Ms. Wood will also comply with recommendations to deposit the data in the Child and Family Data Archive as directed by the Office of Planning, Research, and Evaluation.

E. Management Plan

The proposed project will take place across two years (10/1/2023 to 9/30/2025). Across the two years, the Linking for Little Ones interagency training program is expected to be implemented 11 times with CHOP-EHS and CHOP-Ped and twice with CSC and VHP due to the pre-existing structure of CHOP-Ped's and VHP-Ped's pediatric resident training programs. These 13 total rounds of training are expected to take place within the first 15 months of the proposed project timeline (see Figure 1). Partnership Team Meetings 1 through 4 will take place during this period, as well. Following the completion of these training rounds and meetings, Ms.

Wood will complete data analyses and lead Partnership Team Meeting 5 to present the findings.

See Figure 3 for a complete projected timeline of the proposed project accomplishments.

Figure 3

Projected Timeline of Project Accomplishments (2023-2025)

Project Task	Year 1 (2023-2024)				Year 2 (2024-2025)			
	Oct. – Dec.	Jan. – Mar.	Apr. – Jun.	Jul. – Sept.	Oct. – Dec.	Jan. – Mar.	Apr. – Jun.	Jul. – Sept.
Form the Parent Advisory Board and Partnership Team; hold Parent Advisory Board Meeting 1	▓							
Hold Partnership Team Meeting 1; Present feedback from Parent Advisory Board Meeting 1; Develop draft *Linking for Little Ones* materials; Send to Parent Advisory Board and Partnership Team for feedback	▓							
Hold Parent Advisory Board and Partnership Team Meetings 2; finalize *Linking for Little Ones* materials	▓							
Begin to implement *Linking for Little Ones*		▓						
Hold Partnership Team Meeting 3; Assess feedback regarding implemented procedures, Determine any necessary changes		▓						
Make any identified necessary changes to procedures; Continue to implement training; Attend and present at CCEEPRC, Scholar Grantee Meeting, and NRCEC		▓	▓					
Hold Partnership Team Meeting 4; Elicit additional feedback on procedures, Determine any necessary changes; Continue to implement *Linking for Little Ones*			▓	▓	▓			
Complete data analyses and write results; Attend and present at SRCD						▓		
Hold Parent Advisory Board Meeting 3 and Partnership Team Meeting 5; Present findings and discuss their meaning to parents, EHS and PPC; Discuss necessary resources to sustain the training and suggestions for improvement							▓	
Provide requested support and resources to participating agencies to promote sustainability of *Linking for Little Ones*; Attend and present at CCEEPRC, Scholar Grantee Meeting, and NRCEC; Complete manuscript draft							▓	▓
Draft and finalize policymaker and practitioner dissemination products; Contact state and practitioner-oriented organization offices to schedule presentations and share briefs; Finalize and submit manuscript for journal publication (see Dissemination Plan)							▓	▓

The proposed project will be led by Christina Wood, M.Ed., doctoral student researcher, under the mentorship of Patti Manz, Ph.D., Professor and Associate Chair of the Department of Education and Human Services at Lehigh University (see Appendix for CV). To meet the proposed project's goals, Ms. Wood and Dr. Manz will meet weekly to monitor progress of the proposed project, identify challenges and solutions, assess adherence to the budget, and ensure continued human subject protection. In addition, Dr. Manz will attend all Parent Advisory Board and Partnership Team meetings to support Ms. Wood in working with the collaborative partners. As a previous Early Care and Education Research Scholar and a mentor to five previous

scholars, Dr. Manz has the mentoring and community-based partnership research experience to provide mentoring. Additionally, Dr. Manz has expertise in integrated services for infants and toddlers from low socioeconomic backgrounds, development of culturally responsive prevention and intervention, and home visitor professional development. As such, Dr. Manz is fully equipped to mentor Ms. Wood in the planning, designing, implementation, evaluation, and dissemination of the proposed research.

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Budget and Budget Justification

Budget Item	Justification
Personnel Combined Years 1 and 2	
Student Investigator: Christina Wood, M.Ed.	Ms. Wood will hold the primary responsibility for this 2-year project. Over the course of this project, she will partner with CHOP, VHP, and CSC to design and oversee the implementation of the training. Ms. Wood will also be responsible for analyzing the data and disseminating the findings to appropriate groups. Utilizing the Lehigh University's graduate student pay of $20/hour, based on 20 hours/week ($20/hour, estimated 80 hours/month, 12 months = $19,200). However, considering other expenses in this report, the final stipend will be reduced to $17,616 for Year 1 and $18,408 for Year 2. Throughout the 2-year project, Ms. Wood will work with the project Principal Investigator, Dr. Patricia Manz, Ph.D., Professor of School Psychology at Lehigh University.
Fringe Benefits - Combined Years 1 and 2	
Benefits	Fringe benefits are direct charged as a percentage of salaries and wages at rates set by DOD/ONR Audit Office Negotiation Agreement. The negotiated rate for part-time staff is 8.1% for FY23 and FY24.
Travel Year 1	
CCEEPRC Conference, Washington, DC (Wood)	Ms. Wood's travel to the annual CCEEPRC Meeting will be supported (June 2024; total $830). Funds will support 3 days of lodging and expenses ($250/night, 3 nights = $750) and transportation expenses ($80 train ticket; cost estimates from hotel and trip cost estimator sites).
Scholar Grantee Meeting Washington, DC (Wood)	Ms. Wood's travel to the Scholars' Grantee Meeting will be supported (June 2024; total $580). For Ms. Wood, funds will support 2 days of lodging and expenses ($250/night, 2 nights = $500) and transportation expenses ($80 train ticket; extra costs stated here only necessary if Scholar Meeting does not take place at the annual CCEEPRC meeting; cost estimates from hotel and trip cost estimator sites).
Scholar Grantee Meeting Washington, DC (Manz)	This travel expense will be provided for Dr. Manz's travel to the Scholar Grantee Meeting (June 2024). Funds will support 2 days of lodging ($150/night, 2 nights = $300). Dr. Manz will also dedicate professional travel funds to attend this Grantee Meeting.
NRCEC Conference, Washington, DC (Wood)	Ms. Wood's travel to the NRCEC Meeting will be supported (June 2024; total $1,080). Funds will support 4 days of lodging and expenses ($250/night, 4 nights = $1,000) and transportation expenses ($80 train ticket; cost estimates from hotel and trip cost estimator sites).
Travel Year 2	
CCEEPRC Conference, Washington, DC (Wood)	Ms. Wood's travel to the annual CCEEPRC Meeting will be supported (June 2025; total $830). Funds will support 3 days of lodging and expenses ($250/night, 3 nights = $750) and transportation expenses ($80 train ticket; cost estimates from hotel and trip cost estimator sites).
Scholar Grantee Meeting Washington, DC (Wood)	Ms. Wood's travel to the Scholars' Grantee Meeting will be supported (June 2025; total $580). For Ms. Wood, funds will support 2 days of lodging and expenses ($250/night, 2 nights = $500) and transportation

	expenses ($80 train ticket; extra costs stated here only necessary if Scholar Meeting does not take place at the annual CCEEPRC meeting; cost estimates from hotel and trip cost estimator sites).
Scholar Grantee Meeting Washington, DC (Manz)	This travel expense will be provided for Dr. Manz's travel to the Scholar Grantee Meeting. Funds will support 2 days of lodging (June 2025; $150/night, 2 nights = $300). Dr. Manz will also dedicate professional travel funds to attend this Grantee Meeting.
Society for Research in Child Development, Minneapolis, MN	Ms. Wood's travel to the Society for Research in Child Development Biennial Meeting will be supported (March 2025; total $1,170). For Ms. Wood, funds will support 3 days of lodging and expenses ($235/night, 3 nights = $705) and flight ($465 roundtrip; cost estimates from hotel and travel sites).
Other Expenses	
Incentive for Early Head Start Home Visitors	As a thank you for participating, EHS home visitors will receive a $15 gift card to a department store each time they participate in the training (11 CHOP home visitors/5 rounds of training each = $825, 15 CSC home visitors/1 round of training each = $225, overall total = $1,050).
Incentives for Pediatric Residents	As a thank you for participating, pediatric residents will receive a $15 gift card (63 total CHOP/VHP residents = $945).
Incentives for Administrative Staff/Partnership Team Members	Participants on the Partnership Team will receive $100 per year for involvement in the Partnership Team meetings ($200/team member, estimated 8 team members = $1,600).
Incentives for Parent Advisory Board Members	As a thank you for participating, participants on the Parent Advisory Board will receive a $15 gift card for each meeting attended (6 total parents, 3 total meetings = $270).
Indirect Costs	
Indirect Costs	The University will accept an indirect cost rate of 8% in support of the training project.

DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH
875 NORTH RANDOLPH STREET
SUITE 1425
ARLINGTON, VA 22203-1995

IN REPLY REFER TO:

Agreement Date: July 1, 2020

NEGOTIATION AGREEMENT

INSTITUTION: **LEHIGH UNIVERSITY**
                 BETHLEHEM, PA 18015-3046

The Facilities and Administrative (F&A) Cost contained herein are for use on grants, contracts and/or other agreements issued or awarded to Lehigh University by all Federal Agencies of the United States of America, in accordance with the provisions and cost principles mandated by 2 CFR Part 200. These rates shall be used for forward pricing and billing purposes for Lehigh University Fiscal Years 2021 through 2024. This rate agreement supersedes all previous rate agreements/determinations related to these rates for Fiscal Year 2021 through 2024.

Section I: RATES - TYPE: PREDETERMINED (PRED)

F&A Rates:

TYPE	FROM	TO	RATE	BASE	APPLICABLE TO	LOCATION
Pred	7/1/20	6/30/24	55.76%	(a)	Instruction	On-Campus
Pred	7/1/20	6/30/24	26.00%	(a)	Instruction	Off-Campus
Pred	7/1/20	6/30/24	61.00%	(a)	Organized Research	On-Campus
Pred	7/1/20	6/30/24	26.00%	(a)	Organized Research	Off-Campus
Pred	7/1/20	6/30/24	44.06%	(a)	Other Sponsored Activities	On-Campus
Pred	7/1/20	6/30/24	26.00%	(a)	Other Sponsored Activities	Off-Campus

DISTRIBUTION BASE

(a) Modified Total Direct Cost (MTDC) as defined in 2 CFR Part 200, consisting of all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first $25,000 of each subaward (regardless of the period of performance of the subawards under the award). MTDC excludes equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of $25,000.

SECTION II - GENERAL TERMS AND CONDITIONS

A. **LIMITATIONS**: Use of the rates set forth under Section I is subject to availability of funds and to any other statutory or administrative limitations. The rates are applicable to a given grant, contract or other agreement only to the extent that funds are available and consistent with any and all limitations of cost clauses or provisions, if any, contained therein. Acceptance of any or all of the rates agreed to herein is predicated upon the following conditions: (1) that no costs other than those incurred by the institution were included in this indirect cost pool as finally accepted and that such costs are legal obligations of the institution and allowable under governing cost principles; (2) that the same costs that have been treated as indirect costs are not claimed as direct costs; (3) that similar types of costs have been accorded consistent accounting treatment; and (4) that the information provided by the institution which was used as a basis for acceptance of the rates agreed to herein, and expressly relied upon by the Government in negotiating and accepting the said rates is not subsequently found to be materially incomplete or inaccurate.

B. **ACCOUNTING CHANGES**: The rates contained in Section I of this agreement are based on the accounting system in effect at the time the agreement was negotiated. Changes to the method(s) of accounting for costs, which affect the amount of reimbursement resulting from the use of these rates require the prior written approval of the authorized representative of the cognizant agency for indirect costs. Such changes include but are not limited to changes in the charging of a particular type of cost from indirect to direct. Failure to obtain such approval may result in subsequent cost disallowances.

C. **PREDETERMINED RATES**: The predetermined rates contained in this agreement are not subject to adjustment in accordance with the provisions of 2 CFR Part 200, subject to the limitations contained in Part A of this section.

D. **USE BY OTHER FEDERAL AGENCIES**: The rates set forth in Section I are negotiated in accordance with and under the authority set forth in 2 CFR Part 200. Accordingly, such rates shall be applied to the extent provided in such regulations to grants, contracts, and other agreements to which 2 CFR Part 200 applies, subject to any limitations in part A of this section. Copies of this document may be provided by either party to other federal agencies to provide such agencies with documentary notice of this agreement and its terms and conditions.

E. **DFARS WAIVER**: Signature of this agreement by the authorized representative of Lehigh University and the Government acknowledges and affirms the University's request to waive the prohibition contained in DFARS 231.303(1) and the Government's exercise of its discretion contained in DFARS 231.303(2) to waive the prohibition in DFARS 231.303(1). The waiver request by Lehigh University is made to simplify the University's overall management of DoD cost reimbursements under DoD contracts.

F. **SPECIAL REMARKS**: The Government's agreement with the rates set forth in Section I is not an acceptance of Lehigh University's accounting practices or methodologies. Any reliance by the Government on cost data or methodologies submitted by Lehigh University is on a non-precedence-setting basis and does not imply Government acceptance.

Accepted:
FOR LEHIGH UNIVERSITY:

FOR THE U.S. GOVERNMENT:

BRADLEY.ROBERT.
B.1230644620

Digitally signed by
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Date: 2020.07.02 14:24:53 -04'00'

_____
PATRICIA A. JOHNSON
VP, Finance & Administration

_____
R. BRIAN BRADLEY
Contracting Officer

_____7/2/2020_____
Date

2 JUL 2020

_____
Date

For information concerning this agreement contact:
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E-mail: sharon.gales@navy.mil

LEHIGH
U N I V E R S I T Y.

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Re: "Interagency Training to Promote Culturally Responsive, Family-Centered Home Visiting and Pediatric Service Integration" Dr. Patricia Manz, Principal Investigator

To Whom It Concerns:

This is to serve as Lehigh University's acknowledgement that we have prepared the cost estimate for the referenced project in response to Early Care and Education Research Scholars: Head Start Graduate Student Research Grants program using a Facilities and Administration (F&A) rate of 8%, which is lower than our audited F&A rate for sponsored research. Our decision to apply the 8% rate was deemed appropriate as we have applied this rate for other programs of this kind.

Regards,

Emily Boell

Emily Boell, Sr. Contract and Grant Specialist