A COMPARATIVE REVIEW OF A REGGIO EMILIA INSPIRED PROGRAM FOR INFANTS AND TODDLERS

by

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ABSTRACT

The Reggio Emilia approach is a social constructivist method that fosters children's creative development through organized focus on symbolic representations (Edwards et al., 2012). This study compared the physical environments and teacher-child interactions in infant and toddler classrooms in a Reggio Emilia Inspired Program (RI) to those of a matched non-Reggio Emilia Inspired Program (NRI). A brief history of the RI approach and the founder, Loris Malaguzzi, key child development theorists, and key teaching principles and strategies of the RI paradigm are reviewed. A RI and a non-RI program, both NAEYC accredited, were compared for quality of teacher-child interactions, classroom environment, children's behaviors, and development using standardized measures. Participants were two teacher (one RI infant and one RI toddler) and their children. With school closures due to COVID-19, data collection was stopped early at both sites. The findings are presented as a feasibility study. The ITERS-3 was used to assess the classroom environments of the two programs (RI and NRI). Analysis of the ITERS-3 scores failed to reveal that the RI approach promoted a more optimal classroom environment for infants' and toddler's learning than the NRI approach. However, closer examination conducted by videotaping an activity in the classroom revealed high-quality teacher-child interactions for both the RI infant and toddler classroom. Interviews in the RI program depicted teachers who view their children as an equal part of the classroom supporting the RI principle of the Image of the Child. This study contributes to the literature on RI programs and raises new questions related to the sensitivity of environmental scales in assessing creative, non-structured, reflexive program.

DEDICATION

To my husband and best friend, Bryan, you have believed in me from the beginning and pushed me to pursue my Master's degree. Thank you for challenging me to be better, for supporting me during hard times, and being my rock. I would not be here without you. I love you.

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1. INTRODUCTION

Do Reggio Emilia Inspired Early Childhood Education Programs provide a more optimal classroom environment for infants and toddlers?

The Reggio Emilia approach is a child-oriented approach in which children are viewed as individuals with rights, active participants in their own learning and discovery, and equal members in society. The teachers who practice the Reggio Emilia approach are facilitators rather than stimulators of learning. Teachers collaborate and co-learn with children (Hewett, 2001). From this perspective, children have an innate desire to learn and understand the world around them. Learning is not a process that is done to children, but something that children actively do and discover on their own (Firlik, 1994). Researchers have studied various components of this approach, but there is a gap in the literature that lacks the comparison of this approach to other early childhood education teaching strategies. The next section describes how the Reggio Emilia approach developed and the core principles grounded in child development theories that are represented in this approach.

2. LITERATURE REVIEW

The Founder and History of the Reggio Emilia Approach

Loris Malaguzzi is the founder of the Reggio Emilia approach. This approach took form after World War II in a small Italian town called Reggio Emilia. Through collaborative efforts, teachers, parents and members of the small Italian community rebuilt their children's school developing a unique approach. Loris Malaguzzi helped to build and facilitate this approach with children, their families and the community (Gandini, 1994). After the war, the people in this community wanted a new educational system that challenged children while giving them an equal part in their community. A key principal in the Reggio Emilia approach is the view that the school is an organization and system that supports many relationships with children, their families, the teachers themselves, and the community (Hughes, 2007). Another principle of the Reggio Emilia approach is the image of children that teachers, parents, and community members hold.

Influential Theorists

John Dewey (Constructivism). The Reggio Emilia approach is influenced by various child development theories. John Dewey, for example, wrote that "All thinking is research" (Dewey, 1910). This concept is central in the Reggio Emilia framework of the image of children and the role that children play in their own learning. From Dewey's perspective, children are natural researchers who can make their own decisions, hypothesize solutions, make predictions and revisit what they have learned. Dewey stated that many teachers and educators see children and the curriculum as separate; or, that you have one or the other; that these two are antagonists,

as opposed to that both work together to form the curriculum in which children learn best (Dewey, 1902). Dewey argued that the interaction of the child and the curriculum should be viewed as one unit that works together to transform learning, as opposed to viewing these as separate aspects of learning. Dewey postulated that it should not be the child versus the curriculum or the child's individual nature versus social culture; instead, the child and curriculum should be viewed as working together seamlessly as one (Dewey, 1902). "The child is the starting-point, the center, and the end" (Dewey, 1902). Dewey argued for self-realization, not information or knowledge, as the goal. Like Piaget, John Dewey viewed children's learning as an active process that involves organic assimilation of teachers and children, with the children (as opposed to the subject matter) determining the quality and quantity of learning (Dewey, 1902). The children's own experiences are what should guide teachers about the facts, information, and subject matter they introduce to foster children's understanding of the events in their environment and to promote children's optimal growth (Dewey, 1902).

Jean Piaget (Theory of Cognitive Development). A notable theorist that influenced the Reggio Emilia philosophy is Jean Piaget. The Reggio approach adopted the Piagetian view that children are "active participants in learning or education". This Piagetian principle supports the constructivist concept, or the view that children's interactions with their own environment helps them construct an understanding of reality or the world around them (Piaget, 1963). For instance, rather than feeding information to children, the teacher may take the approach of posing questions that allow children to openly discuss, wonder about and explore in their environment. Thus, with this approach the teacher allows children to discover their own answers through their own hypothesis development and testing.

The Piagetian construct of cognitive conflict and disequilibrium has been observable in the Reggio Emilia approach in terms of how children deal with cognitive conflicts. Even when cognitive knots do not prompt understanding and growth, the experience itself is seen as beneficial. The use of cognitive knots is a key teaching strategy of the Reggio Emilia approach. Cognitive knots are problems provided by teachers that provide direction and momentum for learning to move beyond what the children already know (Northern Lights, 2019). It is like a knot in a string that stops the sewing process. This can cause frustration or confusion but should be taken as an opportunity to stop and learn. These cognitive knots represent Piaget's idea of cognitive disequilibrium (Lloyd, 1970). For example, when an infant discovers that he can no longer find the hidden block because it is covered up by a scarf, he must figure out a way to find the block again. Children work through cognitive knots by discovering new methods for problem solving through their own hands on learning, exploration and persistence. These things are needed to ensure overall growth and development. It is important for adults not to interfere with children while they are working through a cognitive knot, but rather wait and see if they can find the solution on their own recognizance.

Lev Vygotsky (The Social –Cultural approach). Lev Vygotsky, a Russian psychologist, also influenced the Reggio Emilia approach. Vygotsky defines pedology as, "the science of the child", as it directly translates from the Russian language or more precisely the science of child development (Kellogg & Veresov, 2019). If the term "pedology" is Googled nothing that Vygotsky and his co-thinkers intended for the term will appear. The term was intended to describe "science of a natural whole" that views the individual child as an irreducible unit in human development. When the term is Googled results will show that "pedology" is a branch of soil science. A comparison can be made between the soil in which researchers and

teachers can replant, rebuild and re-enact the lost science of pedology in their study of children (Kellogg & Veresov, 2019).

In defining pedology, Vygotsky poses the question: “What is child development?” Child development takes place over time with a beginning and an end; Vygotsky referred to this as the rhythm of development or the sequence of steps that occurs chronologically throughout development at differing times (Kellogg & Veresov, 2019). Child development is a cyclical process that occurs either on track with the chronological age of a child, or in line with children’s pedological age (i.e. level of development that is reached) (Kellogg & Veresov, 2019). Development depends on two factors – the environment and heredity; for example, speech is a complex whole which develops from genetic traits and is also influenced by the environment in which the child lives (Kellogg & Veresov, 2019). Pedologists are interested in various mixed traits where the interactions of heredity and the environment can be observed (Kellogg & Veresov, 2019). Pedologists do not study the environment per say rather, they study the meaning and role of the environment and the influence it plays on the development of the child. Environments vary from child to child and according to age level; for example: the unborn child has the environment of the womb whereas, toddlers typically experience a home and often a classroom environment (Kellogg & Veresov, 2019). The environment is a volatile and dynamic part of child development; it influences children and the children also influence it.

Learning new concepts from building on previous experiences has been a key part of Vygotsky’s theory. Vygotsky’s Zone of Proximal Development (ZPD) relates to the Reggio Emilia approach in that the teacher is viewed as a facilitator of new information and one who scaffolds children to promote their learning (Vygotsky, 1978). Children learn through the social relations they build over time with their caregivers who aid in their learning. For example, a

teacher sees a young toddler in her class working with small building blocks and the tower of blocks keeps falling. The teacher could go over and fix the tower for the child, but the child would learn nothing from this. Instead, if the teacher used a scaffolding approach, she could provide a few blocks and question the child about which blocks the child may use to help build the tower. This may lead the child to test different blocks and by so doing discover which blocks are best to use for building his tower.

This approach, or "scaffolding", involves guiding the child as opposed to instructing the child and is likely to be a more meaningful experience for the child. The term "scaffolding" was coined by Dr. Jerome Bruner who connected it to Vygotsky's work in the 1960s (Wood et al., 1976). Scaffolding is a teaching strategy composed of the caregiver/teacher controlling various elements of a task that are beyond the child's capacity. This allows the child to focus on the elements of the task that are within his or her range of competence and build from there (Wood, et al., 1976). Scaffolding is a part of the concept of the Zone of Proximal Development (ZPD), which is comprised of the skills a child can do with the help of a more informed individual, such as a caregiver or teacher. Scaffolding occurs, for example, when the teacher helps a student learn a new skill that is outside the realm of the child's ZPD (Wood, et al., 1976). For example, a student can accurately finish the shape puzzle with a little help from the teacher (ZPD) who may point out an area of the puzzle where the correct piece goes, but not place the piece for the child. Through her actions, the teacher is helping the child understand the words for each shape (scaffolding).

The Constructivist Paradigm

Philosophy. A key component of the Reggio Emilia approach is the teacher and the philosophy of the teacher. Teachers are children's caregivers, co-learners and co-researchers.

Teachers may have a positive or negative impact on children. When adults become active listeners, observers and researchers, children benefit (Ghirotto & Mazzoni, 2013). The principle that children are active in their own learning involves two basic ideas: (1) child agency and (2) child autonomy (Ghirotto & Mazzoni, 2013). *Child agency* refers to the child's ability to make choices and have opinions to influence events that have an impact on his or her environment. Children realize that they have the power and ability to make decisions on their own and that these decisions affect the world around them. *Child autonomy* refers to children's ability to have self-confidence, show independence, discover their own way of thinking and be able to act for themselves. These important rights of children are observed when caregivers uphold the Reggio inspired principle about the role of the adult and how children learn.

Taken together, these views and philosophies have helped to form an image of children in which they have rights, they are active constructors of knowledge, and they are researchers and social beings. Teachers are facilitators of children's knowledge, collaborators and researchers with the children (Hewett, 2001). The Reggio Emilia approach is not a model or set of blueprints for other schools to use like a curriculum. It is not an approach that can be simply imported from one area to another. To be successful, this approach must be unveiled and re-discovered according to the various cultures and beliefs for which it is being implemented (Hewett, 2001). Reggio Emilia has maintained its strength, core values, innovative teaching techniques and creative culture for more than 50 years. The Reggio Emilia approach offers a modernized and renewed educational system that is expressed through local community projects, networking of local schools, working together with parents to create a new way of thinking and working together to educate children (Moss, 2016). When teachers document children's learning and

make it visible to their families and the community, it provides concrete evidence of children learning through hands-on experiences (Kaufman, 2014).

The influence that the Reggio Emilia community and its teachers have had on children and families is not a model to be imitated or something that is transferable to other contexts (Lindsay, 2015). The Reggio Emilia approach has influenced the way teachers and community members see children and how teachers act as researchers and co-constructors of knowledge together with children (Lindsay, 2015). One priority has been for teachers to provide an authentic learning environment for children where they are free to learn and explore in their own way. The success of this educational reform for other communities requires leadership that is willing to stand apart from outdated ideas and influences on reconceptualizing teaching practices, such as teacher-directed instructions to children (Lindsay, 2015).

Another principle of the Reggio approach that is counter to the teacher-directed approach is the perception of children as individuals rather than as part of a group that has to learn information that the teacher is interested in the children learning. Teachers should ask children "What do you think?" when children ask questions instead of answering the questions for the children. When teachers give children the opportunity to answer questions on their own it allows them time to reflect, theorize, hypothesize, make assessments, do research and come up with their own answers to their questions. The process of reflecting and finding answers on their own facilitates greater learning than giving children answers to their questions. A firm belief that both teachers and children are researchers together and discover new things with each other is another way of fostering discovery and learning with children (Kauffman, 2014).

Image of the Child. A fundamental value for teachers and administrators who follow the Reggio Emilia approach is that children have rights that should be valued and prioritized. From

this approach, children are viewed as individuals who are elegant, powerful, capable, creative, inquisitive and knowledgeable (Hewett, 2001). Questions teachers should ask themselves about their children when finding their image of them are: “What are they capable of?” “How do our children learn best?” “What does it mean to educate children?” (Hughes, 2007).

Teachers, parents, and members of the community may either encourage or diminish children’s desire to learn (Rinaldi, 2001). Reggio teachers foster an image of children as capable researchers and learners. Teachers can gather information and construct their image of children through careful and meaningful observations to better understand each child’s interests and questions (Hughes, 2007). Another way to create an image of children is to look back at one’s own childhood to rediscover how children think and what is most meaningful to them and their learning. Early childhood education programs should prioritize and examine their own image of children in different ways that will guide their practices in the future. A core principle of the Reggio Emilia philosophy is that every child is different and should be viewed individually by their teachers, parents, and community (Hughes, 2007).

The Teacher. For teachers, offering children opportunities to accomplish things for themselves is an integral part of the teaching process that allows children to be autonomous individuals (Ghirotto & Mazzoni, 2013). Children develop autonomy, skills, competencies and agency when interacting with adults or teachers who guide them as oppose to instruct them. Adult-child relationships are the roots that foster children’s development in all areas. The higher the quality teacher-child or adult-child relationship, the more high-quality of learning the child exhibits (Ghirotto & Mazzoni, 2013).

The Child. When children are able to make decisions for themselves and discover new things through hands on learning, they become more competent, including adults perceiving

them as more capable of making decisions (Vandenbroeck & Bie, 2006). Ideally, children should be able to communicate their ideas and their thoughts while knowing that adults are there to support them and help facilitate making their ideas a reality rather than being critical or punitive. Adults can better serve children when they engage in the pedagogy of listening, watching and observing children, understanding how they communicate physically and learning about children's intentions through their physical interactions (Ghirotto & Mazzoni, 2013).

The Environment as the Third Teacher. Allowing children time to explore their surroundings is key in fostering open-ended and child-led discovery in the classroom. An important factor in the Reggio Emilia teaching approach is seeing the classroom environment as the third teacher. Space is a vital source of educational provocations, investigations and discovery (Strong-Wilson & Ellis, 2007). The three teachers in the Reggio Emilia approach are the teachers, the children, and the environment in which the children learn. Children have a way of creating with their imaginations; childhood is the first instance where children begin to see their environment imaginatively (Strong-Wilson & Ellis, 2007). There are eight principles that are key to making the environment impactful for children: 1) aesthetics, 2) clarity of the environment, 3) active involvement in learning, 4) resilience, 5) collaboration, 6) cooperation, 7) bringing the outdoors inside, and 8) relationships (Fraser, 2006). The environment is normally thought of as what we see around us; however, it is much more than visual and what we see directly around us. Teachers can make the environment inviting or attractive to children to enhance discovery and questioning. When the environment is seen as central to learning, children can use their environment in purposeful and meaningful ways.

Small changes made in the classroom can animate children's discovery. The ability of the teachers to make the walls and environment "speak" with the children's work and learning,

fosters dialogue and communication among children, parents and teachers (Malaguzzi, 1998). A child-centered environment fosters development of autonomy, positive feelings, social support and discovery. These things are associated with children's sense of their surroundings and helps to foster attachment (Strong-Wilson & Ellis, 2007). In the Reggio Emilia approach, teachers should ask questions about the environments that they are providing for their children: "Why did I choose these materials to put on the shelves?" "What will my children learn from them?" "What image of the children does this toy or display communicate?" "How can I allow the walls of the classroom to invite active participation and discovery for children and parents?" "When a classroom successfully supports children and their learning, it can quickly become a favorite place and where children learn to interact with the world" (Strong-Wilson & Ellis). This view of the environment sees the classroom, both the outdoor and indoor classroom, as a teacher (Hughes, 2007).

Materials and Toys: Reggio-Inspired vs. Non-Reggio-Inspired

Reggio-Inspired Materials and Toys. Children's environments and the materials in these environments provide opportunities for children to achieve their greatest potential. Every child has a unique set of needs and learning styles, and each classroom should be set up to provide the best learning experiences for each of the children in the classroom (University, 2020). The Reggio Emilia approach is set apart from other approaches in that it provides children with specific and intentional learning environments that focus on the individual child as well as the whole group of children. Reggio-Inspired classrooms are also set up to focus on the children's unique learning styles (University, 2020). Children's curiosities, interests, creativity, and freedom of exploration are emphasized in Reggio-Inspired classrooms. The curriculum is

flexible and ever changing based on children's specific topics of interest. There is no set curriculum for Reggio-Inspired Programs.

With the freedom to explore and investigate, children have the ability to freely access classroom materials. There are no assigned seats and children are inspired to direct their own learning through provocations and investigations (University, 2020). Classroom materials that help support this learning are: 1) tinkering or loose parts materials (toilet paper rolls, paper towel rolls, large wooden rings, recycled jewelry, recycled bottles, paint rollers, large bottle caps, egg cartons, large popsicle sticks, empty boxes, scarves), 2) natural materials (large tree cookies, pinecones, acorns, seeds, nature items inside sensory bottles, sand, large rocks, wooden pieces), 3) mirrors, 4) art materials (all types of mediums: chalk, pastels, markers, paints, writing materials), 5) books and literacy materials, 6) imaginative toys (animals, dinosaurs, people), 7) blocks, and 8) musical instruments. These materials are used and set up intentionally by teachers to create purposeful learning experiences that can be manipulated and guided by the children. These materials may be set up in a provocation to stir new thinking on part of the children. Children may also investigate these materials in new ways to elaborate on their knowledge about these materials. The environment is also set up in a way that allows for free exploration of materials. There are no set centers, children are able to freely bring materials from one area to another. The materials found in a Reggio-Inspired classroom are more ambiguous than those materials in a non-Reggio-Inspired classroom.

Non-Reggio-Inspired Materials and Toys. Unlike materials in Reggio-Inspired (RI) classrooms materials in non-Reggio-Inspired (NRI) classrooms are typically novel and traditional materials that are placed in the children's environment for them to play with and explore. Non-Reggio materials and toys are typically familiar to children. Materials in non-

Reggio-Inspired classrooms may be toys like: 1) manipulatives that target fine motor skill development (nesting cups, rattles, shape sorting, stacking rings), 2) art materials, 3) musical instruments, 4) puzzles, 5) nature/science items, 6) math/numbers (e.g. manipulatives and/or a Montessori spindle box), and 7) diversity items (e.g., inclusive toy dolls or diverse mix and match memory games). Many of these items overlap with the items listed for the Reggio-Inspired materials. Perhaps one difference in non-Reggio-Inspired programs with respect to materials is the abundance of manipulatives available given that there may be specific regulations on how many materials must be displayed and where they must be displayed to maintain or attain accreditation.

The Alabama Department of Early Childhood Education has set standards for the environment and types of materials that are required for each classroom that serves children birth through age five (Alabama First Class Pre-k Classroom Guidelines, 2019). The goal of these standards is to promote a supportive and positive learning community through the social and the physical environment in which children play and learn (Alabama First Class Pre-K Classroom Guidelines, 2019). Displays and bulletin boards are purposeful and displayed at children's levels. These should be meaningful and relevant to the current study or theme of the teacher focused curriculum. Jobs charts are displayed around the room and are set up to be inclusive, fair, and consistent for the children in the classroom (e.g. lunch helper, art helper, pet & plant caretaker, trash collector, and light inspector). Pictures schedules are also provided to depict daily routines.

Requirements and materials listed by The Alabama Department of Early Childhood Education for each classroom are: 1) blocks and math: at least 3-5 materials for measuring, shape/size, and quantities, 2) fine motor: minimum of 3-5 small building/art materials and puzzles, 3) nature and science: minimum of 3-5 natural objects, 1 living object, 3-5 books/games,

science tools, etc., 4) dramatic play: 3 or more types of dress up clothes, and gender specific examples, 5) library: wide variety of books, minimum of 6 big books, soft furnishings, 1 face-out shelf, and 1 additional shelf with baskets of books, 6) writing and art: writing tools, crayons, paints, 3-5 painting materials, 3D materials, collage, and art tools, and 7) music and movement: instruments, CD player, 1 storage shelf, and a listening center (First Class Pre-K, 2017).

While these materials are intended to be developmentally appropriate for children of each age in each individual classroom, there is a difference in the intentionality of the presentation of the materials in Reggio-Inspired programs compared to non-Reggio-Inspired programs. In a non-Reggio-Inspired classroom, the materials are placed to ensure that children are exposed to all of the materials to help develop their learning. Teachers intentionally place new or provoking items in a central place in the classroom so that all children may naturally notice these new and intriguing items. For example, a RI teacher would place an assortment of natural items (leaves, pinecones, rocks) on the light table along with small sensory bottles filled with colored water to reflect the light. This is done intentionally so that children can naturally explore these materials and also have the freedom to bring other toys or items to this provocation. Other materials include but are not limited to: 1) flowers set up in a new way on the art table, 2) real spices left on the table for the children to explore, 3) numbers and sticks in the sand table, and 4) an assortment of loose parts with the manipulatives. An NRI teacher would choose materials that may be a part of a theme that the teacher wants to help the children learn about. For example, an NRI teacher may create a themed unit based on apples and provide materials in the classroom that are apple themed. These materials and activities included, but are not limited to: bobbing for apples activity, green and red tissue paper collage inside the cut out of an apple, color sorting apples (green, yellow, and red), defining the parts of an apple during circle time, having an apple

themed sensory bin, painting with an apple, having apple books in the library or adding extra apples to the home living center. Some of these toys are also displayed as a requirement by the state to ensure proper development and learning.

Reggio-Inspired programs may present similar materials to children; however, there is no guideline or limit to the number of materials that should be in a classroom. Reggio-inspired teachers set up their classrooms to follow the children's interests without overwhelming children with too many toys/materials. A crowded environment can be overwhelming for children and may make learning less purposeful. This overcrowding can influence the quality of a teaching program.

High-Quality Programs

Purpose of Play. Play experiences and investigations for infants and toddlers should be purposeful, planned for each individual child, and children should be allowed to freely interpret the play experience without adult direction or coercion. When left alone, infants and toddlers create their own games and experiences. We can take their interests from these experiences and foster creativity with specific provocations and investigations that expand their interests. For example, a teacher will put out a provocation of new building blocks on a shelf when she sees her children trying to explore with building blocks. The teacher is being purposeful in her thinking of elaborating on an interest that she is seeing with her infants. The teacher's intention is for children to discover new ways of thinking about building with blocks, such as teaching problem solving behaviors by allowing children to stack blocks time after time until they no longer fall, or the testing of children's hypotheses to build scientific reasoning. Intentional teachers facilitate learning opportunities for children that allow children to develop a deeper understanding of the world (Schwartz & Luckenbill, 2012).

Sensory and art projects for infants and toddlers are an important part of curriculum and allow children to develop in all areas. There is a direct relationship between creativity and sensory experiences for infants and toddlers (Schwartz & Luckenbill, 2012). Offering art and sensory provocations and investigations are some of the best received and exciting options for children. An optimal environment for these provocations includes time for expansion of ideas, free exploration, and a safe area to freely explore the materials (Schwartz & Luckenbill, 2012). As children learn, they revisit experiences to retest or confirm new hypotheses or to discover new ways to make things work. Sensory and art experiences aid in the broadening of motor development, social-emotional skills, language development and cognition. Other activities and experiences that promote infant and toddler development are working with the following materials: fabrics, clay, nontoxic oil pastels, dot markers, natural outdoor items, homemade playdough, glue, stickers, paint, tape, watercolor and finger paint. Partaking in activities with these open-ended materials promote overall development in infants and toddlers by offering them opportunities to discover cause and effect, to share materials between and among children, to respect each other's space, to follow limits and expectations, to learn new vocabulary and to work on fine and/or gross motor development. These experiences foster prosocial interactions between and among infants, their peers and teachers (Schwartz & Luckenbill, 2012). As children play, they learn to share spaces with one another, develop language through talking about each other's feelings, learn new vocabulary, and new skills (Schwartz & Luckenbill, 2012).

At time, choosing toys that are suitable for children can pose challenges for teachers. When teachers understand children's individual developmental needs, they can better choose toys that are appropriate, allow for more challenges, foster creativity, and promote discovery (Guyton, 2011). Thus, toys and manipulatives provide play experiences for children to work

through and learn. Through well thought out play experiences, children learn about the world around them to optimize their development (Guyton, 2011). Through creative play experiences, children expand their problem-solving skills, think about cause and effect, and improve in symbolic thinking. Toys that are open-ended and offer opportunities for young children's learning include grabbing toys, sensory balls, musical instruments, stacking toys, wooden blocks, and natural materials (Guyton, 2011). In a classroom environment, creative play fosters physical development, allows children opportunities to increase their coordination, promotes social skills, sharpens cognitive and language skills, and teaches children role playing skills (Honig, 2006). When children are faced with new, creative and challenging activities, the outcome is typically the acquisition of new knowledge for children as well as the teacher. Teachers may also learn new things about children and their abilities.

High-quality teacher-child relationships/interactions. High-quality teacher-child relationships, from a Reggio Emilia perspective, are those in which the teacher respects children and supports children because they are seen as individuals, having their own needs, wants and interests. High-quality teacher-child interactions may occur at any time and reveal a sensitivity of a caregiver who plans and responds to the needs of each child (Cash, et al., 2018). For example, a high-quality interaction during supervised play may involve high emotional support, overall classroom organization and instructional support (Hu, et al., 2016). In high-quality interactions, teachers facilitate knowledge by guiding children to make discoveries on their own and to find their own answers to their questions, as opposed to teachers giving children all the correct answers (Hu et al., 2016). Teachers and parents should be encouraged to view all children, regardless of age, as competent, unique, creative, decision makers and independent thinkers. If

children are not seen in this way, they are being separated from adults and are put in another social class.

Research supports that the quality of the teacher-child relationship predicts children's behavioral, social-emotional and academic achievement (Hu, et al., 2017). The framework for high-quality teacher-child interactions include: a teacher that gives developmentally appropriate emotional support (e.g., sensitive, warm and open), an organized classroom (i.e., purposefully and intentionally placed materials, warm environment and children who are free to explore and manipulate materials), and a teacher who views the children as capable and contributing members of the classroom. For the teacher to have appropriate high-quality interactions with the children, the teacher should see the children as equal contributors, and the teacher should research and learn together with them while allowing the children's interest and self-discoveries to guide their learning.

The quality of teacher-child interactions also impacts infants' and young toddlers' overall development. Play-based curriculums that focus on children's language, cognition, social-emotional and physical development have been advocated by NAEYC (the National Association for the Education of Young Children) along with the contemporary view of the socially constructed nature of learning (Shin & Partyka, 2017). Playing with teachers has been found to be critical for infants' development and learning because they experience life more holistically than any other group of children (Shin & Partyka, 2017).

Shin and Partyka (2017), for example, conducted a qualitative case study that examined how infant teachers provide meaningful learning interactions and experiences for infants through play while also considering the rationale behind these experiences. Their research asked, "How does the teacher provide meaningful learning experiences for infants through play?" and "What

is the teacher's educational rationale behind these experiences (Shin & Partyka 2017)?" This study was conducted in one infant classroom with 10 infants between the ages of 10-21 months (four girls and six boys). In this classroom, there were two full time teachers and other student caregivers. Data were collected through both natural and videotaped methods. Researchers focused on how infants and their teachers interacted on a daily basis by observing them twice per week for 12 weeks with observations being about 90 minutes long. About 30 minutes of the 90 minute observation time was videotaped and for the other time field researchers took natural observational notes to assess the interactions between the teacher and infants Interviews were also conducted after the 12 weeks to gain insight into the teacher's decision making as she re-watched the video footage. In addition, researchers observed children playing in: a three-part tunnel set, a cube shaped cardboard box, explore with water, toy animals and a washcloth, and painting with toy cars (Shin and Partyka, 2017).

Shin and Partyka (2017), found that a critical relationship exists between infants' learning and development in combination with teachers planned and spontaneous emergent activities (Shin & Partyka, 2017). In the study, the teacher was able to vocalize and talk with researchers about her reasonings behind her activities and the ways in which she presented herself to her students. The head infant teacher planned various activities and was then able to re-plan those same activities in a more developmentally appropriate way to better meet her students' needs after the completion of the first activity. The head teacher followed the infants' lead throughout the activity, maintained close proximity, demonstrated warm responses and engaged in non-instructive/non-didactic behavior throughout the interaction.

The study findings acknowledged the importance of play for infants' development and learning and depicted how the infant teacher supported the children's learning experiences

through play. There were conflicting views throughout the study that questioned the developmental appropriateness of some activities like painting with cars and washing the animals in the water table (Shin & Partyka, 2017). Researchers concluded that curriculum planning should include a variety of experiences instead of sets of predetermined activities (Shin & Partyka, 2017). This study is limited to one specific group of children and their teacher; therefore, it may not be applicable to a broader group of children in a different setting. However, the findings do contribute to the understanding of infants and how their teachers create and implement a responsive curriculum that is focused on the children's interests (Shin & Partyka, 2017).

To facilitate children's participation in classroom provocations, adults have to be able to sincerely challenge their own values and beliefs about children (Zorec, 2015). In a Reggio-Inspired approach, provocations are used daily and are meant to trigger children's thoughts, questions, promote discussions, and help expand on previous thoughts, projects or ideas. A provocation can be many things: an intriguing picture, forms of nature (leaves, rocks, and petrified wood), forms of light, magnets, anything that is concrete to children or that they have an interest in. For example, providing infants with a nature provocation that includes petrified wood, dirt, rocks and grass challenges their beliefs about nature and what new aspects they can continue to discover about nature as they explore these materials with their senses. A provocation is something that incites curiosity, such as something that is new to the children that they have never experienced and may want to explore.

Investigations are also a large component of children's learning in the Reggio Emilia approach. An investigation is provided by the teachers and is influenced by the teacher's natural observations of the children's interests. Investigations are put in place by the teachers to

challenge the children on their own wonderings and interests. For example, the infant teacher observes that the children are interested in the light shining through the window that reflects onto the floor. The teacher noticing this may place colored transparent paper on the windows so that new colors of light would then reflect onto the floor. The teacher would observe how the children react to the new colors reflected from the window and document their responses and behaviors.

The Reggio Emilia approach challenges the educational experience and influences children are exposed to in traditional classroom settings. Adopting the Reggio approach requires intentionally and constantly questioning and being concerned about limitations that are placed on children who are exposed to teacher-directed curriculums. A teacher-directed curriculum refers to the instructional use of straightforward information that is used to teach a specific skill. In that approach, the teacher stands in front of the classroom and presents information to the children rather than allowing the children to discover this information in their own way. Children often ask their teachers, "Is this what you want?", when turning in an assignment or paper. This is not just heard throughout preschool and elementary schools, but in college settings as well (Wexler, 2004). A teacher-directed approach to learning takes the children's discovery and learning out of the experiences.

The Reggio Emilia approach places a very heavy importance on children's involvement in their own learning. The children's participation is at the heart of Reggio Emilia practice and theory (Wexler, 2004). Wisdom is gained by listening, asking questions and "walking" together (Malaguzzi, 1996). The process of learning by listening starts with walking without a resting-place and this "walking towards knowledge" has become a metaphor used in the Reggio Emilia approach. This implies that releasing certainty and "walking" without a final resting-place or end

goal allows the discovery of the unknown (Wexler, 2004). Along with this view of walking towards knowledge, the view of time is also very different in Reggio Emilia than in traditional classroom settings. Time is crucial and fundamental for the careful and gradual maturation of children's ideas (Wexler, 2004). Time is a useful tool for careful exploration and discovery rather than something that is an obstacle or limitation that must be negotiated, conquered or manipulated. Time and organization are viewed as enriching children's overall learning process as children freely explore and make new discoveries on their own (Wexler, 2004).

High-quality indicators and best practice. Early childhood education programs can have various levels of quality. Some may be accredited by various state or national associations. In this current research study, the definition for high-quality programs is influenced by the National Association of the Education of Young Children's (NAEYC) standards for education. The National Association for the Education of Young Children (NAEYC) is a U.S. organization that strives to advance the quality of early childhood education programs for children by determining a high-quality vision by providing the tools needed to attain this vision (NAEYC, 2019). There are 10 standards defined by NAEYC and these standards are: 1) relationships, 2) curriculum, 3) teaching, 4) assessment of child progress, 5) health, 6) staff competencies, preparation, and support, 7) families, 8) community relationships, 9) physical environment, and 10) leaderships and management (NAEYC Early Learning Program Accreditation Standards and Assessment Items, 2019). Teacher competencies and preparation are further discussed and more specifically looked at.

NAEYC is the standard of care that is considered excellent for the purpose of this research study. There are underlying differences between the NAEYC standard of care and traditional approaches. This is not to say that traditional approaches and curriculums cannot be

NAEYC accredited as well as good programs. What sets excellent programs apart from good programs is the “how” and “why” they choose to use their approaches and accreditations. The most high-quality programs place children, their families, and the relationships that are built with these families at the forefront of their approach. High-quality programs want to expose children and families to best practices and place positive relationships between children and adults at the forefront of their core values. This emphasis on relationships encourages children’s sense of self-worth and belongingness (NAEYC, 2019). The curriculum for these programs is consistent with the program goals, promotes learning and development in all five areas of development. The teachers use a plethora of teaching strategies to incorporate each child’s individual learning abilities and needs into the lesson plans. For example, teachers use formal assessments, informal assessments, documentation, and note taking to provide information about the child’s learning and development when developing their lesson plans (NAEYC, 2019). These assessments, developmental observations, and documentation pieces are shared with family’s multiple times throughout the year during parent-teacher conferences to relay this quality information to families to show them their child’s learning and development.

High-quality programs also provide and promote healthy nutrition and strive to protect the children and staff from various illnesses. The administration provides support for teachers’ professional development so that the teachers may best meet the children’s needs. These programs place families at the forefront of their focus and maintain collaborative relationships with them to ensure proper development and learning for the children (NAEYC, 2019). High-quality programs also use community resources to support program goals. The physical environment is a safe place for children and their families with well-maintained outdoor and indoor environments. The programs also implement systems and procedures that support stable

staff, strong personnel, and program management so that children have the most high-quality experiences (NAEYC, 2019).

High Scope. The High-Scope teaching approach focuses on *how* to teach children as opposed to just *what* the teachers are teaching the children ("Quality Early Education Through Active Learning | HighScope", 2020). Teachers take the learning process beyond traditional academic subjects to better help prepare children for elementary school and beyond (HighScope, 2020). The goal of High-Scope education is to help children become responsible, confident, and independent thinkers who are able to make decisions on their own. In the High-Scope approach, shared control is a main focus. The idea of shared control is that teachers find a balance of experiences and activities that are teacher-guided and child-initiated experiences. Like the Reggio-Inspired approach, High School helps children construct their own knowledge about the world around them with the support of intentional provocations, investigations, and individual learning experiences (HighScope, 2020). Children make their own discoveries and create their own plans to further investigate their interests, act on their discoveries, and reflect on previous learning (HighScope, 2020). Through shared control teachers use a variety of tools, such as prompting, gesturing, questioning, and interacting with children to guide their learning and create new experiences in a concept referred to as, “plan-do-review” (HighSchope, 2020).

Creative Curriculum. Creative curriculum is based on the idea that the most efficient and best way to teach young children is by using a developmentally appropriate environment that includes well planned schedules and teacher/child interactions in terms of the *what*, *why*, and *how* ("Creative Curriculum for Preschool", 2020). This approach uses weekly planning templates with new changes to the environment, planning for small and large group activities, group time, story time, special activities, and themes or investigations that will be studied and is divided for

each day of the week. This is a model to set up the classroom based on a theme of interest that the teachers want to share with children. This study approach allows the teachers to help children gain a deep, rich understanding of topics that are of interest to the children (“Creative Curriculum for Preschool”, 2020). These studies are hands-on and project-based investigations for children. Each center does not have to reflect everything with the theme, but it should address the interests and needs of the children ("Creative Curriculum for Preschool", 2020). Throughout the week teachers create activities that are centered around the study for the week. For example, one teacher may decide to study spiders, so most of the activities that week will be focused on spiders. Other examples of areas of study would be apples, fall, ocean animals, or dinosaurs. This approach is a whole-child approach that immerses children in play-based experiences. These experiences are things that may be familiar to them or could be things they see in their everyday lives ("The Creative Curriculum® for Preschool - Teaching Strategies", 2020). These themes could also be teacher guided and created to have the children learn specific things based on said themes. In Creative Curriculum the teachers are planning lessons based on themes or investigations they feel the children would be interested in or will help them in various areas of development. There is a start to a theme and an end to a theme that is being taught for the week or weeks of the study.

Coaching. For teachers who aspire to provide high-quality teaching, professional development and learning never stop. Teachers should continuously reflect on their practices to ensure they are teaching children to the best of their abilities. Professional development opportunities are essential to increasing teachers’ knowledge and awareness of the importance of high-quality early childhood education. Coaching can be defined as in-service professional development opportunities where peers or coaches observe teachers in their classrooms and

provide feedback that allows them to improve their practice (Kraft, et al., 2018). Coaching for teachers is meant to be individualized, sustained over the course of a semester or year, and time-intensive (Kraft et al., 2018). Coaching leads to higher-quality teaching practices as well as higher improved child development outcomes (Page, & Eadie, 2019). What sets coaching apart from other forms of professional development is the continuous learning and hands on development by the teachers. This continuous education for teachers allows them to focus their attention on the advancement of young children's learning outcomes by raising the quality of their practices (Page & Eadie, 2019). Continuously reflecting on teaching practices to best meet the needs of children and to ensure the most high-quality education is essential for early childhood educators to positively impact children.

Good vs. Excellent Approaches. The Reggio Emilia approach and social constructivist style of teaching can be applied to many curriculums and teaching approaches, especially those referenced above. The teaching approaches mentioned have commonalities in which children and their development are at the center of the curriculum. Teachers use their knowledge of their children and their interests to plan lessons for the children that are rich in content and purposeful in their meaning. Both Creative Curriculum and High Scope are widely used and well-respected curriculums. This purpose of the comparison is to show how the Reggio Emilia approach can be used in conjunction with other approaches and how it can help a curriculum go above and beyond to teach children. In the Reggio Emilia approach, there is no limit on time for a project or interest, children may focus on one area of interest for an entire year. There is also the aspect of spiral learning in the Reggio Emilia approach. This type of learning allows for re-launching of experiences, going back and further understanding topics, and also finding new questions about previously explored interests. The Reggio Emilia approach allows children to explore with

hands-on materials of their choice to test their own hypotheses and theories. The vision of teachers, the space and environment, the organization of time, *Progettazione* (design, planning), observations and documentation, and families are what makes the Reggio Emilia program excellent and elevates it above other teaching practices. How we (educators, teachers, parents, caregivers and members of society) view children is present in everything that we do (Wurm, 2005). However, many members of American society view children as weak and in need of adult protection instead of capable, strong, and powerful individuals (Wurm, 2005). The teachers of the Reggio Emilia approach view children as rich with potential, independent, and strong members of society.

The space and environments in the Reggio Emilia approach are heavily considered when planning the room for the children. The idea of space refers to the permanent features of a place (doors, walls, windows), and many of these things may be unchangeable on part of the educator (Wurm, 2005). The environment refers to how the physical space is dressed up, the smells, textures, furnishings, and lighting (Wurm, 2005). The space is meant to respond to each child or group of children in its own way. When creating a space, it is important to look at the teacher's view of the child and how the classroom environment can act as the third teacher for the children in the classroom (Wurm, 2005).

The daily schedule of a program and its individual classrooms are part of the structure in which the school is organized (Wurm, 2005). Schedules are made to be flexible, taken at each individual classroom's own pace, there are no bells, and no hard time constraints. The children and teachers work at their own pace and are allowed time to do that without being hurried or rushed (Wurm, 2005). Another important Reggio term is *Progettazione*, an Italian term that translates to design or planning. The Italian teachers who practice the Reggio Emilia approach

use Progettazione as a way of working with children on curriculum or projects. In the Reggio approach, project planning involves a much broader way of thinking and a mindset that considers construction, teachers, parents, staff, administration, schools, and pedagogical documentation (Rinaldi, 1998; Wurm, 2005). Teachers take time to intentionally work on the idea of a project before introducing it to the children. Progettazione is the intricate development of children's interests and this is the core of the curriculum for the Reggio Emilia approach (Wurm, 2005). Projects and studies are not simply pulled from an idea or thin air; this is a concept that gets lost in translation for many Americans when thinking of the Reggio Emilia approach. The idea of Progettazione cannot be fully understood or defined when thinking about emergent curriculum or the project approach (Wurm, 2005). Working with children in ways that stimulate real life experiences are ways that projects are created within the Reggio Emilia approach (Wurm, 2005). To ensure that the project is meeting the needs of the children, much observation and documentation is done by the teachers in advance.

Documentation and observations are key components of the Reggio Emilia approach and is an international trademark of teachers who follow this approach (Wurm, 2005). Documentation creates a powerful legacy of work by children and can be viewed as a tool for one's own professional development. Documentation is not simply photographing the daily goings on of a classroom; Rather, it is the intentional collection of children's work and experiences with as many forms of media as possible (Wurm, 2005). Documentation serves to validate the work of children; the gathering of evidence and the reflection of this evidence makes children's learning visible to teachers, families, and members of the community (Wurm, 2005).

The families of the Reggio Emilia community are a fundamental component to the success of each school and program. Parents whose children attend the schools work hand-in-

hand with the teachers to support children's learning and development (Wurm, 2005). The role of the family is extremely crucial to the success of children. Children whose parents are involved in their education are more successful academically, including having higher school attendance, lower dropout rates, and higher graduation rates (Wurm, 2005). The presence of families allows teachers the chance to build relationships, create an exchange of information/knowledge, and teachers can gather ideas about children's work, development, and personalities (Wurm, 2005). Family is the core of the Italian culture; there is an extreme sense of belonging with familial ties that makes each person valuable in their own way (Wurm, 2005). In sum, the social constructivist philosophy and Reggio Emilia approach can be used alongside other teaching curriculums to create a high-quality curriculum for children.

3. GAPS IN THE LITERATURE

Conceptually, and perhaps anecdotally, the Reggio Emilia teaching philosophy benefits children's development. There is little research on how the Reggio Emilia approach compares to other approaches in terms of children's developmental outcomes. To recapitulate, the Reggio-Emilio approach is not a structured curriculum. Rather, it is a child-directed approach in which the teacher understands her role in creating an ideal environment for children to create and uncover knowledge.

One factor to consider when conducting curriculum research is how adults influence play interactions with children and how their influences during a play experience foster or hinder children's growth and development. Research has examined how adult participation in play enhances and aligns with children's actions during a play experience (Pursi & Lipponen, 2018; Stanton-Chapman, 2015). Joint play between children and adults is complex and can involve one simple interaction or a more complex and intensive situation where active participation is needed from both the teacher and the children (Pursi & Lipponen, 2018).

Active listening requires teachers to hear their children's voices during times of happiness, distress or anger. Teachers who actively listen to their children let their children know that they are with them in that moment, accepting of their feelings, and appreciating their unique situation. For instance, when an infant falls and hurts himself the teacher may pick up the child and say, "I saw that you just had a hard fall. I can imagine how scary that was for you", rather than saying, "Oh, do not cry. You are okay!" The first response makes the child feel validated and that his or her concerns or hurts are real. The second response is dismissive of the child and

what he or she is going through in that moment. Teachers may enhance children's ability to be active listeners by modeling appropriate behavior during social-emotional or play experiences, including teaching their children to have empathy for others and an understanding that everyone has different feelings about different situations. When adults are active learners and researchers with children, they establish an environment in which children feel free to explore, hypothesize, and create their own understanding about an experience (Pursi & Lipponen, 2018). Giving children the opportunity to learn through meaningful and purposeful experiences needs to be rigorously tested to ascertain if this approach promotes children's development so that they can become competent and knowledgeable about the world around them.

In conclusion, the Reggio Emilia approach offers an innovative, child-directed approach to foster children's learning and development. However, there are gaps in the literature in terms of empirical support for Reggio-inspired (RI) program effects on young children' learning and development. The current study examined the environments of Reggio-inspired (RI) and non-Reggio Inspired infant and toddler classrooms. The quality of teacher-child interactions through videotaped recordings of a creative activity were also planned, but data were obtained for only one infant and one toddler classroom in the RI program and no classrooms in the non-RI program because of COVID-19 closure. Below are the research questions and hypotheses addressed in this research:

Research question 1: Does a Reggio-inspired (RI) program promote a more optimal classroom environment for infants and toddler learning?

Hypothesis 1a: The RI Classroom group will have higher total ITERS-3 scores than the NRI groups reflecting a more optimal environment.

Hypothesis 1b. Videotaped recordings will reveal teachers in the RI program will display high-quality teacher-child interactions during a creative activity in terms of teacher behaviors and teacher language.

Research Question 2: To what extent do children in RI programs display optimal development (cognition (C), social-emotional (SE), physical (P), and language(L))?

Hypothesis 2a: Videotaped recordings will reveal the children showing: 1) cognitive (C), 2) social-emotional (SE), 3) physical (P), and 4) language (L) development throughout the play experience.

Hypothesis 2b. The majority of parents (80%) will complete and return the ASQ-3, which examines children's developmental delays and milestone achievements.

Research Question 3: To what extent can the Reggio Emilia approach be carried out by teachers and to what extent do these teachers view children as an equal part of the classroom, thinkers, contributors to learning, and researchers?

Hypothesis 3: Coded videotaped interviews from one infant and one toddler teacher in the Reggio Inspired program will reveal that teachers' view children as having rights, being an equal part of the classroom, being capable researchers, and viewed as co-learners with teachers.

4. METHOD

Power Analysis. A power analysis using the Gpower 3.1 program (Faul & Erdfelder, 1996) indicated that a total sample of 52 participants was needed to detect large effects (d=.80) with 80% power using independent samples t-tests between groups with alpha at .05.

Participants. Infants, toddlers, and their teachers from two preschool centers in a midsize town in a southern state were invited to participate. Two schools were approached about this study, one was Reggio Emilia Inspired (RI), and one served as the comparison school (non-Reggio Emilia Inspired or NRI). Both schools had received accreditation from the National Association for the Education of Young Children (NAEYC), supporting that both programs adhered to 10 standards of quality for early childhood education programs serving children from birth through kindergarten age (NAEYC, 2019). The two schools in the study were also both lab schools (schools that are operated by or partner with a college or university that is used for demonstration of classroom practices and student teaching). However, only one was following a RI approach.

Thirty infants (2-12 months), 49 toddlers (13-24 months) and 11 Head Teachers served as the pool to draw from for the study. Of those whose data contributed to the final study, the racial/ethnic distributions for the children were: 74% Caucasian, 11% Asian/Other, and 15% who did not identify with any racial/ethnic classification. In all, data from 27 children and 10 head teachers had been collected before the COVID-19 closure. The data collected from these children and teachers comprise the final sample for this study.

Design. This research study was intended to be a mixed method design that included comparing the environments of infants and young toddlers who attend an RI vs NRI program and examining teachers' perception of children via videotape interviews. Children's behaviors during a classroom activity were also planned as were coding of teachers' language and interactions with the children. As a result of the COVID-19 closure, data collection was stopped at the two program sites. Permission was sought from the thesis committee to complete the data analyses and write up the findings that had been collected and present the findings as a descriptive or feasibility study as opposed to the findings of the planned mixed methods design.

Procedure. Once the IRB and the directors of each preschool approved the study, teachers in the infant and toddler classrooms of the two early childhood education programs were approached about participating. Teachers who consented to be a part of the study completed a Teacher Demographic Form and provided permission for their classroom environment to be evaluated by ITERS-3 assessors; participating teachers also agreed to implement a 20-minute long creative activity with their children using materials provided to them by the researcher. This creative activity was videotaped and later coded by two trained CITI certified research coders (PO = Primary Observer and SO = Secondary Observer) for the purpose of checking reliability. After completing the creative assessment, teachers were asked to answer five questions to assess their views of the children in their classroom, or their "image of the child". Only one infant classroom and one toddler classroom were able to complete the creative classroom activity and the videotaped teacher interview on their "image of the child" prior to school closures because of COVID-19.

For the RI program the ASQ-3s were included in their packets along with consent forms. Of the parents who consented, 14 parents received the ASQ and were asked to compete and return the form.

Materials. The infant and toddler teachers who completed the activity at the RI program before the COVID-19 closure were presented with materials that included a mirror, one empty shoe box, 3 scarves, 2 small sensory bottles, a set of nesting cups, 1 large non-wooden block, and 1 small toy car. The mirror, 3 scarves, empty shoe box and sensory bottles were RI toys because they were open-ended and could be used creatively. The nesting cups, the non-wooden block and the small toy car were considered NRI because these items typically had specific purposes (e.g., stacking the cups, rolling the car on a surface, etc.). The toys that overlap in both categories were the mirror and the scarves. Teachers were given no instruction on how to use the materials nor were they informed of the goal of the study. They were read a script that stated the time of the videotaped recordings, stated the aspects of the creative assessments (that there were no instructions and it was up to them on how they used the materials), and asked if they were available for a teacher interview at the end of the 20 minute activity. The presentation of materials without instructions provided the opportunity to study where the teachers placed the materials and what opportunities children were provided to manipulate and explore the materials in the RI group.

Measures and Assessments. Below is a description of each measure or assessment used in the study:

1) The Infant/Toddler Environment Rating Scale (ITERS-3) Third Edition. The ITERS-3 is a research based widely used tool to assess the overall quality of the environment of infant and toddler programs. The ITERS-3 is composed of 33 items that are organized into 6

different subscales: 1) space and furnishings, 2) personal care routines, 3) language and books, 4) activities, 5) interaction and 6) program structure (Harms, et al., 2017). Each item is presented on a 7-point Likert-type scale (Harms et al., 2017) ranging from inadequate (1) to excellent (7). The ITERS-3 examines interactions between the children and their teachers and the role that the teacher plays in terms of children's development in the following domains; language, literacy, and math. A great emphasis is placed on how teachers use materials to promote the children's learning (Harms et al., 2017).

ITERS-3 subscale 5 (Interaction) was of specific interest in this current study because it purported to examine the classroom environment and more specifically the quality of the teacher-child interactions. Items that are scored in the teacher-child interaction subscale are: 1) Supervision of gross motor play, 2) Supervision of play and learning (non-gross motor), 3) Peer interaction, 4) Staff-child interaction, 5) Providing physical warmth/touch, and 6) Guiding children's behavior.

The ITERS-3 has acceptable reliability and validity (ITERS-R; Harm et al., 2006). These scales are also testing for measures of quality and the children's long-term cognitive development, language and social-emotional outcomes with the new addition being designed to improve the prediction of child outcomes through increased emphasis on language development and teacher-child interaction (Harms et al., 2017). Cohen's Kappa to assess the overall item reliability was reported to reach 0.600 for the 33 items in the ITERS-3 subscale (Harms et al., 2017). Cronbach's alpha for the ITERS-3 to determine the internal consistency for the subscales (Space and Furnishings, Personal Care Routines, Language/Books, Activities, Interaction, and Program Structure) was reported as 0.914, showing a high degree of confidence in the measure (Harms et al, 2017). For our sample, Cronbach alphas on the ITERS-3 reached 0.897, indicating

a high level of internal consistency between raters. Reference Table 2 for specific Cronbach alphas for each classroom; the range for these classrooms is .614 to.1.0 (Hypothesis tested: 1a).

2) Video recordings. Video recordings of 20 minutes length of the child activity were planned to more closely examine the environment of the RI and the NRI programs. The videos were coded by two trained graduate students who were kept blind as to the hypotheses of the study. The student coders independently watched and coded the videos using manuals (see Appendix A, B, and C and coding sheets (see Appendices D, E, and F) and) that operationally described each category/behavior to be coded. Cronbach alphas for the coders ranged from .632-.957. Exact Cronbach alphas may be found at the end of each Table (See Table 3-8).

As can be seen on the coding sheet (see Appendices D, E, and F), next to the behaviors to be coded, are 20 columns with each column representing a one-minute videotape interval. The rows of the coding sheet reflect the behaviors to be coded. The coders were trained to use partial interval coding method (Interval Recording - Let's Learn ABA, 2020); in this method, the coder views an entire 60 seconds of videotape and then stops. Then, the coder looks down the coding sheet recollecting and marking all behaviors observed in the 60-second video viewing. This is repeated for each minute of the 20-minute videotape until all 20 minutes have been coded.

To summarize the data, each behavior/category (row) on the coding sheet was individually tallied and entered as the numerator reflecting the number of intervals for which the behavior was observed. The numerator was then divided by 20 (denominator reflecting total number of intervals for coding) to obtain a percentage of partial intervals for the observable behaviors. For example, if teacher “scaffolding children’s learning” was marked as observed for 5 out of the 20 coding intervals, then the percentage for scaffolding observed using the partial interval method would be 25% (5/20). The percentages, while not intended to represent

frequency of occurrence, were interpreted as revealing the general observable behaviors displayed by teachers and children during the classroom activity.

The following categories of behaviors were coded from the videotapes that were collected prior to the COVID-19 closure:

1) *To assess teacher's interactions with children* each minute of the videotaped recordings were coded for teacher display (or absence by leaving the cell blank) of the following behaviors : 1) *shared control* (e.g., teacher supports children's play ideas, uses objects or gestural prompts, or encourages children to assume appropriate responsibility and express their needs in a socially acceptable way), 2) *scaffolds children's learning* (e.g., teacher provides cues to children to aid them in completing a task, without providing the answer or doing the task for them), 3) *gets down on children's level* (i.e., teacher kneels or sits on the floor with the children), 4) *displays warmth* (i.e., teacher hugs, pats, or smiles at the children), 5) *allows for free exploration of materials* (e.g., children are allowed to play with or use any manipulative or object without directions from the teacher on how to use the object or what to do with it), 6) *keeps children engaged* (e.g., the teacher shows children the manipulatives and interacts with the children), and 7) *understands children's needs* (e.g., if a child expresses curiosity or seeks an object, the teacher assists the child in obtaining or exploring the object). (Hypothesis tested: 1b Item 1, Teacher Behaviors).

2) *To assess teacher's language* each minute of the videotaped recordings were coded on a separate pass for presence (or absence by leaving the cell blank) of : 1) appropriate tone of voice (e.g., easy, soft or compassionate tone of voice), 2) praising or encouraging children (e.g., "Show me how you can use the blocks!"), 3) acknowledging children (e.g., "I see that you are using all of the blue blocks to stack your tower"), 4) providing appropriate limits and

expectations when necessary (e.g., “It’s not a choice to throw that block, here’s a ball that you can throw instead), 5) encouraging on task behavior (e.g., the child is working with blocks and the teacher says, “I see that you are using the blocks. Let’s see how many more you can add to your tower.”), 6) making interdisciplinary connections (math, science, literacy), and using a variety of questioning techniques to probe students’ knowledge and understanding, 7) superficial questioning (e.g., basic or surface level questions – “What is it?”), and 8) open-ended questioning (e.g., “How did you make that scarf come out of the box?”) (Hypothesis tested: 1b Item 2 Teacher Language).

3) On a separate pass, videotaped recordings were coded to *examine children’s*: 1) cognitive (C), 2) social-emotional (SE), 3) physical (P), and 4) language (L) skills displayed through the play activity. Specifically, the presence (or absence by leaving the cell blank) of 11 child behaviors were coded: 1) looks to teacher for support (SE/L), 2) constructs or deconstructs with materials (C/P), 3) dumps materials into/out of container (C/P), 4) uses materials in traditional way (C/P), 5) uses materials in exploratory ways (C/P), 6) finds hidden toys (C/P), 7) engages in solitary play (C/P/L), 8) engages in parallel play (C/P/L), 9) plays in a concreate/physical way (C/P), 10) plays in an emotional way (C/SE/P/L), and 11) plays in a cognitive way (C/P) (Hypothesis tested: 2a).

Equipment. To record the videotaped interactions, a SWIVL C Series Robot/SW3322-C1 was used with an accompanying remote marker, which was worn by the teacher to capture the teacher-child interactions in the classroom. The teacher wore the remote marker on a landline around her neck and the robotic SWIVL followed the teacher’s movements around the room audio-visually recording from the teacher’s perspective. The recordings were uploaded and saved by the SWIVL device to a phone or iPad device.

3) Ages and Stages Questionnaires: A Parent-Completed Child Monitoring System, Third Edition (ASQ, Squires and Bricker, 2009) *To address research question 2 hypothesis 2b: The majority of parents (80%) were expected to complete and return the ASQ-3, which examines children's developmental delays and milestone achievements.* The ASQ-3 is a comprehensive screening and monitoring program that is comprised of 21 questionnaires which are designed to be completed by parents (or other primary care giver) at any point for children one month to five and a half years of age (ASQ-3; Squires, et al., 2009). The ASQ-3 helps to identify developmental delays or disorders in infants and young children. Thus, it assesses children's developmental level. Questionnaires can be administered at 21 different times between the 2nd and 60th month of age to identify young children who may need intervention or further assessment to determine a delay in one or more areas of development (ASQ-3, Squires et al., 2009). Each questionnaire administered at the different developmental month is comprised of 30 developmentally appropriate items and are organized into five areas: *Communication, Gross Motor, Fine Motor, Problem Solving*, and *Personal-Social* (ASQ-3, Squires et al., 2009). These questionnaires are simply written in straight forward language that is easily understood by parents. For each item, parents mark *yes* (to indicate their child displays a certain behavior), *sometimes* (to indicate their child does the behavior occasionally), or *not yet* (to indicate that their child does not yet perform the specified behavior). The final score of the assessment is totaled and each response is converted into a point value from 10-yes, 5-sometimes, and 0-not yet. The scores are then compared to a total cutoff point (ASQ-3, Squires et al., 2009). In the results, I describe the extent to which the ASQ-3 can be successfully delivered to parents and completed by the parents in a timely manner so that the researchers could analyze the results.

In terms of reliability and validity, the ASQ-3 has an overall agreement across questionnaires at a rate of 86%, with a range of 73%-100%. In terms of reliability for the ASQ-3 test-retest percentage agreement is 92% and intraclass correlations ranges from 0.75-0.82, indicating good test-retest reliability (ASQ-3, Squires et al., 2009). The ASQ-3 agreement between parents and a trained examiner has been reported at 93% with the intraclass correlations ranging from 0.43-0.69 suggesting poor to moderate reliability between trained examiners and parents (ASQ-3, Squires et al., 2009). (Hypothesis tested: 2b).

4) Teacher interviews were conducted at the conclusion of the creative assessment and were videotaped. The video-recordings were possible for one infant and one toddler classroom in the RI program. Five questions were asked of the teacher to assess the teacher's "Image of the Child" using the following questions: 1) Do you think children have rights? "Rights" – referring to what children are entitled to in terms of their educations and learning. 2) How do you see your children in relationship to you? How do you see your children in terms of individuality and as an entire class? 3) What is your opinion of your children and their abilities? Do you see your class as a whole or entire group? 4) How do you think your children learn best? 5) How do you plan your day for your children (Hypothesis tested 3)?

5. RESULTS

Research question 1: Does a Reggio-inspired (RI) program promote a more optimal classroom environment for infants and toddler learning? Hypothesis 1a: The RI Classroom group will have higher total ITERS-3 scores than the NRI groups reflecting a more optimal environment.

ITERS-3 scores are presented in Table 1. ITERS-3 Cronbach alphas are presented in Table 2. The ITERS data were summed across classrooms for each group (i.e., RI or NRI), and the total ITERS-3 score, and the total mean scores for the ITERS-3 subscales, were analyzed using a one-way ANOVA, with program membership (Reggio Inspired vs non-Reggio Inspired) as the between groups factor. Preliminary data analyses were conducted to screen for outliers, missing data, and for violations of assumptions. The one-way ANOVA showed marginal trends, with the RI group receiving higher scores than the non-RI group on the ITERS-3 Indoor Space and Meals/Snack (see Table 1). The total ITERS-3 score did not differ between the two groups.

The ITERS-3 Interaction Subscale 5 was looked at in particular to see if there were differences in the quality of teacher-child interactions involving gross motor play, non-gross motor play, peer interactions, staff-child interactions, providing physical warmth/touch and guiding children's behaviors. Results indicated that there were no differences between the two programs in regard to Interaction 5 Subscale. Thus, based on the ITERS-3, overall, the RI program does not appear to promote a more optimal classroom environment than the non-RI program Therefore, hypothesis 1a is not supported.

Hypothesis 1b. Videotaped recordings will reveal teachers in the RI program will display high-quality teacher-child interactions during a creative activity in terms of teacher behaviors and teacher language.

Results from video recorded data for teacher interactions with infants and toddlers are presented in Tables 3 and 4, respectively. (At the bottom of each table are the Cronbach alphas.) Tables 5 and 6 display the video recorded data for teacher's language with infants and toddlers. At the time of the COVID-19 closure in mid-March of 2020, only one infant and one toddler classroom activity in the RI program had been completed. Thus, the data to address research question 1 are limited and should be interpreted with caution.

The coding of teacher interactions in the RI classroom for infants and toddlers revealed high percentages of intervals (85% or higher) where these displayed behaviors were observed: 1) shared control, 2) scaffolding, 3) getting down on the children's level, 4) displays warmth, 5) teacher keeps the children engaged, and 6) the teacher understands the children's needs throughout the creative activity. The coding revealed lower percentages (lower than 85%) for free exploration of materials in both the infant and toddler classrooms (see Tables 3 and 4).

Teacher language in both infant and toddler classrooms of the RI program revealed high percentages (85% or higher) for the following: 1) appropriate tone of voice, 2) praise and encouragement, 3) acknowledges children, 4) sets appropriate limits and expectations, 5) encourages on task behaviors, and 6) uses superficial questioning techniques to probe students' knowledge and understanding. Lower percentages were reported (lower than 85%) for both infant and toddler RI classrooms regarding interdisciplinary connections (infant teacher at 70% and toddler teacher at 65%). While open-ended questioning was also low (infant teacher at 45% and toddler teacher at 75%), it was higher for toddlers than for infants (see Tables 5 and 6).

Regarding teacher interactions with children and teacher language in the infant and toddler RI classrooms, the video codings across Tables 3,4, 5 and 6 revealed that for the most part the teachers have high-quality teacher-child interactions with the children during a creative activity, therefore, hypothesis 1b is supported.

Research Question 2: To what extent do children in RI programs display optimal development (cognition (C), social-emotional (SE), physical (P), and language(L))? Hypothesis 2a: Videotaped recordings will reveal the children showing: 1) cognitive (C), 2) social-emotional (SE), 3) physical (P), and 4) language (L) development throughout the play experience.

Results of the coding of children's behaviors during the activity and Cronbach alphas are presented in Table 7 and 8 (see Appendix C for coding descriptions). At the time of the COVID-19 closure in mid-March of 2020, only one infant and one toddler classroom in the RI program had completed the classroom activity. Thus, the data to address research question 2 are limited and should be interpreted with caution.

The videotape coding of the children reflected the presence of optimal relationships with teachers, and children's learning and problem-solving behaviors throughout the activity. Infants in the RI classroom were coded as displaying high percentages (85% or higher) of the following behaviors during the classroom activity: 1) exploratory use of materials, 2) finding hidden toys, 3) solitary play, 4) concrete/physical play, 5) emotional play and 6) cognitive play. The following variables were coded as observed at lower percentages by both observers (lower than 85%) for the infant classroom: 1) looks to teacher for support, 2) constructing/deconstructing, 3) dumping/pouring, 4) traditional use of materials, and 6) parallel play (see Table 7).

Toddlers in the RI classroom were coded as displaying high percentages (85% or higher) of the following behaviors during the classroom activity: 1) looks to teacher for support, 2) constructing or deconstructing with materials, 3) traditional use of materials, 4) exploratory use of materials, 5) solitary play, 6) parallel play, 7) concrete/physical play, 8) emotional play, and 9) cognitive play. The following variables were coded as observed at lower percentages by both observers (lower than 85%) who coded the toddler video: 1) dumping and pouring, and 2) finding hidden toys. The summarized data provides support for hypothesis 2a.

Hypothesis 2b. The majority of parents (80%) will complete and return the ASQ-3, which examines children's developmental delays and milestone achievements.

The ASQ-3 is challenging to have parents complete because of the timing of when parents turn in the consent form so that the appropriate ASQ-3 questionnaire based on the child's age in months can be given to the parent. At the time of the COVID-19 closure, a total of 27 parents had consented to participate in the study. Of the 27 parents, 14 were sent the ASQ-3 to complete. All 14 parents (100%) filled out the ASQ-3 questionnaire and returned the forms. Packets were being constructed with the ASQ-3 forms to deliver to the other 13 parents when the COVID-19 closure occurred. Support for hypothesis 2b stems from that 14 parents received the ASQ-3 and all returned the form.

The ASQ-3 scores are presented in Table 9. As can be seen, all except for two children were rated by their parents as scoring above the cutoff for all the areas of development that were assessed. For the two children, their parents rated them above the cutoff for all areas, and close to the cutoffs for problem solving (subject #7) and gross motor (subject #9).

Research Question 3: To what extent can the Reggio Emilia approach be carried out by teachers and to what extent do these teachers view children as an equal part of the classroom,

thinkers, contributors to learning, and researchers? Hypothesis 3: Coded videotaped interviews from one infant and one toddler teacher in the Reggio Inspired program will reveal that teachers' view children as having rights, being an equal part of the classroom, being capable researchers, and viewed as co-learners with teachers.

After the classroom activity was completed in the infant and toddler classrooms, the two RI teachers were interviewed (separately) using a structured questionnaire. Teacher 1 was an infant teacher and teacher 2 was a toddler teacher. Their responses were transcribed and are presented in Table 10 along with the 5 questions they were asked. Teacher 1 stated, "The children I serve have all the rights to all education and knowledge I and my co-teacher possess." Teacher 2 stated, "They have the right to learn anything, anything should be open to them to be educated, to learn and to have the knowledge of anything that is in front of them or that they're interested in." The responses from these teachers suggest they see their children as equals in the classroom, and themselves as co-learning with their children throughout the day.

The teachers stated in their interviews that they saw the children both as individuals and as a whole group depending on the situation. For example, Teacher 2 said, "I see them as both. They're very much individuals. They all learn differently at their own pace. Some of them have bigger interest while some are very interested in smaller things, but I truly think…. what he did individually is affecting the group as a whole."

The teachers talked about their children's abilities to be independent, but also work together with each other to learn in addressing the question of how children learn best. Teacher 1 said, "My children all learn best through loving/caring relationships, safe/unrushed environments, and play!" The teachers made clear that their children learn best in a loving and caring environment where they have secure relationships and are free to play and explore their

interests. The toddler teacher proposed that children learn through observation when they are treated as competent in the ability to learn.

Teacher 1 stated, “I plan my day for my children based upon their interests from the day before. We continually build upon those daily based on each child’s individual needs.” The toddler teacher (Teacher 2) had the approach that she provides, “plenty of objects for them to be able to explore and manipulate, we provide them with books, all they toys the see most days, but we also provide toys that may spark an interest in them. We just want to give them a blank slate and let them explore with what they have.” Both teachers referenced that “interests” the children have about their toys or what is in their environment helps to guide them in their daily planning for their children. It is noticeable that the teachers’ did not reference weekly planning, but rather planning for each day to find the interests of the children.

Overall, the interviews resulted in confirmation of Hypothesis 3 that RI infant and toddler teachers viewed their children as having rights, being an equal part of the classroom, being capable researchers, and that children are viewed as co-learners with teachers. Hypothesis 3 is supported.

6. DISCUSSION

The purpose of this study was to gain a better understanding of teacher-child interactions with infants and toddlers in a Reggio inspired (RI) versus a non-Reggio inspired (NRI) program. There are five key findings of the present research. First, using the ITERS-3 scale to measure the environment of the programs did not support that a RI program promotes a more optimal classroom environment for infants' and toddlers' learning than a non-RI program. Second, the videotape interactions support that teachers in the RI program display high-quality teacher-child interactions during a creative activity. This finding contradicts with the ITERS-3 finding leading to mixed results about the environment of these programs. Third, the videotapes of the children's behaviors support that children in the RI program have optimal high-quality relationships with their teachers. Fourth, parents overwhelmingly rated children in the RI program as displaying optimal development in cognition, social-emotional, physical, and language development. Results also support the hypothesis that a majority of parents were able to complete and return the ASQ-3, which examines children's developmental delays and milestone achievements. Fifth, the results of the teacher interviews provide supporting evidence that the Reggio Emilia approach can be carried out by teachers and that these teachers view children as an equal part of their classroom, thinkers, contributors to learning, and researchers. Below we address each of these major findings in more detail.

In general, the lack of support that a RI program provides a more optimal environment was surprising. Also surprising was the low ITERS-3 scores for both the RI program and NRI program. An "excellent" ITERS-3 scores is a 7, but the majority of the scores for the current

programs were between 2 (less than minimal) and 5 (good). The results suggest that both the NRI and RI program fall between less than minimal to good in classroom environment. For both RI and NRI programs, the interaction subscale of the ITERS appeared to receive the highest score, albeit the scores were still low, falling in the “minimal” to “good” range. Besides the statistical interpretation of the data, additional explanations warrant comments. Two things should be addressed from this current study: 1) the ITERS-3, may not be sensitive in assessing an RI program or may not be a good fit for social constructivist programs, and 2) both programs had minimal scores for their environments, but what was not assessed in the ITER-3 was the intentionality and purpose behind the structure of the spaces and environments of the classroom.

A future study might assess the RI approach more appropriately by examining the documentation and observation methods of the teachers. To our knowledge, there is no known assessment for this level of analysis. Therefore, the assessment would also need to be created in a future study. Documentation is the process of collecting evidence of what happens with the children in the classroom (Rinaldi, 2006). Documentation starts with observations and collecting information about what children are doing to help guide developments of the educational project (Wurm, 2005). For RI teachers anecdotal note taking, observations, and documentation are key in planning, guiding the day, and working with the children. Documentation is done for the children to validate the work that they do (Rinaldi, 2006). Other key pieces to look at in future research are the classroom space and environment. In the RI approach, space refers to the bones and structure of the classroom itself, such as the physical and unchanging features of the space (e.g., doors, access to the outdoor, windows, lighting, etc.) (Wurm, 2005). The environment

contrastingly refers to how the space is designed, how it is lived in, and the various textures, smells, and furnishings that are within the classroom space (Wurm, 2005). The choices made by the teachers of the materials in the space for the environment become the open invitations for children's everyday learning and exploration (Edwards, 2012).

Perhaps, the most compelling justification for the present null findings is that preschool quality evaluation for the Reggio Emilia schools should build on the analyses and subjective analysis from documentation and daily observations that preschool teachers gather throughout their daily documentation of their teaching and educational processes rather than evaluation based solely on a prepared instrument, like the ITERS-3 (Sebart & Hocevar, 2014). Cronbach's alpha for the ITERS-3 reveal high levels of agreeableness for both the original ITERS-3 scale and the individual scales completed by raters for the current study. Thus, the data in the current study can be trusted as a reliable and true measure of the classroom environment for both the RI and NRI programs from an ITERS-3 framework. Although the data are reliable, the ITERS-3 may not be the most sensitive instrument to detect the nuanced environment of RI classrooms.

The present results of the ITERS-3 assessment clearly support the RI program has low subscale scores in areas like displays for children, health practices, and activities. It is appropriate to recognize several potential reasons for these low scores given that the RI program was also NAEYC accredited. Displays for children may be low because the teachers did not reference the pictures displayed around the classroom or talk with the children about them, or the children's family pictures were not displayed at eye level. The children may have been desensitized to the pictures in their classrooms by this point in the year, therefore, the teachers

did not reference them during the ITERS-3 observation. The children may have seen the pictures every day and knew that they are always there for reference. That is not to say that the teachers did not reference the pictures when the children noticed them, it simply did not take place during the ITERS-3 observation. Family pictures are displayed in each infant and toddler classroom in the RI program, these pictures for one classroom, however, are displayed in various places that may not be at children's eye level. Again, this does not mean that the children cannot view their family's pictures, they simply just have to look up to where their family pictures are displayed. These pictures are displayed hanging from a wall piece that is just above the children's eye level. In the other RI classrooms the family pictures are displayed at children's eye level or in photo frames around the classrooms.

Health practices were particularly low in the RI classrooms and this may be a result of teachers not immediately placing mouthed toys in a separate container to be washed, individual cribs and cots not being 36" apart, or hand washing was not carried out as accurately as it needed to be done. Both infants and toddlers mouth their toys, their hands, their pacifiers, etc. to learn about the environment around them. There may have been children who mouthed something, and the teacher was focused in another area and did not see this happen, therefore the teacher was not able to remove the item that the child put in their mouth. Room space is another justification for the cribs and cots not being 36" apart in the classrooms. The infant classrooms in the RI program are set up to have an area for napping and an area for playing. This allows children who need sleep time to reset in a quiet area while the other children are playing. Hand washing may not have occurred for the time length that was required by the ITERS-3 guidelines but could have

still been carried out by the teachers. Overall, the scores for activities were in the inadequate to minimal range for the RI program.

Guidelines for the ITERS-3 recommends that 10+ toys for certain items like art, music, blocks, and math be accessible to children at all times throughout the day and be seen during the observation. Materials used in RI school should be rich and varied (Edwards et al., 2012). Various multisensory areas with various textured surfaces should be available for the children, also different features that change over time (stone, flowers, fabrics, wood, etc.) (Edwards et al., 2012). RI teachers understand that there is not one set way to arrange the classroom with materials and have certain activities that have to be done every day. These activities take place organically depending on the children's interests for the day. Individual interests and sensorial thresholds for children informs RI teachers that it is better to avoid an overstimulation of toys and activities and instead to choose a moderate to mild tone with a mixed variety of small sensorial possibilities for exploration and play (Edwards et al., 2012).

The videotape recordings demonstrate that teachers displayed high-quality teacher-child interactions in all areas except for free exploration of materials, interdisciplinary connections and open-ended questions. The high-quality teacher-child interactions contradict the ITERS-3 findings. This mixed finding might be the result of variations and differences between the two assessment methods. The coding sheets for teacher behaviors were centered around the teacher's intimate interactions with the children during the creative assessment while the ITERS-3 Interaction subscale places focus on the supervision of gross motor play, supervision of non-gross motor play where lapses of no more than 3 minute occur, peer interactions, and guiding

children's behavior (e.g., simply telling a child to "Use your words" is not adequate to receive and excellent score) (Harms et al., 2017). It ITERS-3 assessment also requires a set number of items to be in the classroom to be scored as "excellent" that may not always be in RI classrooms (e.g., nap mats or cribs must be 36" apart, about 20 different choices of books should be accessible, more than 10 fine motor toys accessible at all times, block accessories of five or more are accessible, and certain behaviors have to been seen once, twice, or three times throughout the observation to count towards their excellent scores) (Harms et al., 2017).

The findings of high-quality teacher-child interactions with infants and toddlers can be beneficial to children's learning throughout the creative experience. Interactions are the exchanges in gestures and words that teachers have with young children. (Dombro et al., 2018). Previous research has shown the importance of examining how we interact with children as these exchanges reflect who we are, and how we do and say things to children to help them learn about themselves and the world around them (Dombro et al., 2018). The video codings revealed that teachers in the RI program use soft tones of voice that are encouraging and welcoming to children, that teachers give praise and acknowledge children while also holding appropriate limits and expectations for the children. The RI approach emphasizes that children view themselves as important, that their points of view are being heard, and that their deepest desires and wants are revealed to the teachers (Curtis, 2015). The RI teachers allow children to explore on their own creating a sense of autonomy and trust between the teacher and the other children. The teacher is there to support the children's needs and to be an observer who can step back and find the children's interests.

The videotaped recordings of teacher behaviors showed that RI teachers scored particularly high in shared control, scaffolding and keeping the children engaged throughout the creative experience. Reggio Emilia educators have a strong belief that children and teachers should have shared control between them (Edwards et al., 2012). Sometimes this can be as simple as the teacher sitting and watching children during a play experience and offering provocative or insightful comments that motivates further action or stops the children with a challenge they will have to work through (Edwards et al., 2012). With these actions, teachers can re-stimulate the entire group and encourage children to explore territories never discovered, this is the co-action and shared control of the children (Edwards et al., 2012). It is also very important for RI teachers to find concepts the children are interested in and scaffold their thinking about that concept (Edwards et al., 2012). Just an interest in something is not sufficient; a teacher does not simply bring in new materials for the children; rather, the teacher speculates on what drives the specific interests of the children and then scaffolds the concepts, not the interest (Edwards et al., 2012). For example, if toddlers are interested in jumping and climbing, the teacher will not just bring in gross-motor materials to the classroom for the children to jump off of. The teacher will find out why the children like jumping and climbing. It may be because they like the sounds their feet make after jumping in the air; or, it may be the courage it takes for them to jump off a new structure; or it may be that they are doing it together with their friends as a social experience rather than an individual one. Keeping children engaged throughout and activity is another way RI teachers can have these high-quality teacher-child interactions. There is a metaphor used in the RI approach that says, “Catching the ball that the children throw us, and then tossing it back

to continue the game" is suggested to keep children engaged and find out where their interests really lie during a creative activity (Edwards et al., 2012).

One interpretation of the low findings for free exploration is that teachers were providing the children with other objects during the creative assessment rather than the children bringing materials to the teachers. In other words, the low percentages in free exploration may reflect an abundance of teacher support, such as teachers sharing control with children throughout the activity, teachers getting down on children's level and scaffolding their learning, and teachers understanding the individual needs of the children and meeting those needs. In regard to infant teachers making interdisciplinary connections (connections to science, math, and/or literacy throughout the creative activity) and asking open-ended questions, these teacher behaviors were observed some of the time throughout the creative assessment. These results suggest that teachers are doing something else instead of talking or asking questions throughout the creative assessment. The results could also imply that infant teachers are spending time doing other things like observing and watching how their children interact with the materials of the creative assessment. Infant teachers have to find ways to figure out how their children are communicating with them that is not through language (Merewether, 2018). Infants do not yet have the language skills to communicate their thoughts and ideas fully, so observation and documentation is another way for teachers to gain insight about their children (Mereweather, 2018). The toddler teachers scored lower in interdisciplinary connections but had higher scores in open-ended questions than the infant RI teacher. One interpretation may be that the more language the children have, the more questions their teachers are asking them during a creative assessment.

Children have more of an ability to remain engaged in an activity the older they are, and this may also have an influence on the teachers asking them open-ended questions throughout the activity.

The study findings also highlight the abilities of RI infant and toddler children to display optimal development in all areas (cognitive, social-emotional, physical, and language) as rated by their parents. These findings may be explained by the idea that the Reggio Emilia approach helps to foster the development of critical thinking and cognitive processing, while strengthening autonomy, and facilitating learning (Fernandez-Santin & Feliu-Torruella, 2020). Or it could be that these are typically developing children and the parent ratings have nothing to do with their children being enrolled in an RI program. Since the data for the NRI children were not available, it is unknown in the current study if the children differed in their development in relation to the program they attended.

Evidence was obtained through videotaped interactions that the infants scored highly in exploratory use of materials, emotional and cognitive play. During the infant videotaped recording the RI infants explored their materials freely without interruption from the teachers. One interpretation of this findings is that the children were given the time to explore these materials during the creative assessment. The children were not rushed to start, create something, and then end the activity. They were given the time to freely explore, create if they wished, and interpret the materials on their own terms. Daily schedules of the RI approach allow for fluidness and elasticity (Wurm, 2005). The Italians have a phrase they always say, "*domani, domani,"* meaning "tomorrow, tomorrow" communicating with their children and others that the task can get done tomorrow if not today (Wurm, 2005). This translates to the children being freely able to

explore their toys because there is no time limit or end goal to their play experience. They are able to elaborate on their interests and goals as they wish. This may also have an influence on why the infants in the classroom were able to play in an emotional and cognitive way. The children were able to regulate their emotions and behaviors because the activity took place in a calm and unrushed environment. They had the time to think through their feelings and interact with their peers along the way. The children were also able to freely problem solve and be curious about new things without being rushed to find an end goal of the activity.

It is interesting, but not seen as a limitation, that children in the infant classroom scored lower in other areas like looking to the teacher for support, constructing and deconstructing, dumping and pouring, traditional use of materials, finding hidden toys, and parallel play. Children of the Reggio Emilia approach are encouraged to freely explore on their own, to have the courage to try new things without their teacher's permission, and to play with materials in new ways (Fernandez-Santin & Feliu-Torruella, 2020). That is confirmation that the children are fully immersed in the Reggio Emilia philosophy. Also, it is not developmentally appropriate for most infants to engage in parallel play until around the age of toddlerhood, that may be another reason why parallel play scored at a lower percentage.

The videotaped interactions also showed that the toddlers scored highly in looking to their teacher for support, constructing and deconstructing, their use of materials, and types of play. These findings can be explained by the Reggio Emilia principle that children are powerful, competent, and active protagonists of their own growth and learning (Edwards et al., 2012). Children have the right to be listened to by their teachers and to participate freely on their own;

they should be able to be a part of the group to take action alongside their peers during an activity on the basis of their own individual experiences (Edwards et al., 2012). The role of the teacher is to observe, listen, and understand the different strategies that children use in their different learning situations (Edwards et al., 2012). The teacher is there for the children to come to in times of support, but the teacher is also there to be an observer of the children's work (Edwards et al., 2012). It is interesting, but not seen as a limitation, that children in the toddler classroom scored lower in other areas like looking, dumping and pouring and finding hidden toys. It is possible that the children did not choose to dump and pour or play hide and seek with the materials of the creative assessment. Maybe they were simply more engaged in other aspects of the activity. Since the data for the NRI children were not available, it is unknown in the current study if the children differed in their development in relation to the program they attended.

Another result from this current study that deserves comment is the successfulness of the delivery and completion of the ASQ-3 to parents. The ASQ-3 is a useful tool that helps to evaluate children's baseline levels of development (Agarwal et al., 2020). Developmental screening is important to keep track of children's development, to assess their individual needs, to identify potential risk factors, and to help families get services for their children when needed (Agarwal et al., 2020).

Results also support the idea that the Reggio Emilia approach can be carried out by teachers of infants and toddlers and these teachers have a respectful view of their children. The infant and toddler teacher's perspectives of their children played an important role in influencing

pedagogical practices (Giamminuti & See, 2017). Adults can facilitate children's construction and understanding of the world around them through daily explorations and pedological practices that the teacher puts into place. Some critics believe that by giving children rights and autonomy in the classroom it strips authoritative figures of their right to power (Giamminuti & See, 2017). Providing children with rights does not lead to chaos and rebellion, but allows teachers to learn children's individual needs, interests, and questions they have about the world around them; providing them with rights gives them a chance to take hold of their own learning and have an eagerness for knowledge (Giamminuti & See, 2017).

There are several limitations in the current study. Due to the COVID-19 pandemic researchers were unable to completely finish the original proposed study and had to revise the already collected data. Videotape data were lacking for the RI and NRI programs. Only two classrooms were able to participate in the creative assessment before both programs closed down due to COVID-19. This caused a cease in data collection and when the programs re-opened in August, the children had moved up to new classrooms making data collection with the children who consented to be in the study challenging since the environment/classroom that had been assessed for ITERS-3 was no longer the children's classroom. Information is also missing for the ASQ-3 because researchers were unable to distribute and collect the remaining ASQ-3 assessments from primary caregivers for the remaining study participants. Also, due to school closures, there were no interviews conducted for the NRI programs or the two other RI classrooms. The sample size of the current study is also a limitation where researchers only had one infant and one toddler classroom as the sample size for the videotape recordings.

In sum, the present study represents a first attempt to study the impact of the RI program against a high-quality nationally accredited program. We feel that further research examining the documentation process of RI programs will shed light on infant and toddler teachers and their high-quality teacher-child interactions. In terms of future research, it would be useful to examine the documentation and observation process for each program to assess teachers' knowledge of the children and their overall development. Documentation begins from the day-to-day observations the teachers have on their children (Wurm, 2005). It is important to view documentation to look at a snapshot and see what a day in the life on an infant looks like. An infant only makes the discovery about the world above him one time in his life. When he is nine months old and looks up with wonder at the strings of lights hanging in his classroom that he was not fully aware of the day before (Wurm, 2005). The capturing of this experience by teachers with photos and observational notes creates an important and memorable look into the child's life (Wurm, 2005).

Future research may focus on developing a new scale that would be sensitive in evaluating the environment and teacher-child interactions. There are nine principles that define space and environments within the Reggio Emilia approach that can be used in future research to assess the programs. These nine principles are: 1) overall softness, 2) a relational space, 3) continuity with surroundings, environments, and social connections, 4) multiple sensorial experiences, 5) flexibility and adaptation, 6) community and participation, 7) social constructivism, and 8) narration, and 9) intense richness every day (Edwards, 2012). The environment is seen as an educator for the children. This means that it must always be flexible,

undergo modifications by the teachers and children, it has to remain up to date with current interests, and responsive to the children's needs to be protagonists in their learning (Edwards et al., 2012). The materials and structures in the environments are not seen as passive elements, but as elements that are conditioned by the actions of both the adults and children who inhabit the space (Edwards et al., 2012).

In some, much research remains to be done to gain a full understanding of the potential impact a RI program may have on children's development. Future research should also include randomized control trial studies over a longer period of time to better test the impact of a RI program on infant and toddler development.

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TABLES

Table 1 *ITERS-3 Data for the two programs*

	RI	NRI	SD	p-value	ES
ITERS-3 TOTAL	99.5	107.0	10.569	.932	.791
1. Space & Furnishings					
Indoor Space	4	2.4	1.054	.010	.64
Furniture	4	3.4	0.707	.227	.200
Room arrangement	4.75	3.6	1.054	.105	.331
Display for children	2.25	3	1.414	.466	.078
2. Personal Care Routine					
Meals/Snacks	3.25	1.8	1.014	.019	.568
Diapering/toileting	4	3.6	0.667	.407	.100
Health practices	2	1.6	0.667	.407	.100
Safety practices	3	3.2	1.054	.798	.010
3. Language and Books					
Talking with children	3.5	4.2	1.364	.482	.073
Encouraging Vocab	3.25	4	0.707	.118	.313
Responding to com.	3.5	4	0.833	.407	.100
Encouraging com.	3.5	4.2	0.782	.843	.223
Staff use of books	3	4.2	2.00	.197	.100
Encouraging books	4	3.8	1.364	.843	.006
4. Activities					
Fine motor	2.5	3.4	1.0	.197	.225

Art	2	2	0.632	1.00	0
Music & movement	3	2.6	1.394	.698	.023
Blocks	2.5	2.2	1.732	.815	.008
Dramatic play	1.75	3	1.236	.140	.284
Nature/science	2.5	1.6	1.118	.255	.18
Math/number	2	2.8	1.509	.467	.078
Technology	-	-	-	-	-
Diversity	2.5	2.4	1.732	.217	.208
Gross motor	1.75	2.4	0.782	.238	.192
5. Interaction					
Gross motor play	3	4.2	1.803	.355	.123
Non-gross motor play	4.5	4.2	1.414	.775	.013
Peer interaction	4.25	4.8	1.014	.456	.082
Staff-child interaction	4.5	5	1.563	.665	.028
Physical warmth/touch	5	5.6	1.581	.606	.04
Children's behavior	3.5	4	0.667	.292	.156
6. Program Structure					
Schedule/Transition	3.33	3	0.991	.680	.030
Free play	3.25	3.6	0.882	.589	.043
Group play activities	3	4	0.894	.272	.375

Note: 1 =inadequate; 3 = minimal; 5 = good; 7 = excellent. Bonferroni alpha corrected p-value = .001, *SD is a pooled SD

Table 2 *ITERS-3 Cronbach alphas for two programs*

Classroom	Cronbach's alpha
RI Program	
1. Toddler	.842
2. Toddler	1.00
3. Infant	.939
4. Infant	1.00
NRI Program	
5. Toddler	.764
6. Toddler	.920
7. Infant	1.00
8. Infant	.875
9. Infant	.614

Table 3

Reggio Inspired Infant Classroom: Coding Teacher Behaviors using the Partial Interval Procedure During a 20-minute Classroom Activity.

	Observed	
Variables	PO =	SO =
Shared Control	90%	90%
Scaffolding	100%	100%
Children's Level	100%	100%
Displays Warmth	95%	90%
Free Exploration	75%	80%
Engaged	100%	100%
Understands Needs	100%	95%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 3 is .957, which indicates a high level of internal consistency between raters.

Table 4

Reggio Inspired Toddler Classroom: Coding using the Partial Interval Procedure of Teacher Interactions with Children During a 20-minute Classroom Activity

	Percent Time Observed	
Variables	PO =	SO =
Shared Control	95%	85%
Scaffolding	100%	95%
Children's Level	100%	100%
Displays Warmth	85%	100%
Free Exploration	65%	80%
Engaged	100%	100%
Understands Needs	100%	85%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 4 is .632, which indicates an acceptable level of internal consistency between raters for exploratory research.

Table 5

Teacher Language in Percent Time (%) observed during a 20-minute classroom activity. RI Infant Classroom

	Percent Time Observed	
Variables	PO =	SO=
Tone of Voice	100%	100%
Praise/Encouragement	100%	95%
Acknowledges Children	100%	90%
Limits and Expectations	100%	90%
On Task Behavior	100%	90%
Interdisciplinary connections	70%	80%
Uses a variety of questioning techniques to probe students' knowledge and understanding		
Superficial	90%	80%
Open-ended	45%	55%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 5 is .920, which indicates an excellent level of internal consistency between raters.

Table 6

Teacher Language in Percent Time (%) observed during a 20-minute classroom activity. RI Toddler Classroom

Variables	Percent Time Observed PO =	 SO=
Tone of Voice	100%	100%
Praise/Encouragement	95%	100%
Acknowledges Children	100%	100%
Limits and Expectations	100%	75%
On Task Behavior	100%	80%
Interdisciplinary connections	65%	50%
Uses a variety of questioning techniques to probe students' knowledge and understanding		
Superficial	100%	85%
Open-ended	75%	75%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 6 is .852, which indicates a good level of internal consistency between raters.

Table 7

Child Behaviors in Percent Time (%) observed during a 20-minute classroom activity. RI Infant Classroom

	Percent Time Observed	
Variables	PO =	SO =
Looks for support	75%	65%
Constructing/Deconstructing	40%	40%
Dumping/Pouring	45%	45%
Traditional Use of Materials	45%	40%
Exploratory Use of Materials	100%	100%
Find Hidden Toys	85%	40%
Solitary Play	100%	100%
Parallel Play	30%	55%
Concrete/Physical Play	100%	100%
Emotional Play	100%	100%
Cognitive Play	100%	100%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 7 is .911, which indicates an excellent level of internal consistency between raters.

Table 8

Child Behaviors in Percent Time (%) observed during a 20-minute classroom activity. RI Toddler Classroom

	Percent Time Observed	
Variables	PO =	SO =
Looks for support	100%	100%
Constructing/Deconstructing	95%	90%
Dumping/Pouring	25%	50%
Traditional Use of Materials	100%	85%
Exploratory Use of Materials	95%	90%
Find Hidden Toys	35%	15%
Solitary Play	100%	100%
Parallel Play	100%	100%
Concrete/Physical Play	100%	100%
Emotional Play	100%	95%
Cognitive Play	95%	100%

Note: PO = Primary Observer; SO = Secondary Observer

Cronbach's alpha for Table 8 is .955, which indicates an excellent level of internal consistency between raters.

Table 9

Ages and Stages Questionnaire – 3 Data for the RI program

Subject	Communication	Gross Motor	Fine Motor	Problem Solving	Personal-Social
1	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
2	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
3	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
4	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
5	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
6	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
7	Above cutoff	Above cutoff	Above cutoff	Close to cutoff	Above cutoff
8	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
9	Above cutoff	Close to cutoff	Above cutoff	Above cutoff	Above cutoff
10	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
11	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
12	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff
13	Above cutoff	Close to cutoff	Below cutoff	Above cutoff	Above cutoff
14	Above cutoff	Above cutoff	Above cutoff	Above cutoff	Above cutoff

Note: Above cutoff = Baby's development appears to be on schedule, Close to cutoff = Provide learning activities and monitor, and Below cutoff = Further assessment with a professional may be needed

Table 10

Image of the Child Based on Teacher Interviews

Questions	Answers
1. What rights do your children have in terms of their education and learning? -"Rights" – referring to what children are entitled through in terms of their education and learning.	Teacher 1: The children I serve have the rights to all education and knowledge I and my co-teacher possess. I believe that they are the "ship's wheel" and I am the ship. I safely carry and guide them through their journey of knowledge while they determine the destination. Infants inspire me daily to re-see the wonder of life which they give witness to daily. Teacher 2: They have the right to learn anything, anything should be open to them to be educated, to learn and to have the knowledge of anything that in front of them or that they're interested in.
2. How do you see your children in relationship to you? How do you see your children in terms of individually and as an entire class?	Teacher 1: I see my children as equals. Like my previous answer, I go on these marvelous journeys with my class. I get to see the world through their eyes and re-live the wonder this great world possesses. I see my children both on an individually level as well as an entire class. It depends on the learning situation. Teacher 2: To me, we're co-learners. I mean, I learn alongside them as well. I educate them, they educate me on certain things. As individuals,

	they learn individually as well, but they work together as a team sometimes too by working beside each other, when they see each other do stuff it may spike interest in them. But individually they grow, they're interested, they want to learn and figure out things by themselves, but they also need help from us and the other children as well.
3. What is your opinion of your children and their abilities? -Do you see your class as a whole group or as individuals?	Teacher 1: Each child possesses unique characteristics regarding behaviors, development, and learning abilities. This makes for an interesting classroom dynamic. The older children can be observed helping the younger children by bouncing a bouncy ball, giving them a dropped pacy, or giving a hug when they are upset. They, yet during other times, they all seem to be equals. It's a hard thing to describe. I get to watch them grow together, learn from one another, and build up ideas at such a young age. It's really remarkable. Teacher 2: I see them as both. I guess I kind of covered it with the last question as well. They're very much individuals. They all learn differently at their own pace. Some of them have bigger interests while some are very interested in smaller things, but I truly think as an example: we have one child who learned to petal on his own far before we thought any of them would and we realize some of the other ones have observed him pedaling and this has sparked and interested with our other kids, so what he did individually is affecting the group as a

	whole. I see that with a lot of stuff in life, in general, with children and adults.
4. How do you think your children learn best?	Teacher 1: My children all learn best through loving/caring relationships, safe/unrushed environments, and play! Teacher 2: I think through observing, being treated as one who can learn anything, they can just by seeing things or being interested in something.
5. How do you plan your day for your children?	Teacher 1: I plan my day for my children based upon their interests from the day before. We continually build upon those daily based on each child's individual needs. Teacher 2: We want to provide plenty of objects for them to be able to explore and manipulate, we provide them with books, all the toys they see most days, but we also provide toys that may spark an interest in them. We just want to give them a blank slate and let them explore with what they have.

Teacher 1 = RI Infant Teacher, Teacher 2 = RI Toddler Teacher

Appendix A

Hypothesis 1b Item 1: Teacher Interactions with Children

1. Teacher displays shared control – Shared control refers to a balance of activities and experiences that are child-initiated but also adult-guided (that is, a balance of teacher control and child control). It differs from scaffolding, which focuses on encouraging children's independence through a balance of challenge and support. In shared control, the teacher does the activity with the children and allows the children to direct the experience. The teacher shows supportive qualities and creates opportunities for prompting and feedback.
    a. Example 1: Two infants are sitting next to one another playing with blocks and sensory bottles, while the teachers sits and watches them. One (Child A) hits the other (Child B) in the head with the sensory bottle. What has begun as a playful experience is now more forceful and out of control. A teacher who displays shared control may say to Child A, "Ouch. Hitting your friend with the bottle is hurtful. Do you see that that makes Child B sad? Check on your friend please." To Child B the teacher would say, "Tell Child A that you don't like that." In this situation, both children have control over the experience and event.
    b. Example 2: A teacher may display shared control by supporting children's play ideas, using objects or gestural prompts, or prompting procedures (least-to-most or most-to-least) encouraging children to assume appropriate responsibility and also get what they need in socially acceptable ways. A child is playing with a

c. puzzle and cannot figure out where a puzzle piece goes. The teacher uses hands to point towards the area where the puzzle piece fits. The teacher does not give the child the answer but points them in the right direction so that they can achieve this action on their own.

2. The teacher scaffolds children's learning – Teacher challenges children to do the activity on their own, encourages children's independence through appropriate balance of support and challenge, maps onto the various developmental domains, enhances the play experience.

   a. Example1: A teacher may challenge children to move an object in a new way to enhance and encourage motor development, showing an understanding that the underlying skills needed to accomplish this skill is just at the edge of the children's competence. The teacher may ask, "What happens when we move the scarf up and down with our arms?" The teacher will act out the action for the children prompting them to follow his/her lead. The teacher is encouraging gross motor movement of the arms in this example.

   b. Example 2: A teacher may play peek-a-boo with a 4-month-old and will place the blanket over her face, peer over the top and say, "Peek-a-boo!" The child will laugh, and they will continue this game. When the teacher notices that the child is no longer interested, she may put the blanket in front of her face and peer out from the side of the blanket instead of the top like in the previous times to encourage the child to re-engage with the teacher.

3. Gets down on children's level – the teacher kneels, sits on the floor, or lowers herself so that the teacher can speak to the children at eye level or be at the children's level when interacting rather than above the children.
4. Teacher displays warmth – the teacher makes eye contact with child, uses gentle touches, hugs, pats, and/or smiles. Warmth is critical for positive teacher-child interactions, expressions or warmth occurs as teacher protects, gently guides, communicates teaches, and engages with the children in a positive manner. Teachers show and express an authentic relationship with the children that makes them feel safe.
    a. Example 1: The teacher is seen touching holding, hugging or stroking the child during an interaction.
    b. Example 2: The teacher displays positive facial expressions, laughter, words of endearment while interacting with the child.
    c. Example 3: The teacher is not seeing avoiding criticizing, nagging, yelling, or reprimanding the child. These teacher behaviors would be the opposite of displays of warmth.
5. Teacher allows for free exploration of materials – Teacher does not tell children how to use materials; the children are able to manipulate toys in various ways without being interrupted.
    a. Example 1: Children may use a toy the entire experience without direction from the teacher on how to use the toy. A child may play with the blue toy car and the teacher allows this action for the entirety of the experience.
    b. Example 2: Children may use many toys in various ways throughout the experience without direction from the teacher on how to use the toys. Children

may use all of the toys at different times and the teacher allows for this exploration and manipulation of toys.

6. Teacher keeps children engaged – The teacher shares enthusiasm, gives children an active role when playing with them and/or brings objects, events or behaviors to the children's attention when they appear to miss or not notice something.
    a. Example 1: A teacher will show the children a toy and say, "Look what happens when we turn the sensory bottle upside down. What happens to the beads in the bottle?"
    b. Example 2: A teacher will say, "I see that you really like the car, let's try and roll in on the block and see what happens. Do you think it will roll?"
7. Teacher understands children's needs – Teacher helps children overcome frustrations, displays patience, understands infant's language ((both verbal and body language), and offers simplifications and extensions when appropriate))
    a. Example 1: If a child is upset or overwhelmed the teacher will remove that child from the situation and help to calm the child down in a warm and supportive manner.
    b. Example 2: If a child is more curious or wants for an object the teacher will help them get that object or encourage them to obtain the object.

Appendix B

Hypothesis 1b Item 2: Teacher Language

1. Teacher has appropriate tone of voice
    a. Example 1: easy – uses words that are developmentally appropriate for infants/toddlers. The teacher may say, "I see you like to blue car, Benjamin. It's blue like your shirt."
    b. Example 2: soft – speaks in a "soft" tone, not yelling of overpowering to children. The teacher will gently say, "Okay friends, let's look at what we have here to play with today."
    c. Example 3: compassionate – understanding of a child's behavior, shows concern and patience when interacting with a child. A teacher may say, "Benjamin, I know you want the blue care, but please wait until Sadie is finished. When she is done then you can have a turn."
2. Praises and encourages children – to inspire children to do something new or to express warm approval or admiration of something.
    a. Example 1: "Show me how you can use the blocks."
    b. Example 2: "Look, you worked hard to complete that puzzle and you did all by yourself!"
3. Acknowledges children – Behavior reflections, to accept or recognize the importance or quality of the child's effort, behavior or interaction.

a. Example 1: "You like the noise that the blocks are making when you bang them together."

b. Example 2: "I see that you are working to get that scarf out of the box."

4. Provides appropriate limits and expectations, when necessary – developmentally appropriate limits and expectations are instructional strategies throughout the experience that allow the children to freely explore, while also keeping them engaged, working on the task at hand, and allowing them to be an equal part of the experience while also keeping control throughout.

   a. Example 1: "Show me how we can build with the blocks."

   b. Example 2: "Hitting your friends hurts, let's use nice hands with our friends."

   c. Example 3: "Let's use gentle hands with our materials."

5. Encourages on task behavior – teacher encourages children to work with object in front of them, encourages children to concentrate on what they have in their hands

   a. Example 1: The child is working with blocks and the teacher says, "I see that you are using the blocks. Let's see how many more you can add to your tower."

   b. Example 2: Teacher may ask the child, "What happened to the scarf?" or "Where did it go?" when the scarf is hidden inside of the shoe box.

6. Makes interdisciplinary connections – science, math and literacy connections

   a. Example 1: Math – teacher counts various objects, compares them in size (big or little), more or less. "Let's count all of the scarves and see how many we have", the teacher will say.

   b. Example 2: Science – teacher may talk about the textures, sights, smells of certain objects, or cause and effect, changes of properties. The teacher may say, "Look at

how the glitter sparkles when we hold the sensory bottle up in the sunlight. See how it changes colors."

c. Example 3: Literacy – repeating words to children, introducing new words. The teacher may say, "You are waving that scarf in the air. Show me how you wave your arms like your scarf." If a child says "ball" the teacher would respond with, "Yes Benjamin, you have the small blue ball."

7. Uses a variety of questioning techniques to probe students' knowledge and understanding:

   a. Superficial – basic or surface level questions, not thought provoking

      i. Example 1: "What is this?"

      ii. Example 2: "Which is your favorite?"

   b. Open-ended – thought provoking, leads to other conversations

      i. Example 1: "How did you make that scarf come out of the box?"

      ii. Example 2: "What happened when you turned the cup upside down?"

Appendix C

Hypothesis 2a: Children's Behaviors

1. Looks to teacher for support or communicates a need for help – throughout the activity when children discover that they are unable to accomplish a goal they try and get their teacher to help them achieve this goal.
    a. Example 1: the child may cry out when they need assistance getting the stacking cups to fit back together.
    b. Example 2: reaches out for teacher when frustrated that the car will not sit on top of the blocks like they want them to.
2. Constructing or deconstructing with materials – building with materials or taking things apart.
    a. Example 1: stacks all of the stacking cups on top of one another.
    b. Example 2: knocks down the stack of cups they just made.
3. Dumping materials into/out of container – fills container with all of the scarves and then dumps the scarves out of the container back onto the ground.
4. Uses materials in traditional way – uses toys and objects how they are designed to be used.
    a. Example 1: stacks stacking cups right side up.
    b. Example 2: stacks blocks on top of one another.
5. Uses materials in exploratory way – Examines toys, explores in different ways, using different body parts and movements to explore the toys and materials

a. Example 1: mouthing toys again and again.

b. Example 2: turning toys upside down to look at the bottom.

c. Example 3: banging to discover sound of the sensory bottle.

d. Example 4: touching to feel texture of the scarves against their face.

e. Example 5: stacking cups over and banging on them or using them as a container rather than stacking them.

6. Finds hidden toys – discovers something that the teacher has hidden or makes a new discovery of a toy from moving one toy off of another one.

   a. Example 1: plays peek-a-boo.

   b. Example 2: finds objects under scarves or inside of the shoe box.

7. Engages in solitary play – the child plays by himself and is unaware of children who are playing close by.

   a. Example 1: children do not notice when other children approach group.

   b. Example 2: children remain engaged in toy instead of others around them.

8. Engages in parallel play – children play adjacent to each other, but do not influence each other's behavior, may play alone, but show interest in what other children are doing.

   a. Example 1: takes a toy away from another child and begins to play with in on their own.

   b. Example 2: watches other children from a distance while playing with the same materials and may mimic the same behavior. If they see another child put the scarf on their head, they may then do the same thing to find out what they result will be.

   c. Example 3: reaches towards other children who are playing with similar toys

9. Playing in a concrete/physical way – uses body or hands to manipulate toys, fine motor and gross motor manipulation (TS Gold, https://teachingstrategies.com/, 2019).
    a. Example 1: demonstrates traveling skills – rolls over to reach toys, cruises, crawls, steps, pushes, moves from crawling to sitting and back again.
    b. Example 2: demonstrates gross motor manipulative skills – reaches out for objects, drops toys, pushes toys, bats or swings at a toy, or grasps an object with two hands to pick it up.
    c. Example 3: uses fingers and hands – transfers toy from one hand to another, purposefully release objects, uses fingers and hands to pick up objects, bangs two objects together).
10. Playing in emotional way – regulates emotions and behaviors, sustains positive relationships, participates in group situations, forms relationships with teacher, responds to emotional cues, interacts with friends/classmates, or makes friends (TS Gold, https://teachingstrategies.com/, 2019).
    a. Example 1: manages feelings – uses adults support to calm self, turns away from source of over stimulation, looks to adult when speaking in a soothing voice.
    b. Example 2: responds to emotional cues – continues reaching for toy as teacher laughs nearby, startles when a loud voice or sound is used.
    c. Example 3: interacts with peers – plays near other children or uses some similar actions or materials.
11. Playing in a cognitive way – attends, engages, problem solves, shows curiosity and motivation, works to get objects out of reach (TS Gold, https://teachingstrategies.com/, 2019).

a. Example 1: attends and engages: pays attention to, watches teacher does something (walk across room), turns head at the sounds of teacher's voice.

b. Example 2: problem solves – attempts to crawl and reach a toy that is out of-reach, finds or uncovers toys that are hidden under other objects.

c. Example 3: explores objects with hands and mouth (curiosity and motivation), bangs blocks on other objects.

Appendix D

Coding Sheet for Hypothesis 1b Item 1

Teacher Interactions with Children	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min	11 min	12 min	13 min	14 min	15 min	16 min	17 min	18 min	19 min	20 min
Teacher displays shared control (does the activity with child & allows child to direct the experience)																				
Teacher scaffolds children's learning (challenges child to do activity on own)																				
Gets down on children's level (teacher kneels or sits on floor with child)																				
Teacher displays warmth (hugs, pats, smiles)																				
Teacher allows for free exploration of materials (does not tell children how to use materials)																				
Teacher keeps children engaged (shares enthusiasm, give children an active role in play experience)																				
Teacher understands children's needs (helps child overcome frustrations, displays patience, understands infants language ((both verbal and body language), and offers simplifications and extensions when appropriate))																				

Appendix E

Coding Sheet for Hypothesis 1b Item 2

Teacher Language	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min	11 min	12 min	13 min	14 min	15 min	16 min	17 min	18 min	19 min	20 min
Teacher has appropriate tone of voice (neutral and warm)																				
Praises or encourages children																				
Acknowledges children (behavior reflections, "I see that you are working to get that scarf out of the box.")																				
Provides appropriate limits and expectations, when necessary ("Show me how we can build with the blocks." "Hitting your friends hurts, let's use nice hands with our friends.")																				
Encourages on task behavior																				
Makes interdisciplinary connections																				

Uses a variety of questioning techniques to probe students' knowledge and understanding

	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min	11 min	12 min	13 min	14 min	15 min	16 min	17 min	18 min	19 min	20 min
Superficial																				
Open-ended																				

Appendix F

Coding Sheet for Hypothesis 2b

Children's Behaviors	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min	11 min	12 min	13 min	14 min	15 min	16 min	17 min	18 min	19 min	20 min
Looks to teacher for support or communicates a need for help																				
Constructing or deconstructing with materials																				
Dumping materials into/out of container																				
Uses materials in traditional way																				
Uses materials in exploratory way																				
Finds hidden toys																				
Engages in solitary play																				
Engages in parallel play																				
Playing in a concrete/ physical way (uses body or hands to manipulate toys, fine motor and gross motor manipulation)																				
Playing in an emotional way (regulates emotions and behaviors, sustains positive relationships, participates in group situations)																				
Playing in a cognitive way (attends, engages, problem solves, shows curiosity and motivation, and shows inventiveness in thinking, works to get objects out of reach)																				

Appendix G

THE UNIVERSITY OF ALABAMA | Office of the Vice President for Research & Economic Development
Office for Research Compliance

January 21, 2020

Lindsay Blocker
Dept. of Human Development & Family Studies
College of Human Environmental Sciences
Box 870159

Re: IRB # 20-OR-010, "Do Reggio Emilia Inspired Early Childhood Education Programs Provide More Optimal Classroom Environment for Infants and Toddlers?"

Dear Ms. Blocker:

The University of Alabama Institutional Review Board has granted approval for your proposed research. Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) *Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.*

The approval for your application will lapse on January 12, 2021. If your research will continue beyond this date, please submit the continuing review to the IRB as required by University policy before the lapse. Please note, any modifications made in research design, methodology, or procedures must be submitted to and approved by the IRB before implementation. Please submit a final report form when the study is complete.

Please use reproductions of the IRB approved informed consent forms for obtaining consent from your participants.

Good luck with your research.

Sincerely,

Carpantato T. Myles, MSM, CIM, CIP
Director & Research Compliance Officer

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