

A Case Study of Montessori Early Childhood and Head Start Curricular Alignment

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Abstract

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Although access to public early childhood education (ECE) continues to expand nationwide, the Montessori approach to ECE remains largely excluded from the public sector. One obstacle to launching public Montessori programs is the incompatibility between Montessori philosophy and quality rating improvement systems (QRISs), program assessments that often determine funding for public preschool programs. Despite this challenge, during the 2015-16 school year, a public preschool program in a major California city piloted a Montessori classroom, subject to such seemingly incongruous QRISs. This case study reviewed the program's QRIS assessments and conducted open-ended interviews with key players both to document the program's process of launching its Montessori classroom as well as to provide recommendations for ECE programs elsewhere considering a similar undertaking. Data analysis resulted in challenges to the validity of two QRIS assessments, thus generating further implications for the use of QRISs to evaluate preschool program quality.

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Chapter I

Introduction

A growing body of research demonstrates both the immediate as well as long-term benefits of children beginning school before the traditional kindergarten entry point (American Institute for Research in the Behavioral Sciences (AIRBS), 1969; Ansari & Winsler, 2014). In recent years, education reformers nationwide have worked to expand access to early childhood education (ECE), programs for children younger than kindergarten age (Barnett, Carolan, Squires, Clarke Brown, & Horowitz, 2015; Clifford et al., 2005). The most notable example of this expansion of ECE programs emerged in 1965 as *Head Start*, the nation's largest public preschool network (Office of Head Start, 2015). In subsequent decades, both Head Start programs as well as some public school districts have expanded access to public ECE programs across all 50 states (Barnett et al., 2015; Office of Head Start, 2015).

Largely excluded from the expansion of public ECE are Montessori programs, adhering to the pedagogy of Dr. Maria Montessori (Bainter, 2005; National Center for Montessori in the Public Sector (NCMPS), 2014). For over a century, Montessori preschools have distinguished themselves from conventional preschools in several ways, including the incorporation of mixed-age classrooms, student-initiated learning, and a Montessori-specific curriculum (Lillard, 2005). A small, but growing body of research has indicated that Montessori ECE programs can yield immediate as well as long-lasting benefits for school readiness and executive functioning (Ervin, Wash, & Mecca, 2010; Kayili & Ari, 2011; Lillard, 2012b). Despite such lauded outcomes, taxpayer-funded Montessori programs remain largely unavailable to the public, partially due to contradictions between the Montessori philosophy and certain program assessments, or quality rating improvement systems (QRISs), required for funding approval (Murray & Peyton, 2008).

As a result of such QRISs, despite sharing Montessori education's commitment to providing quality ECE programming, Head Start organizations are typically unable to adopt the Montessori philosophy in their classrooms (Bellwether Education Partners, 2014; Office of Head Start, 2015).

In 2015, an exception to this trend emerged: despite the aforementioned conflicts between the Montessori philosophy and Head Start's QRISs, one pilot program in a major California city attempted to align the two. This case study sought to describe the Head Start program's process of aligning two seemingly incompatible ECE curricula. Documenting one Head Start preschool's successful alignment of its own, state-approved QRISs with the Montessori method may ease this arduous process for early childhood educators hoping to develop similar programs in public ECE classrooms elsewhere. Further, the attempted alignment of the Montessori philosophy with such QRISs might suggest revisions for the assessments themselves in order to better include Montessori ECE in the public sector.

Statement of the Problem

This section will address the lack of public Montessori ECE programs in California (the setting of this case study) despite the recent expansion of public ECE nationwide. After first defining and describing public ECE, this section will then outline the research supporting the movement to enroll children in public preschool programs, such as Head Start. The Statement of the Problem will continue with a description of Montessori ECE, as well as an explanation of the pedagogy's incompatibility with Head Start's adopted QRISs.

The expansion of public ECE. By law, children in the United States may attend a tuition-free, public school. A public school is any school that draws its funding from taxpayers and follows state and federal education guidelines (California Const. art. IX, § 5). Given its lack of

tuition costs, public education is the most financially accessible to the population and, as an example, remains the top enrollment choice for California families; in 2010, California Public Schools enrolled over six million children compared to, for instance, the California Association of Independent Schools which enrolled less than 74,000 students (California Department of Education, 2015; National Association of Independent Schools, 2011).

Although the California State Constitution provides for public schooling from kindergarten through high school, emerging research has suggested children should begin schooling before kindergarten (AIRBS, 1969; Cal. Const. art. IX, § 6). An increasing number of studies have indicated that ECE programs bolster academic and social success in later grades (AIRBS, 1969; Ansari & Winsler, 2014). Nearly a half century ago, the longitudinal Perry Preschool Project found that 3- and 4-year-old children who received a 2-year educational programming treatment prior to kindergarten not only significantly outperformed their peers in a comparison group through grade 3 but also were found to earn higher wages at age 40 (AIRBS; HighScope, 2015). The Perry study's findings received further support from the Carolina Abecedarian Study, the Chicago Longitudinal Study, and others (Ansari & Winsler, 2014; Clifford et al., 2005). Over the past half-century, efforts at both the national and state level have attempted to incorporate the documented benefits of preschool into public education policy (Barnett et al., 2015).

The most recognizable example of this expansion is Project Head Start. Since its inception in 1965, the federally funded Head Start initiative has served over 32 million children from low-income families that could not otherwise afford private preschool (Office of Head Start, 2015; Sandel, 1991). In 2014, Head Start programs included preschool for 3- through 5-year-olds as well as services for American Indians, Alaskan Natives, migrant families, pregnant women, infants, and toddlers (Office of Head Start, 2015). Currently, Head Start serves four times as

many students as the largest public preschool program at the state level (Bellwether Education Partners, 2014). Although Head Start enjoys a vast reach, the program does not espouse the Montessori method and therefore does not typically afford its clients access to a Montessori ECE program (Office of Head Start, 2015).

The Montessori method: A largely inaccessible pedagogy. Despite its origins in the one-room schoolhouse, serving mixed-ages and providing individualized schooling, conventional American education has increasingly followed a factory model, designed to educate the greatest number of children as efficiently as possible (Lillard, 2005). Adhering to mid-nineteenth century principles of scientific management, adopted to maximize efficiency in industrial factories, most American public school classrooms have relied upon one adult to teach one age-group of children in order for students to develop as close to uniformly as possible over the course of the academic year (Lillard, 2005).

The Montessori method is untraditional in that it differs from the conventional American pedagogy, yet Montessori schools represent a century-long educational tradition of their own (Bainter, 2005). Developed by Dr. Maria Montessori (1870-1952), the pedagogy emphasizes an individualized view of the child in which students direct their own learning within a mixed-age setting (Lillard, 2005). The content of the Montessori curriculum relies heavily upon an array of didactic, sensorial materials, designed for a child to use with only minimal guidance from an adult (Montessori, 1967). Chapter II of this study reviews literature related to Montessori and further describes the Montessori pedagogy.

Although studies of Montessori programs remain rare, the limited existing research has indicated preschool children in “classic Montessori” programs demonstrated substantially stronger gains over the course of a school year than children in a conventional (non-Montessori)

program (Lillard, 2012b, p. 379). Investigations of school readiness have found Montessori students are better prepared for academic instruction than students in a comparison group (Kayili & Ari, 2011). Incorporating a larger sample than the aforementioned research, a longitudinal study of approximately 400 students in Milwaukee Public Schools found a statistically significant relationship between a Montessori education (preschool through grade 5) and high achievement on high school math and science scores (Dohrmann, Gartner, Grimm, Lipsky, & Nishida, 2007). Looking beyond academic preparedness, a 3-year study of self-regulation skills in young children found Montessori students to outperform their peers in a non-Montessori program (Ervin et al., 2010). Montessori educators' claims of pedagogical efficacy are not new; in 1901, Dr. Montessori's first implementation of her method in the slums of Rome resulted in children with intellectual disabilities outperforming their typically developing peers on language and math assessments (Lillard, 2005). Such promising research demands an explanation for the current lack of publicly accessible Montessori ECE programs.

Despite the pedagogy's documented promise, neither school districts nor Head Start programs in California have made Montessori an affordable, public option for most families in the state. There are currently at least 190 Montessori schools in California, only 43 of which are in the public sector (23%) (National Center for Montessori in the Public Sector (NCMPS), 2014). Of these, far fewer (approximately 7% of Montessori programs statewide) include ECE programs (NCMPS, 2014). As a result, with the exception of the families enrolled in the 14 public Montessori ECE programs in California, Montessori ECE programs are inaccessible to families unable to afford varying levels of private preschool tuition (NCMPS, 2014).

The incompatibility of Montessori ECE and Head Start QRISs. One explanation for the lack of public Montessori ECE programs is the tension between the Montessori philosophy and

Head Start's QRISs. In addition to the Classroom Assessment Scoring System (CLASS), one measure upon which Head Start has relied is the Early Childhood Environment Rating Scale-Revised (ECERS-R) (Zill et al., 2003). The ECERS-R rubric assesses Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interaction, Program Structure, and Parents and Staff (Harms, Clifford, & Cryer, 2004). Although Montessori and Head Start agree on many points regarding health, safety, and the classroom environment, a Montessori classroom would likely fail to satisfy the standards on a number of items. For example, Personal Care Routines item 7.3 calls for staff to use pick-up and drop-off times as an opportunity to discuss children with their parents (Harms et al., 2004). The Montessori philosophy would suggest that the classroom belongs to the child and, as such, many Montessori programs have a designated drop-off area outside the learning environment to limit the presence of parents and caregivers (Sharp & Lowry, 2014). Exemplifying a similar contradiction, Language-Reasoning item 5.1 calls for staff to discuss "logical relationships while children play with materials that stimulate reasoning" (Harms et al., 2004). Typically, if a Montessori teacher is working directly with a child, the teacher uses minimal language (if any) in order to prepare the child to perform the activity independently; rather than narrate a presentation of an activity, the Montessori teacher simply shows the student how to complete the task (Sharp & Lowry, 2014). Chapter II of this study will further describe contradictions between the Montessori philosophy and QRISs such as the ECERS-R. As long as these contradictions exist, such standards will present an obstacle to Montessori programs seeking to operate in the public sector. This case study attempted to document a possible approach to overcoming such an impediment.

Purpose of the Research

Despite the apparent contradictions between Montessori and state-approved QRISs, one classroom at a Head Start program in a major California city has attempted to adopt the Montessori philosophy and curriculum. This thesis project is a case study of the aforementioned classroom's attempt to align the Montessori philosophy with Head Start curricular standards. The case study is an effort not only to document a replicable strategy for curricular alignment but also to describe the strengths and weakness of the curricular standards themselves. Revisions of the standards could facilitate the expansion of Montessori ECE into the public sector, which would, in turn, make Montessori ECE an accessible option for all families, regardless of income.

Research Questions

Research questions guiding this study were:

- (a) What process did the Head Start program follow to implement its Montessori classroom?
- (b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

Limitations

This study's limitations stemmed primarily from generalizability. Although Head Start standards may be similar (if not identical) across Head Start agencies, there is no guarantee that this Head Start's Montessori program's curricular assessment process would be identical elsewhere. The Head Start campus at the center of this case study benefitted from a Montessori-trained teacher working on staff and a willing Executive Director guiding the program. An additional limitation may result from varying interpretations of QRIS items across Head Start programs. For example, the mandate to include pretend play in the preschool environment might require a play kitchen for one Head Start program, whereas the Montessori curriculum's practical

life and sensorial building materials may meet this requirement according to another QRIS assessor. Finally, this study's focus on curriculum, independent of student characteristics and behavior, further compromises the study's generalizability. These limitations do not affect this case study's validity, but it is important to acknowledge that the implications of this research may be severely restricted.

Assumptions

Several assumptions lay at the foundation of this study. First, the researcher assumed that Head Start QRIS evaluators attended to all aspects of the pilot Montessori classroom; in other words, it may be that the discrepancies between the Montessori philosophy and Head Start QRISs went unnoticed. The researcher attempted to address this threat to validity by reviewing the curricular discrepancies with participants, but this review occurred following the QRIS assessments.

Operational Definition of Terms

Head Start: A nationwide public preschool program that serves children from low socioeconomic brackets. The program currently serves over one million children in the United States, four times as many students as the largest public preschool program at the state level (Bellwether Education Partners, 2014).

Montessori ECE: Any ECE program that adheres to the philosophy of Dr. Maria Montessori. Central to this philosophy are mixed-age classrooms for children three through six-years-old, student-initiated learning, and a unique complement of tactile and sensorial materials that children may use independently (Lillard, 2005).

Implications

Implications of this research include documenting a possible model of Montessori alignment for other classrooms within the researched Head Start program, other Head Start programs at large, and other institutions that rely on similar QRISs for public funding. Additionally, this research's findings may hold implications for the standards themselves; by identifying any unnecessary contradictions between Montessori and state-approved standards, this case study may suggest revisions to existing QRISs. Finally, this research might indirectly facilitate the expansion of Montessori programs into the public sector, thereby affording all families, regardless of income, access to Montessori ECE.

Chapter II

Literature Review

Despite a recent nationwide expansion of public preschool programs, the Montessori method of early childhood education (ECE) has remained underrepresented in the public sector (National Center for Montessori in the Public Sector (NCMPS), 2014). The incompatibility of Montessori preschool and state-approved curriculum standards may contribute to the scarcity of public Montessori ECE programs. More specifically, adherence to the Montessori philosophy may compromise a classroom's performance on widely used, public ECE program assessments (Murray & Peyton, 2008). Despite the incongruity between such measures and Montessori pedagogy, one public ECE program at a Head Start facility in a major California city has attempted to implement the Montessori philosophy in a classroom that remains subject to seemingly incompatible curricular assessments, or quality rating improvement systems (QRISs). This case study attempted to describe the process of implementing Montessori ECE in a classroom subject to QRISs. Guiding the research were the following questions:

- (a) What process did the Head Start program follow to implement its Montessori classroom?
- (b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

This study's implications include the possibility of a documented model for incorporating Montessori pedagogy into public ECE, thereby potentially facilitating the expansion of public access to quality Montessori education. Further implications for designers of QRISs may be revisions of the ECERS-R and CLASS assessments that unnecessarily exclude Montessori ECE pedagogy.

Overview of Literature Review

This chapter will first provide this case study's theoretical rationale. This section will explain not only the Montessori philosophy of ECE, but also the apparent incompatibility between the pedagogy and two widely used program assessments, the Early Childhood Environment Ratings Scale-Revised (ECERS-R) and Classroom Assessment Scoring System (CLASS). The chapter will continue with a review of related research, obtained primarily via searches of ERIC, Psych-Info, and Google Scholar databases using keywords such as Montessori, ECE, Quality Rating Improvement Systems (QRISs), ECERS-R, CLASS, and Head Start. The review of related research will address the outcomes of, first, ECE and, later, Montessori ECE in particular. The research review will then explore the problem of assessing quality in ECE before describing the common solution of adopting QRISs such as the ECERS-R and CLASS. Finally, this chapter will outline the very limited research on Montessori classrooms' response to such high-stakes program assessments.

Theoretical Rationale

Dr. Maria Montessori (1870-1952) developed the pedagogy that bears her name throughout the first half of the twentieth century (Bainter, 2005). The first female physician in Italy, Dr. Montessori crafted her method of education while working with intellectually disabled children in the slums of Rome (Lillard, 2005). Building upon the work of educational theorists Jean-Jacques Rousseau, Eduoard Seguin, and Jean Itard, Montessori produced an array of tactile educational materials designed to support her students' physical and intellectual development (Montessori, 1967b). Her curriculum proved so effective that her students with intellectual disabilities outperformed typically developing peers on academic assessments (Standing, 1962). Soon thereafter, the Montessori method gained international acclaim not only for its unique

educational materials but also for the unconventional context in which students experience the curriculum (Standing, 1962).

This section will address the Montessori method's departure from conventional schooling. Once addressed, the distinctions between Montessori ECE and conventional preschool pedagogy will obviate the challenges of assessing Montessori programs with mainstream measures. As the philosophical underpinnings of Montessori education are numerous, this section will focus exclusively on the aspects of the Montessori approach that may conflict with Head Start's QRISs: mixed-age classrooms, freedom of movement, the early childhood curriculum, and the early childhood environment.

Mixed-age classrooms and freedom of movement. Dr. Montessori believed that every child's rate of development is unique (Montessori, 1966). Two aspects of Montessori practice follow from this belief: mixed-age classrooms and freedom of movement. It follows from the view that individual children mature at unique rates that a child's age is less important than his stage of development, making it arbitrary to rely on birthdates to group students in single-age cohorts. Instead, Montessori programs enroll children in three-year age groupings (ages birth through 3, 3 through 6, 6 through 9, etc.) (Montessori, 1967b). An individualized view of development also implies that not all children will be prepared for or interested in the same curriculum at the same time. As such, Dr. Montessori called for the child's freedom of movement throughout the learning environment (Montessori, 1967b). Freedom of movement does not refer exclusively to the child's ability to physically move about the classroom; this freedom also entails student-initiated learning, in which each child may choose which activities to explore and for how long (Montessori, 2007). Although the freedom of movement principle might imply anarchy, it is important to clarify that many classroom protocols as well as adult-led

introductory lessons guide the child's freedom of movement and curricular engagement (Chattin-McNichols, 1991). For example, although the child may choose to work with the Pink Cubes, a series of ten, wooden cubes of varying volume, the child must follow protocols such as using two hands to carry each cube, one at a time, from the shelf to a work rug on the floor. The child therefore works freely yet remains beholden to protocol. Such structured freedom of movement is foundational to the Montessori aim of fostering the child's independence to the greatest extent possible (Montessori, 1967b).

Implementation of both mixed-age classrooms as well as freedom of movement conflicts with several items on the ECERS-R, one of Head Start's QRISs. For example, the measure's Activities subscale calls for developmentally appropriate materials in the classroom. The Space and Furnishings subscale elaborates that materials should be developmentally appropriate for the "predominant age group" (Sharp & Lowry, 2014, p. 9). Given the mixed-age composition of the learning environment, children in the Montessori classroom have access to materials that are either not yet or no longer developmentally appropriate. An additional contradiction arises between the Montessori approach's freedom of movement and the ECERS-R's requirement that adults sometimes direct children's learning. The ECERS-R's Program Structure subscale evaluates the balance between student- and teacher-initiated activities (Harms, Clifford, & Cryer, 2004). Although adults may facilitate some elements of the daily schedule, the Montessori philosophy calls for a maximization of child independence (Montessori, 1967a). Personal Care Routines subscale item 5.1 calls for "most staff [to] sit with children during meals and group snacks" (Sharp & Lowry, 2014, p. 10). Freedom of movement allows Montessori students to serve themselves snack at a time of their choosing. Montessori classrooms therefore do not schedule "group snacks," nor do Montessori educators consistently join each child at the snack

table (Sharp & Lowry, p. 10). As the Activities, Program Structure, and Personal Care Routines subscales of the ECERS-R demonstrate, Montessori's incorporation of mixed-age classrooms and freedom of movement proves to be incongruous with one of Head Start's favored internal assessments.

The Montessori ECE curriculum. Dr. Montessori developed and compiled a unique set of lessons and didactic materials, which constitute four core curriculum areas: Practical Life, Sensorial, Language, and Mathematics (Montessori, 2007). The Practical Life curriculum consists of exercises designed to teach necessary skills for daily living. Practical Life activities include preparing food, dusting shelves, or watering plants in addition to "Grace and Courtesy" lessons on, for example, pushing in a chair, greeting a friend, or asking for help (Lillard, 2005). Each of these lessons not only fosters a child's independence, but also facilitates harmonious freedom of movement within the environment. The Sensorial curriculum houses materials designed both to develop the child's senses and to present concepts such as dimension, weight, and seriation (Montessori, 2007). This curriculum area therefore supports the child's developing perception of his world. The Montessori Math curriculum relies primarily on tactile materials to explore numerical concepts from identifying numerals to dynamic division of quantities as large as 9,999 (Montessori, 2007). The Language curriculum introduces children to the sounds of the alphabet and the mechanics of writing before eventually inviting students to craft stories, read books, and perform sentence analysis (Montessori, 2007). Amongst other aims, the Math and Language curricula serve to develop the child's pre-academic skills in preparation for higher learning. Inclusion of the Practical Life, Sensorial, Mathematics, and Language curriculum areas is essential to the Montessori ECE environment (Montessori, 2007).

One of the underlying philosophical aims of the Montessori curriculum is to acquaint the child with reality (Montessori, 1967a). Dr. Montessori wrote that when a child hears a fairy tale, for example, “he is not developing his own powers to imagine constructively” (Montessori, 1967a, p. 254-55). As such, Montessori ECE often avoids fantasy. Rather than pretending to be a knight or a princess, children in the Montessori classroom perform the real-world activities students observe at home such as gardening, cooking, cleaning, and caring for plants and animals (Montessori, 1966). Instead of using blocks to construct castles or spaceships, children use block-like materials in the Sensorial area to explore facets of reality such as length, width, and height. Books and images in the classroom avoid fantasy and, instead, depict elements of the real world (Montessori, 1967a). Although the Montessori approach does not discourage fantasy for children of elementary age, an emphasis on the reality of the physical universe lies at the foundation of the Montessori ECE curriculum (Montessori, 1967a). As this section will soon address, the avoidance of fantasy may contradict QRISs’ expectations for ECE programming.

The Montessori curriculum presents additional incongruities with the ECERS-R. Activities subscale item 7.1 requires educators to rotate classroom materials in order to maintain the children’s interest (Harms et al., 2004). As many of the Montessori materials lend themselves to multiple, increasingly advanced lessons, the majority of activities stay on the shelves throughout the year to allow for additional lessons with the same apparatus (Sharp & Lowry, 2014). Montessori’s reality-based curriculum presents a similar conflict. The ECERS-R’s Language-Reasoning subscale requires that an array of books be available for much of the day and that among these are fantasy stories. Similarly, the Activities subscale expects preschool curricula to include dramatic play such as dress-up (Harms et al., 2004). Typically, a Montessori classroom incorporates neither of these elements (Sharp & Lowry, 2014). The Montessori curriculum is

therefore seemingly incompatible with a number of items from multiple subscales of the ECERS-R.

The Montessori ECE environment. The Montessori method calls for a prepared environment for children to embrace as their own (Montessori, 1967b). Montessori educators prepare the classroom so that children may freely choose activities from the various curriculum areas, displayed on low-lying shelves (Chattin-McNichols, 1991). These shelves intentionally display a single set of each curriculum material, in order to foster patience and flexibility in children; students must wait patiently or work elsewhere until the desired activity becomes available (Lillard, 2005). A prepared environment frequently requires suitable flooring to accommodate, for example, the Practical Life curriculum's pouring materials that use water or the Language curriculum's letter tracing activities that involve sand. Adhering to a reality-based curriculum, Montessori environments incorporate real-world materials such as glass vessels and functioning knives (Montessori, 1967b). Taken together, the aforementioned facets of the Montessori environment maximize the child's ownership of the classroom, allowing students to go about their day with minimal assistance from adults. Further establishing the child's dominion over the environment, many Montessori ECE programs require parents to respect the classroom as the students' space, often asking caregivers not to enter the environment unless invited (Sharp & Lowry, 2014).

The Montessori ECE environment conflicts with the ECERS-R in a number of ways. First, Activities subscale item 7.2 calls for labeled shelves (Harms et al., 2004). Montessori educators do not typically label curriculum materials because children learn the names of each activity through verbal interaction with the teacher (Sharp & Lowry, 2014). Second, although a number of Montessori activities incorporate sand and water, the environment does not explicitly satisfy

both the Activities as well as the Space and Furnishings subscales' requirement of sand and water tables (Harms et al., 2004). Further, the Space and Furnishings subscale calls for soft furnishings in the environment such as cushions, rugs, and carpets (Harms et al., 2004). As the ideal flooring in the Montessori classroom must accommodate the presence of sand, water, and food throughout the space, furnishings might not be as soft as those found in a conventional preschool setting. It is therefore not simply the pedagogy or curriculum that presents a challenge for ECERS-R assessors; the Montessori environment may in itself be incongruous with a number of the measure's items.

The Montessori method and potential QRIS conflicts in summary. The Montessori philosophy, curriculum, and environment contradict items within many of the ECERS-R's seven subscales (Harms et al., 2004). Mixed-age classrooms, freedom of movement, a reality-based curriculum, and the unique needs of the Montessori environment complicate one of Head Start's two primary internal evaluation tools. This case study sought to understand how one Montessori Head Start pilot program reconciled Dr. Montessori's approach to ECE with seemingly incompatible Head Start QRISs.

Review of Related Research

Existing research has suggested that both conventional as well as Montessori ECE can result in positive, long-term outcomes for both children and communities (AIRBS, 1969; Ladd, Muschkin, & Dodge, 2014). Within this promising field, however, evaluating the efficacy of individual programs has proven difficult as assessing quality in ECE presents a unique challenge to teachers, administrators, and families. In order to ensure that ECE, regardless of pedagogy, can live up to its documented promise, many ECE programs have adopted the use of QRISs such as the ECERS-R or CLASS (Jeon, Buettner, & Hur, 2014). Validity analyses of the

aforementioned measures have led to mixed results for the ECERS-R and promising findings for the CLASS (Hooks, Scott-Little, Marshall, & Brown, 2006; La Paro, Pianta, & Stuhlman, 2004; Warash, Markstrom, & Lucci, 2005). However, very few studies have explored the interaction between Montessori ECE and QRISs, the specific area of research to which this case study hoped to contribute.

Outcomes of ECE. Several landmark studies, including the seminal Perry Preschool Project (PPP), have suggested that enrollment in ECE may result in better kindergarten readiness. The PPP researchers assessed the longitudinal effects of a 2-year education program for 96 African American 3- and 4-year-olds with intellectual disabilities. The experimental group demonstrated better kindergarten readiness than did the comparison group given the treatment group's significantly greater gains in math, language, and reading skills (AIRBS, 1969). The benefits of ECE are not limited to preparedness for lower elementary learning, however. Beyond kindergarten readiness, some research has suggested that the mere presence of ECE programs has a reverberating effect. Examination of community-wide implications of two ECE initiatives in North Carolina found that each program led to solid benefits in third grade reading and math scores, not only for program participants but also for the treatment group members' classmates. The research suggested that, at 2009 funding levels, the combined mean effects of investment on test scores was equivalent to an additional 2-4 months of third grade instruction (Ladd, Muschkin, & Dodge, 2014). Thus, the mere presence of ECE has been shown to academically benefit not only ECE students but also their wider community of learners.

Some research has suggested the reverberating benefits of ECE transcend academic preparedness as additional longitudinal research has indicated ECE may lead to distal economic benefits. The research team behind the ongoing Chicago Longitudinal Study (CLS) conducted a

cost-benefit analysis of Chicago's 20 Child-Parent Centers (CPCs), which offer ECE programs to low-income communities. The authors detailed the programs' cost, before determining the yielded return on investment to society (the population) and the public (defined as the population excluding individuals from the treatment group.) The researchers found that the treatment group members were less likely to be incarcerated, hospitalized, or unemployed. As a result, the researchers found that the return on investment for the preschool program was \$10.83 for every dollar spent (Reynolds, Temple, White, Ou, & Robertson, 2011). The suggested academic and economic benefits of ECE indicate a promising investment of resources for communities nationwide. It is therefore possible that the Head Start program at the center of this case study holds similar promise for the community it serves. As the next section will discuss, a successful implementation of Montessori ECE could further enhance the program's potential benefits.

Outcomes of Montessori ECE. The limited, existing research on Montessori ECE has found mainly positive results for the use of the pedagogy. As not all Montessori ECE programs adhere identically to the Montessori philosophy and curriculum, it is important to consider fidelity of implementation of the method when evaluating its outcomes (Lillard, 2012b). In one of the few studies that factored fidelity of implementation into its analysis, Montessori ECE appeared to benefit students in the short-term by leading to kindergarten readiness. In the study, the researchers tested 172 children at the beginning and end of the school year in programs deemed to be classic Montessori (high fidelity of implementation), supplemented Montessori (moderate fidelity of implementation), and conventional (no implementation of the Montessori method) (Lillard, 2012b). The tests assessed executive functioning, theory of mind, literacy, mathematics, and social skills. Children in the classic Montessori program demonstrated substantially stronger gains over the course of the year than did their peers in the other two

program types (Lillard, 2012b). This study not only supported previous findings around ECE enrollment's correlation with kindergarten readiness, but also suggested that classic Montessori programs may be of particular benefit to this effect.

Beyond kindergarten readiness, Montessori ECE has been shown to benefit students long-term. A study in Milwaukee Public Schools (MPS) showed benefits at age 12 for children who attended a Montessori program for ages 3 through 6. In this oft-cited study, Lillard and Else-Quest (2006) evaluated the academic and social impact of Montessori education in MPS. Using established measures such as the Woodcock-Johnson Test Battery, the researchers assessed 102 children at age 5 (when the Montessori ECE program concluded) and at age 12 (when the Montessori Elementary program concluded.) The researchers found that scores favored the Montessori students on almost all measures (Lillard & Else-Quest, 2006). An additional study of Milwaukee's public Montessori programs compared student achievement between Montessori graduates (attending Montessori from age 3 through grade 5) and non-Montessori graduates within MPS. After assessing GPA as well as Math/Science and English/Social Studies scores, compiled from the ACT and Wisconsin Knowledge and Concepts Examination, the researchers found that attending Montessori from ages 3 through 11 predicted higher achievement on science and math assessments in high school (Dohrmann, Gartner, Grimm, Lipsky, & Nishida, 2007).

Despite the pedagogy's documented benefits, some research has suggested that children of different races and ethnicities may respond differently to Montessori ECE. Researchers Ansari and Winsler (2014) assessed the school readiness of 7,045 Latino and 6,700 African American 4-year-old children, attending either a Montessori or conventional preschool program. The researchers conducted both pre-academic as well as socio-emotional assessments of participants at both the beginning and end of the school year. All children across the study made gains, but

not all children made identical strides within the Montessori program as Latino children were found to benefit the most from the Montessori curriculum. African American children benefited from the Montessori program, but advanced further in the non-Montessori program (Ansari & Winsler, 2014). It bears mentioning that this study did not consider fidelity of Montessori implementation, nor were investigated classrooms mixed-age. Nevertheless, such ethnographic data may be important to consider in this case study as well, given the investigated classroom's majority-Chinese/Chinese-American population. Despite Montessori's potentially uneven efficacy across ethnicities, Ansari and Winsler's study nevertheless supported the findings of much of the limited, existing Montessori research by suggesting the pedagogy holds sufficient promise to merit further implementation and investigation.

Assessing ECE program quality. Research on the current state of ECE in the US has revealed a vast array of preschool programming representing varying pedagogies and levels of quality. Nationwide ECE program data from six states (California, Georgia, Illinois, Kentucky, New York, and Ohio) indicate that although most classrooms met minimum quality standards, very few exceeded expectations (Clifford et al., 2005). Nationwide assessments of Head Start program quality in particular has led to similarly mixed findings (Connors et al., 2014). Such data is difficult to interpret, however, given that program quality has proven to be an elusive concept.

Multiple research studies have indicated that preschool program quality is a complex construct, often meaning different things to different groups. Katz (2000) argued that program assessments can approach preschool program quality from five possible perspectives: 1) top-down, in which administrators or licensing agencies assess programming; 2) bottom-up, in which enrolled children share their experience of the preschool in question; 3) outside-in, in which

enrolled families provide feedback on the services delivered; 4) inside-out, in which staff members share their perceptions and 5) the outside perspective, in which the larger community assesses any received benefits of the program. One study found that most existing research on preschool quality approaches the construct from Katz's top-down perspective, incorporating program assessments from state and federal agencies (Ceglowski & Bacigalupa, 2002). The example of the Head Start program at the center of this case study supports these findings. However, a shared (albeit limited) approach to ECE program assessment does not equate to a shared definition of ECE program quality.

The disagreement over a cohesive definition of program quality extends beyond the realm of research to reach the key players associated with ECE programs. One study conducted 38 focus groups across Minnesota in an attempt to define the term "child care quality" (Ceglowski, 2004). The researcher found that parents, administrators, teachers, licensers, legislators, and fellow researchers voiced discrepant definitions of quality in ECE. The author identified trends in the responses, but highlighted that the variance in definitions of quality is, in itself, a significant finding of which all key players should remain cognizant (Ceglowski, 2004).

Even when a shared definition of ECE quality exists, its assessment can be a challenge given the age of enrolled students. As most preschool-age children have yet to read or write with fluency, the standardized tests distributed to older students are inappropriate measures of ECE program efficacy (DeLuca & Hughes, 2014). Although there do exist reliable measures for gauging pre-academic skills in young children, such assessments often require one-on-one verbal interactions and are therefore not appropriate for assessing programs at large (AIRBS, 1969; Lillard, 2012b). Further limiting a program's ability to assess quality is the fact that teachers are

seldom sufficiently versed in assessment theory to generate original, reliable measures (DeLuca & Hughes, 2014).

Although research on assessing Montessori ECE program quality within a Head Start facility is extremely limited, one study has documented the specific challenges of assessing the pedagogy in this context. Employing a multi-method approach to understanding program quality, the research relied upon both teacher reports as well as ethnographic data. The researchers concluded that this combinative approach is a promising methodology for holistically studying program quality and process (Korfmacher & Spicer, 2002). Despite these researchers' calls for such a multi-method approach to assessing program quality, many programs across the country have opted for a different evaluation strategy.

Quality Rating and Improvement Systems (QRISs) in summary. In order to address the challenges of assessment in ECE, many programs, including Head Start, have invested in QRISs, observation-based measures that evaluate a range of program attributes. For example, the Head Start classroom at the focus of this case study is subject to two QRISs: the ECERS-R and the CLASS. At least one study has linked the adoption of such QRISs to improvements in program quality (Jeon, Buettner, & Hur, 2014). The researchers found that participation in a QRIS (in this case the ECERS-R, CLASS, and English Language Literacy and Observation Tool) led to higher scores of global quality; in other words, programs that did not formally engage in a QRIS fared worse on QRIS-determined measures of quality than programs in which classrooms expected and responded to QRIS assessment. The study endorsed QRISs as a worthwhile investment for ECE programs to make (Jeon, Buettner, & Hur, 2014).

The ECERS-R examined. Some research has indicated that one QRIS, the ECERS-R, is a reliable method of ensuring program quality. In one study, teacher familiarity with the ECERS-

R appeared to result in small program improvements. Although the study's authors could not establish causality between a one-day ECERS-R training module and program improvements, the researchers nevertheless concluded that attending the training could be associated with modifications to the classroom environment, each of which represent small, positive outcomes (Warash, Ward, & Rotilie, 2008). Similar studies from North Carolina and West Virginia have supported the findings that adoption of the ECERS-R may result in statistically significant program improvements on quality measures (Hooks, Scott-Little, Marshall, & Brown, 2006; Warash, Markstrom, & Lucci, 2005).

Other research on the ECERS-R has called into question the measure's validity. One study suggested that the ECERS-R lacks a fixed definition of "quality." Following an analysis of 76 studies that relied upon the ECERS-R, the researchers found ten different meanings of "quality," often used to direct programs and even to influence policy. The researchers called for a more specified approach to assessing the quality of ECE programs (La Paro, Thomason, Lower, Kintner-Duffy, & Cassidy, 2012). Further examination of the measure found that the ECERS-R's items are disorganized, often simultaneously evaluating multiple aspects of a program. In a 2015 study, researchers sought to determine the validity of the ECERS-R by consulting a panel of child development experts. The panel validated the ECERS-R's indicators by deeming them relevant to child development outcomes, but item response theory analysis indicated that the measure's items do not exclusively pertain to the domains in which they are categorized. This disorganization, compounded by the ECERS-R's use of stop-scoring (in which a failing score on one domain terminates the observation and scoring process), challenges the validity of the ECERS-R as a standard assessment of ECE programs nationwide (Gordon et al., 2015).

Beyond the structural validity of the ECERS-R itself, further research has suggested that there is little correlation between ECERS-R quality ratings and child development outcomes. One study, running five separate models on data from the Early Childhood Longitudinal Study-Birth Cohort (10,700 children attending 1,400 ECE programs), found no significant correlation between ECERS-R quality ratings and child development outcomes (Sabol & Pianta, 2014). (It should be noted that one of the aforementioned study's authors is also the creator of another widely used QRIS, the CLASS.) Regardless of the ECERS-R's validity, however, the measure nevertheless remains one of Head Start's primary internal assessments, bearing a great deal of importance for the classroom at the center of this case study.

The CLASS examined. Research on an additional QRIS, the CLASS, has supported the measure's validity. Program quality as determined by the CLASS has correlated with other existing quality measures, suggesting that programs may use the CLASS in concert with other assessments, such as the ECERS-R, in order to improve program quality (La Paro, Pianta, & Stuhlman, 2004). An additional study, incorporating data from a longitudinal study of Tennessee's statewide preschool programs, corroborated these findings (Denny, Hallam, & Komer, 2012). These findings suggest an endorsement of Head Start's approach of using the CLASS alongside the ECERS-R.

Corroborating the CLASS' documented validity, further research has suggested that the measure may lead to program improvements. One experimental study explored the efficacy of CLASS training as a professional development tool for early childhood educators working in a high-poverty learning environment. Albeit from a small sample size (the study followed seven teachers), the researchers found that exposure to a week-long professional development on the CLASS led to statistically significant improvements in scores across all domains of the measure

(Casbergue, Bedford, & Burstein, 2014). Of particular promise for the Montessori classroom at the focus of this case study is the finding that the CLASS has been shown to benefit program quality especially when paired with a curricular focus such as Project Learning. Hypothesizing that CLASS scores might improve if teachers followed project work in their classrooms, one study's researchers found that providing a curricular focus for a teacher can improve the instructor's pedagogical assessment scores. The authors recommended that CLASS evaluators incorporate the Project Approach to give evaluated teachers a curricular focus through which they might gauge their own growth (Vartuli, Bolz, & Wilson, 2014). Although the Montessori method and Project Approach are distinct pedagogies, both constitute curricular focuses, linking the findings of this case study to the aforementioned research on CLASS and Project Learning.

Research on the efficacy of CLASS assessments in Head Start classrooms is not extensive. One study, however, found program improvements following the adoption of the CLASS when paired with a coaching approach. This experimental study examined the effectiveness of a yearlong professional development strategy consisting of self-reflection via videotape, mentoring, peer coaching, and bimonthly workshops. The research team used the CLASS to evaluate the efficacy of these professional development components and found that their implemented strategy resulted in significant increases on CLASS scores in the domains of Quality of Feedback, Behavior Management, Language Modeling, and Productivity (Zan & Donegan-Ritter, 2014). Although the research pertaining to its efficacy suggests the CLASS holds promise as a QRIS, the effects of the confluence of Montessori pedagogy and the CLASS in a Head Start program remain unknown.

The interaction of the ECERS-R, CLASS, and Montessori ECE. Very limited research exists exploring the interaction of Montessori ECE and QRISs such as the CLASS and ECERS-

R. One possible indication of how QRISs might affect Montessori pedagogy comes from a case study assessing a Montessori Elementary program's response to high-stakes testing. Although Montessori Elementary programs and high-stakes testing are distinct from Montessori ECE and QRISs, it may nevertheless be relevant to note that the aforementioned case study's participants acknowledged that they had compromised Montessori philosophy in order to achieve higher test scores (Block, 2015). One focus of the current case study of a Head Start classroom is to determine whether or not a Montessori ECE program must make similar pedagogical compromises in order to satisfy a contradictory form of assessment, such as the CLASS or ECERS-R.

The review of related literature in summary. The documented benefits of both ECE as well as Montessori preschool programs in particular explain the nation's recent investments in educating its youngest. Research has suggested that positive outcomes of ECE include the development of pre-academic and social skills as well as distal economic benefits for communities (AIRBS, 1969; Ladd, Muschkin, & Dodge, 2014; Reynolds, Temple, White, Ou, & Robertson, 2011). A limited number of studies investigating Montessori ECE in particular have found the method similarly effective in development of pre-academic and social skills, and additional research has found Montessori students to outperform their peers in conventional classrooms in both short and long-term analyses (Dohrmann, Gartner, Grimm, Lipsky, & Nishida, 2007; Lillard, 2012b; Lillard & Else-Quest, 2006). Despite the research's promising findings for Montessori as well as ECE in general, ensuring program quality in order to reap such benefits remains a challenge. Multiple studies have found ECE program quality to be an amorphous concept, holding differing meanings across constituencies (Ceglowski, 2004). Beyond a definition of program quality, assessing a specific program's impact presents

additional challenges given the impossibility of evaluating young children via written standardized tests. An increasingly common step towards accountability has been the adoption of QRISs, such as the ECERS-R and CLASS (Jeon, Buettner, & Hur, 2014). Although research has found greater validity for the CLASS than the ECERS-R, neither measure appears to have been adequately investigated within the context of a Montessori ECE classroom (Denny, Hallam, & Komer, 2012; La Paro, Thomason, Lower, Kintner-Duffy, & Cassidy, 2012).

Conclusions

Although Montessori ECE represents over a century of history, dating back to a single classroom in the slums of Rome, contemporary research has revealed little regarding the interaction between this promising pedagogy and modern quality assurance measures. Despite apparent contradictions between the Montessori method and widely used QRISs, only a classroom such as the one at the center of this case study can elucidate how such incongruities manifest themselves in practice. The following chapter will discuss a proposed methodology for obtaining the necessary data to better understand the interplay between the ECERS-R, CLASS, and Montessori ECE.

Chapter III

Method

The Office of Head Start is the nation's largest provider of public preschool, yet very few of its programs adhere to the century-old Montessori approach to early childhood education (ECE) (Bainter, 2005; National Center for Montessori in the Public Sector, 2014). To secure funding, Head Start programs must demonstrate adherence to quality rating improvement systems (QRISs) such as the Early Childhood Environment Rating Scale-Revised (ECERS-R) or the Classroom Assessment Scoring System (CLASS) (Jeon, Buettner, & Hur, 2014). One explanation for the exclusion of Montessori from Head Start programs may be that Montessori philosophy is incompatible with several items on the ECERS-R and CLASS assessments (Sharp & Lowry, 2014). In other words, adhering to Montessori philosophy could compromise a Head Start classroom's assessment scores and, as a result, affect program funding. Despite this tension between Montessori ECE and Head Start program assessments, one Head Start organization in a major California city has piloted a Montessori classroom and evaluated its programming with both the ECERS-R and CLASS assessments. The purpose of this case study was to document the process of piloting a Montessori classroom in a Head Start context in order to identify challenges and, ultimately, provide recommendations for publicly funded ECE programs elsewhere that may attempt a similar undertaking. As such, specific research questions included:

- a) What process did the Head Start program follow to pilot its Montessori program?
- b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

This section will address the methodology followed in order to answer these research questions.

Setting

This study took place at a Head Start facility in a major California city. The Head Start program consisted of seven campuses citywide. This case study focused on the implementation of the Montessori method in only one of the classrooms within the Head Start organization. Two teachers led the pilot Montessori classroom. One of these teachers, this study's Teacher participant, had received a Montessori credential through the American Montessori Society (AMS).

Participants

This case study's participants consisted of two administrators and one teacher at the Head Start program. The Executive Director participant had held his position for 7 years. The Education Manager participant had worked at the Head Start program for 5 years. The study's Teacher participant was a graduate student in the same program as this study's author and the two met following an introduction by graduate faculty. The Teacher participant had worked at the Head Start site for less than one month when she began to implement Montessori ECE pedagogy in her classroom and left the organization after one school year. The participant most familiar with the Montessori method was the AMS-credentialed Teacher participant. The Executive Director and Education Manager participants had not been certified in Montessori ECE.

Design

This qualitative research followed a case study design. Guiding the study were the questions:

- a) What process did the Head Start program follow to pilot its Montessori program?
- b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

To address these questions, this study gathered both narrative data to understand the organization's implementation process in addition to the qualitative QRIS data to describe the challenges of evaluating Montessori ECE with the ECERS-R and CLASS assessments.

Measurements/Instruments

Data collection in this case study relied upon an analysis of documents as well as the conducting of interviews. The Montessori ECE pilot classroom's three QRIS assessments comprised the documents for review. The interview subjects for this case study were the three participants from the investigated Head Start organization. Interviews conducted for this research were open-ended.

Document Review. Documents pertinent to this case study included the pilot classroom's ECERS-R assessment from Feb. 3, 2016 and CLASS assessment from Nov. 17, 2015 and April 19, 2016. Document review consisted of multiple read-throughs of each assessment in addition to a partial review with the help of the Executive Director and Teacher participant during interviews.

Interview Protocol. Interviews with the Executive Director, Education Manager, and Teacher participants were open-ended. The interview with the Education Manager participant took place via continued email correspondence as she was on maternity leave at the time of data collection. A number of possible questions guided the discussions including:

- a) How and when did the idea for a Montessori classroom at your Head Start organization originate?
- b) What challenges did you face in launching a Montessori classroom?
- c) What recommendations would you make to Head Start programs elsewhere seeking to implement the Montessori philosophy into their programming?

Appendix A provides a list of possible questions to be asked in open-ended interviews and continued email correspondence in this case study.

Procedure

Two phases comprised this case study's procedure of data collection. First, the researcher reviewed the documents relevant to the pilot Montessori classroom's performance on the ECERS-R and CLASS assessments. Second, the researcher conducted open-ended interviews and initiated continued correspondence with the study's participants.

Document review. Through his Executive Assistant and Education Management team, the Executive Director participant provided the researcher with the pilot classroom's ECERS-R and CLASS assessments. The researcher reviewed these documents in order to understand the program's perception of compatibility between the Montessori pedagogy and Head Start's QRISs. The review of these documents contributed to the development of questions for open-ended interviews and continued email correspondence with the study's three participants.

Open-ended interviews and continued correspondence. The researcher conducted open-ended interviews with the Teacher, Education Manager, and Executive Director participants. The interviews included questions addressing the origins of the pilot Montessori classroom, the role of QRISs within the Head Start organization, the participants' initial perception of the relationship between Montessori pedagogy and the QRISs, participants' reflection on the experience of implementing the Montessori classroom, and recommendations to other Head Start or otherwise publicly funded organizations seeking to implement similar pilot Montessori environments. Each participant agreed to ongoing email communication with the researcher to allow for follow-up and clarifications.

Data Collection

Data collection took place during the fall of 2016. Data collection began with the securing and review of the classroom's QRIS assessments and continued with the conducting of open-ended interviews and ongoing correspondence via email. Following the initial review of QRIS documents and the first round of interviews and email correspondence, the review of documents and communication with participants continued simultaneously.

Data collection via document review. The researcher first reviewed the Montessori classroom's QRIS performance. The Executive Director participant and his staff provided the researcher with the pilot Montessori classroom's one ECERS-R and two CLASS assessments, conducted on Feb. 3, 2016, Nov. 17, 2015, and April 19, 2016, respectively. The researcher did not document any personally identifiable information recorded on these assessments and, instead, recorded only the program titles of each person connected to the QRISs.

Data collection via open-ended interviews and continued correspondence. A series of interviews comprised the second phase of data collection. The interview with the Executive Director participant occurred at the Head Start organization's main office on Sept. 27, 2016. The Education Manager was on maternity leave at the time of data collection so responded to the researcher's initial interview questions via email on Sept. 22, 2016. The final interview occurred on Oct. 11, 2016 when the researcher conducted a phone interview with the Teacher participant.

Data Analysis

The analysis of data in this study consisted of four components. The researcher first generated an organizational map to facilitate understanding of the Head Start program's key players' positions within the agency. The researcher then constructed a chronology of key events in order to illustrate the timing of the Montessori classroom's launching and its

subsequent assessments. A direct reporting of these assessments constituted the third component of data analysis. Finally, the researcher conducted a comparative analysis and coding of all interview data.

The Head Start program’s organizational structure. The first step of data analysis was to describe the key players within the investigated Head Start program. Incorporating interview data as well as member checking, the researcher created an organizational map, identifying the positions and roles of Head Start program staff (Figure 1). As with QRIS and interview data, no personally identifiable information was collected. The organizational chart served as a means to track the various staff members that have played a role in implementing or assessing the pilot Montessori classroom.

A chronology of key events. Incorporating interview data, the researcher then compiled a chronology of events (Figure 2). This timeline originated with the initial idea for a pilot Montessori classroom and terminated with the resignation of the Teacher participant. The chronology included key events such as the hiring of the Teacher participant, the Montessori classroom’s first day with students and QRIS observations.

Analysis of the QRIS assessments. Analysis of the Head Start program’s QRIS assessments (two CLASS reports and one ECERS-R evaluation) consisted of a direct reporting of the program evaluators’ findings. This study did not report assessment items unrelated to Montessori pedagogy or curriculum.

Coding of interview data. The researcher used coding to determine patterns in responses across similar (if not identical) interview prompts. The author identified three codes in participant responses: “process,” “challenges,” and “recommendations.” The first two codes

relate directly to this case study's guiding research questions. The third code assisted with the preparation for a discussion of findings in Chapter V.

Chapter IV

Results

In spite of recently expanding access to public early childhood education (ECE), for the most part, Montessori ECE programs remain excluded from the public sector due partially to conflicts between Montessori pedagogy and widely used program assessments. This case study sought to document a possible model for implementing Montessori ECE in the context of a Head Start classroom, subject to state-approved program assessments (Quality Rating Improvement Systems (QRISs)). Specifically, this study sought to answer the following research questions:

(a) What process did the Head Start program follow to implement its Montessori classroom?

(b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

This study attempted to answer these questions via a review of the Head Start classroom's ECERS-R and CLASS assessments as well as via interviews with the organization's executive director, education manager, and the pilot Montessori program's lead teacher. Data collection therefore consisted of reviewing the Montessori classroom's ECERS-R and CLASS scores in addition to conducting interviews with the Executive Director, Education Manager, and Teacher participants.

Results

This chapter will present both the results of the ECERS-R and CLASS document review as well as key responses from the three open-ended interviews. To facilitate the presentation and analysis of data, this chapter will first briefly present both a diagram of the Head Start site's organizational structure as well as a chronology of key events relevant to the case study.

Head Start program’s organizational structure. Figure 1 depicts the Head Start program’s organizational structure. Beneath the Executive Director (who participated in this study) and Program Director of the organization are three primary branches: the Service Area, Site Managers, and Administration. The Service Area includes the Education Managers (one of whom participated in this study), Early Learning Coach, Nutrition Manager, Family Community Partnership Manager, and Facilities Manager. The Administration consists of an Accounting Clerk, Office Clerk, Human Resources Manager, Executive Assistant, Finance Manager, and Administrative Coordinator. Each of the seven Site Managers is respectively responsible for one of the organizations’ seven campuses. Beneath each Site Manager at each campus are Lead Teachers (one of whom participated in this study), Support Teachers, and Family Advocates.

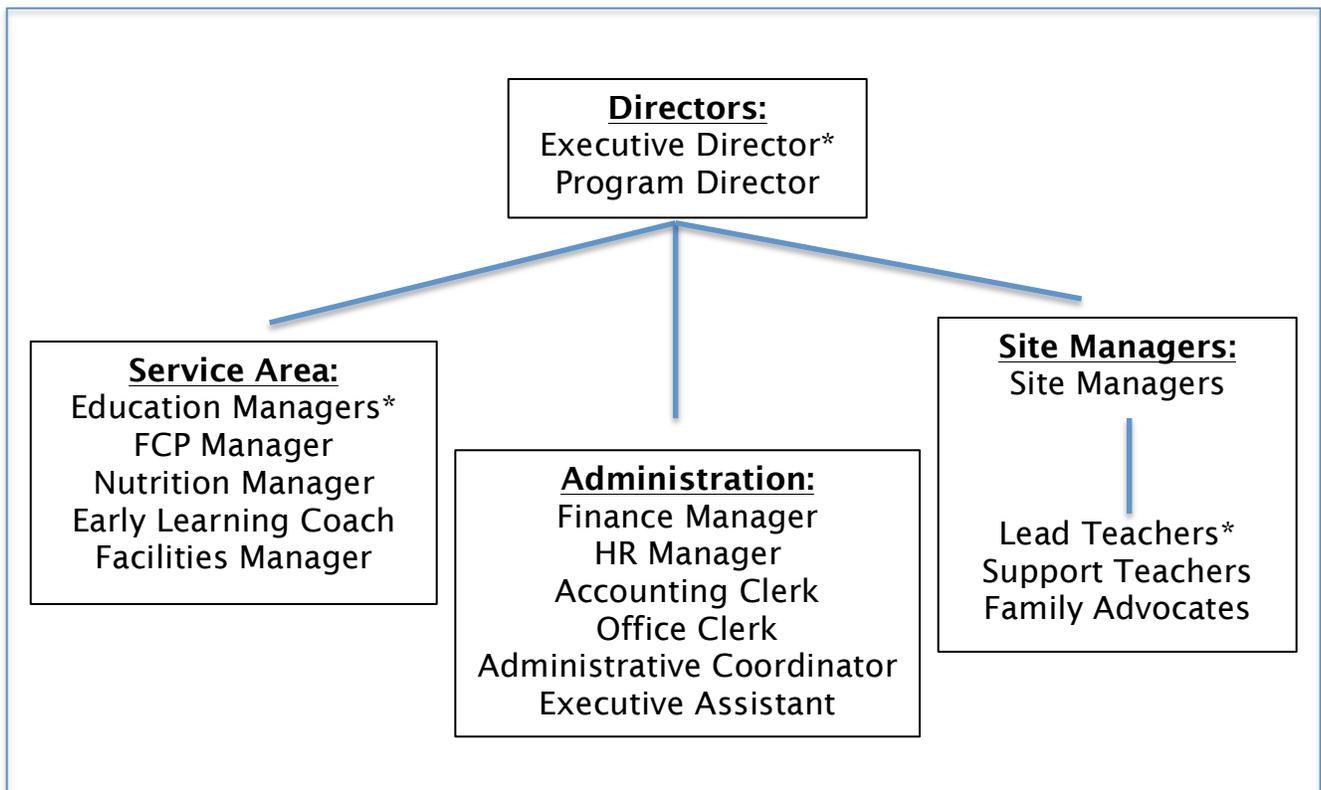


Figure 1. The Head Start agency’s organizational structure. The Executive Director, Education Manager, and Teacher participants’ positions within the agency are indicated with an asterisk.

Chronology of key events. Figure 2 depicts the chronology of key events in the launching of the pilot Montessori classroom at the Head Start site. The key events listed are the hiring of the Montessori teacher participant (Aug., 2015), the first CLASS observation (Nov. 17, 2015), the ECERS-R observation (Feb. 3, 2016), and the second CLASS observation (April 19, 2016). The chronology of CLASS and ECERS-R observations will be of particular importance to the discussion of CLASS/ECERS-R reliability and compatibility in chapter V.

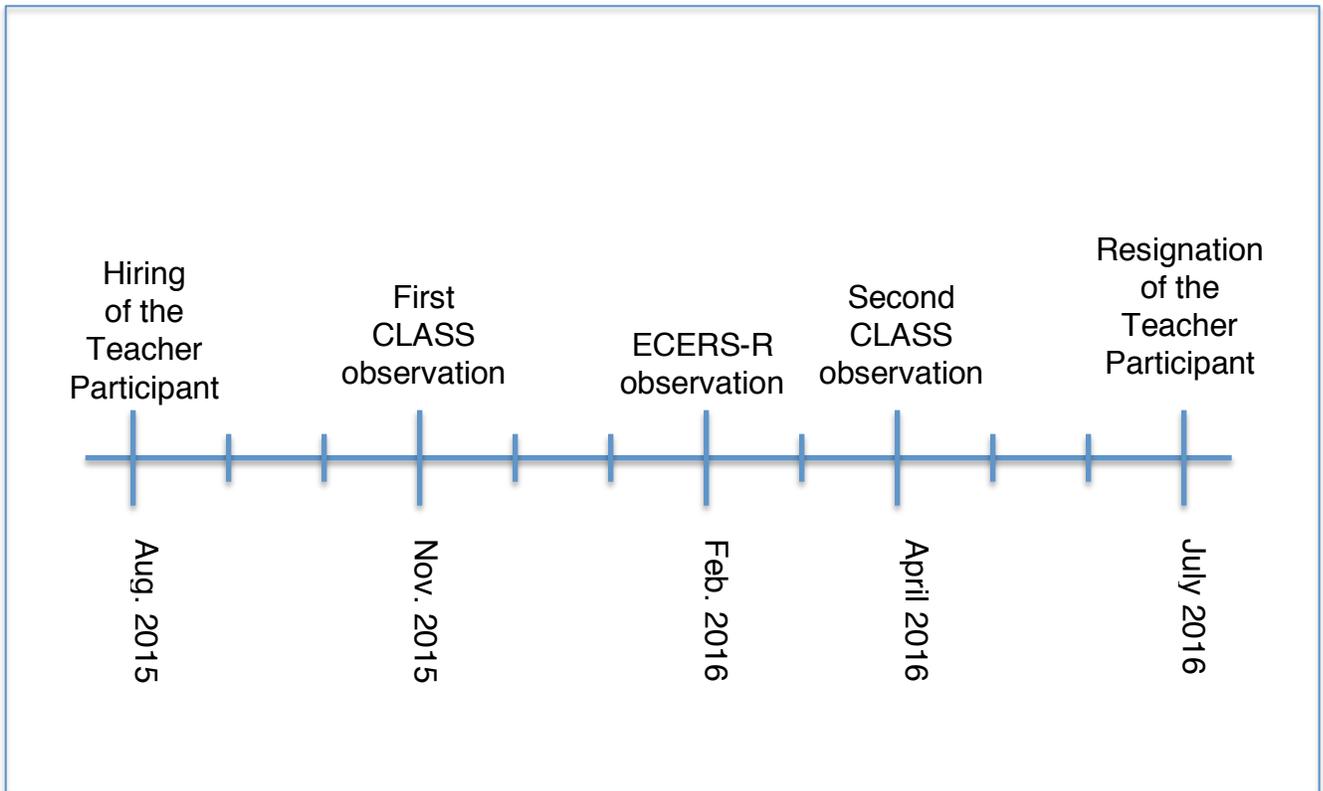


Figure 2. The chronology of key events. This figure depicts a timeline of key events relevant to the implementation of Montessori curriculum at the Head Start agency.

Results of document review. Throughout the 2015-16 school year, the Montessori classroom participated in three assessments, twice using the CLASS measure and once using the ECERS-R. The CLASS observations occurred on Nov. 17, 2015 and April 19, 2016. The

ECERS-R observation occurred on Feb. 3, 2016, between the two CLASS observations. The CLASS observations assess three domains: Emotional Support, Classroom Organization, and Instructional Support. Each of these domains is scored on a seven-point scale with seven indicating the highest possible score. The ECERS-R assesses seven domains: Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interaction, Program Structure, and Parents and Staff. As with the CLASS assessment, each of these domains is scored on a seven-point scale with seven indicating the highest possible score. This section will report the findings of each of the Montessori classroom's assessments.

Results of the first CLASS observation. One Early Learning Coach and one Site Manager (from a separate campus within the Head Start organization) performed the first CLASS observation on Nov. 17, 2015. The report indicated that the Teacher participant and her support teacher were present in the classroom that day. Out of a possible seven points, the Montessori classroom received scores of 5.75 on the Emotional Support domain, 5.42 on the Classroom Organization domain, and 1.83 on the Instructional Support domain. This section will present the observers' comments on the following dimensions within the aforementioned domains: Positive Climate, Teacher Sensitivity, Regard for Student Perspectives, Behavior Management, Productivity, and Instructional Learning Formats.

The document divided the observers' comments into two columns, labeled "Strength" and "Area of Improvement." Facets of the aforementioned dimensions could pertain to both columns; for example, the observers listed both the classroom's perceived strengths and areas of improvement within the dimension of Regard for Student Perspectives. The CLASS report pointed to "displays of positive affect, positive communication, and respect" and indications of a Positive Climate in the classroom. Further strengths pertained to Teacher Sensitivity ("Children

are very comfortable in seeking support from and sharing ideas with teachers”) and Regard for Student Perspectives (“There were observations of incorporating the child’s lead... No restriction of movement observed.”) The observers also described Behavior Management and Productivity as strengths in that “teachers had clear behavior expectations” and “children knew routines.”

The CLASS scorers also noted weaknesses within some of these dimensions. The observers described the classroom’s teachers’ sensitivity as “inconsistent,” citing the example of children who “watched the activity or the teacher working on the activity and were not asked if they wanted to participate.” The assessors reported further inconsistencies in the dimension of Regard for Student Perspectives, describing how “children were not always encouraged to talk/share ideas.” The scorers also noted, “many times, activities and conversations were teacher-directed and led.” In the dimension of Productivity, the observers recorded multiple instances (once during a hand washing transition, once during breakfast, and once again during a small group lesson) of children waiting without “anything to do.”

Results of the second CLASS observation. An Education Manager conducted the second CLASS observation on April 19, 2016. The final scoring of the second assessment indicated that the Montessori classroom’s scores had improved slightly (by 0.63, 1.08, and 0.17 points on the Emotional Support, Classroom Organization, and Instructional Support domains, respectively) from those recorded the previous November; out of a possible seven points, the Montessori classroom received scores of 6.38 on the Emotional Support domain, 6.5 on the Classroom Organization domain, and 2.0 on the Instructional Support domain. The observers commented on the following dimensions within the aforementioned domains: Positive Climate, Teacher Sensitivity, Regard for Student Perspectives, Concept Development, and Quality of Feedback.

As with the November CLASS score sheet, observer comments divided into columns labeled “Strengths” and “Areas of Improvement.” Strengths from the spring CLASS observation included notes in the realms of Positive Climate, Teacher Sensitivity, and Regard for Student Perspectives. The observers reported, “teachers and children demonstrated strong emotional connection, close proximity, positive affect, mutual respect, and engaged in social conversations.” The report described further strengths in the Teacher Sensitivity realm such as “the teacher consistently noticed children who needed extra support or attention and responded quickly with individualized support, comfort, and assistance.” The assessors also described how “the Lead Teacher was flexible in her plans, always went along with students’ ideas and interests and encouraged students to talk.” Further Regard for Student Perspectives manifested as the teacher inviting students to help lead lessons to a small group.

The CLASS observers described two dimensions as “Areas of Improvement.” In the realm of Concept Development, the assessors recorded that “the teacher rarely used discussions and activities that encourage analysis and reasoning” in addition to rarely providing “opportunities for children to be creative or generate their own ideas and products.” The classroom’s Concept Development score also suffered due to scarce examples of teachers connecting “ideas to children’s previous knowledge or their actual lives.” The report indicated that, in the dimension of Quality of Feedback, the lead teacher “barely scaffolded” and “gave only perfunctory feedback to children.”

Results of the ECERS-R observation. A certified observer from a third party organization conducted the Montessori classroom’s only ECERS-R observation on Feb. 3, 2016. The observation began at 9:30am and concluded at 12:30pm. The ECERS-R report indicated that the Lead Teacher as well as two supporting teachers were present throughout the observation. The

assessment reported that although 16 children were enrolled in the classroom, only 12 were present on the day of the observation. The scoring sheet recorded the Montessori classroom's overall score as 6.14 out of a possible seven points. Domain-specific scores, also out of a possible seven points, were as follows: 6.88 on Space and Furnishings, 4.00 on Personal Care Routines, 5.50 on Language-Reasoning, 6.20 on Activities, 7.00 on Interaction, 6.75 on Program Structure, and 6.50 on Parents and Staff. The report noted that the observer was able to score all items on the assessment (marking none "not applicable").

The Montessori classroom earned a nearly perfect score on the Space and Furnishings domain, scoring less than seven points on only one of the domain's eight dimensions. The observer described the classroom's Indoor Space, Space for Gross Motor, Space for Privacy, Furnishings for Relaxation, and Gross Motor Equipment as meeting all requirements. The classroom also received a perfect score on the dimensions of Furniture for Care, Play, and Learning as well as that of Room Arrangement. Regarding the latter dimension, the observer listed the classroom's "interest centers" of science, dramatic play, art, fine motor, math, water play, and sand play. The only dimension on which the classroom lost points within the Space and Furnishings domain was that of Child-related Display; the assessor indicated that the classroom was lacking in three-dimensional art.

The classroom did not fare as well on the Personal Care Routines domain, earning seven points on only two of the domain's six dimensions. Although the ECERS-R assessment records a score of seven points on the Personal Care Routines dimension of Greeting/departing, the observer acknowledged that she did not observe morning drop off and recorded the dimension's perfect score based on an interview with the Teacher participant. The classroom lost points in this dimension and others within the domain primarily due to several items related to hygiene

and sanitation, but the observer also listed under “other problems” that one of the teachers who sat with children during snack did not engage in conversation.

The Language-Reasoning domain earned the classroom its second lowest domain score. Although the observer noted that the classroom offered children a wide selection of books (including over ten in the genre of fantasy), the report awarded the Books and Pictures dimension only four points due to the lack of teachers reading “informally” to children throughout the observation. The classroom received a perfect score on the domain’s dimensions of Encouraging Children to Communicate and Informal use of Language, but lost points on the dimension of Using Language to Develop Reasoning Skills. The observer reported no examples of children “being asked to explain reasoning” or of teachers introducing new concepts to children following expressed interest.

On the Activities domain, the classroom earned a perfect score on eight out of ten dimensions. The report indicated that the classroom offered ample opportunities for fine motor development as well as explorations of art, nature, science, music, movement, sand play, water play, dramatic play, and mathematics. Noting inclusive representation in the classroom’s books, pictures, and “other materials” (such as a display of international flags), the observer also awarded the classroom a perfect score on the dimension of Promoting Acceptance of Diversity. The classroom lost points, however, on the Blocks dimension; the assessor recorded that the block area was not consistently accessible. Further, the environment’s blocks did not meet the ECERS-R requirements of including “at least two types” nor of being “stored on open, labeled shelves.”

The classroom received its highest scores on the domains of Interaction and Program Structure, earning a perfect score on the former. On the Program Structure dimension, the

assessor recorded via an interview with staff that children with disabilities must go off-site to receive services. Aside from losing one point on this item, the Interaction and Program Structure domains remained the highest scored.

Results of interviews. The Executive Director, Education Manager, and Teacher participants responded to interview questions. The Executive Director participant participated in an in-person interview and also responded to follow-up questions submitted via email. The Education Manager participant, who was unavailable for an in-person interview due to her maternity leave, responded to questions and follow-up questions via email. The Teacher participant responded to initial questions in a phone interview as well as to follow-up questions via email. The researcher coded the participants' responses into answers describing the organization's process, answers identifying the challenges of implementing Montessori in a Head Start context, and any recommendations for similar programs seeking to incorporate Montessori pedagogy in classrooms subject to ECERS-R and CLASS assessments. This section will describe the participants' responses regarding process, challenges, and recommendations.

Results of the interview with the Executive Director participant. In an open-ended interview conducted in person on September 27, 2016, the Executive Director participant shared his thoughts on the process and challenges of implementing Montessori ECE within his Head Start organization in addition to providing recommendations for other organizations seeking to attempt a similar undertaking.

The Executive Director participant's description of process. The Executive Director participant cited his approaching the Head Start organization's board as the beginning of the Montessori ECE implementation process. The organization then hired a Montessori-trained teacher, this study's Teacher participant. The Executive Director participant recalled meeting

with the newly hired Teacher participant to discuss ways of introducing the organization's enrolled families to the concept of Montessori ECE. Short on time prior to the start of the school year, both participants decided to conduct this orientation via a newsletter as well as through interpersonal communication. Also around the beginning of the school year, the Executive Director participant called two meetings between his education management team and representatives from a separate ECE advocacy organization. The Executive Director participant described these consultants as having "a Montessori background" as both held Montessori credentials (Executive Director participant, September 27, 2016). The purpose of these meetings was to begin to familiarize the Head Start education managers (including this study's Education Manager participant) with basic principles of Montessori ECE. The Executive Director participant felt that these meetings presented Montessori ECE and Head Start curriculum standards as potentially compatible: "We found it's not like comparing apples to oranges; there are common things regardless of the program" (Executive Director participant, September 27, 2016).

The Executive Director participant described a peripheral role in the implementation of Montessori curriculum in the pilot classroom. Following one classroom observation, he recalled that, "in terms of environment, I only gave some suggestions to move tables around in order to have better supervision" (Executive Director participant, September 27, 2016). He described that, aside from one meeting with the Teacher participant following the first CLASS assessment in the fall, much of the process of curriculum implementation fell to the Education Manager participant and the Teacher participant. The final point of process addressed in this interview was a meeting with the Teacher participant in the summer of 2016. During this meeting, the

Executive Director participant and Teacher participant discussed the results of the classroom's second CLASS assessment as well as a parent satisfaction survey.

The Executive Director participant's description of challenges. The Executive Director participant described several challenges that arose from the process of implementing Montessori ECE in a classroom within his Head Start organization. Prior to describing such challenges, he clarified the importance of the organization's performance on its required QRISs:

As an agency, we need to report to the Office of Head Start. I need to secure our funding.... The way Head Start works is within the region, Region 9... if your CLASS scores fall under 10% on the bottom, that means you will lose your funding and you will need to go to re-competition.... I want to be [in] at least [the] top ten percent tier (Executive Director participant, September 27, 2016).

Regarding the ECERS-R assessment, the Executive Director participant explained, "the ECERS score is very important to our funding as well. If we fall under a certain score, [it] immediately will trigger probation of conditional funding from the city. So we need to make sure we are in compliance" (Executive Director participant, September 27, 2016).

Resulting from the high stakes of such assessments, one described challenge were differing tolerances for low QRIS scores within the organization's administration. The Executive Director participant explained that the significant funding implications of both the CLASS and ECERS-R assessments make the jobs of the Education Managers central to the financial viability of the organization. Given this pressure, the Executive Director participant described that he can "fully understand" that the organization's "very responsible" Education Managers may feel "anxious"

when they see low scores on QRISs because “they need to do their job” (Executive Director participant, September 27, 2016). He then explained that, although maintaining high scores agency wide is very important, “for this Montessori classroom, I already prepared; it can be the lowest score in the agency” (Executive Director participant, September 27, 2016).

After describing these potentially disparate attitudes towards low QRISs scores, the Executive Director participant described one instance of the Education Managers’ attempts to ensure the Montessori classroom’s compliance with upcoming assessments. The Executive Director participant recalled a meeting with his Education Managers that happened to be at the same campus as the Montessori ECE classroom. Although the purpose of that meeting was to discuss the CLASS, the Education Managers were aware that the ECERS-R observation was scheduled for the following day. The Executive Director participant described that, to prepare for the impending observation, the Education Managers “actually came into the classroom to remove [some] items” (Executive Director participant, September 27, 2016). The removed items included the Montessori ECE math curriculum’s colored beads, which ostensibly posed a potential choking hazard. The Executive Director participant explained, “our manager told [the Teacher participant] through email and also told the assistant teacher that we have to do this for ECERS assessment” (Executive Director participant, September 27, 2016).

A final challenge that arose in the interview pertained to daily routine. As described in chapter II, classroom snack procedure represents a potential conflict between Montessori philosophy (calling for children to serve themselves snack at their own discretion) and the ECERS-R assessments (requiring a group snack time in which a teacher converses with students.) The Executive Director participant described the challenge in addition to an agreed-upon solution. He recalled that the Teacher participant had asked if the children in her classroom

could serve themselves snack and that his response was “of course—let’s accommodate that” (Executive Director participant, September 27, 2016). As the Teacher participant wanted an “open” snack and the Executive Director hoped to retain “a little bit of structure,” the two agreed upon “an open breakfast... from 9:30-10am” during which “one teacher sits [in the snack area] and then the children come... and eat and when they are ready, they go to play” (Executive Director participant, September 27, 2016). The classroom eventually came to use this time as a form of community engagement in that parents and volunteers took the place of the teacher in the snack area (Executive Director participant, September 27, 2016).

The Executive Director participant’s recommendations. In the in-person interview, the Executive Director offered a number of recommendations to any other Head Start organization attempting to implement Montessori ECE into its programming. Each of these recommendations related to the importance of communication within the agency. The Executive Director participant first stressed the importance of communication during the teacher hiring process: “The hiring needs to make 300% crystal clear [that] we are looking for Montessori-inspired; we are not looking for 100% Montessori.... You are hired to accommodate the two things; you are not just being hired to do Montessori” (Executive Director participant, September 27, 2016). Following the hiring process, the Executive Director participant recommended “an ongoing conversation” between the teacher, education managers, and main office: “I would suggest that in the management team you need to have at least a quarter [of] full time staff... [working] with the teacher” rather than have the teacher and education managers shoulder the responsibility on their own (Executive Director participant, September 27, 2016). The Executive Director participant elaborated by saying, “I need to allocate the time to support the teacher. That’s a lesson learned” (Executive Director participant, September 27, 2016). He went on to suggest

that the conversation between the Head Start agency and the outside ECE advocacy organization continue beyond the two meetings held prior to the start of the school year. The Executive Director participant suggested further meetings to discuss Montessori philosophy “on at least a monthly basis” (Executive Director participant, September 27, 2016).

Results of the interview with the Education Manager participant. As the Education Manager participant was on maternity leave during the data collection phase of this research, she responded to questions and follow-up inquiries via email. This email exchange occurred during September and October, 2016.

The Education Manager participant’s description of process. In describing the implementation of the Montessori ECE classroom at the Head Start organization, the Education Manager elaborated on the protocol for conducting ECERS-R and CLASS assessments at the Head Start organization:

For both assessments, we follow the standard guidelines, which are the “Early Childhood Environment Rating Scales” for ECERS-R, and “CLASS Manual” from Teachstone. For ECERS-R, we don't do internal assessment, but provide teachers with support and feedback. For CLASS, internal certified assessors conduct assessments twice a year for all classrooms. (Education Manager participant, personal communication, September 22, 2016).

In describing the protocol for conducting the required QRIS assessments, the Education Manager participant echoed the Executive Director participant by stating the funding implications of the organization’s scores before pointing out an additional utility of the measures: “Both assessments are great ways to assess the quality of our program, and inform program improvement and

professional development” (Education Manager participant, personal communication, September 22, 2016).

The Education Manager participant’s description of challenges. The Education Manager participant described the challenge of seemingly incongruous curricula and assessments. She acknowledged having concerns around compatibility between Montessori ECE and the QRIS requirements: “Prior to the assessment, particularly CLASS, we (supervisors and coach) were concerned about the compatibility” (Education Manager participant, personal communication, September 22, 2016). However, despite her concerns, the Education Manager participant articulated hope that Montessori ECE and Head Start QRISs might not be as ill suited for each other as they appeared:

Even though the CLASS scores for our Montessori inspired class were relatively low comparing with the other Head Start classes, as we (supervisors, coach and teachers) [had] further conversations around the philosophies of the CLASS and Montessori, we found that they are not against each other. Also, during my CLASS observation, I saw a lot of great interactions in the Montessori inspired class which fit the CLASS standards. As for ECERS-R, with some minor modifications of the classroom organization, and removal of some materials (safety concern), the assessment results turned out to be very positive. (Education Manager participant, personal communication, September 22, 2016)

The Education Manager participant’s recommendations. The Education Manager participant reflected on the process of implementing Montessori ECE in a Head Start program and offered several recommendations:

I would recommend programs to have more in-depth conversations with the classroom teachers around the philosophies, the differences, and similarities. In order to truly integrate Montessori and Head Start approaches, both the program and Montessori teacher should keep their minds open, respect, and make efforts to understand the values and purpose of the other party's philosophy, approaches, standards and requirements etc., be reflective on the “non-compatible issues.” (Education Manager participant, personal communication, September 22, 2016)

Finally, the Education Manager participant encouraged curriculum specialists, teachers, and administrators to “proactively seek solutions” in response to potential areas of disagreement or curricular incongruity (Education Manager participant, personal communication, September 22, 2016).

Results of the interview with the Teacher participant. The Teacher participant responded to questions in a phone interview on Oct. 11, 2016. As with those of the Executive Director and Education Manager participants, the interview’s structure was open-ended. The researcher applied the same codes of “process,” “challenges,” and “recommendations” to the Teacher participant’s responses.

The Teacher participant’s descriptions of process. The Teacher participant began her description of process with her account of joining the team at the Head Start organization. Having recently completed her Montessori training, she learned of the position in the summer of 2015 through an online job posting and remembered feeling that the position could be a “perfect” fit (Teacher participant, October 11, 2016). She described the job posting as calling for a

Montessori head teacher and noted that the job description was very similar to that of the organization's non-Montessori lead positions, but the agency advertised their seeking "someone who has Montessori knowledge" (Teacher participant, October 11, 2016). The Teacher participant also noted that the Head Start organization did not call for a Montessori teaching credential from the American Montessori Society (AMS), the Association Montessori Internationale (AMI), or any other Montessori credentialing organization. From the Teacher participant's perspective, the position "was basically advertised as a Montessori lead teacher" (Teacher participant, October 11, 2016). Following her hiring, however, she understood the organization to advise that no Montessori implementation occur during the first year of her tenure so that she might first become familiar with Head Start programming and operation (Teacher participant, October 11, 2016).

Nevertheless, following only "a few weeks of school," the Teacher participant remembered the Executive Director participant encouraging her to begin the implementation of Montessori curriculum (Teacher participant, October 11, 2016). To support her efforts, the Teacher participant was allocated a budget with which to purchase Montessori materials (Teacher participant, October 11, 2016). At liberty to secure whichever curriculum items her Montessori classroom would require, the Teacher had soon purchased materials for all Montessori curriculum areas (Teacher participant, October 11, 2016). As a result, the Teacher participant's classroom had begun its implementation of Montessori ECE in the fall of the 2015-16 school year.

The Teacher participant's description of challenges. A number of challenges arose following the conversion of the conventional Head Start classroom into a Montessori ECE learning environment. One such difficulty pertained to the classroom's daily routine and

illustrated a tension between Montessori ECE, the Head Start organization's daily schedule, and ECERS-R compatibility. As the Head Start organization practices a "family style breakfast" and as ECERS-R item 5.1 calls for "most staff [to] sit with children during meals and group snacks," the Teacher participant sought a way to preserve the Montessori ECE principle of freedom of movement by which children may serve themselves snack at a time of their choosing (Executive Director participant, September 27, 2016; Harms, Clifford, & Cryer, 2004; Teacher participant, October 11, 2016). The Teacher participant recalled agreeing with the Executive Director participant to establish the "open snack" the Executive Director described in his interview (Executive Director participant, September 27, 2016; Teacher participant, October 11, 2016). This approach satisfied the ECERS-R requirement while simultaneously allowing children to continue to work uninterrupted with curriculum materials (Teacher participant, October 11, 2016). The solution did not last, however, as at a later point, the administration asked the Teacher participant to return to a whole group snack citing concerns over "withholding food from the kids" (Teacher participant, October 11, 2016). The Teacher participant reported that she consented to the reversal (Teacher participant, October 11, 2016).

The team encountered an additional challenge in preparation for the ECERS-R observation in early February, 2016. As the Executive Director participant described, following a Feb. 2 meeting at pilot Montessori classroom's campus, members of the Education Management team entered the environment and removed several items from the shelves. The Teacher participant remembered the Education Manager participant describing the removed items as representing a "choking hazard" (Teacher participant, October 11, 2016). In her interview, the Teacher participant voiced disappointment with both the timing as well as the nature of this decision: "It's the day before ECERS and you're telling me this now?" (Teacher participant, October 11,

2016). Further, the removed materials (colored beads from the Math area and the smallest block from a set of ten in the Sensorial area) are integral to the curriculum areas from which they were extracted: “For a Montessori teacher, that’s a pretty big deal” (Teacher participant, October 11, 2016). The Teacher participant explained that she returned the removed items to the shelves prior to the ECERS-R observation the following day (Teacher participant, October 11, 2016).

The Teacher participant identified a final, principal challenge that arose related to the preparedness of and support for Head Start staff. Throughout her interview, the Teacher participant described her fondness for her teaching assistant, a 15-year veteran of Head Start, at one point referring to her as akin to a second mother (Teacher participant, October 11, 2016). Despite her assistant’s ample experience in the classroom, the Teacher participant worried that the sudden transition to a different pedagogy caused her assistant, unfamiliar with Montessori ECE, significant stress: “Throwing her into the Montessori which she knows nothing about wasn’t very helpful for her” (Teacher participant, October 11, 2016). The Teacher participant explained that her assistant’s unfamiliarity with Montessori ECE not only appeared to lead to some amount of stress, but also created a disconnect in the realm of discipline; the Teacher participant described her assistant’s “very harsh” style of redirecting children as counter to the Montessori approach. Further, as the assistant enjoyed an existing relationship with the classroom’s families, the Teacher participant had hoped that her assistant’s familiarity with the parent community could be an asset in explaining and advocating for the changes in the learning environment. Instead, without a foundation in Montessori ECE, the assistant teacher was unable to vouch for the new Teacher participant and her foreign approach (Teacher participant, October 11, 2016). The Teacher participant recalled inquiring with the administration to provide her

assistant with some Montessori training, but the organization was unable to deliver such support (Teacher participant, October 11, 2016).

The Teacher participant's recommendations. The Teacher participant offered two primary recommendations for optimizing the implementation of Montessori ECE in a Head Start context. First, rather than immediately replacing the classroom's activities with a full set of Montessori materials, she suggested a more gradual transition of curriculum: "Looking back on it now... I would definitely suggest building up on that Practical Life and Sensorial [curricula]" (Teacher participant, October 11, 2016). These introductory materials represent the foundation of the Montessori curriculum, and the Teacher participant believed first introducing her students to these activities would better prepare them for the new Math, Language, and Cultural Subjects lessons she had also purchased (Teacher participant, October 11, 2016).

A second recommendation, also related to the implementation of Montessori curriculum, was for Montessori teachers in Head Start contexts to be flexible. The Teacher participant identified open-mindedness as the "most important" trait for an educator in such a position (Teacher participant, October 11, 2016). In order to make the seemingly juxtaposed curricula work, the Teacher participant suggested that "you just kind of tweak things a bit; not a big deal" (Teacher participant, October 11, 2016). This would include steps such as the incorporation of sand, water, and dramatic play into the environment or the alternative snack routine temporarily introduced into the pilot classroom. The Teacher participant acknowledged her perspective as being "on the very liberal side" of Montessori pedagogy, indicating her willingness to make minor adjustments to the curriculum. Such openness, she felt, would be a great asset for any Montessori teacher working within a Head Start context (Teacher participant, October 11, 2016).

Conclusion

In addition to revealing the process through which the Head Start organization launched its Montessori classroom, the analysis of the interview responses from the Executive Director, Education Manager, and Teacher participants highlights a number of areas of agreement that may serve as useful recommendations for other Head Start organizations seeking to incorporate Montessori ECE. The QRIS assessment data from the ECERS-R and two CLASS score sheet also carry implications for the use of such measures in Montessori environments. Chapter V will discuss the aforementioned recommendations in addition to describing the numerous possible implications of this data.

Chapter V

Conclusion

Despite increasing support for and investment in public preschool programs, the Montessori approach to early childhood education (ECE) remains largely confined to the private sector (National Center for Montessori in the Public Sector (NCMPS), 2014). A possible explanation for this restriction is the apparent conflict between Montessori philosophy and two widely used quality rating improvement systems (QRISs), the Early Childhood Environment Ratings Scale-Revised (ECERS-R) and the Classroom Assessment Scoring System (CLASS). As QRIS scores frequently hold funding implications for public ECE programs, the implementation of Montessori ECE in a classroom subject to such assessments carries significant risk (Murray & Peyton, 2008). Nevertheless, during the 2015-16 school year, one classroom at a Head Start program in a major California city attempted to implement Montessori ECE. This case study sought to document the program's process, including any challenges specific to the CLASS and ECERS-R assessment of the Montessori ECE classroom. The following questions guided this research:

- (a) What process did the Head Start program follow to implement its Montessori classroom?
- (b) What challenges did the ECERS-R and CLASS assessments pose to the implementation of Montessori pedagogy?

This case study asked these questions in an attempt to gather recommendations for other publicly funded classrooms seeking to implement Montessori ECE. Ultimately, research of this kind may contribute to the generation of a working model for the incorporation of Montessori ECE in the public sector. The data gathered for this study came from a document review of the pilot Montessori classroom's three assessments as well as from responses to interviews with

three key players from the Head Start program: the executive director, an education manager, and the pilot Montessori classroom's lead teacher. This final chapter will discuss major findings in the data, describe the limitations of this research, list possible implications of this study, and propose areas of future investigation to further facilitate the incorporation of Montessori ECE in public preschool programming.

Major Findings

A number of significant findings arise from the data, presented in chapter IV. The data highlighted the specific challenges of assessing a Montessori ECE environment with both the ECERS-R and CLASS as these measures offered disparate reports of the quality of the Montessori classroom. This disconnect between assessments yields two findings, one for each QRIS. A third finding follows from the first two: this case study suggested a problem with ECERS-R and CLASS correlation. Finally, the interview participants' recommendations for implementing Montessori ECE in public preschool programs constitute a final finding of this study.

A successful alignment of the ECERS-R and Montessori ECE. Despite the numerous potential incompatibilities between the ECERS-R and Montessori pedagogy described in chapter II, the pilot Montessori classroom received the highest ECERS-R score across the Head Start agency's seven campuses (Teacher participant, October 11, 2016). The Executive Director and Teacher participants as well as the measure's score sheet revealed a number of strategies for Montessori ECE classrooms to comply with the ECERS-R. Although snack routine posed a potential conflict, the Executive Director and Teacher participants agreed upon an "open snack" approach, allowing children to serve themselves snack at their own discretion without defying the ECERS-R call for a teacher to converse with children over a meal (Executive Director

participant, September 27, 2016; Teacher participant, October 11, 2016). The classroom lost points on the Meals/Snacks dimension due to concerns around table sanitization, but the adopted “open snack” was evidently satisfactory.

Beyond this creative solution, the data suggested further successful alignments. The Teacher participant acknowledged including fantasy books as well as sand, water, and dramatic play areas of the classroom; although these might not be found in many Montessori ECE environments, the Teacher participant was willing to compromise on these ECERS-R items. Aside from losing points for teachers failing to read informally to students, the classroom received a perfect score on all dimensions pertaining to the inclusion of these elements. Further, despite the presence of the colored beads and the smallest pink cube on the classroom’s shelves, the environment received a perfect score on the Safety Practices dimension of the Personal Care Routines domain. The pilot Montessori classroom’s high marks indicate that curricular compromises may be the unavoidable solution to the ECERS-R compatibility challenges outlined in chapter II.

Incompatibility between the CLASS and Montessori pedagogy. The pilot Montessori classroom received the lowest CLASS scores agency wide on both the fall and spring assessments (Executive Director participant, September 27, 2016). Although the CLASS score sheet offers fewer specifics than that of the ECERS-R, document review revealed a number of incongruities between the CLASS assessment and Montessori ECE. It is impossible to evaluate each instance described on the score sheet, as the researcher did not observe alongside the CLASS observer, but the measure’s recorded comments do reveal philosophical tensions between pedagogy and assessment. For example, during the November CLASS observation, the classroom lost points on the Teacher Sensitivity dimension due to instances in which “children

sat at the teacher's table, watched the activity or the teacher working on the activity, and were not asked if they wanted to participate." The sight of children silently looking on while the teacher works with another student is common in most Montessori classrooms and exemplifies the pedagogy's reliance upon observational learning (Lillard, 2005). Such nonverbal instruction again posed a challenge on the fall CLASS assessment's Regard for Student Perspectives dimension: the observer noted, "children were not always encouraged to talk/share ideas." A similar critique emerged on the second assessment in April: "The teacher gave only perfunctory feedback to children." Montessori teachers often make the active choice to omit speech from a presentation and, in doing so, adhere to Dr. Montessori's philosophy: "The fewer the words, the more perfect will be the lesson. Special care should be taken in preparing the lesson to count and pick out the words to be used" (Montessori, 1967b, p. 106). As these QRIS items reveal, a philosophical disagreement regarding the instructional use of spoken language may exist between the CLASS measure and Montessori ECE.

The ECERS-R and CLASS assessments' failure to correlate. The first two findings imply a third: the ECERS-R and CLASS measures, as applied to the pilot Montessori environment, reported drastically different findings regarding classroom quality. In fact, were one to review either the ECERS-R or the two CLASS scores without consulting the other measure, one would view the pilot classroom to be either the highest or the lowest quality across the entire Head Start agency. This dramatic disconnect defies both the research from the CLASS' authors as well as that of an additional study that endorsed using the CLASS alongside the ECERS-R, citing high correlation between the two QRISs (Denny, Hallam, & Komer, 2012; La Paro, Pianta, & Stuhlman, 2004).

There are several possible explanations for the two measures' opposing descriptions of classroom quality. As the chronology of key events illustrates (Figure 2), the classroom received the agency's highest score in between instances of earning the organization's two lowest marks (Executive Director participant, September 27, 2016). It is possible, though unlikely, that the classroom's quality peaked in February before degrading so dramatically as to receive the lowest score two months later. It is also possible that what subjectivity still exists in QRIS scoring may account for the contradictory assessments; the personal perspective of the assessors may well have affected the classroom's scores. Final possibilities are that the example of the Montessori classroom either has supported the research questioning the ECERS-R's validity or introduced a challenge to the validity of the CLASS (La Paro, Thomason, Lower, Kintner-Duffy, & Cassidy, 2012; Sabol & Pianta, 2014). As chapter II described, a number of studies have challenged the ECERS-R's validity as a measure given its amorphous concept of quality and its disorganized items, often evaluating multiple program facets simultaneously (Gordon et al., 2015; La Paro, Thomason, Lower, Kintner-Duffy, & Cassidy, 2012). In this study, the ECERS-R's failure to correlate with two CLASS scores may undermine its reliability. However, it is also possible that this lack of correlation highlights validity concerns regarding the CLASS measure.

Recommendations from interviewed participants. The study's participants' recommendations for public ECE programs comprise a final finding of this research. Both the Education Manager and Executive Director participants recommended frequent, deliberate communication between key players in a Montessori implementation process. Although such communication may seem the hallmark of any effective organization, the study's participants specified that undertaking a transition from conventional preschool to Montessori ECE requires a clarity of expectations at the outset (Executive Director participant, September 27, 2016). The

Executive Director participant described the hiring process as a critical moment to communicate the organization's expectations, stressing it should be "300% crystal clear" that the Montessori classroom may at first be "Montessori-inspired," compromising some aspects of curriculum and philosophy in order to satisfy QRIS standards (September 27, 2016). To facilitate understanding around the new classroom, albeit a "Montessori-inspired" environment, the Education Manager participant called for on-going discussions of educational philosophy (Education Manager participant, personal communication, September 22, 2016; Executive Director participant, September 27, 2016). The Executive Director participant echoed this idea, explaining part of this continuing pedagogical discussion should involve further input from the outside ECE advocacy organization (beyond the two meetings held at the start of the school year) (Executive Director participant, September 27, 2016). From a managerial perspective, the Executive Director participant also suggested designating a quarter of his administrative team as a support system for his education managers and the teacher implementing Montessori ECE (Executive Director participant, September 27, 2016).

The Teacher participant offered two recommendations regarding the implementation of the curriculum. First, she recommended a slow integration of foundational curriculum materials, such as the introductory activities in the Practical Life and Sensorial areas of the classroom (Teacher participant, October 11, 2016). A second, related recommendation from the Teacher participant suggested that the Montessori classroom incorporate elements such as fantasy books as well as sand, water, and dramatic play materials. Although some Montessori teachers may object to including these activities, the Teacher participant explained that, in a Head Start context, open-mindedness is critical (Teacher participant, October 11, 2016). The Education Manager and Executive Director participants also independently voiced the importance of these

traits, underscoring the need for flexibility throughout the implementation of Montessori curriculum (Education Manager participant, personal communication, September 22, 2016; Executive Director participant, September 27, 2016; Teacher participant, October 11, 2016). This finding echoed a previous study in which Montessori Elementary teachers acknowledged the necessity of compromising on curriculum implementation in order to achieve higher standardized test scores; in a non-Montessori system, it may be that “Montessori-inspired” is a necessary first step for any program in curricular transition (Block, 2015; Executive Director participant, September 27, 2016).

Limitations. A number of limitations qualify these findings. The original design of this case study included an evaluation (determined via classroom observation) of the implemented Montessori curriculum. The Teacher participant’s unanticipated resignation during the summer of 2016 made such an assessment of Montessori pedagogy impossible. This study, therefore, did not collect data on the fidelity of Montessori implementation, the extent to which children used Montessori materials, enjoyed freedom of movement, and interacted in a mixed-age setting. Absent an account of implementation fidelity, it is difficult to draw conclusions regarding the Montessori curriculum’s effects on QRIS performance. In other words, a minimal introduction of Montessori pedagogy could account for the surprisingly high ECERS-R score in the Montessori environment. This study will suggest an investigation of the effects of QRISs on fidelity of implementation as an area of future research.

A second limitation pertains to generalizability. This case study assessed one classroom within a single Head Start organization. Questions of applicability to other public preschool programs (or even to other classrooms within the researched organization) are inherent to such a small sample size. Interpersonal dynamics, organizational climate, language barriers, and the

participants' distinct cultural backgrounds are only four of many unaddressed variables in this study. Given such limitations, the investigated classroom may serve as a point of reference but may not accurately predict events at other publicly funded organizations attempting to implement Montessori ECE.

Implications and Recommendations

Despite its acknowledged limitations, this case study nevertheless holds implications and offers recommendations for ECE practitioners. The study's implications relate to the validity of the researched QRISs: the ECERS-R and the CLASS. Recommendations stemming from this research pertain to the construct of quality in ECE, the development of new QRISs, the initiation of a Montessori ECE implementation process, and the need for reasonably accessible Montessori training.

Implications. Barring a drastic fluctuation in the pilot Montessori classroom's quality between November and April, the ECERS-R and CLASS measures' highly contradictory reports call both QRISs into question. However, it is also possible that the incorporation of Montessori ECE proved more incompatible with the CLASS measure than with the ECERS-R. Prior to data collection, low marks on the CLASS for the Montessori ECE classroom seemed unlikely given previous studies showing a curricular focus (such as Project Learning or Montessori) may improve CLASS scores (Vartuli, Bolz, & Wilson, 2014). Nevertheless, as poor performance on its Teacher Sensitivity and Regard for Student Perspectives dimensions suggested, the CLASS and Montessori ECE's incongruous perspectives on the use of spoken language, for example, may render the QRIS inappropriate for the evaluation of a Montessori environment. Regardless of which measure more accurately reflected the pilot classroom's quality (if such a complex

construct is even subject to assessment), the disputed reporting documented in this study challenges the validity of both QRISs.

Recommendations. This section will offer recommendations regarding Head Start's preferred QRISs: the ECERS-R and the CLASS. This study will also make suggestions about how preschool programs might initiate the transition from conventional pedagogy to Montessori ECE. Finally, this section will recommend that non-Montessori programs such as the Head Start agency in this case study approach Montessori professional organizations to receive a level of basic training in the pedagogy prior to implementation.

Recommendations regarding QRISs. This study's first recommendation follows from the implication regarding the validity of the CLASS and ECERS-R. The persistent difficulty of assessing quality in ECE, exemplified once more in this study, may call for a new approach to program evaluation. One alternative approach may be the adoption of recently developed QRISs such as the Developmental Environment Ratings Scale (DERS) and the Minnesota Executive Functioning Scale (MEFS) (Ayer, 2016; National Center for Montessori in the Public Sector (NCMPS), 2016). Developed by a team of researchers working with the National Center for Montessori in the Public Sector (NCMPS), the DERS focuses specifically on the desired outcome of developing executive functioning, the skillset that includes attention, memory, planning, flexibility, inhibition control, and problem solving (NCMPS, 2016). Jackie Cossentino, one of the measure's architects described the DERS' shift of the existing QRIS paradigm:

As we analyzed existing tools, such as the ECERS and the CLASS, we discovered two amazing things. First, these tools were never designed with clear outcomes in mind. The

second, which should come as no surprise, is that they don't predict student performance in any but the most general ways. Because Montessori pedagogy is so detailed and so specific, and because researchers such as Angeline Lillard had already demonstrated a link between high fidelity Montessori implementation and high scores on measures of executive functions, we shifted our focus... (Ayer, 2016)

Such a focus on the desired outcome of strong executive functioning, for example, may be more appropriate than an attempt to describe overall program "quality." To complement the DERS' 60-item assessment of a classroom's support of executive functioning, the NCMPS has recommended the MEFS tool, which measures students' executive functioning in a brief, one-on-one assessment (Ayer, 2016). Although the field of ECE has yet to implement or research the DERS and MEFS tools on a large scale, Head Start programs may benefit from the incorporation of such alternative QRISs, even on an experimental basis.

Beyond simply replacing the imperfect QRISs described in this study, it may also be time for the field of ECE to re-evaluate its broader approach to measuring program quality. To this end, Katz's five possible perspectives on assessing ECE may prove useful (Katz, 2000). The ECERS-R and CLASS both represent Katz's "top-down perspective," in which administrators or certified observers measure program quality. However, ECE practitioners still have four additional possible perspectives at their disposal: 1) the bottom-up perspective in which the primary metric is the child's perception of the preschool experience; 2) the outside-in, in which enrolled families offer feedback; 3) the inside-out, in which staff reflect on the quality of services delivered and 5) the outside perspective, taking a broader view by asking the larger community

to assess the benefits of programming (Katz, 2000). Perhaps it is time for ECE practitioners to incorporate perspectives beyond the “top-down” approach.

Recommendations for initiating Montessori ECE implementation. Interview responses from the Executive Director and Teacher participant highlighted two potential pitfalls of which programs new to Montessori should be wary. The first pitfall pertained to the hiring process. In his interview, the Executive Director participant described the importance of clarifying the extent of desired Montessori implementation during the hiring process (Executive Director participant, September 27, 2016). Although the Executive Director participant initially envisioned the pilot classroom as being “Montessori-inspired,” the Teacher participant expected to be working as a “Montessori lead teacher” (Executive Director participant, September 27, 2016; Teacher participant, October 11, 2016). Soon after hiring, the agency advised the Teacher participant to hold off on implementing Montessori pedagogy before, only weeks later, reversing that directive and allocating a budget with which she should begin to purchase Montessori curriculum materials (Teacher participant, October 11, 2016). This strategic ambiguity suggests that, to prevent a haphazard implementation of curriculum, program administrators, education managers, and teachers should agree to a timeline for introducing Montessori pedagogy into the environment.

A second recommendation pertains to the preparation of the education management team. In his interview, the Executive Director participant described his willingness to accept low QRIS scores from the pilot Montessori classroom; he seemed to view such outcomes as a likely unavoidable step in the implementation process (Executive Director participant, September 27, 2016). The Education Manager participant, on the other hand, voiced concerns about curricular compatibility prior to the first CLASS observation and the Executive Director participant seemed

to detect some understandable anxiety on the part of the education management team (Education Manager participant, personal communication, September 22, 2016; Executive Director participant, September 27, 2016). The two participants' interview responses suggest that administrators should adequately prepare education managers for low QRIS scores in pilot Montessori ECE environments. A better prepared education management team might not have, for example, surprised the Montessori teacher with the sudden removal of curriculum materials prior to the ECERS-R observation. An expectation of low QRISs scores might alleviate the pressure on all parties involved and, as a result, foster better collaboration between teachers, education managers, and administrators.

Recommendations for accessible and appropriate Montessori training. A final recommendation relates to the preparedness of program staff for the implementation of Montessori ECE. Both the Executive Director and Teacher participants voiced an interest in some form of Montessori training for staff. The Executive Director was happy to receive input from the outside ECE advocacy organization and regarded their two meetings as helpful, but he also shared that his staff could have benefited from introductory, one-day trainings in Montessori philosophy (Executive Director participant, September 27, 2016). The Teacher participant voiced a similar interest in providing her classroom assistant with basic training in the new pedagogy (Teacher participant, October 11, 2016). This study therefore recommends that non-Montessori organizations provide their staffs with a primer on the philosophy and curriculum prior to the beginning of curricular implementation. Inherent in this recommendation is the suggestion that Montessori organizations such as the American Montessori Society (AMS) and Association Montessori Internationale (AMI) provide such accessible trainings, understanding that not all teachers will complete a two-year certification program. Some Montessori advocates

might resist the call for potentially superficial trainings that may lead to low-fidelity Montessori implementation. However, some familiarity with the pedagogy is inarguably preferable to no training whatsoever, and if non-Montessori programs are to continue piloting Montessori environments, AMS, AMI, and other organizations would be wise to involve themselves in such efforts.

Future Research.

The findings, implications, and recommendations of this study call for a number of areas for future research. The field of ECE would benefit from more investigations of how Montessori ECE classrooms perform on Head Start's preferred QRISs: the ECERS-R and CLASS. Additional research in this area would further elucidate obstacles to public Montessori ECE and, in doing so, may serve to generate more working models for publicly funded Montessori ECE programs. An analysis of Montessori ECE's performance on the recommended DERS and MEFS measures would complement this area of research. Most important, such proposed investigations would do well to include analyses of fidelity of Montessori implementation, a factor this case study was unable to consider.

Conclusion

The example of the pilot classroom at the investigated Head Start agency illustrated several challenges of implementing Montessori ECE in a public program, subject to QRISs. An initial challenge was to prepare education managers and teaching assistants for the incorporation of a new pedagogy. A second obstacle was the aligning of the classroom with the agency's QRISs' requirements. Although adjustments to daily routine and curricular compromises appeared to render the classroom compatible with the ECERS-R, philosophical tensions between Montessori ECE and the CLASS measure seemed to remain. The agency's QRIS reporting

therefore resulted in an incoherent analysis. In response, this study recommended the adoption of new QRISs to either supplement or replace the potentially contradictory ECERS-R and CLASS measures. Finally, as this research highlighted the persistent challenge of assessing quality in ECE, regardless of pedagogy, this study invited ECE practitioners to rethink the possibilities for identifying what works in the field.

In addition to providing recommended steps for introducing Montessori ECE in a public program, this study sought to contribute to the research by calling for a new approach to assessing quality in the field. The example of the pilot Montessori classroom revealed less about QRIS compatibility than it did about such measures' utility. It is unfortunate that families seeking public preschool programming could be denied access to a promising pedagogy on the basis of potentially incoherent assessments. Professionals throughout the field of ECE should consider a departure from existing QRISs in order to seek innovative approaches to the problem of assessing quality in preschool.

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Appendices

Appendix A

Possible Questions for Open-Ended Interviews with Head Start Agency Staff

1. How and when did the idea for a Montessori classroom at the agency originate?
2. How do you define the role of the ECERS-R and CLASS at the agency?
3. How did you view the compatibility of Montessori and ECERS-R/CLASS assessments prior to launching the Montessori classroom?
4. How did families respond upon hearing about the Montessori classroom?
5. What challenges did you face in launching the Montessori classroom?
6. What, if any, adjustments to Montessori philosophy do you feel you have made and why?
7. What is the protocol for ECERS-R and CLASS observation and assessment at the agency?
8. Prior to conducting ECERS-R/CLASS observations and assessments, did agency staff discuss any compatibility issues between the pedagogy and these measures?
9. How did the initial round of ECERS-R/CLASS assessments change your view of their compatibility with Montessori?
10. What recommendations would you make to Head Start programs elsewhere seeking to implement the Montessori philosophy into their programming?