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THE EARLY CHILDHOOD MEALTIME AS A LEARNING ENVIRONMENT: PRACTICES, CHILDREN'S BEHAVIORS, AND TEACHERS' PERSPECTIVES

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THE EARLY CHILDHOOD MEALTIME AS A LEARNING ENVIRONMENT:

PRACTICES, CHILDREN'S BEHAVIORS, AND TEACHERS' PERSPECTIVES

A DISSERTATION APPROVED FOR THE
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BY THE COMMITTEE CONSISTING OF:

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DEDICATION

"One child, one teacher, one book and one pen can change the world."

- Malala Yousafzai

"…if you educate a woman, you educate a nation."

- African proverb

This work is dedicated to the girls and women who desire to go to school. I know the reason I have even been able to write these manuscripts is in part, because of fortune. So many girls and women are unable to achieve or complete the education they want. I understand that the direct topic of this dissertation will not lead to opening doors for those females who seek an education. However, my aim is that by having completed this journey, I will be better positioned to advocate and influence so that the future will be more equipped to support and embrace those females who wish to learn.

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A special thanks to Cristy Roberts and Sun Geun Kim for helping me achieve reliability and for helping collect data. Thank you Dr. Dipti Dev and Saima Hasnin for allowing me to collaborate with you and share access to your data and helping me find a solution to all of the twists and turns that the pandemic presented. And thank you to all of the teachers, children, and parents who participated in this study. I could not have done it without you!

Table of Contents

List of Tables

List of Figures

PROLOGUE

This dissertation adheres to a journal-ready format. Three journal articles prepared for submission to refereed journals comprise the first part of the dissertation. Manuscript I, Developing an Integrated Framework for Supportive and Responsive Mealtime Practices is prepared for the journal *Early Childhood Education Journal*. Manuscript II, Associations Among Teaching Practices, Feeding Practices, and Children's Behavior During the Early Care and Education Mealtime is prepared for the journal *Teaching and Teacher Education*. Manuscript III, Exploring Early Care and Education Teachers' Knowledge, Perspectives, Perceived Roles, and Goals and Their Influence on Mealtime Practices is prepared for the journal *Early Childhood Research Quarterly*.

Dissertation Abstract

This dissertation examines the early care and education mealtime as a learning environment. Manuscript one proposes a new improved conceptual framework that addresses the need for better alignment of teachers' practices during the mealtime from both the education and nutrition field. Manuscript two examines the associations between teaching practices as measured by the Classroom Assessment Scoring System and feeding practices as measured by the Mealtime Observation in Childcare Checklist. Manuscript two also explores children's behaviors during the mealtime and associations with teachers' practices. Manuscript three provides a qualitative analysis of teachers' perspectives of the mealtime gathered by interviews.

MANUSCRIPT I

Developing an Integrated Framework for Supportive and Responsive Mealtime Practices

This manuscript is prepared for submission to the peer-reviewed journal *Early Childhood Education Journal* and is the first of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

The early care and education (ECE) mealtime is a context in need of strong partnerships from education and nutrition disciplines. Knowledge from the field of ECE (i.e., children's learning and development and child guidance) combined with knowledge from the field of nutrition (i.e., providing adequate nutrients and supporting children's growth and health) would offer the best guidance for ECE teachers to use high-quality practices that support both learning and healthy eating. This conceptual paper integrates Developmentally Appropriate Practices (DAP) key practice areas and Academy for Nutrition and Dietetics (AND) *Benchmarks for Nutrition in Child Care* to expand the Positive Mealtime Environment (PME) framework and proposes an improved integrated framework to guide the implementation of high-quality teaching and feeding practices during the mealtime.

Keywords: developmentally appropriate practice, benchmarks for nutrition, mealtime practices

Developing an Integrated Framework for Supportive and Responsive Mealtime Practices

Early care and education (ECE) is an intrinsically collaborative and interdisciplinary field (National Association for the Education of the Young Child [NAEYC], 2019). NAEYC, a representative professional early childhood education organization, claims that "effective ECE and the promotion of children's positive development and learning in the early years call for a strong interdisciplinary and systems-oriented approach" (NAEYC, 2019, p. 5). In other words, the need for partnerships among disciplines outside of the scope of ECE is vital to ensure the positive development of the whole child.

The ECE mealtime is a context in need of strong partnerships from education and nutrition disciplines. For the purposes of this paper, the mealtime is defined as breakfast or lunch in classrooms for children aged 2-5 years old. Activities and interactions during routines like the mealtime can influence a child's overall daily experience in the classroom (Chien et al., 2010; Fuligni et al., 2012; Vitiello et al. 2012), and the mealtime offers a variety of opportunities for teachers to support children's learning (Lochetta et al., 2017; Mita et al., 2015; Whorrall & Cabell, 2016). In addition, teachers' practices during the ECE mealtime play a critical role in shaping children's long-term eating behaviors and health trajectories (Benjamin-Neelon, 2018; Dev, McBride et al., 2014; Hendy & Raudenbush, 2000; Johnson, 2000; Sigman-Grant et al., 2008), particularly given that an estimated 7.5 preschool aged children attend ECE centers where they can consume up to two-thirds of their daily meals in ECE settings (National Center for Education Statistics [NCES], 2020).

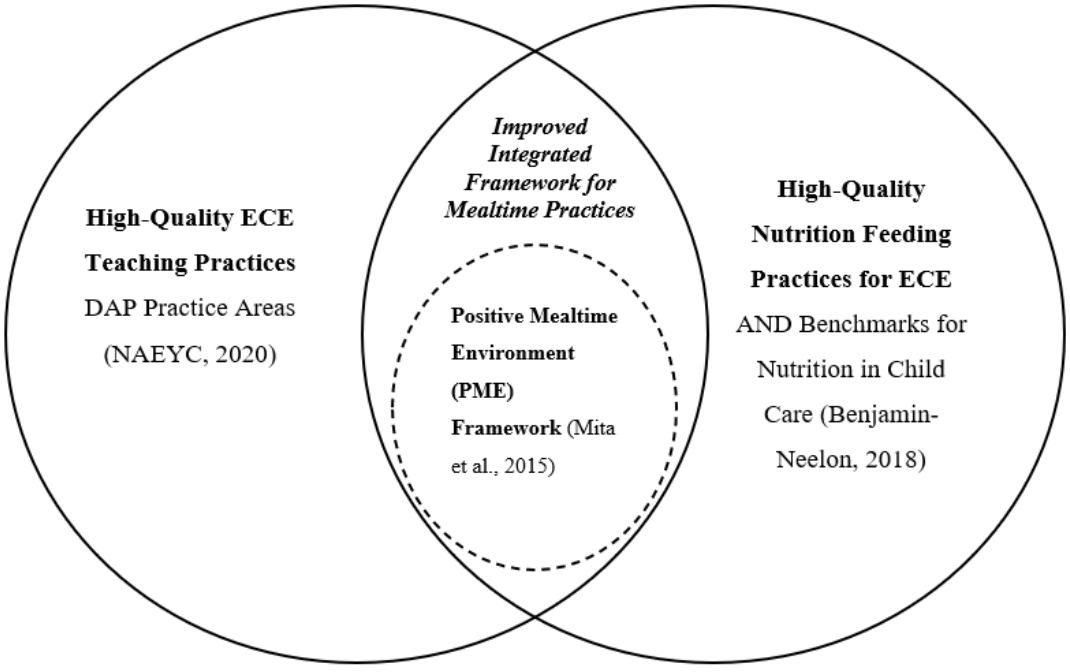
Ideally, knowledge from the field of ECE (i.e., children's learning and development and child guidance) combined with knowledge from the field of nutrition (i.e., providing adequate nutrients and supporting children's growth and health) would offer the best guidance for ECE teachers to use high-quality practices that support both learning and healthy eating. Education and nutrition disciplines offer guidelines for best practices for ECE teachers for both high-quality teaching and high-quality feeding practices respectively. The field of education provides a comprehensive set of Developmentally Appropriate Practices (DAP) that serves to inform high-quality teaching practices in the classroom (NAEYC, 2020), and the field of nutrition provides the Academy for Nutrition and Dietetics (AND) *Benchmarks for Nutrition in Child Care* (Benjamin-Neelon, 2018) that inform best feeding practices for the ECE mealtime. However, there are discrepancies in the integration of high-quality practices across fields. For example, nutrition recommendations for feeding practices (AND Benchmarks, Benjamin-Neelon, 2018) are intended for ECE teachers, yet are rarely explicitly taught to teachers or promoted by education-related organizations (i.e., NAEYC), nor are they easily found within education related resources. Additionally, measures of quality in the field of education tend to focus on global or classroom ratings (e.g., CLASS), which may miss patterns of teaching effectiveness during routines like the mealtime (Buell et al., 2016; Cabell et al., 2013; Malek-Lasater et al., 2021). Consequently, there is little accountability for implementing high-quality practices during the mealtime.

Developing an agreed upon conceptual understanding can centralize common goals among disciplines and create more congruence between recommendations from the education and nutrition fields related to applying high-quality practices in the mealtime

context (Tobi & Kampen, 2018; Tripp & Shortlidge, 2019). Mita et al. (2015)'s conceptual framework of a positive mealtime environment (PME) is the only work of its kind, to date, that provides a comprehensive look at the components of a positive mealtime environment. However, this framework is not exhaustive and is limited in that it does not offer specific strategies for teachers during the mealtime nor does it address practices that support self-regulation. The frameworks for DAP (NAEYC, 2020) and AND Benchmarks (Benjamin-Neelon, 2018) are evidenced-based and grounded in theory related to best practices in their respective fields. Integrating these frameworks into the PME (Mita et al., 2015), and expanding the PME framework to include a more complete guide to mealtime practices, can provide an improved framework for teacher practices during the ECE mealtime that will guide both high-quality teaching and feeding practices (Figure 1). This type of framework does not yet exist and is needed to bridge the

Figure 1

Conceptual Model for an Integrated Framework for Mealtime Practices



partnership between the fields of education and nutrition, and to best support the use of best practices during the ECE mealtime.

Frameworks for ECE Teacher Practices

Framework for High-Quality Teaching Practices: DAP

ECE teaching practices are guided by the principles of developmentally appropriate practices, which states that teaching practices should be "appropriate to children's age and developmental status, attuned to them as unique individuals, and responsive to the social and cultural contexts in which they live" (Copple & Bredekamp, 2009, p. xii). Child development and learning are complex and multifaced phenomena and curriculum and pedagogical approaches can fall along a continuum of curriculum paradigms (Kolberg & Meyer, 1972). Therefore, an all-inclusive list of teaching practices does not exist. There is, however, a comprehensive set of DAP Practice Areas that serve to inform classroom practices (NAEYC, 2019). The NAEYC position statement on DAP (NAEYC, 2020) outlines six overarching key practice areas presented in Appendix A. For the purpose of this paper, three of the key practice areas are relevant to teachers' practices during the mealtime. These three practice areas include: creating a caring community of learners; engaging in reciprocal partnerships with families and fostering community connections; and teaching to enhance each child's development and learning.

Creating a caring, equitable community of learners (key practice area 1) highlights the need for a supportive culture and climate within the ECE setting, and guides ECE teachers to foster an environment that supports development in all areas for each child. Strategies within this key practice area emphasize creating consistent, positive, and caring relationships between teacher and child and among all adults within

the community. Further, teachers are guided to maintain a welcoming and positive climate that is psychologically safe and allows children to focus on learning (Ainsworth, 1969). *Engaging in reciprocal partnerships with families and fostering community connections* (key practice area 2) calls for strong and respectful relationships with parents and the child's surrounding community to gain deep knowledge about each child (Bronfenbrenner, 2006; NAEYC, 2020). Strategies focus on collaborative partnerships with families and community members. *Teaching to enhance each child's development and learning* (key practice area 4) centers on fostering learning and development in all developmental domains and subject areas and supports positive relationships as the foundation for children's learning (NAEYC, 2020). Strategies are rooted in play and constructivist teaching philosophies that guide teachers to provide hands-on and meaningful experiences, support interactions between peers, differentiate learning based on children's individual needs, and scaffold children's learning.

Guidelines for high-quality teaching practices offer a framework for teachers to provide emotionally supportive interactions and developmentally appropriate instruction that foster children's optimal learning and development (Burchinal, 2018; NAEYC, 2019, 2020). However, beyond promoting the child's need for nourishment in key practice area 1 (creating a caring, equitable community of learners), the framework for DAP does not offer specific guidance for practices during the ECE mealtime.

AND Benchmarks for Nutrition Practices in ECE

Eating behaviors are already established by school age and the first five years of life are more formative years for many health-related behaviors (Birch & Ventura, 2009); therefore, the AND position statement, *Benchmarks for Nutrition in Child Care*

(Benjamin-Neelon, 2018), includes recommendations for nutrition and feeding practices used by ECE teachers serving children age 2 to 5 years. Eating behaviors acquired during the early years have an influence on children's food habits and nutrient intake patterns that can last through adolescence and adulthood (Birch & Ventura, 2009; Campbell et al., 2006; Westenhoefer, 2002). Current rates of child obesity (13.8% for children 2-5 years old, Hales et al., 2017) make the development of healthy eating behaviors even more critical.

The AND Benchmarks include twelve benchmarks for nutrition in child care in four categories (Appendix B). These benchmarks are grounded in extensive nutrition and public health-related research examining caregiver (i.e., parent, grandparent, teacher) feeding practices around topics related to food neophobia (fear of trying new foods) (e.g., Dovey et al., 2008), child consumption of nutritious foods (e.g., Hoppu et al., 2015), and eating self-regulation (e.g., Johnson, 2000). For the purpose of this paper, the three categories of benchmarks relevant to teachers' mealtime practices are: nutritional quality of foods and beverages served; mealtime environments; and interactions between children, families, and care providers.

Nutritional quality of foods and beverages served (Benchmark category 1), calls for children to be served a variety of healthy foods and beverages that will help meet their daily nutritional requirements, while limiting foods with excessive fat, sodium, and sugar (USDA, n.d.). *Mealtime environments* (Benchmark category 2) highlights that need for the ECE mealtime to support a physical and social eating environment while also supporting a child's ability to regulate food intake (i.e., eat when hungry/stop when full) (Johnson, 2000). The ECE mealtime settings should include chairs, tables, plates, and

other tableware that are sized appropriately for the children's age and developmental skill level in the classroom. Visuals and classroom materials within and surrounding the eating environment should communicate age-appropriate messages to children about healthy eating. To support eating-self regulation teachers should implement practices known as responsive feeding practices (Baumeister & Vohs, 2004; Sigman-Grant et al. 2008). Responsive feeding practices include using verbal prompts to help children self-serve food (Baumeister & Vohs 2004), modeling feelings of satiety, and cuing children to sensations that reflect hunger and fullness while supporting their language to express if they are hungry or full (Sigman-Grant et al. 2008).

Interactions between children, families, and child care providers (Benchmark category 3) emphasizes supporting and teaching healthy eating habits (Benjamin-Neelon, 2018). Strategies for ECE teachers include sitting and eating with children role modeling eating healthy foods with enthusiasm (Hendy & Raudenbush, 2000; Sigman-Grant et al., 2008), using peer modeling to encourage children to try new and healthy foods (Greenhalgh et al., 2009), providing nutrition education such as connecting food to health benefits can encourage healthy food choices, and allowing children to explore food through their senses (Dazeley & Houston-Price, 2015).

While the AND Benchmarks offers some guidance to teachers in regard to supporting social development (i.e., Benchmark category 2 mealtime environment), the primary focus for the AND Benchmarks is for ECE teachers to implement strategies that support healthy eating behaviors (Benjamin-Neelon, 2018). This focus is expected given the AND is a nutrition-based organization. Yet, to ensure these benchmarks reach ECE

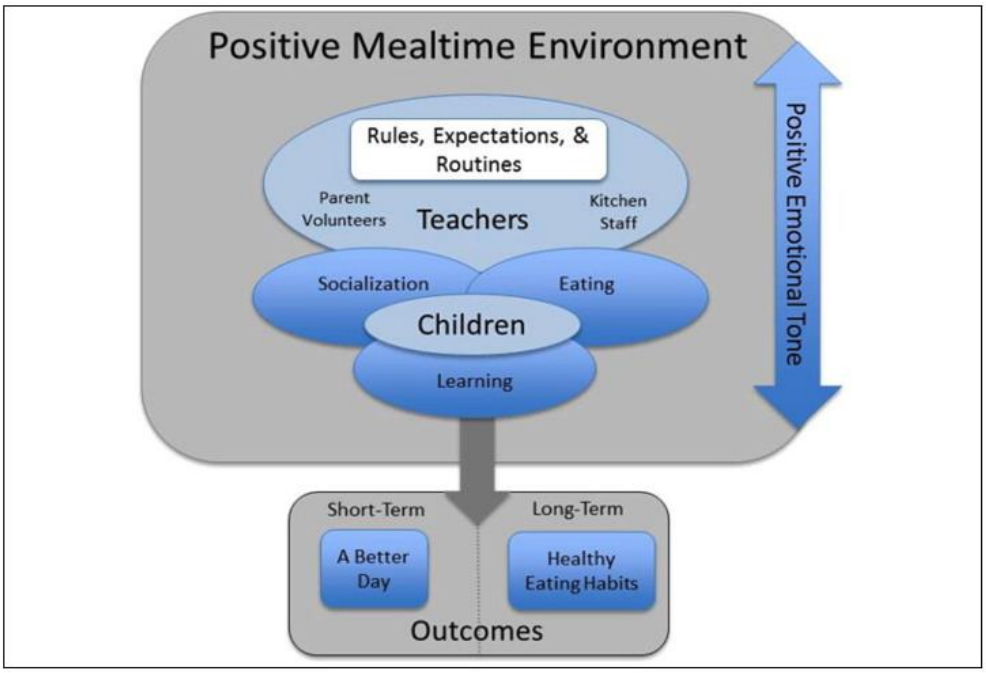
teachers so they may implement them during the mealtime, there is a need to integrate foundational principles of DAP that are well-known to the field of ECE.

Positive Mealtime Environment (PME) Explanatory Framework

Mita et al. (2015) offers an explanatory framework of a Positive Mealtime Environment (PME) (Figure 2) that discusses the multiple components that make up the ECE mealtime. The PME takes a holistic and comprehensive approach that includes *people* (teachers, parent volunteers, kitchen staff, children), *rules/expectations/routines*, *positive emotional tone*, and *operations* (eating, socialization, learning) (Mita et al., 2015).

Figure 2

Positive Mealtime Environment (PME) Explanatory Framework (Mita et al., 2015)



The operations of eating, socialization, and learning described in the PME offer the foundation for teacher practices during the mealtime. The *eating* operation suggests teachers and children will be eating during the mealtime and encourages teacher practices that support children's healthy eating, such as role modeling. The *socialization* operation

suggests adults and children will interact during the mealtime. Teachers facilitate interactions by asking questions and encouraging everyone to share information about their day and the meal. The *learning* operation suggests that children will gain language, social, motor, and cognitive knowledge and/or skills during the mealtime. Teachers can foster this by having children learn about foods groups, independence, nutrition, manners, and new vocabulary. Further, the construct of *positive emotional tone* within the PME suggests that an overarching positive and relaxed climate during the mealtime can support the overall mealtime experience (Mita et al., 2015).

The PME framework is the first of its kind to integrate children's needs related to learning and healthy eating during the mealtime. This structure of the PME allows it to be an appropriate framework to integrate DAP (NAEYC, 2020) and the AND Benchmarks (Benjamin-Neelon, 2018) and align high-quality practices from both the education and nutrition disciplines in the context of the ECE mealtime. The comprehensive nature of the PME is a strength of the framework. However, it is limited in two ways. First, it does not outline specific strategies for teachers to effectively support the areas of eating, socialization, and learning during the mealtime. This practical information is important to translate theory into practice. Second, it does not address children's needs for supporting self-regulation during the mealtime. Supporting children's eating self-regulation in particular is recognized as a critical area of development when fostering long-term healthy eating behaviors (Satter, 2012; Sigman-Grant, 2008). Therefore, there is a need to expand the PME to incorporate these areas of limitation and to provide a more complete framework for supporting high-quality practices during the ECE mealtime.

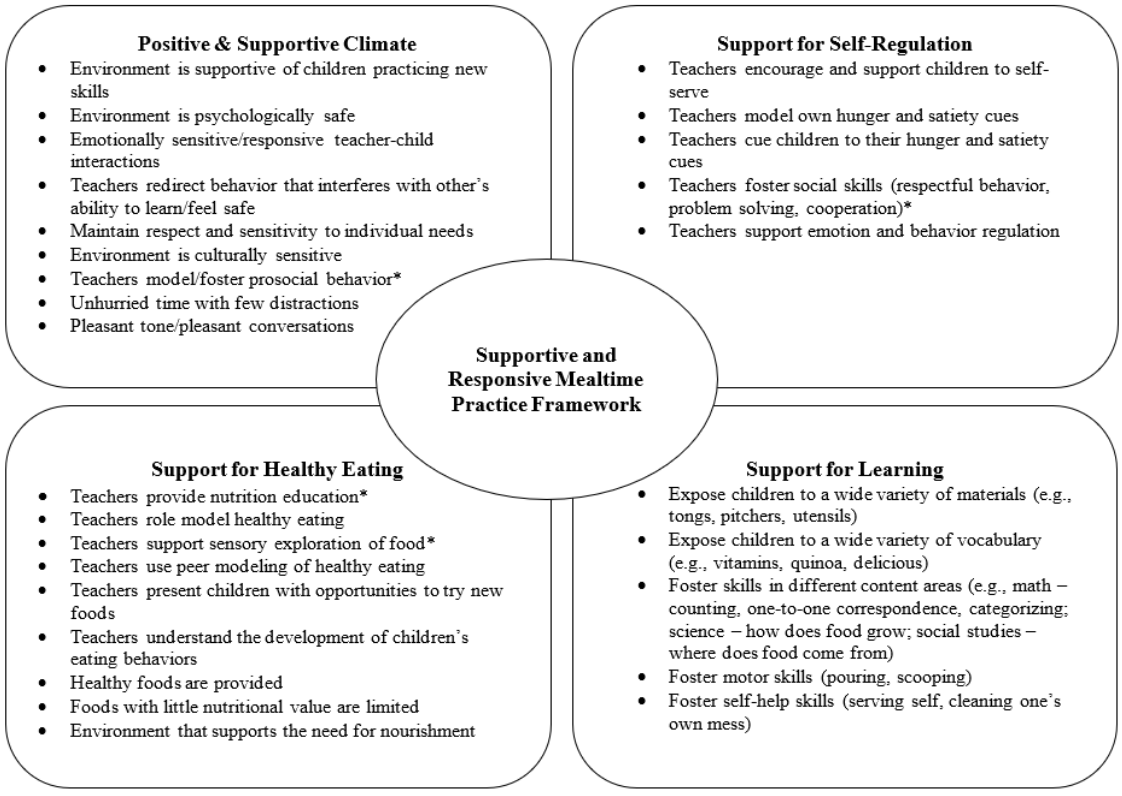
Supportive and Responsive Mealtime Practice Framework

The Supportive and Responsive Mealtime Practice Framework as a proposed improved integrated framework can provide a guide for teachers to implement high-quality teaching and feeding practices that have been integrated from DAP (NAEYC, 2020) and AND Benchmarks (Benjamin-Neelon, 2018) respectively. The PME constructs of positive emotional tone, eating operation, socialization operation, and learning operation provide the structure for the Supportive and Responsive Mealtime Practice Framework, with the addition of self-regulation.

This improved integrated framework is comprised of four practice domains: positive and supportive climate, support for healthy eating, support for learning, and support for self-regulation (see Figure 3). Each domain describes associated practices

Figure 3

New Integrated Supportive and Responsive Mealtime Practice Framework



Note: * = Practice can also apply to "Support for Learning" category

teachers can use during the mealtime. These practices incorporate both high-quality teaching practices and high-quality feeding practices. Each domain is described in detail in the following sections.

Positive and Supportive Climate

The domain of *positive and supportive climate* includes practices that maintain an overall positive and supportive environment during the mealtime. Drawing from the PME construct of positive emotional tone (Mita et al., 2015) and the DAP key practice area of creating a caring equitable community of learners, practices in the *positive and supportive climate* domain should support a positive tone and pleasant conversations. Teachers' practices should promote and foster respectful behaviors, so the environment stays conducive for learning. Strategies include modeling and teaching prosocial behaviors, while redirecting behaviors that interfere with other's ability to learn. During the mealtime, this may look like a teacher helping children take turns talking so that everyone can hear one another.

Practices in the *positive and supportive climate* domain should also include efforts to ensure children feel psychologically safe during the mealtime, and that the overall social and emotional climate is welcoming (aligned with DAP key practice area of creating a caring equitable community of learners and AND Benchmark of mealtime environment). During the mealtime, teachers should provide positive, warm, emotionally sensitive, and behaviorally supportive responses to children (Phillips & Lowenstein, 2011). The mealtime should also remain unhurried. These types of interactions foster children's ability to focus on learning (Burchinal, 2018). In addition, children should have many opportunities to practice new skills (e.g., serving themselves, taking turns)

and have novel experiences (e.g., trying new foods) during the mealtime (Benjamin-Neelon, 2018). Maintaining a positive climate and positive-teacher child interactions during the mealtime allows children to feel safe and enjoy engaging in new practices, rather than feeling worried, scared, or overly stressed (Benjamin-Neelon, 2018; NAEYC, 2020).

Further, the *positive and supportive climate* domain guides teachers to incorporate aspects of each child's culture into the learning environment by integrating concepts from (a) DAP practice area of engaging in reciprocal partnerships with families and fostering community connection (NAEYC, 2020); (b) AND Benchmark of interactions between children, families, and child care providers (Benjamin-Neelon, 2018); and (c) PME positive emotional tone construct (Mita et al., 2015). This can be achieved by serving foods that are familiar to the child's culture or using language that reflects a child's home experience (i.e., using Spanish for Spanish-speaking children) while respecting culture and encouraging culturally appropriate foods (Benjamin-Neelon, 2018). Teachers should also be sensitive to signs of stress or trauma (NAEYC, 2020), and can work closely with families to be mindful and aware of individual differences such as food allergies, food security, and family resources (Benjamin-Neelon, 2018).

Support for Healthy Eating

The domain *support for healthy eating* includes practices that foster healthy eating behaviors. Few DAP key practice areas explicitly address supporting children's eating in the classroom. However, the DAP key practice area of creating a caring, equitable community of learners connects (NAEYC, 2020) with the PME eating construct (Mita et al., 2015) to guide teachers to provide a learning environment that supports a

child's need for nourishment (NAEYC, 2020). Further integrating the AND Benchmarks of nutritional quality of foods and beverages served (Benjamin-Neelon, 2018) offers more specific guidance on how to support a child's need for nourishment by providing a variety of healthy foods and limiting foods with little nutritional value.

The *support for healthy eating* domain also guides teachers to plan the environment and daily activities to promote each child's development and learning (integrating DAP key practice area of teaching to enhance each child's development and learning (NAEYC, 2020) and PME eating construct (Mita et al., 2015)). Related to mealtime, teachers should understand that it is developmentally appropriate that many children experience hesitancy to try new foods as it can often take up to 15 times of offering a food before a child accepts it (Wardle et al., 2005). Teachers can consistently present children with opportunities to make choices during eating and can promote choosing healthy foods by modeling or trying the foods in front of the children and helping them understand that healthy foods help them grow.

Integrating (a) DAP key practice area of teaching to enhance each child's development and learning) (NAEYC, 2020); (b) AND benchmark of interactions between children, families, and child care providers; and (c) PME eating construct (Mita et al., 2015) into the *support for healthy eating* domain emphasizes the use of role modeling, peer modeling, and sensory exploration during the mealtime. Role modeling is effective because children learn about food and nutrition from significant caregivers in their lives, including teachers (Hughes et al., 2007). Young children are more likely to eat foods they see adults eating, and teachers can support children in choosing and eating healthy foods

by enthusiastically role modeling healthy eating (Greenhalgh et al., 2009; Hendy & Raudenbush, 2000; McBride & Dev, 2014).

Using peer modeling during mealtime can be used in instances where a child may be hesitant to try new foods. A teacher may encourage food acceptance by pointing out when a peer is eating that same food which is a strategy that is more supportive than pressuring a child to eat (Greenhalgh et al., 2009; Visalberghi & Addessi, 2000). Teachers can also extend children's interests and thoughts by stimulating their senses at mealtime. Sensory exploration is an effective teaching strategy and engaging children in ways such as smelling and touching new foods may encourage children to try them (NAEYC, 2020). Incorporating sensory exploration through sound, sight, smell, and touch has been shown to strengthen preschool children's willingness to try new foods (Nekitsing et al., 2018).

Support for Learning

The *support for learning* domain focuses on practices that foster children's learning and development in all domains during the mealtime. There are some overlaps in this domain that fall into other domains related to supporting children's social skills and providing nutrition education (see Figure 3). To supporting social development in the *support for learning* domain, practices from the DAP practice area of creating a caring, equitable community of learners (NAEYC, 2020) can be integrated with the AND benchmark of mealtime environment (Benjamin-Neelon, 2018), and PME socialization construct (Mita et al., 2015). The mealtime provides a consistent setting where extended and engaging conversations can and should happen. Through the communion of eating together, teachers and children participate in social conversations and learn social skills

such as respectful behavior, problem solving, and cooperation (Locchetta et al., 2017). During mealtime teachers and children can learn more about each other by sharing about themselves and their experiences outside of school or talking about their food (Mita et al., 2015). Teachers can also prompt children to interact with their peers as they pass food to one another. For example, as a child is reaching for a serving bowl, the teacher may prompt them to ask their peer to pass the bowl to them. These types of interactions prompt children's awareness to their peers and potentially initiate conversations about food or other topics, therefore supporting social development skills.

Practices in the *support for learning* domain can also foster cognitive and motor development by integrating (a) DAP key practice area of teaching to enhance each child's development and learning (NAEYC, 2020); (b) AND Benchmark of interactions between children, families, and child care providers; and (c) PME learning operation (Mita et al., 2015). The PME learning operation describes the mealtime as a space for children to display their learning of colors, food groups, language, or shapes (Mita et al., 2015). DAP emphasizes making learning experiences meaningful (NAEYC, 2020), and the mealtime is a unique setting where teachers can provide a wide variety of experiences and materials. For instance, during the mealtime, children may be exposed to equipment (e.g., tongs, pitchers, utensils) and vocabulary (e.g., vitamins, quinoa, delicious) they do not often experience. It is also very sensory rich with colors, textures, shapes, and smells that lead to thoughtful conversation or inquiry. Many opportunities exist to practice math skills like one-to-one correspondence by passing out plates to each child or categorizing foods into their respective food groups (i.e., grains, fruits, etc.). Additionally, motor skills such as using utensils or pouring, self-help skills like cleaning up spills, and

independence such as taking their waste to the trash (Endres & Rockwell, 1980; Fletcher et al., 2005) can be reinforced.

Support for Self-Regulation

The *support for self-regulation* domain encourages practices that foster self-regulation skills and is where the Supportive and Responsive Mealtime Framework expands the PME (Mita et al., 2015) since the PME does not address supporting children's self-regulation skills. Children's ability to regulate their food intake by eating when they are hungry and stopping when they are full is an important healthy eating behavior that can help children maintain healthy weight status and physical wellness (Benjamin-Neelon, 2018; Johnson, 2000; Satter, 2012). The DAP key practice area of creating a caring, equitable community of learners highlights teachers' need to support children's ability to regulate emotions and behaviors (NAEYC, 2020). Self-regulation specific to eating is not mentioned within the DAP position statement, therefore incorporating the AND benchmark practice of respecting children's hunger and satiety cues (within the AND mealtime environment category), adds guidance for teachers on how to support eating self-regulation (Benjamin-Neelon, 2018). For instance, structuring the ECE mealtime in a way that allows children to serve themselves can support children's eating self-regulation. The thought is that as children serve themselves, they can have control over how much food is on their plate based on their own internal state of hunger (Satter, 2012).

Teachers' practices for supporting eating-self-regulation can also include their use of verbal communication that cues children to attend to their hunger and satiation. Johnson (2000) found that children who were introduced to concepts of hunger and

fullness through adult-guided play (e.g., rumbling of the stomach, stomach extension and distention, discomfort, and where you chew food) had significant improvements in their ability to self-regulate their food intake. ECE teachers can also role model their own states of hunger and fullness to help children attend to their own internal cues. This same study (Johnson, 2000) found associations between mothers' abilities to regulate their own eating and their children not showing evidence of good self-regulation; teachers are thought to influence children's eating self-regulation in this same manner (Benjamin-Neelon, 2018).

Conclusion

The Supportive and Responsive Mealtime Practices Framework offers a new conceptual framework that integrates recommendations for high-quality teaching and feeding practices to support teachers' mealtime practices. The development of this framework addresses the need for more centralized goals between the education and nutrition disciplines in terms of mealtime practices. Previous studies suggest that mealtimes may be less engaging compared to other classroom contexts (Degotardi, 2010), and that ECE teachers are not consistently using recommended mealtime practices (Dev, McBride et al., 2014; Dev, Speirs et al., 2014; Erinosho et al., 2012; Malek-Lasater et al., 2020; Sleet et al., 2019). One explanation may be that ECE teachers are not aware of how to translate teaching practices to the mealtime or how to apply feeding practices effectively. Therefore, this framework offers specific guidance on what support children need during the mealtime and what practices are considered most supportive of children's needs.

The Supportive and Responsive Mealtime Practices Framework expands the PME framework (Mita et al., 2015) by including the *support for self-regulation* domain. Including practices that support children's eating self-regulation during the mealtime is vital to fostering the development of long-term healthy eating behaviors. Studies have shown that teachers are not consistent in implementing practices that support eating self-regulation (Dev et al., 2013; Dev, McBride et al., 2014; Dev, Speirs et al., 2014; Sleet et al., 2019), suggesting that teachers need improved training and preparation in this area. Incorporating support for self-regulation can help guide future trainings to address this important area of development.

This framework can be useful for researchers, teacher educators, and ECE teachers. As this conceptual paper highlights the importance of interdisciplinary collaboration, researchers can use this framework as a model for future studies exploring ways to improve teacher practices during the mealtime, or as a guide for integrating practices across fields. Researchers can also use this framework as a guide for developing or modifying measures of teaching quality that address teacher practices during the mealtime. New or modified measures can refer to this framework to capture all four domains of teaching practices. Teacher educators can use this framework to guide teacher preparation and professional development courses. ECE teachers can use this framework as it provides specific practices in each domain. Having a conceptual model can provide a visual for teachers to reference as a guide for mealtime practices or to reflect on needed areas for improvement.

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Appendix A

Guidelines for Developmentally Appropriate Practice in Action from NAEYC Position Statement on Developmentally Appropriate Practice (NAEYC, 2020)

Key Area of Practice	Standards/Strategies/Descriptors
1. Creating a Caring, Equitable Community of Learners	a) Each member of the community is valued by the others and is recognized for the strengths they bring b) Relationships are nurtured with each child and educators facilitate the development of positive relationships among children c) Each member of the community respects and is accountable to the others to behave in a way that is conducive to the learning and well-being of all d) The physical environment protects the health and safety of the learning community members, and it specifically supports young children's physiological needs for play, activity, sensory stimulation, fresh air, rest, and nourishment e) Every effort is made to help each and every member of the community feel psychologically safe and able to focus on being and learning. The overall social and emotional climate is welcoming and positive
2. Engaging in Reciprocal Partnerships with Families and Fostering Community Connections	a) Educators take responsibility for establishing respectful, reciprocal relationships with and among families. b) Educators work in collaborative partnerships with families, seeking and maintaining regular, frequent, two-way communication with them and recognizing that the forms of communication may differ for each family c) Educators welcome family members in the setting and create multiple opportunities for family participation. d) Educators acknowledge a family's choices and goals for their child and respond with sensitivity and respect to those preferences and concerns e) Educators and the family share with each other their knowledge of the particular child and understanding of child development and learning as part of day-to-day and other forms of communication (e.g., family get-togethers, meetings, support groups) f) Educators involve families as a source of information about the child (before program entry and on an ongoing basis) g) Educators take care to learn about the community in which they work, and they use the community as a resource across all aspects of program delivery
3. Observing, Documenting, and Assessing	a) Observation, documentation, and assessment of young children's progress and achievements is ongoing, strategic, reflective, and purposeful.

	Children's Development and Learning	b) c) d) e) f) g)	Assessment focuses on children's progress toward developmental and educational goals. A system is in place to collect, make sense of, and use observations, documentation, and assessment information to guide what goes on in the early learning setting. The methods of assessment are responsive to the current developmental accomplishments, languages, and experiences of young children. They recognize individual variation in learners and allow children to demonstrate their competencies in different ways Assessments are used only for the populations and purposes for which they have been demonstrated to produce reliable, valid information Decisions that have a major impact on children, such as enrollment or placement, are made in consultation with families When a screening assessment identifies a child who may have a disability or individualized learning or developmental needs, there is appropriate follow-up, evaluation, and if needed, referral
4.	Teaching to Enhance Each Child's Development and Learning	a) b) c) d) e) f) g) h)	Educators demonstrate and model their commitment to a caring learning community through their actions, attitudes, and curiosity. Educators use their knowledge of each child and family to make learning experiences meaningful, accessible, and responsive to each and every child Educators effectively implement a comprehensive curriculum so that each child attains individualized goals across all domains (physical, social, emotional, cognitive, linguistic, and general learning competencies) and across all subject areas (language and literacy, including second language acquisition, mathematics, social studies, science, art, music, physical education, and health). Educators plan the environment, schedule, and daily activities to promote each child's development and learning. Educators possess and build on an extensive repertoire of skills and teaching strategies. Educators know how and when to scaffold children's learning Educators know how and when to strategically use the various learning formats and contexts. Educators differentiate instructional approaches to match each child's interests, knowledge, and skills.
5.	Planning and Implementing an Engaging Curriculum to Achieve Meaningful Goals	a) b)	Desired goals that are important for young children's development and learning in general and culturally and linguistically responsive to children in particular have been identified and clearly articulated. The program has a comprehensive, effective curriculum that targets the identified goals across all domains of development and subject areas.

		c) Educators use the curriculum framework in their planning to make sure there is ample attention to important learning goals and to enhance the coherence of the overall experience for children d) Educators make meaningful connections a priority in the learning experiences they provide each child. e) Educators collaborate with those teaching in the preceding and subsequent age groups or grade levels, sharing information about children and working to increase continuity and coherence across ages and grades. f) Although it will vary across the age span, a planned and written curriculum is in place for all age groups.
6.	Demonstrating Professionalism as An Early Childhood Educator	Developmentally appropriate practice serves as the hallmark of the early childhood education profession. Fully achieving these guidelines and effectively promoting all young children's development and learning depends on the establishment of a strong profession with which all early childhood educators, working across all settings, identify. Educators use the guidelines of the profession, including these guidelines, as they conduct themselves as members of the profession and serve as informed advocates for young children and their families as well as the profession itself

Appendix B

Benchmarks for Children Aged 2 to 5 years in ECE from the Position of the Academy for Nutrition and Dietetics: Benchmarks for Nutrition in Child Care

Category	Benchmarks
Nutritional Quality of Foods and Beverages Served	7. Provide children with a variety of healthy foods and beverages in appropriate portions 8. Limit less-healthy foods that contribute little to no meeting children's nutritional needs 9. Be mindful of food safety, foodborne illness, and food allergies
Mealtime Environments	10. Create healthy physical and social eating environments 11. Respect children's hunger and satiety cues
Interactions Between Children, Families, and Care Providers	12. Encourage child-care provider role modeling 13. Work with parents to encourage healthy foods brought from home to child care 14. Respect culture and encourage culturally appropriate foods 15. Be mindful of food security and family resources 16. Facilitate nutrition education for children and families
Partnering with Child-Care Providers	17. Consider barriers to serving healthy foods and beverages from the provider perspective 18. Provide training and technical assistance to child-care providers

MANUSCRIPT II

Associations Among Teaching Practices, Feeding Practices, and Children's Behavior During the Early Care and Education Mealtime

This manuscript is prepared for submission to the peer-reviewed journal *Teaching and Teacher Education* and is the second of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

Early care and education (ECE) mealtime is a highly influential setting that carries implications for children's learning and health. However, understanding the mealtime as an important opportunity for learning (i.e., supporting cognition, language skills, and social skills) is a topic that has received little attention in research. Exploring how feeding practices align with teaching practices by examining their associations, may offer insight in how to offer support to improve teaching practices during the mealtime. In addition, there is little evidence documenting how teachers' practices are associated with children's behavior during the ECE mealtime. Therefore, this observation study examined measures of high-quality teaching and feeding practices during the mealtime in ECE classrooms serving children ages 2-5 years old and their associations with children's observed behaviors during the mealtime. The findings of this study have implications for future measurement developments, teacher trainings, and interdisciplinary research collaborations.

Keywords: mealtime practices, feeding practices, children's engagement, behavior, mealtime

Associations Among Teaching Practices, Feeding Practices, and Children's Behavior During the Early Care and Education Mealtime

Early care and education (ECE) mealtime is a highly influential setting that carries implications for children's learning and health (Booren et al., 2012; Hamre & Pianta, 2007; Riggs et al., 2010). An estimated 7.5 million children attend ECE center-based programs (National Center for Education Statistics [NCES], 2020), where they spend a substantial part of their day (7-14%) at mealtime (Chein et al., 2010). Thus, there are potentially several occasions for ECE teachers to support both children's learning (Lochetta et al., 2017; Mita et al., 2015; Whorrall & Cabell, 2016) and their development of healthy eating behaviors (Dev, McBride et al., 2013; Gubbels et al., 2010; Benjamin-Neelon, 2018).

However, while there is growing research in how the mealtime is an important setting to support children's healthy eating (e.g., Hoppu et al., 2015), understanding the mealtime as an important opportunity for learning (i.e., supporting cognition, language skills, and social skills) is a topic that has received little attention in research. In fact, some studies suggest that the quality of the ECE mealtime needs improvement. The quality of practices teachers use during the mealtime has been found to be lower than other classroom activities (Buell et al., 2016; Cabell et al., 2013, Degotardi, 2010; Hallam et al., 2016), and teachers have been observed not consistently using practices that support healthy eating (Dev et al., 2013; Dev et al., 2014; Dev, Speirs et al., 2014; Erinosho et al., 2012). Teachers ideally need to implement practices that are recommended from education and nutrition fields to provide a high-quality mealtime environment, yet there is little documented alignment and specialized trainings guiding

teachers in this task. This lack of guidance and trainings may contribute to the reasons why practices during the mealtime are sub-optimal. Feeding practices during the preschool mealtime are understood to be those that support children choosing and eating healthy foods (e.g., providing nutrition education, role modeling healthy eating, allowing sensory exploration), along with practices that support children's ability to regulate their intake to eat when they are hungry and stop when they are full (e.g., cueing internal states of hunger and fullness, supporting self-serving, role modeling own feelings of hunger/satiety) (Benjamin-Neelon, 2018; Dev et al., 2020). Exploring how these feeding practices align with teaching practices by examining their associations, may offer insight in how to offer support to improve teaching practices during the mealtime.

In addition, there is little evidence documenting how teachers' practices are associated with children's behavior during the ECE mealtime. Much of the current understanding of how teacher practices during the mealtime may influence children's healthy eating behavior is based on empirical findings of parental practices in the home (Burroughs & Terry, 1992; Fiese et al., 2012; Skinner et al., 1998). In addition, most of these studies examining children's behavior during mealtime are focused on children's food and nutrient intake (e.g., Magarey et al., 2011). There is limited research exploring children's engagement and learning (i.e., cognition, language, and social) behaviors during the ECE mealtime. Yet, understanding children's behavior is important to capture how children respond to teachers' practices and have a more accurate representation of the quality of the mealtime routine (Hallam et al., 2016). Therefore, this study aims to better understand the ECE mealtime as an important setting for supporting children's

learning and development by examining associations between teaching and feeding practices and their associations with children's behaviors during the mealtime.

Teachers' Practices and Children's Behaviors During the Mealtime

Associations Between Teaching and Feeding Practices

The ECE mealtime is a unique time for implementing teaching practices. Teachers serving children five years old and younger would best serve the needs of the whole child during the mealtime by providing high-quality teaching and feeding practices. High-quality teaching practices can be drawn from guidelines of developmentally appropriate practices that provide instructional support to stimulate children's higher-level thinking and connection to real-world concepts while maximizing learning time. In addition, high-quality teaching practices support children's emotional, social, and behavioral needs through building trusting and secure relationships (Burchinal, 2018; La Paro et al., 2008; National Association for the Education of the Young Child [NAEYC] 2019, 2020; Pianta et al., 2008). High-quality feeding practices also emphasize positive teacher–child interactions but are focused more on supporting children's development of healthy eating behavior, which includes children's ability to choose and eat healthy foods and regulate food intake (Benjamin-Neelon, 2018).

Conceptual similarities exist between characteristics of high-quality teaching practices and feeding practices. For instance, recommendations for both high-quality teaching and feeding practices guide teachers to be responsive to children's interest and needs and serve as a role model. NAEYC endorses in their position statement for Developmentally Appropriate Practices (DAP), that teachers role model positive behaviors, attitudes, and problem-solving skills when teaching (NAEYC 2020). The

Academy for Nutrition and Dietetics (AND) outline in their position statement on *Benchmarks for Nutrition in Child Care* (Benjamin-Neelon, 2018), that teachers practice role modeling by eating healthy foods while showing enthusiasm (e.g., Yum! These carrots are delicious!). *Benchmarks* also suggests teachers are sensitive to children's cues and role modeling recognition of their own internal states of hunger and fullness (Benjamin-Neelon, 2018; Hendy & Raudenbush, 2000). Similarly, DAP (NAEYC, 2020) and AND (Benjamin-Neelon, 2018) also recommend teachers provide supportive praise by acknowledging and encouraging children's efforts as a teaching practice and when a child chooses healthy foods as a feeding practice (Tovar et al., 2018).

However, beyond the conceptual similarities, little is known about the associations between high-quality teaching and feeding practices. There has been one study by Malek-Lasater et al. (2021) that examined associations between measures of classroom practices and feeding practices. This study found that the feeding practices of role modeling, peer modeling, and supporting eating self-regulation were positively associated with teachers' practices supporting emotional and behavioral support. Feeding practices of role modeling, sensory exploration, and supporting eating self-regulation were also associated with teachers' instructionally supportive practices. However, this previous study measured teaching practices during classroom activities outside of the mealtime (e.g., free play, large group, small group) and did not capture how the quality of teaching practices during the mealtime are similar to, and associated with, the quality of feeding practices. Given that some studies suggest that the quality of teaching practices may differ during the mealtime compared to classroom activities (Degotardi, 2010; Hallam et al., 2016), it is important to examine associations of high-quality teaching and

feeding practices used during the mealtime. In addition, high-quality teaching practices (i.e., DAP) are widely known and used in the field of ECE, whereas feeding practices endorsed by the AND (Benjamin-Neelon, 2018) and nutrition-focused professionals are not as widely known or applied in the classroom (Citation). Therefore, understanding associations between high-quality teaching and feeding practices during the mealtime can provide valuable information to help know where to support teachers to provide both types of practices during the mealtime to best support children's learning and health needs.

Children's Behaviors During the Mealtime

When examining the quality of a learning environment such as the mealtime, it is important to not only consider teaching practices used, but also the experience of the children. Research has considered children's eating during the mealtime in terms of food consumption (e.g., Magarey et al., 2011) and trying new foods (e.g., Dovey et al., 2008). However, there has been little exploration of children's engagement and behavior related to learning or social interactions during the mealtime in ECE settings.

The ability for a child to choose and eat healthy foods emerges at a young age and can impact long-term health and well-being (Benjamin-Neelon, 2018). Children's tastes evolve as they age, and young children may exhibit a reluctance to try to foods, particularly certain fruits and vegetables with bitter tastes (Dovey et al., 2008). This reluctance is understood to be a normal part of children's developmental process (Rozin, 1979; Rozin & Vollmecke, 1986) and is often displayed when an unfamiliar food is presented (Birch & Fischer, 1998). In addition, children are born with an innate ability to regulate their intake of food, which means to eat when hungry and stop when full (Birch

et al., 1991; Fox et al., 2006). It is understood that children are capable of eating in response to internal cues of hunger and not eating in response to internal cues of fullness (Baumeister & Vohs, 2004). This ability of regulating food intake has been found to prevent over or undereating, thus, maintaining a healthy weight and preventing diseases (Benjamin-Neelon, 2019; Frankel et al., 2012; Johnson, 2000).

Eating in the classroom also offers unique opportunities for other mealtime behaviors and learning to be displayed. Children can practice socializing with their peers and teachers during mealtime which may look like asking questions, sharing about experiences at home, or talking about their food (Mita et al., 2015). Locchetta et al. (2017) found that the mealtime can have an impact on increasing children's social interactions when Family Style Meal Service (FSMS) is used, as its implementation was associated with increases in children initiating conversations. Self-serving is also a component of FSMS and can foster learning as children can practice motor skills such as using utensils or pouring (Endres & Rockwell, 1980; Fletcher et al., 2005). Mealtime may also provide a space for children to display their learning of colors, food groups, language, or shapes (Mita et al., 2015). While studies have examined children's learning and social behavior during classroom activities, very few have examined children's engagement in learning behaviors during the mealtime.

The understanding of the development of children's eating behaviors and learning has come about based on studies focusing on children's eating experiences with parents and at home (e.g., Burroughs & Terry, 1992; Fiese et al., 2012; Skinner et al., 1998). Beyond examining food consumption and food acceptance, there is limited research

examining children's eating behaviors in the ECE classroom, including children's eating regulation or other learning related outcomes developed and practiced during mealtime.

Associations Between Teacher Practices and Children's Behavior During the Mealtime

Much of the current research related to associations between teacher practices and children's behavior during the ECE mealtime focuses on children's eating and consumption of nutritious foods. This is because the ECE mealtime is understood to be highly influential in shaping children's eating behaviors (Benjamin-Neelon, 2018). In addition, research examining associations between teacher practices and children's behaviors during mealtime is primarily based on research focused on parent practices and the home feeding environment. There are a handful of studies examining the associations between specific feeding practices and children's healthy eating and self-regulation in the ECE setting.

Extant studies focused on teacher mealtime practice (e.g., role modeling) and its association with children's health have shown equivocal results. For example, Hendy and Raudenbush (2000) found that preschool children were more likely to accept new foods when teachers combined role modeling and enthusiastically commenting on these foods. But Gubbles et al. (2009) found that children had overall more food intake when teachers ate with them regardless of whether they were role modeling eating the same foods or role modeling eating unhealthy foods in front of children.

Children's choice of healthy food may require a learned taste acceptance brought about by repeated exposure (Birch & Marlin, 1982; Rolls, 1994). When children are supported in their exploration of food through each of the senses (Dazeley et al., 2015)

and allowed to decide when they are ready to try a food (Satter, 2012), they can show more willingness to try new and nutritious foods and display an overall interest in food (Satter, 2012).

Research continues to support the notion that significant adults in young children's lives, as well as the mealtime environment, can influence their eating behaviors and, therefore, influence the child's overall health and reduce obesity rates (Klesges et al., 1983). In terms of children's eating self-regulation, teachers can support children by allowing them to choose how much they want to eat from the foods served, and by helping them read and respond to their states of hunger and fullness (Johnson, 2000; Satter, 2012). On the other hand, children's ability to regulate food intakes can be negatively influenced by the external environment including teacher practices, particularly when children are five years of age or younger (Benjamin-Neelon, 2018; Birch & Fisher, 1988). In other words, children may eat in response to external pressures, bribes, rewards, or punishments even if they are not hungry, which may undermine children's eating self-regulation. As a result, children may overeat or show frequent food refusals, picky eating, or an overall lack of interest in food (Satter, 2012).

A few studies have looked at the impact of teachers supporting socialization during mealtime. For example, Locchetta et al. (2017) found increased levels of social initiations in preschool children when family style meal service was implemented, as children are often prompted to pass serving bowls and cooperate during times of self-serving. Harte et al. (2019) observed children during mealtimes and their peer and teacher interactions. Results showed that teachers were observed aiding children while they practiced using utensils and self-serving. These times of assistance prompted verbal

interactions about children's home life and about the food being served. Teacher-child interactions were also observed to prompt peer socialization where teachers could support respect for one another and share stories with one another. More research is needed to understand how mealtime practices (both teaching and feeding practices) are associated with children's behavior in the classroom.

Purpose

The current literature has not examined associations between high-quality teaching and feeding practices. In addition, there is a lack of observational studies examining young children's (age 2-5) engagement and behavior during the mealtime, or how these engagements or behaviors are associated with teachers' teaching and feeding practices at mealtime. To better understand the mealtime as a learning environment, more research is needed. Therefore, to address the gaps in research, this study seeks to answer the following:

Research Questions

1) What are the relationships between high-quality teaching practices and high-quality feeding practices during the mealtime?
2) What are children's engagement and behaviors during mealtime and their associations with teacher practices during mealtime?

Methods

Research methods for this study included observations of teachers' mealtime practices and children's engagement and behaviors during the mealtime. Quantitative data analysis was used to answer the research questions and acknowledge the nested nature of the child-level data. A portion of the video and survey data was collected by the

researcher (i.e., primary source). The remaining data came from secondary video and survey data collected by a research team at another university in a Midwestern state. Both sets of videos were recordings of either the breakfast or lunch time routine.

Participants

Participants in this study included ECE teachers and children whom they served in an ECE center-based program in two Midwestern States in the United States from a combination of a primary source (collected by the researcher) and secondary data. For both data collected by the researcher and secondary data, the setting for this study was the participating teacher's classroom's typical breakfast or lunch mealtime location. The participating teachers and children come from various ECE settings including private center-based programs and Head Start programs. Inclusion criteria set by the researcher for teachers included being a full-time teacher at an ECE center-based program in a classroom that serves children between the ages of 2-5 years old. A total of 29 ECE teachers serving children age 2-5 years old participated in this study (86% Female). The majority of teachers were White (86%; 9% Black) and had an average of 36 years (Range 21-64). Teachers were educationally diverse (41% high school/GED/some college; 18% associates/2-year degree; 41% bachelor's degree or higher). Teachers had an average of eight years working in the field of ECE (Range 1-20) and six worked at Head Start programs during the time of data collection.

Criteria for children to be included in the study were that they be between the ages of 2 and 5 years old, be in a classroom with their participating teacher, parent permission was granted for the child to participate, and child ascent was obtained. A total of 75 children participated in the study. Children ranged in age from 2-5 years old.

About half of the children were female (48%; 52% male). All children were in a participating teachers' classroom for an average of 2.6 children per classroom.

Measures

Data were collected through a brief questionnaire that provided demographic information about the teachers, and classroom observation of high-quality teaching practices and feeding practices. Each measure is described below. A mealtime time sampling tool measured individual children's engagement and behavior during mealtime.

Demographic Information

A brief 10-minute questionnaire asked teachers questions about their demographic information such as age, gender, and years teaching in the field. Teachers completed the questionnaire on their own time before the observation began.

High-Quality Teaching Practices

High-quality teaching practices during the mealtimes were measured by the Toddler and the Pre-K versions of the Classroom Assessment Scoring System (CLASS Toddler, La Paro et al. 2012 and CLASS Pre-K, La Paro et al. 2008). The CLASS measures the quality of teacher–child interactions in classroom setting on a 7-point Likert scale (low =1–2, mid-range=3–5, high=6–7). The CLASS-Toddler has two domains of Emotional and Behavioral Support (Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Child Perspectives, and Behavior Guidance) and Engaged Support for Learning (Facilitation of Learning and Development, Quality of Feedback, and Language Modeling). High internal consistency (α= .92 for Emotional and Behavioral Support, and α= .86 for Engaged Support for Learning) has been reported (e.g., La Paro et al. 2014). The CLASS-Pre-K has three domains of Emotional Support (Positive

Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspectives), Classroom Organization (Behavior Management, Productivity, and Instructional Learning Formats), and Instructional Support (Concept Development, Quality of Feedback, and Language Modeling). The CLASS Pre-K has been deemed valid and reliable with internal consistency alpha scores for the three domains ranging from .82 to .92 (Downer et al. 2012; Johnson et al. 2017).

The CLASS-Toddler and the CLASS Pre-K have a different number of domains and dimensions and were reorganized into two domains for this study: Emotional-Behavioral Support and Instructional Support. These two subscale scores were used for analysis. Specifically, Emotional-Behavioral Support focuses on teacher and child expressions of emotions, the responsiveness and sensitivity of the teacher, and the degree to which children's perspectives are considered and independence is fostered. This composite variable included five dimensions (e.g., positive climate, teacher sensitivity, behavior guidance) from Emotional and Behavioral Support domain in CLASS Toddler and six dimensions (e.g., classroom climate, teacher sensitivity, behavior management/guidance) from Emotional Support and Classroom Organization domains in CLASS PreK. Instructional Support focuses on the ways in which teachers interact with children to facilitate learning activities to effectively support development, learning, and language. This composite variable includes three dimensions (e.g., facilitation of learning and development, language modeling) from CLASS Toddler and three dimensions (e.g., concept development, language modeling) from CLASS PreK. The researcher and two other trained and certified CLASS researchers scored 20% of the videos together to

establish inter-rater reliability. Among the researchers an inter-rater reliability of 90% was established.

High-Quality Feeding Practices

High-quality feeding practices during mealtime were measured using the Mealtime Observation in Childcare (MOCC) (Dev et al., 2020), which is an observation tool designed to measure ECE teachers' mealtime practices in classrooms serving children between ages 2 to 5 and was developed by adapting previously validated measures (Hughes et al., 2007; Swindle et al., 2017; Tovar et al., 2018) and the AND best practice feeding domains (Benjamin-Neelon, 2018).

The most updated version of the MOCC has 43 questions clustered into 12 subscales plus an area to record characteristics of the meal (e.g., type of meal, length of meal, number of children and staff present, foods served, and food units). The 12 subscales are Mealtime Environment, Style of Meal Service, Role Modeling (Sitting Together, Eating Together, Verbal Communication), Sensory Exploration, Offering Condiments and Dips, Peer Modeling, Pressure, Praise, Rewards, and Threats, Provider's Response to Food Refusal, Self-Regulation, End of Meal and Overall Feeding Style. As suggested by the MOCC authors, responses are to be coded as "no, not observed," "yes sometimes (1-2 times)," "yes regularly $\geq$ 3," or "unable to observe or not applicable." For scoring, responses were converted to a numerical scale (0 = no, not observed, 1 = yes, sometimes, 2 = yes, regularly > 3 times). The code "unable to observe" is to be used if observers could not observe a situation. For example, if no vegetable or fruit was served then the observer could not observe the teacher eating vegetables or fruit and the code "unable to observe" was used. However, if vegetables were served and the

teacher was not eating vegetables, then the response was “no, not observed.” Scores are not penalized for questions marked as “unable to observe or not applicable” therefore the number of items in the subscale with this code is deducted from the total possible points scored (the denominator for the calculation) as to not affect the score. Total points are summed for each subscale and divided by the total possible points for that subscale. Subscale means are then multiplied by 10. Some items are to be reverse coded in order to reflect the desirable practice with a higher number. The researcher was previously trained on how to use the MOCC and deemed reliable. For this study, the researcher and three other trained and reliable observers scored 20% of the videos and achieved 90% agreement across all subscales.

Children’s Behavior During Mealtime

Children’s behavior during the mealtime was measured using a mealtime time sampling tool. The mealtime time sampling tool was developed for the purpose of this study by adapting portions of the Bob and Tom’s Method of Assessing Nutrition (BATMAN, Klesges et al., 1983). BATMAN is a time sampling tool that evaluates child eating behavior and concurrent parental behavior. Psychometric properties for the BATMAN include interobserver agreement of 92% for parent behavior and 96% for child behavior. Weighted Kappa coefficients ranged from .88 to .94. Test-retest correlations ranged from .61 to .94 (Klesges et al., 1983).

Child behaviors were categorized into 12 different behaviors. Categories include bites/places food in mouth; explores food or non-food material; presents a problem/crying; social interaction/verbalization; away from table; engaged in other non-food activity; request food/express hunger; refuse food/express satiety;

waiting/wandering; compliance; self-serve; and other. The time sampling also noted whether there was no teacher interaction, the teacher was interacting with the child; or interacting with the whole table at mealtime, however this portion was not used for the purpose of this study (See Appendix A).

The mealtime time sampling documented the frequency of a child's mealtime behavior. Five-minute segments of each video were randomly selected by the researcher between the time children were present at the mealtime table in the video and when most children had left the table or the video ended (whichever came first). These five-minute segments (Morita & Kobayashi, 2013; Nakazawa et al., 1997) of the videos were coded over 10 second intervals, resulting in 30 observation points. The researcher and another researcher coded the 15% of the videos together an established an average of 90% inter-rater reliability.

Procedures

Recruitment for participants of this study began by contacting directors from ECE settings (private center-based programs, Head Start centers, college/university lab schools) for the primary source of the data (i.e., data collected by the researcher). All steps were taken to ensure confidentiality of all participants was maintained, as outlined by the IRB from the researcher's institution. For the primary source of the data, once receiving agreement from the ECE directors, the researcher visited centers in-person and/or via email to recruit teachers. Teachers were also invited to participate in the study through a social media posting (Facebook). Teachers were provided a description of the study. Those who agreed to participate were given a questionnaire and consent form to complete. Once the consent form was signed, the researcher provided packets to

distribute to parents of the children in the classroom to invite children to participate. Packets included a parent permission forms and consent forms. Once parents returned consent forms agreeing to allow their child to participate, children were asked to provide additional verbal ascent to participate.

In addition, secondary data were collected by another research team at a university in a Midwestern state. This data was collected for a larger study and IRB approval was granted and teacher and child consents were obtained by the research team. Data was shared with the researcher through a password-protected file shared through the university's secured server.

Questionnaires were collected on the day of observation for the videos collected by the researcher. Video recordings of the mealtime were used to observe children's behavior during mealtime and teacher practices during mealtime. For data collected by the researcher, video recording devices (two per classroom) were strategically set by the researcher to ensure the video captured both the participating children's behavior during mealtime and the participating teacher during mealtime. Video recording devices were also set to place children not participating in the study out of view of the camera. When this was not possible teachers placed participating children next to each other in a way that created minimal or no disruption the natural flow of the mealtime. The video observations began when the mealtime preparation started and ended when the last child eating left the table.

Data Analysis

The Statistical Package for Social Sciences (SPSS) version 26 and Stata SE 17 Software for Statistics and Data Science were used for all data analysis. High-quality

teaching practices, feeding practices, and frequencies of children's engagement and behavior at mealtime were analyzed using descriptive statistics, including means and standard deviations of CLASS subscale scores and MOCC subscale scores respectively, and percentages of children's engagement and behavior. Pearson product-moment correlations were used to examine the relationships between the CLASS subscale scores MOCC subscale scores.

The nature of the data for associations between teaching practices and children's engagement and behavior consists of a two-level nested structure where the children (level 1) are nested within teachers (level 2), meaning that the smaller levels of analysis of children's behavior are contained within the larger grouping of teachers. This type of data structure lends to the use of multilevel modeling analysis (Robson & Pevalin, 2015). However, due to the sample of size of approximately 2.5 children per teacher, multilevel modeling analysis would not yield the most accurate results. Therefore, to analyze associations between teacher practices and children's engagement and behavior at mealtime, OLS multiple regression with adjusted standard errors for clustering at the classroom level was used.

Results

For research question one, descriptive subscale scores for feeding practices showed that teachers had mid-range scores for most of the subscales. Teachers had scores in the upper-mid range for Mealtime Environment and Role Modeling (Sit, Eat, Verbal). The Mealtime Environment subscale captured practices related to providing child-sized furniture and visuals of healthy foods. The Role Modeling subscale captured practices related to the teaching sitting with the children (Sit), the teachers eating the same, healthy

foods with children (Eat), and teachers enthusiastically talking about healthy foods while pairing food with nutritional benefits (Verbal). Teachers overall had lower scores in Peer Modeling and Self-Regulation. The Peer Modeling subscale captures if teachers prompt other children to model healthy eating (e.g., Jon tried his beans. Would you like to try one?). The Self-Regulation subscale captures practices that teachers use like talking to children about hunger and fullness and cueing them to their internal states (e.g., Are you still hungry? Would you like more?). Descriptive subscale scores for high-quality teaching practices also showed teachers had higher scores in Emotional-Behavioral Support than Instructional Support overall but subscale scores fell in the mid to low range for both. Teaching practice subscale scores also showed a low variability in ranges for both Emotional Behavioral Support and Instructional Support (Table 1).

Correlations between high-quality teaching practices and responsive feeding practices (Table 2) showed that Emotional Behavioral Support was positively correlated with the feeding practices of role modeling (verbal) and support of self-regulation. Instructional Support was positively correlated with role modeling (verbal) and sensory exploration, with a stronger association with sensory exploration.

Table 1

Descriptive Statistics of Teaching and Feeding Practices in During the Mealtime (n=29)

			Range	
	M	SD	Potential	Actual
Feeding Practices				
Mealtime Environment	8.0	2.5	0-12	3-12
Style of Meal Service	6.2	1.7	0-12.8	2.8-8.9
Role Modeling: Sitting	7.8	3.6	0-15	2.5-15
Role Modeling: Eating	7.9	2.6	0-11.4	2.9-11.4
Role Modeling: Verbalize	13.8	3.7	0-20	6.7-20
Sensory Exploration	10.1	5.4	0-20	0-20
Peer Modeling	1.4	3.5	0-20	0-10
Pressure, Praise, Rewards and Threats	15.6	1.6	0-20	11.8-17.7
Self-Regulation	7	2.4	0-20	3.3-12.2
High-Quality Teaching Practices				
Emotional-Behavioral Support	4.4	1.0	1-7	2.7-5.8
Instructional Support	2.4	0.9	1-7	0.9-3.9

For research question two, descriptive statistics for children's engagement and behavior revealed that the most frequently occurring was children's eating (45%). Children's talking (15%) and children's waiting/wandering (15%) were the next most frequently occurring. Children showed an exploration of food and utensils at rate of 6.4%, followed by self-serving (4.6%) and learning activity (4.3%) (Table 3). Results for associations between children's engagement and behavior and teacher's teaching and feeding practices are represented in terms of children's *eating* engagement (Table 4), *self-regulation promoting behaviors* (Table 5), and *learning engagement* (Table 6). Children showed *eating engagement* related to their taking bites, licking, or

actively eating foods and a lack of engagement when they were waiting/wandering during the mealtimes and away from the table. Children showed engagement in *self-regulating promoting behaviors* when they requested or refused food or practiced self-serving. Children showed *learning engagement* when they were exploring food/utensils, talking/socializing, and engaging in learning activities.

Table 2

Correlations Between High-Quality Teaching Practices and High-Quality Feeding (n=29)

	High-Quality Teaching Practices	
High-Quality Feeding Practices	Emotional-Behavioral Support	Instructional Support
Mealtime Environment	.26	.24
Style of Meal Service	.33	.15
Role Modeling (Sit)	.26	.31
Role Modeling (Eat)	.23	.35
Role Modeling (Verbal)	.54**	.46*
Sensory Exploration	.33	.51**
Peer Modeling	.19	-.01
(Avoidance of) Pressure, Praise, Rewards, Threats	.12	-.15
Self-Regulation	.47**	.31

***p < .01; *p < .05*

Table 3

Frequency of Children's Engagement and Behavior at Mealtime (n=75)

Children's Engagement and Behavior	%	SD
Eating	45.8%	.27
Explore food/utensils	6.4%	.07
Express a problem	0.7%	.02
Talking/Socializing	15.4%	.15
Away from table	0.9%	.04
Learning activity during mealtime	4.3%	.08
Food request/express hunger	2.5%	.05
Food refusal/express fullness	1.8%	.04
Waiting/wandering	15.5%	.27
Compliance	2.0%	.03
Self-Serve	4.7%	.08
Other (Miscellaneous)	2.5%	.03

After controlling for teacher's Head Start status, years in the ECE field, and children's gender, results showed, in terms of children's *eating engagement*, the feeding practice subscale of Sensory Exploration was positively associated with children's eating. There were no significant associations between teacher mealtime practices for children's waiting/wandering or being away from the table. For children's *self-regulation promoting behaviors*, Provider Response to Food Refusal feeding subscale was negatively associated with children's self-serving, but positively associated with children refusing food. The avoidance of Pressure, Praise, Rewards, and Threats feeding subscale was positively associated with children's' self-serving. The feeding practices of Self-Regulation, Role Modeling (Eat), and Peer Modeling subscale was positively associated with children refusing food. For children's *learning engagement* behaviors, results

showed that the teaching practice subscale of Emotional Behavioral Support was positively associated with children's exploration of food and negatively associated with children engaged in learning activities. The teaching practice subscale of Instructional Support was positively associated with children's talking and engagement in learning activities during the mealtime. The feeding practice of avoidance of Pressure, Praise, Rewards, and Threats was positively associated with children exploring food/utensils. Sensory Exploration feeding subscale was positively associated with children's talking.

Table 4

Associations Between Teaching and Feeding Practices and Children's Eating Engagement Behaviors

	Eating			Waiting/Wandering			Away from Table		
	Coeff	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**
Head Start	1.16	1.08	-1.08, 3.40	-1.12	.84	-2.86, .63	-.07	.64	-1.41, 1.27
Years Teaching in ECE	.13	.24	-.37, .62	.08	.18	-.31, .46	.16	.19	-.24, .56
Child Gender	-.06	.27	-.62, .50	-.03	.22	-.49, .43	.01	.16	-.32, .35
Emotional Behavioral Support	-.28	.68	-1.7, 1.1	.05	.39	-.75, .86	-.12	.34	-.82, .58
Instructional Learning Support	.09	.45	-.85, 1.0	-.59	.29	-1.20, .03	.06	.32	-.61, .73
Mealtime Environment	.24	.26	-.30, .79	-.36	.19	-.77, .04	-.01	.11	-.25, .23
Style of Meal Service	-.50	.51	-1.6, .56	.21	.32	-.47, .90	-.03	.19	-.42, .37
Role Model (Sit)	.12	.29	-.49, .73	.32	.26	-.23, .86	.00	.16	-.34, .35
Role Model (Eat)	-.37	.51	-.14, .69	.03	.40	-.82, .87	-.11	.23	-.59, .36
Role Model (Verbal)	.00	.27	-.55, .56	-.02	.33	-.71, .68	-.07	.09	-.26, .12
Sensory Exploration	.51**	.16	.17, .85	-.02	.22	-.47, .44	.11	.15	-.19, .42
(Avoidance of) Pressure Praise Rewards Threats	-.68	.34	-1.39, .036	-.38	.36	-1.13, .37	-.07	.16	-.41, .27
Self-Regulation	-.35	.18	-.72, .03	.16	.21	-.28, .61	.17	.16	-.18, .52
Peer Modeling	-.79	.42	-1.67, .09	.45	.28	-.14, 1.04	-.18	.26	-.73, .37

**p < .01; *p < .05

Table 5

Associations Between Teaching and Feeding Practices and Children's Self-Regulation Promoting Behaviors

	Food Request			Food Refusal			Self Serve		
	Coeff	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**
Head Start	-2.09	.71	-3.58, -.59	-1.22	.47	-2.20, -.24	-.64	.70	-2.11, .82
Years Teaching in ECE	-.05	.13	-.32, .22	.08	.11	-.16, .31	.01	.15	-.30, .32
Child Gender (Female)	-.34	.19	-.73, .05	-.18	.43	-1.08, .71	-.00	.32	-.68, .67
Emotional Behavioral Support	.99*	.37	.22, 1.75	-.26	.26	-.80, .28	.09	.39	-.73, .90
Instructional Learning Support	-.18	.30	-.82, .45	-.22	.19	-.62, .19	-.55	.29	-1.17, .06
Mealtime Environment	.09	.11	-.14, .33	-.05	.11	-.27, .18	-.16	.14	-.46, .14
Style of Meal Service	-.08	.20	-.50, .35	.12	.15	-.19, .43	-.26	.27	-.82, .30
Role Model (Sit)	-.33	.29	-.93, .26	.33	.19	-.05, 0.72	.29	.25	-.22, .81
Role Model (Eat)	-.30	.30	-.94, .33	.53*	.19	.12, .93	.61	.30	-.02, 1.24
Role Model (Verbal)	.08	.22	-.39, .55	.08	.17	-.27, .44	-.01	.19	-.42, .41
Sensory Exploration	.12	.15	-.19, .43	-.22	.14	-.52, .07	.07	.17	-.29, .43
(Avoidance of) Pressure Praise Rewards Threats	-.27	.32	-.94, .39	-.01	.19	-.41, .39	.58*	.24	.08, 1.08
Provider Response to Food Refusal	.51	.28	-.07, 1.10	-.39*	.15	-.71, -.08	-.39*	.18	-.77, -.01
Self-Regulation	-.30	.28	-.89, .28	.43**	.12	.17, .69	.02	.16	-.31, .35
Peer Modeling	-.75	.46	-.45, .33	.68*	.27	.12, 1.24	-.07	.29	-.69, .55

**p < .01; *p < .05

Table 6

Associations Between Teaching and Feeding Practices and Children's Learning Engagement Behaviors

	Talking			Learning Activity			Explore Food/Utensils		
	Coeff	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**	**Coeff**	**Robust Std. Err**	**95% CI [LL, UL]**
Head Start	.68	.74	-.86, 2.21	-.79	.38	-.01, 1.59	-1.68	.78	-3.30, -.07
Years Teaching in ECE	-.08	.14	-.38, .22	.05	.11	-.19, .28	-.36	.16	-.69. -.04
Child Gender (Female)	.47	.29	-.13, 1.01	-.21	.22	-.67, .25	-.09	.31	-.73, .54
Emotional Behavioral Support	-.47	.41	-1.34, .39	-.66**	.22	-1.12, -.19	.80*	.38	.02, 1.58
Instructional Learning Support	1.00**	.35	.27, 1.74	.60**	.67	.26, .95	-.53	.42	-1.40, .34
Mealtime Environment	.25	.14	-.04, .53	-.10	.13	-.37, .16	.01	.12	-.24, .26
Style of Meal Service	.21	.29	-.41, .84	.06	.19	-.35, .47	.43*	.17	.08, .79
Role Model (Sit)	-.36	.19	-.77, .06	-.14	.16	-.48, .20	-.12	.24	-.62, .38
Role Model (Eat)	.04	.31	-.61, .69	-.37	.20	-.78, .05	.27	.19	-.14, .68
Role Model (Verbal)	.16	.23	-.32, .65	.37*	.18	.01, .74	-.08	.20	-.49, .35
Sensory Exploration	-.54*	.21	-.98, -.10	-.23	.16	-.56, .11	-.43	.29	-1.05, .19
(Avoidance of) Pressure	.42	.25	-.09, .93	.12	.22	-.35, .58	.53**	.17	.17, .89
Praise Rewards Threats Self-Regulation	-.03	.16	-.37, .31	.39*	.17	.04, .74	.26	.14	-.04, .56
Peer Modeling	.44	.28	-.14, 1.02	-.23	.14	-.52, .07	.56	.37	-.22, 1.34

**p < .01; *p < .05

Discussion

The purpose of this study was to better understand the ECE mealtime as an important setting for supporting children's learning and development by examining associations between high-quality teaching and feeding practices and their associations with children's engagement and behaviors during the mealtime. Given that the mealtime offers a unique time of day where teachers can potentially support children's learning and healthy eating behaviors, this study highlights the type of interdisciplinary work that is needed to advance the understanding of how to better align recommendations for teaching and feeding practices in their application to the ECE mealtime. By using observations, this study was able to provide a detailed examination of the mealtime experience and adds to the literature by being the first of its kind to explore moment to moment time sampling observations of children's engagement and behaviors during the ECE mealtime in conjunction with observed teaching practices.

In the examination feeding practices, results showed that teachers most often provided a mealtime environment that was equipped with the appropriate furniture and materials needed (e.g., child sized plates) to support children in their eating as well as provided role modeling in the form of eating, sitting, and verbalizing more than half of the time. Other studies have reported that teachers see themselves as a role model (Erinosho et al., 2012) which may help explain the current findings of teachers' strength in this area. Overall, teachers showed that they needed improvement in supporting teachers' usage of practices that support children's eating self-regulation. There are a few studies that have used the MOCC as an observation assessment tool, that have also found teachers are not frequently implementing practices that support children's eating self-

regulation (Dev et al., 2020; Malek-Lasater et al., 2021; Sleet et al., 2019). This could be related to teachers' not trusting that children can regulate their intake or their beliefs that controlling feeding practices (that hinder eating self-regulation) are more effective at getting children to eat (Dev et al., 2016).

A unique component to this study is the assessment of high-quality teaching practices using the CLASS (La Paro et al., 2012) during the mealtime. Findings from this study show that teachers are providing mid-level quality practices for emotional and behavioral support and low-quality practices for instructional support. These results are concerning given that children are typically at mealtimes at least 2-3 times per day (breakfast, lunch, snack) in a center-based program. They suggest that several times a day, children are not receiving high-quality emotional, behavioral, or instructional support. Experiences during the routines of the day can significantly impact the overall experience a child has in an ECE setting (Buell et al., 2016).

Furthermore, a similar study (Malek-Lasater et al., 2021) examined associations between teaching practices and feeding practices, however, Malek-Lasater et al. (2021) did not use an assessment of teaching practices during the mealtime, but rather during typical classroom activities (e.g., free play, centers). Scores related to Emotional Behavioral Support and Instructional Support from the study by Malek-Lasater et al. (2021) were comparable to the scores in this current study. Interestingly though, findings from this study showed a much smaller range of scores (i.e., current study EBS: 2.7-5.8 and ISL: 0.9-3.9 compared to EBS: 1.7-6.7 and ISL: 1-5.1) (Malek-Lasater et al., 2021). These findings extend the findings of other studies that show quality of engagement and instruction may be lower during routines such as the mealtime (Degotardi, 2010; Hallam

et al., 2016) and suggests that teachers may need more support to provide high-quality practices during the mealtime.

The findings on associations between teaching and feeding practices suggest that teachers who use higher-quality teaching practices that support emotional-behavioral support during the mealtime also use some higher quality of feeding strategies such as using verbal role modeling (e.g., "I like carrots!") and supporting children's eating self-regulation. In addition, findings show that teachers who use higher-quality teaching practices related to instructional support also use higher-quality of feeding practices of verbal role modeling and sensory exploration. These findings highlight areas where teaching and feeding practices may align. This alignment is important because teachers may be more familiar with teaching practices from their training and preparation. If feeding practices have common characteristics as teaching practices (e.g., role modeling using words for conflict resolution and verbally role modeling the enjoyment of healthy foods), teachers may be more apt to apply these practices to the mealtime routine. These similar characteristics may also serve as a common ground and a starting point for teacher trainings related to mealtime practices. These findings add to the current body of knowledge by being the first of its kind to examine measures of teaching and feeding practices used during the mealtime routine and can serve as a model for future interdisciplinary research.

Results of this study related to children's behaviors add to the current body of knowledge related to the ECE mealtime because there have been no studies to date that have provided an observational study of children's engagement and behaviors related to eating and learning. Findings highlight that while children spent more time eating during

the time sampled, it was less than half of the time. Children were also actively socializing with peers and teachers, engaged in exploration of their food and utensils, and engaged with learning activities. Children engaged in these behaviors regardless of teacher practices. These behaviors align with what we know to be true about the nature of children, in that they are always learning and exploring in their environment (Kamii & Ewing, 1996). Experiences with food and eating can be considered new learning opportunities for them.

On the other hand, the second most frequently observed child behavior in the time sampling was waiting/wandering, which suggests that there are missed opportunities to deepen children's understanding of the world around them. One explanation for the frequency of waiting/wandering may be related to how prepared the meal is or how the meal is served. FSMS provides a type of meal service where teachers sit and eat with the children and children are able to serve themselves from the food on the table. This type of meal service supports a wide use of feeding practices such as role modeling, peer modeling, and supporting eating self-regulation (Sigman-Grant et al., 2008). This type of service may also lend to more opportunities to engage children in learning. For example, as teachers and children are serving themselves, they could be engaged in conversations, practice turn-taking skills, or building on a skill such as counting by counting the number of scoops they serve themselves. These findings add to the understanding of the experience of the mealtime by showing that children may be experiencing more wait time than necessary and that there may be missed opportunities for learning.

Overall, findings related to children's engagement and behaviors during the mealtime highlight that the mealtime experience is different for children than it is for

adults. Eating was not the only activity children were engaged in. They were exploring foods or utensils they may have never seen before. Additionally, they were actively engaged in talking, learning activities, and self-serving when those opportunities were available. Adults may primarily focus on eating and socializing during mealtimes. However, children are in different developmental stages and are focused not only on eating, but also learning in their immediate environment which includes the mealtime. Thus, it is important for teachers having a strong foundational knowledge of child development and how to support the development of learning of the whole child across all contexts and routines.

This study also found that there are significant relationships between several aspects of teaching and feeding practices and children's engagement and behaviors during the mealtime. For example, teaching practices in emotional and behavioral support and instructional support are positively associated with children's behaviors related to learning engagement (i.e., children exploring food/utensils and children talking/socializing) and instructional support is associated with children's engagement in learning activities. These results suggest that children are exhibiting more of these learning engagement behaviors when teachers are implementing high-quality teaching practices. These findings align with current studies showing that higher-quality teaching have positive associations with children's outcomes (Curby et al., 2009; La Paro, Hamre, & Pianta, 2012; Mashburn et al., 2008; Mortensen & Barnett, 2015). However, this study extends current understandings by applying this concept to the mealtime routine, further supporting the notion that the mealtime can be an important learning environment.

Feeding practices related to avoiding pressure, praise, rewards, and threats were associated with children's self-serving as well as children's exploring of foods. These children's behaviors highlight children's promotion of eating self-regulation and learning engagement. These findings suggest that teachers who overall avoided practices of pressure, praise, rewards, and threats may provide a supportive environment conducive for children to exhibit these behaviors.

The findings on associations between teacher practices and children's engagement and behavior provide new insight into the mealtime experience. Previous studies tended to have a narrow scope of children's outcomes, typically exploring children's social behavior or children's food consumption of specific nutrients. The present study offers a more holistic perspective of teacher mealtime practices (i.e., teaching and feeding practices) and children's engagement in eating and behavior. This is one of the few studies that examined an association between observed both teachers' practices and children's engagement and behaviors.

Despite its new insights and contribution, the present study has several limitations. First, this study had a small sample size. Having more child participants would allow for multilevel modeling to best capture the nested nature of the data. Second, the time sampling captured only a portion of the mealtime rather than the whole duration. Third, this study did not capture program level quality measures, which could provide more insight for interpreting results. Future studies are need that capture the child, classroom, and program level perspectives. Fourth, the data for this study was collected prior to the changes that many center-based ECE programs experienced related to the COVID-19 pandemic. Many ECE programs had to change the way they structured

mealtimes to reduce the spread of the virus. Findings do not account for the new changes that have occurred or that may remain as a result of the pandemic.

Implications for Research and Practice

This study has implication for research and practice. First, this study has implications for research. This study can serve as a guide for future studies to adopt an interdisciplinary perspective as well as adding in children's perspectives of their experiences in ECE. These together can provide a more holistic picture of how to improve the field of ECE and to best support teachers and meet the needs of children. The development of comprehensive measures can aid in this effort.

Second, current measures are limited in capturing holistic experiences. As displayed in this study, measures to capture both feeding and teaching practices were isolated and separate. Examining how teaching and feeding practices align can help guide future development of measures that may capture the quality of experiences of routines. Third, this study has implications for teacher preparation and training. The mealtime can be an important learning opportunity. Teacher preparation programs and professional development workshops should incorporate how to apply high-quality teaching and feeding practices across all contexts to help teachers best meet the holistic needs of the children they serve.

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Time Sampling adapted from Bob and Tom's Method for Assessing Nutrition BATMAN (Klesges et al., 1983)

Child Name/ID#:_____ Child Age:_____ Teacher/Classroom:_____

Gender/Identifying Features:_____ Type of Meal: Morning Snack Lunch Afternoon Snack

1. Child Behavior (after every 10 seconds the following are always coded)

1: Bites or places food in mouth
2: Play with/Explores food or non-food items
3: Crying or present problem
4: Talking or other verbal social communication
5: Away from table
6: Engage in other (non-eating) activity
7: Food requests/Express Hunger
8: Refuse food/Express Satiety
9. Waiting/Wandering
10. Compliance
11. Serve Self
12: Other

2. If during 10 second observation, teacher encourages/discourages child activity, the following are coded

a.Who Interacted:
0: N/A
1: Teacher
2: Teacher to Whole group

b.Teacher Interaction
1: Physical encouragement
2: Physical discouragement
3: Verbal encouragement
4: Verbal discouragement
5: Present food
6: Offer food
7: Model eating
8: Model hunger/satiety
9: Offer choices or prompts
10: Provides information or engagement
11. Provides guidance
12. Other

1. Bites or places food in mouth
2. Play with/explores food or non-food items
3. Crying or present problem
4. Talking or other verbal social commination
5. Away from table
6. Engage in learning (non-eating) activity
7. Food requests/Express Hunger
8. Refuse food/Express Satiety
9. Waiting/Wandering
10. Compliance
11. Serves self
12. Other
13. Teacher spontaneous interaction

c. Child response to interaction
1. Bites or places food in mouth
2. Play with/explores food or non-food items
3. Crying or present problem
4. Talking or other verbal social commination
5. Away from table
6. Engage in other (non-eating) activity
7. Food requests/Express Hunger
8. Refuse food/Express Satiety
9. Waiting/Wandering
10. Compliance
11. Serves self
12: Other

	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	Notes
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Child Behavior Codebook

Child Behavior	Description	Examples
1. Bites or Places Food in Mouth	Child eats, bites, or places food in mouth	Child does not have to swallow food, child takes a bite of food, child puts food in mouth and takes it out, this can include teacher placing food in child's mouth
2. Explores Food or utensils with Senses	Child explores food through taste, smell, touch or other senses. Child explores utensils	child licks, smells, touches, messes, stirs, or crumbles food. Child manipulates tableware or other non-food items on the table
3. Crying or present problem	Child cries or shows upset feelings; Child presents a problem	Child cannot open container, child in conflict with peer, Child cannot reach serving bowl
4. Talking or Verbal Social Communication	Child uses verbalization during mealtime for socialization or to get attention or needs met.	Child communicates with teachers and/or peers; Child cries or whines during mealtime as a bid for attention; Child can talk about food or non-food related topics
5. Away from table	Child is not at the table	Child leaves the table or is away from the table
6. Engaged in learning non-food activity	Child is engaged in an activity other than eating that can be related to learning and not specific to food or utensil exploration	Child is playing with toy; Child is engaged in game or song or chant with class; Child is counting, Child is talking about shapes, colors, matching
7. Request Food	Child asks for food verbally or non-verbally	Child points to food so as to request it, asks for food, or begins to whine or cry for food; Child expresses hunger
8. Refuse Food/Express satiety	Child refuses food that is presented verbally or non-verbally	Child closes mouth, turns head away or shakes head no, pushes food away when presented, verbally refuses food; Child expresses fullness/satiety
9. Waiting/wandering	Child is waiting or wandering, not engaged in any specific activity	Child is sitting still; Child is fidgety or moving around in chair; Child is up and down; Child is looking around
10. Compliance	Child follows teacher's direction (applies for teacher interactions)	Child follows direction. Ex: Child sits down in response to teacher telling them to sit
11. Serves Self	Child scoops, pours, or places food on plate or in hands	Child scoops fruits, Child uses tongs to grab food for themselves; Child pours beverage
12. Other	Behaviors that do not fit in any category	Child watches other children; Child smiles/frowns, etc.

MANUSCRIPT III

Exploring Early Care and Education Teachers' Knowledge, Perspectives, Perceived Roles, and Goals and Their Influence on Mealtime Practices

This manuscript is prepared for submission to the peer-reviewed journal, *Early Childhood Research Quarterly* and is the third of three manuscripts prepared for a journal-ready doctoral dissertation.

Abstract

Research suggest teachers are not consistently using high-quality teaching and feeding practices during the mealtime. One way to understand how to improve ECE teacher practices is to explore what may shape and influence the practices they use during the mealtime from their own perspectives. Guided by a phenomenological approach, this qualitative study explored the influence of teachers' knowledge, perspectives, and perceived roles on their goals related to mealtime practices. Six themes emerged from the data: Teachers perceived mealtime as an opportunity for learning similar to other learning contexts; Teachers had varied knowledge about mealtime practices gained from limited training and personal experience; Teachers perceived themselves as a role model for healthy eating; Teaching goals at mealtime focused on building relationships and supporting social skills; Feeding goals at mealtime focused on making sure children did not go hungry and encouraging children to try new and healthy foods; and Teachers faced challenges related to time and challenging behavior. Findings have implications for teacher preparation, and how to better support teacher practices during the mealtime.

Keywords: Mealtime, Perspective, Theory of Planned Behavior

Exploring Early Care and Education Teachers' Knowledge, Perspectives, Perceived Roles, and Goals and Their Influence on Mealtime Practices

The early care and education (ECE) mealtime can potentially provide multiple opportunities for teaching given that children 2-5 years old in ECE programs can spend between 7-14% of their day participating in mealtime (i.e., breakfast, lunch, snack) (Chein et al., 2010). The ECE mealtime offers a unique setting where teachers can use practices that support both children's learning (Lochetta et al., 2017; Mita et al., 2015; Whorrall & Cabell, 2016) and their development of healthy eating behaviors (Benjamin-Neelon, 2008; Hendy & Raudenbush, 2000; Sigman-Grant et al., 2008; Dev, McBride et al., 2014; Johnson, 2000). For example, during the mealtime, ECE teachers can foster conversation skills to increase vocabulary (Whorrall & Cabell, 2016), support turn-taking and cooperation (Lochetta et al., 2017), and help children practice counting and color and shape recognition (Mita et al., 2015). Teachers can also foster healthy eating through role modeling (Hendy & Raudenbush, 2000; Sigman-Grant et al., 2008), while also supporting eating self-regulation (i.e., eat when hungry/stop when full) through responsive feeding practices like cueing children to their internal states of hunger and fullness (Dev, Speirs et al., 2017; Ramsay et al., 2010).

However, research suggest teachers are not consistently using high-quality teaching and feeding practices during the mealtime; *teaching practices* are defined as those that support children's learning and development in cognitive, motor, and social/emotional domains and *feeding practices* are defined as those supporting healthy eating behaviors. Teaching practices and teacher-child interactions have been shown to be less responsive, engaging, or interactive during mealtime compared to other classroom

activities (Buell et al., 2016; Degotardi, 2010; Hallam et al., 2016). Teachers have also been observed not consistently providing role modeling of healthy eating (Erinosho et al., 2012) or responsive feeding practices (Malek-Lasater et al., 2021; Sleet et al., 2019), and instead using controlling (non-responsive) feeding practices that override children's ability to regulate food intake (Dev et al., 2013; Dev et al., 2014; Dev, Speirs et al., 2014).

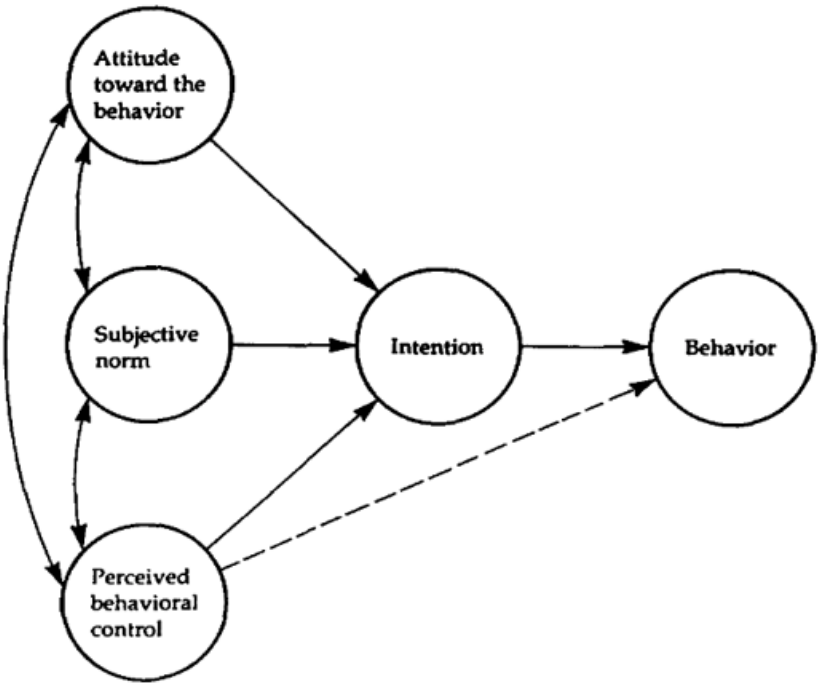
One way to understand how to improve ECE teacher practices is to explore what may shape and influence the practices they use during the mealtime from their own perspectives. Gaining insight directly from teachers regarding how they teach and why has been deemed an important method to use by researchers for several years (e.g., Clark, 1988; Pajares, 1992; Spodek, 1988). This is because teachers' knowledge, perspectives, perceptions, and goals can influence the practices they use in throughout classroom activities and routines like the mealtime (Dev, Speirs et al., 2017). Understanding teacher practices during the ECE mealtime can be complicated though, because there are often many factors that influence their practices, some of which teachers do not have control over, such as the timing or structure (i.e., how food is served) of the mealtime (Sigman-Grant et al., 2008). Using the Theory of Planned Behavior (TPB) (Ajzen, 1991) as a theoretical framework and a qualitative approach, this study will explore the influence ECE teachers' knowledge, perspectives, and perceived roles has on their goals for implementing teacher practices during the mealtime, while considering challenges that exist.

Theoretical Framework

The Theory of Planned Behavior (TPB) (Ajzen, 1991) offers a framework that may be useful in understanding what may shape and influence teachers' practices during the mealtime, as it is designed to represent what an individual has control over while considering one's motivation (i.e., intention) and perspectives. The individual's *intention* to perform a given behavior is a central factor in the TPB and is assumed to capture motivational factors that influence behavior. The stronger the intention to perform the behavior, the more likely the individual will perform the behavior to the extent of their control given their available resources and opportunities. The TPB suggests teachers' perspectives shape and influence their intention. These perspectives, according to the TPB, are presented as three separate types of beliefs: behavioral beliefs, subjective norm, and perceived behavioral control. *Behavioral beliefs* capture one's attitude toward the behavior and refers to the degree to which a person has a positive or negative assessment of the given behavior. *Normative beliefs* capture the subjective norm as a social factor that refers to the perceived social pressure to perform or not perform the behavior. *Control beliefs* refer to one's perceived behavior control, or the perceived ease or difficulty in performing the behavior (Ajzen, 1991) (Figure 1).

Figure 1

Theory of Planned Behavior (Ajzen, 1991)



TPB postulates that the more favorable teachers' perspectives (i.e., beliefs) toward the behavior, the stronger the individual's intention should be to perform the behavior under consideration. Previous research has used the TPB to explain teachers' intentions and behaviors (e.g., Salleh & Albion, 2004; Sugar et al., 2004; Zint, 2002) which highlights the valuable understanding of teacher behavior that can be gained by considering the teacher's perspective. However, TPB has not been used in the context of the ECE mealtime, and teachers' perspectives in terms of their knowledge and perceived roles related to mealtime practices are not fully understood. Also, ECE teachers' goals during the mealtime is one aspect of intention that has not yet been explored in regard to mealtime practices. Thus, this current study expands on the TPB by using it as a

framework to explore the influence ECE teachers' knowledge, perspectives, perceived roles, has on their goals for implementing teacher practices during the mealtime. In addition, non-motivational and external factors such as time and resources are considered challenges that can impact an individual's actual control over performing a given behavior (Ajzen, 1991). Therefore, this study will also explore what challenges ECE teachers experience related to implementing high-quality mealtime practices.

The Role of ECE Teachers' Knowledge, Perspectives, Intentions, and Reported Challenges in Mealtime Practices

As described earlier, teachers' practices during the mealtime are found to be less engaging (Buell et al., 2016; Hallam et al., 2016) and not consistently supportive of shaping healthy eating behaviors (Dev et al., 2013; Dev, Speirs et al., 2017; Erinosho et al., 2012; Malek-Lasater et al., 2021; Ramsay et al., 2010; Sleet et al., 2019). The high-quality mealtime practices should include support for both *learning and healthy eating*. However, studies that have sought the teachers' point of view to explore what may influence ECE teachers' mealtime practices are limited and have primarily focused on practices for promoting healthy eating without addressing much on supporting children's learning and social emotional development at mealtime (Dev, McBride et al., 2014; Dev, Speirs et al., 2014; Dev et al., 2016; Dev, Caraway-Stage et al., 2017; Dev, Speirs et al., 2017). Current research, as described in the following sections, has explored the influence of teachers' knowledge and perspectives on feeding practices. There are a few studies (e.g., Dev, Speirs et al., 2014; Dev, Carraway, et al., 2017) exploring ECE teachers' intention (in terms of motivators) for implementing feeding practices and what

challenges exist. However, there are no current studies examining teachers' goals or perceived roles regarding the mealtime.

The Role of Teachers' Knowledge in Feeding Practices

Research examining ECE teacher mealtime practices have found that teachers' knowledge through various professional development opportunities and trainings has an influence on teachers' feeding practices. For instance, Cooper and Contento (2019) showed that ECE teachers who received *Eat Well Play Hard in Child Care Settings* (EWPHCCS) training reported more favorable beliefs regarding compliance with recommended feeding practices (e.g., role modeling healthy eating and providing nutrition education) (Benjamin-Neelon, 2018) compared to nontrained teachers. Lanigan (2012) also found that training (Encouraging Healthy Activity and Eating in Childcare Environments (ENHANCE)) influenced teachers' beliefs related to their efficacy in supporting children's healthy eating. Also, Lanigan (2012) found that when teachers had more knowledge after the training, they reported fewer misconceptions about feeding practices and improved in implementing recommended feeding practices.

Dev, Speirs et al. (2017) also found that ECE teachers' knowledge and understanding of the Child and Adult Care Food Program (CACFP) portion size regulations shaped their practices. For instance, some ECE teachers understood portion size requirements to mean what children should eat rather than what should be offered to children, and thus used more controlling feeding practices like pressuring children to eat. Their study (Dev, Speirs et al., 2017) also found teachers' knowledge and understanding about the availability of food at the center where they worked shaped their practices; some teachers understood there was often not enough food for seconds, so they did not

allow children to choose how much they wanted to eat. Ramsey et al. (2010) adds to these finding by noting that ECE teachers may not understand how influential they are to shaping children's eating self-regulation. Dev et al. (2016) further adds that teachers may have misconceptions about what a controlling feeding practice is, which could influence their use of responsive feeding practices. For instance, teachers in this study reported they did not use controlling feeding practices, however when asked to describe their approach, they described characteristics of controlling feeding practices.

The Role of Teachers' Perspectives in Feeding Practices

Previous research found that teachers' perspective on children's healthy eating and learning and effective ways to support those outcomes during the mealtime, may determine to their practices and interaction with children. For example, when exploring ECE teachers' use of responsive feeding practices, Dev, Speirs et al. (2017) found that teachers' perspectives about whether or not young children can self-regulate food intake shaped their practices. ECE teachers who thought that children could regulate their food intake, reported using more responsive feeding practices like allowing them to choose how much to eat. On the other hand, ECE teachers who thought children could not regulate their food intake reported using more controlling feeding practices.

A similar study by Dev et al. (2016) examined ECE teachers' perspectives regarding their use of controlling feeding practices (e.g., pressuring children to eat or "make a happy plate"). They found that some ECE teachers reported they use controlling feeding practices because they thought controlling feeding practices were more effective than responsive feeding practices at getting children to eat, especially picky or stubborn children. In addition, some ECE teachers said they used bribes and rewards because they

thought that using this method made mealtime easier, commenting that they felt fear or pressure from parents to get children to eat. The findings of these studies suggest a significant association between teachers' perspectives on supportive mealtime practices and their actual practice and underscore the importance of understanding teachers' perspectives related to mealtime practices. There is limited research available on this area and the extant studies focused on feeding/eating, but not much on children's learning more holistically during the mealtime.

The Role of Teachers' Intention and Challenges in Feeding Practices

Studies examining teachers' intentions (in terms of motivators) found that teachers were motivated to implement practices they felt benefited children, but also expressed challenges to carrying out practices. Dev, Carraway, et al. (2017) interviewed ECE teachers to explore their motivators for providing nutrition education to young children, and what challenges exist. Providing nutrition education is considered a feeding practice that supports children's healthy eating (Dazeley & Houston-Price, 2014; de Droog et al., 2013; Heath et al., 2014). Dev, Carraway et al. (2017) found that ECE teachers were motivated to deliver nutrition education because they believed it: (a) encouraged children to try new foods; (b) improved their knowledge of healthy and unhealthy foods; and (c) was consistent with children's tendency for exploration. These motivators likely guide teachers' intention for using certain practices during the mealtime. On the other hand, teachers reported various challenges such as limited funding, resources, and restrictive policies.

In addition, Dev, Speirs et al. (2014) investigated ECE teachers' reported motivators and challenges for practicing family-style meal service (FSMS). Findings

revealed that ECE teachers from Head Start programs and programs using the CACFP were motivated to practice FSMS because they believed it created pleasant mealtimes, opportunities to role model healthy eating, and supported the health of children. On the other hand, ECE teachers that were not from Head Start Programs were not motivated to use FSMS because it was resource intensive, messy, and they perceived it to violate CACFP policy.

Purpose

Mealtimes in ECE classrooms of children ages 2-5 provide valuable opportunities for teachers to support learning and development, including the development of healthy eating behaviors. Yet, as described, research has suggested that ECE teachers are implementing lower quality teaching practices and inconsistent feeding practices during the mealtime. The previous studies gained insight from ECE teachers to explore and understand how teachers' knowledge, perspectives, intention, and challenges can influence the use of *feeding practices* (i.e., focusing on facilitating healthy eating) during mealtime. However, research is lacking in considering teachers' knowledge, perspectives, and intention related to *teaching practices* (i.e., instructional support for development and learning) during mealtime. Also, there is currently no research examining what teachers may describe as their perceived roles and goals in addition to their knowledge and perspective during the mealtime, which may provide a richer understanding to what their intent may be in implementing mealtime practices (Ajzen, 1991).

Exploring the ECE teachers' point of view on their knowledge, perspectives, perceived roles, and goals regarding mealtime practices can offer insight on why teachers implement certain practices during the mealtime which can inform future efforts for

improvement. The TPB offers a framework for this exploration, suggesting teachers' knowledge, perspectives, and perceived roles influence their goals for implementing practices at mealtime, yet challenges may exist. Taken together, the purpose of this qualitative study was to explore ECE teachers' knowledge, perspectives, perceived roles, goals, and reported challenges, and their influence on mealtime practices. Guided by a phenomenological approach (Bazeley, 2013), this study sought insight from the ECE teacher's perspective to answer the following:

Research Questions:

1) What are the influences of teachers' knowledge, perspectives, and perceived roles on their goals and mealtime practices?
2) What challenges do ECE teachers experience related to implementing mealtime practices?

Methods

Setting and Participants

After obtaining IRB approval, recruitment for the larger study began. Full-time ECE teachers serving children age 2-5 years old in a center-based program, including Early Head Start/Head Start programs were invited to participate via site visits, email, or recruitment on social media (Facebook). As participants of the larger study, teachers were observed for a one-time mealtime observation and completed a questionnaire for demographic information and information pertaining to their nutrition training. Teachers who met inclusion criteria and agreed to participate in the study signed a consent form and were asked if they were willing to participate in an additional interview. After the mealtime observations were complete, purposeful sampling (Merriam & Tisdel, 2016;

Patton, 2015) was used by emailing teachers who completed the observation and agreed to the interview. Teachers were invited to be interviewed via Zoom. Once teachers agreed, an interview date and time was established, and a zoom link was emailed to the teachers. Teachers who completed the interview were compensated with a gift card.

Of the teachers that were invited to participate, a subsample of nine teachers agreed to be interviewed. These teachers were from three different ECE centers located in a midwestern state. Of the nine teachers, three were lead teachers in a toddler classroom and six were lead teachers in a preschool classroom. Five teachers were from Head Start programs. Teachers ranged in age from 24 to 52 years old, with the average age being 34 years. Eight teachers were female. Seven teachers reported their race as White; one reported their race as American Indian; one preferred not to report race. Teachers were educationally diverse (11% high school diploma or GED; 33% associate degree; 89% bachelor's degree) (Table 1).

Table 1

Teacher Information

Teacher Pseudonym	Age	Gender	Education Level (Degree)	Program Type	Age of Class
Katy	52	Female	Bachelors	Head Start	Toddler
Tracy	40	Female	Bachelors	Non-Head Start	Preschool
Grace	24	Female	High School Diploma	Non-Head Start	Preschool
Micah	34	Female	Bachelors	Head Start	Toddler
Fae	37	Female	Associate	Non-Head Start	Preschool
Sarah	*	Female	*	Head Start	Preschool
Marion	26	Female	Bachelors	Head Start	Preschool
Whitney	29	Female	Bachelors	Non-Head Start	Preschool
Matt	34	Male	Associate	Head Start	Toddler

Note: * = Teacher preferred not to answer

Data Sources and Procedures

Understanding that teacher practices are shaped by their knowledge, perspectives, perceptions, intentions (i.e., goals), and challenges (Ajzen, 1991; Cooper & Contento, 2019), the interview served as an appropriate tool to explore teachers' points of view related to mealtime practices. A field notebook allowed a space to document reflections about the interview and confront any biases that may have surfaced during the interview. Lastly, a brief questionnaire completed by the teachers also provided additional information regarding teachers' demographic information and classroom details. Each of these data collection methods helped to provide important insight into how teachers experience mealtime and what may influence their practices.

Interviews

Teacher's knowledge, perspectives, perceived roles, goals, and reported challenges related to ECE mealtime experience were gained during a one-time interview conducted synchronously online via Zoom. COVID-19 restrictions in place at the time of the interviews eliminated the option for interviewing in person. However, by conducting the interviews synchronously (in real-time) rather than asynchronously (where there is lag time), the researcher was able to simulate a face-to-face interview that allowed for conversation and the ability to pick up on visual cues (Merriam & Tisdell, 2016). In addition, the researcher preserved confidentiality by using a password-protected and secured network to log on to Zoom and conduct the interview.

The interviews were semi-structured in format and lasted approximately 30 minutes each. The researcher conducted the interviews using a laptop with a webcam from a private office at the researcher's university. Participating teachers could choose

the location of the interview. Before the interview began, the researcher obtained verbal permission to record the interview (in addition to written permission obtained previously on the consent). Rapport was built with each teacher before the interview when the researcher obtained consent and collected the questionnaire. The interview as guided by an interview protocol that included a list of open-ended questions related to the teacher's mealtime experiences, perspectives, goals, challenges, perceived roles, knowledge of healthful feeding practices, and personal eating habits guided the interviews (see Appendix A). The researcher piloted the interview questions with a former preschool teacher who was not participating in this current study and made modifications to the order and the wording of some questions for clarity. Notes were also made for possible questions that could serve as prompts if needed. The recorded interview was transcribed verbatim, and the written transcript was emailed to each teacher for member checking.

Field notebook

The researcher kept a field notebook to document the physical and social context of the interview setting, actions, and experiences (Bazeley, 2013). The context is crucial for understanding, interpreting, and transferability of data. Field notes included details of the interactions and reflective commentary that was handwritten in the notebook immediately after the interview to not lose the detail of the entry (Merriam & Tisdell, 2016). The researcher's thoughts and biases were also documented in the field notebook (Miles et al., 2014). Biases such as judgments on the teacher's respective ECE center’s quality, the quality of the observed mealtime that occurred prior to the interview, or judgments on the teacher's responses to personal eating habits were confronted to allow for an impartial interpretation of the data that accounted for each teacher's point of view.

Jottings of informal thoughts and connections made throughout the data collection and analysis process were included in the field notebook (Emerson et al., 2011). This information helped generate a synthesis of findings and triangulate the data sources collected throughout the study.

Questionnaire

Before the interview, teachers completed a questionnaire that elicited information related to demographics and classroom details such as the age of children in the classroom. Teachers were able to complete the 10-minute paper questionnaire on their own time.

Data Analysis

Interviews were transcribed verbatim and uploaded to Dedoose. Next, the researcher began data analysis by reading through the interview transcripts and recording jottings and notes in the field notebook of initial thoughts regarding how the data answered the research questions. Once this process was completed, the process of coding the transcripts began.

Level one and level two coding was used during the analysis process. Provisional codes were used for level one coding. Provisional coding began with a list of researcher-generated codes to start with based on the preparatory examination of what the literature suggested might appear in the data before it is collected and the interview protocol questions (Miles et al., 2014). Level one provisional codes were: changes to mealtime, barriers, challenges, influences on children's eating, how children influence practices, and personal eating habits. Provisional codes became parent codes during the level one coding process and new child codes were added. The new codes were reorganized using

Structural Coding (Saldana, 2016). Pattern coding was used for level two coding (Saldana, 2016). Codes were combined and categorized into themes using pattern coding that represented reoccurring patterns in the data. In addition, data from the questionnaire were analyzed to provide frequencies for demographics and classroom information.

Triangulation

Once all the data was analyzed, findings were triangulated across all data sources (Bazeley, 2013). The final coding cycle that constructed the narrative of findings incorporated relevant themes and ideas that surfaced among and across the different data types. The information recorded in the field notebook helped generate a synthesis of findings and triangulate the various data sources in the study. Peer audits were conducted through multiple points throughout the study to preserve the objectivity and reliability of findings from data sources (Anney, 2014).

Trustworthiness

This study was conducted with rigor to ensure trustworthiness (Merriam & Tisdell, 2016) as evidenced by implementing practices that ensured credibility, transferability, dependability, and confirmability. These practices are widely adopted in qualitative research to ensure trustworthiness (Merriam & Tisdell, 2016).

Credibility

Credibility refers to how the research findings capture what is really happening in reality (Merriam & Tisdell, 2016). This study used a number of strategies to increase the credibility of findings, including triangulation and member checks. Findings from the interviews, questionnaires, and the field notebook were connected back to existing literature (Merriam & Tisdell, 2016; Miles et al. 2014). Member checks were used to

solicit feedback on emergent findings from some of the interviewees, which helped rule out the possibility of misinterpreting the meaning of what teachers said and helped the researcher identify biases and misunderstandings (Merriam & Tisdell, 2016).

Dependability and Transferability

To increase dependability in this study, the researcher kept an audit trail of the research process to help explain how the researcher arrived at the results (Bazeley, 2013; Merriam & Tisdell, 2016). A data audit and peer examination were also conducted with scholars in the field of early childhood education. Rich and clear description of the research methodology was provided to ensure the features of the study are congruent with the research questions to increase dependability.

To ensure transferability, the researcher provided a sufficient description of the characteristics of the sample to allow for adequate comparisons with other samples. A detailed description of the ECE interview setting and an interview guide was provided (Merriam & Tisdell, 2016; Miles et al., 2014).

Confirmability

Confirmability is concerned with neutrality and reasonable freedom from research biases. Rich description of the study's methods and procedures were described in detail. Documentation of the data collection and analysis process has been provided. Record of iterative coding was documented in the field notebook and documentation of personal awareness, assumptions, biases, and affective states (Miles et al., 2014).

Findings and Discussion

During the interviews, ECE teachers shared about their knowledge, perspectives, perceived roles and challenges in relation to the mealtime and mealtime practices. Based

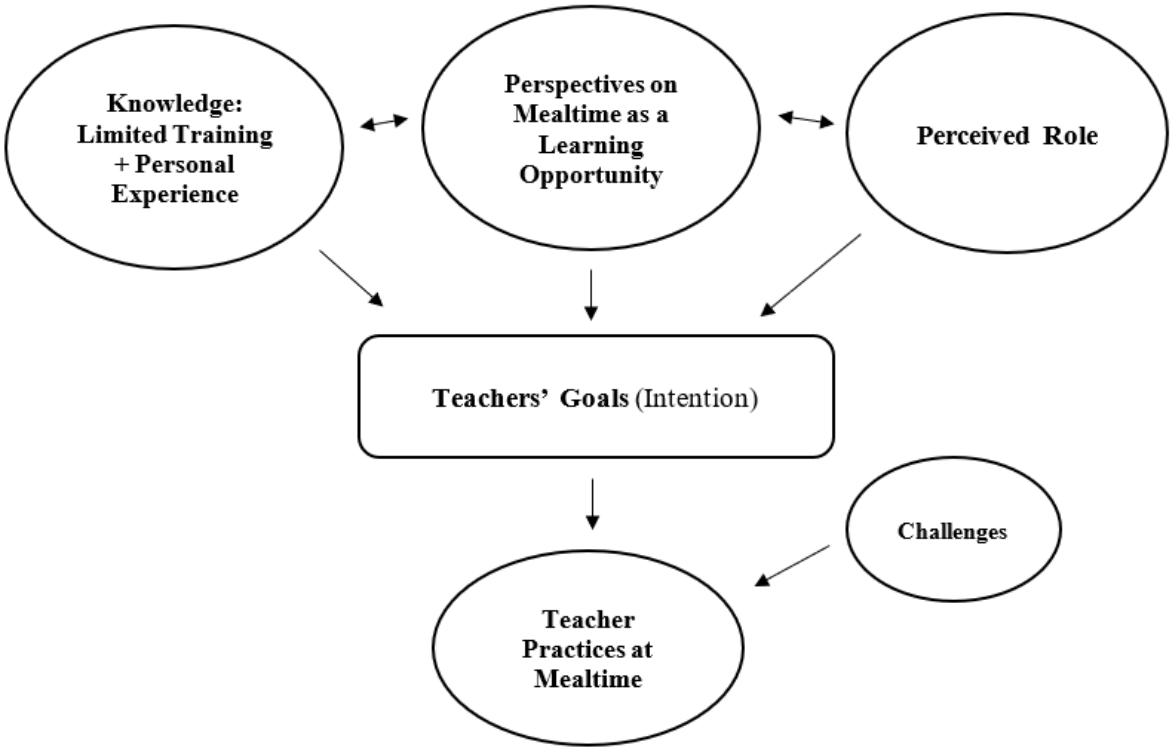
on teachers' responses, six themes emerged: (1) Teachers perceived mealtime as an opportunity for learning similar to other learning contexts; (2) Teachers had varied knowledge about mealtime practices gained from limited training and personal experience; (3) Teachers perceived themselves as a role model for healthy eating; (4) Teaching goals at mealtime focused on building relationships and supporting social skills; (5) Feeding goals at mealtime focused on making sure children did not go hungry and encouraging children to try new and healthy foods; and (6) Teachers faced challenges related to time and challenging behavior.

How Themes Related to Mealtime Practices Guided by TPB

The TPB (Ajzen, 1991) guided a deeper interpretation of the themes that emerged in the data. Specifically, how teachers' knowledge, perspectives, and perceived roles can influence their goals for mealtime practices. In addition, challenges related to time and challenging behaviors influenced the actual implantation of practices during mealtime (Figure 2).

Figure 2

Teachers' Knowledge, Perspectives, Roles, Goals, and Challenges Related to Mealtime Practices



Teachers Perceived Mealtime as an Opportunity for Learning Similar to Other Learning Contexts

Overall, most of the teachers viewed the mealtime as an opportunity for learning. Specifically, eight of the nine teachers viewed mealtime was a time for children's learning in various developmental domains just like any other part of the day. Marion, a preschool teacher, described teaching and learning during mealtime as a learning opportunity similar to the rest of the day as,

> I mean… the kids are learning all the time, whether it's a small group or a large group playing outside or at a mealtime. I feel like my job is to help them make those connections between their life at home, their life at school and the world. Um, you know, counting how many Brussel sprouts are on their plate – that was math. Literacy, everything ties in. So, I feel like my job at mealtime is pretty much the same as my job any other time.

Overall, teachers viewed the mealtime as a time to model and promote children's development and learning just like other parts of the day, although the "teachable moments" during the mealtime that teachers highlighted varied. For example, Matt thought the mealtime was a great time to foster children's self-help skills, while Katy saw the mealtime as a time to encourage children to "try new things".

Three teachers also noted that teaching during the mealtime had unique features that were slightly different from teaching in other classroom activity contexts. Beyond the characteristic of serving food to children during mealtime, these three teachers believed the mealtime had a different focus or approach. Regarding a different focus, two teachers reported that mealtime provided more of a "relaxed role," having a "more conversational rather than instructive" tone. Sarah highlighted the focus during mealtime was different because,

> We're not up engaged, moving around. We have to focus on more sitting down and our manners and self-help skills. We don't want them choking. If we're up moving around, we're not having things in our mouth, so [the focus] changes.

Believing that mealtime provided a different focus also meant, for two of the three teachers, that mealtime had a different approach. In other words, as teachers, they might

have to change their teaching approach during the mealtime. For example, Whitney who taught in a Reggio-inspired classroom described her approach as typically being “very child-led,” following the children’s lead during provocations and activities. However, during the mealtime she felt she had to take on more control in order to manage the logistics of getting everyone enough food. During her interview, she stated,

> Maybe [children] have a little bit less control [compared to the rest of the day] over like amounts of things that are on each plate… because if it was completely child-led, it probably wouldn't be fairly distributed. So, I think maybe the mealtime is a little bit more teacher-led…but we still want them involved with putting out food and cleaning up. That way, they have ownership so, I feel like our role might change a little bit as far as how much control we [as teachers] need to have in the situation.

Matt offered another perspective. He described mealtime as "less hands-on," meaning he could not offer as many hugs or physical affection because everyone’s hands were busy eating, which was different than other parts of the day. In addition, he pointed out that the “materials” during the mealtime were different. The children were working with “consumable resources” and not materials they could share and replace. Therefore, he believed he had to approach using the materials with the children with a little more control.

> Food is really kind of the only consumable resource that we have in the classroom. Everything else, like blocks, we can share blocks. They’re not going away. Or crayons. We can always get more crayons. Sometimes with the food, I

don’t want to say we don’t always get enough, but we just have to make sure that everybody can get some before the other kids take more.

Most of the teachers in this study believed that mealtime was a time for learning and described examples of how they foster children’s development. Teachers depicted they were to help children learn, regardless of the setting. In a similar way, Dev, Caraway-Stage et al. (2017) found that teachers were motivated to provide education related to nutrition during mealtimes because they were helping children learn about healthy foods and fostering exploration. Teachers in this study, however, provide additional insight about their intentions on how they desire to teach children in all areas (e.g., problem solving, counting). Further, a few teachers illuminate some distinct differences in the mealtime focus and approach which shapes their goals.

Teachers had Varied Knowledge About Mealtime Practices Gained from Limited Training and Personal Experience

Although most of teachers viewed the mealtime as an opportunity for supporting children’s learning, teachers reported varied knowledge about nutrition and feeding children, which stemmed from their limited or basic training on mealtime practices and their varied personal experiences. For example, Sarah and Matt shared they learned about basic nutrition information from college-level courses. Micah reported she did her own research on the internet if she wanted to know something specific about food. Other teachers reported having basic training from the CACFP (i.e., food program) on topics such as serving sizes.

In addition, most teachers (7) reported they had very little training surrounding mealtime practices. Katy shared, “I don’t think I’ve had any like mealtime trainings or

anything like that. I don't remember it because it's been a while, but very rarely if I have." Fae stated, "we've done the food program class, like gone over it with the director once." Whitney reported, "I don't think I've ever had professional development around mealtimes. I think the only thing I had is that I learned just in a college course about how family style dining is probably the best way to go." These findings suggest that teachers are not getting consistent information regarding mealtime practices. Some teachers may learn about serving sizes while others only know basic information regarding healthy eating. The consensus was a lack of teacher preparation around mealtime practices and strategies. In addition, no teachers reported being trained on fostering eating self-regulation.

Teachers' responses revealed that their knowledge about mealtime practices also came from their personal experiences. Three teachers reported personal experience shaped their knowledge about the mealtime practices during mealtime, including practices from home and personal histories. Marion and Sarah both reported they bring practices from their homes into the classroom. Marion shared:

> Um, as I was saying earlier, a lot of my influences come from eating meals with my family as a kid… That has kind of influenced what I talk about at the table or just kind of how I act.

Sarah described that she talked to the children in her class the same way she talked to her family at home during meals, which for her included talking about the aspects of their day. Sarah also described that she talked with her daughters a lot about the health benefits of food since her and her family were all trying to practice healthier lifestyles. Additionally, Whitney said her personal history influenced what she felt was important

during the mealtime. She described that she had a history of having a challenging relationship with food, but now has learned how to better listen to her body. As a result, she felt this was a very important lesson that she could help teach children.

These findings highlight the importance of specialized training for high quality mealtime practices and are consistent with previous studies that have reported improved teacher compliance and buy-in for recommended feeding practices during the mealtime after receiving training (Cooper & Contento, 2019; Lanigan, 2012). However, the findings of the present study add to the literature by addressing the important role teachers' personal experience plays in their knowledge and practices. Together, the findings of this current study suggest that providing more consistent training in teacher preparation college or CDA courses and professional developments trainings related to mealtime practices is needed and will likely be effective in improving teacher practices during mealtime. The varied personal experiences teachers reported suggest it would be beneficial to provide more individualized coaching and professional development opportunities.

Teachers Perceived Themselves as a Role Model for Healthy Eating

Interestingly, regardless of their varied knowledge, almost all teachers in this study viewed themselves as a role model during mealtimes. Some teachers knew they were a model for choosing healthy foods and others saw themselves serving as a model for trying new foods. For example, Matt stated, "Oh yeah, all the time in the classroom. If there is something that looks different or unappealing to the child, we will model it ourselves and taste it… and it helps a lot of the time." Katy commented, "Yes. I think if

they see us trying it, they're willing to go 'okay if you're eating it maybe it's okay, and maybe I can try it."

However, no teachers viewed their role as a support for eating self-regulation, except for Whitney. Whitney commented that her role was “making sure that they are listening to what their body wants and needs and learning how to do that.” Her perception of this role stemmed from her own personal experiences with food as previously mentioned. These finding are important to note. It has been well-documented that ECE teachers serve as an important role model for children’s behaviors in the classroom (NAEYC, 2019) suggesting that widely-adopted teaching practices lend to teachers’ viewing themselves as a role model. This may explain why teachers perceived themselves as role models for healthy eating. However, since teachers had reported not having specific training on mealtime practices, they may not have the foundational knowledge to properly inform their practices and may rely more on their personal experiences (Cassidy & Lawrence, 2000).

Guided by the TPB (Ajzen, 1991), teachers’ knowledge, perspectives, and perceived roles together and separately influence their goals during the mealtime. Teachers viewed the mealtime as a time for learning and saw themselves as a role model which impacts what their goals are during the mealtime. Further, teachers’ knowledge about mealtime practices were a combination of limited training and personal experiences which also shapes their goals.

Teaching Goals at Mealtime Focused on Building Relationships and Supporting Social Skills

The majority of participating teachers (seven out of nine) reported specific goals related to mealtime practices that highlighted the importance of building relationships and supporting social skills during mealtimes. Teachers viewed mealtime as a valuable opportunity to connect with their students and for children to connect with their peers. Marion and Katy explained their desire for building connections. Marion said, “I think one of my goals is to use the time as an opportunity to connect with the kids and getting them to connect with each other. Um, kind of a bonding moment almost.” Katy stated, "my goal is to get them to interact and talk, and we talk about their day. We talk about something that we did at home, so to build that bond." In addition, teachers noted the opportunity that mealtime offered for supporting language skills.

> Our goals are to encourage the children to talk, have conversation, talk about the foods we're eating, and talk about the nutritional values. Even talk about the things that we've done through the day. To encourage the kids to conversate and, you know, use different language. Languages that they usually don’t use. Cause everybody don’t know. We have served food like asparagus. I don't personally talk about asparagus at home, so that's not a word that we use every day. It's not a common word. So, we've encouraged it [in the classroom] to build language and to build social skills, conversations (Sarah).

The goal of promoting positive relationships, social skills, and language development participating teachers mentioned in this study is typically a goal highly emphasized in the ECE setting. This is evidenced in the study by Kowalski et al. (2001)

showing that preschool teachers believed practices that support social and emotional development were the most important when compared to practices that support math and literacy instruction. Interestingly, studies from the nutrition field have displayed similar findings. For example, Sigman-Grant et al. (2008) found that the majority of teachers in their study reported social and conversation skills as important during mealtime regardless of how food was served (e.g., pre-plated, children served self). Findings from this study expand on the current literature by providing the perspective that teachers' top goal during the mealtime is focused on building relationships and social skills and feeding goals may be secondary.

Feeding Goals at Mealtime Focused on Making Sure Children Did Not Go Hungry and Encouraging Children to Try New and Healthy Foods

While the most frequently reported goal was related to building relationships and social skills, teachers also reported having feeding goals during mealtime. Six of the nine teachers emphasized their goal during mealtime was to make sure children did not go hungry. Some teachers reported they just wanted children to be well fed during mealtime as it is the only time of the day the food is served. Teachers conveyed this through statements like, "my thing is just trying to get them all to sit down and actually eat (Fae)," or "making sure that all of the kids are able to get all of the components and be able to eat as much as they need is the most important thing (Matt)," and "just getting them to get enough protein and food… that probably my biggest goal for sure (Micah)."

Some of the motives underlying this goal seemed to vary depending on the teacher and more prevalent among teachers who serve children from low-income families. For instance, Katy who worked for a Head Start program commented,

> We feel that sometimes they might now be eating at home, so we want to make sure that they are eating here… Some of the food we give them, because they're not used to it, they're not going to eat it. But our job is to make sure they eat. I understand we want to be healthy, and they can't eat chicken nuggets all the time, but we gotta make sure it's something they're going to eat.

Teachers' goals of making sure children go hungry imply that teachers recognize the responsibility of meeting children's basic needs yet do not reveal an understanding that a teachers' practices can influence a child's eating behavior. Some studies have suggested that teachers who work with children from low-income families (e.g., Head Start) may use more controlling feeding practices that are rooted in their concerns about children's food insecurity and weight (Dev, McBride et al., 2014). Teachers may try to achieve their goals of making sure children are not hungry by pressuring children to eat and overriding a child's internal cues of hunger and fullness. While these goals are based on good intentions, teachers may inadvertently foster unhealthy habits and undermine children's self-regulation on eating without the proper understanding of how to support healthy eating behaviors.

Five of the nine teachers reported they make further efforts to encouraging children to try new and healthy foods. Teachers relayed an understanding of the importance of children eating healthy foods like vegetables and foods that contain protein, but they also described the challenge of getting some children to want healthy foods. Fae commented,

> So right now, we're just trying to get them to focus on actually eating their food and trying it out, cause a lot of the kids, you know, they don't want to eat it. They don't

like how it looks. So, I try to like, encourage them to taste it. Just try new things and stuff like that.

Fewer teachers described using forms of nutrition education to promote healthy eating. For instance, Sarah

> …[tells them] about the nutrients. We talk about that a lot, and the kids remember that because what we do is we talk about 'remember the other day when we ate this? And 'what does it do for your body? And the kids usually know because we've introduced that to them… And we've talked about the food pyramid. We've incorporated some activities that they can see the pictures of foods that fall in that category: the grain group, the meat group, the vegetable, and fruit group.

Teachers expressed that encouraging children to try new and healthy foods was a prioritized goal (i.e., among the top three). This suggests that teachers recognize the importance of supporting children's healthy behaviors during mealtime. This goal is similar to teachers' motivators for providing nutrition education in the study by Dev, Caraway-Stage et al. (2017); teachers reported they wanted to teach children about nutrition because it encouraged them to try new foods. However, findings in this study add that teachers also reported having limited training related to mealtime practices. Again, without the proper foundation of how to implement effective strategies that support healthy eating, teachers may implement strategies that are not supportive or responsive.

Teachers Faced Challenges Related to Time and Challenging Behaviors

Despite the good intention and efforts, ECE teachers experience various challenges that may interfere with their goals or intention to implement mealtime

practices. For example, six teachers felt that they often did not have enough time to carry out the mealtime routine in a way that matched their goals. Timing challenges were described in relation to pressure from the kitchen staff or the demands of the classroom. Regarding pressure, Marion reported, "We're expected to get the dishes out at a certain time, and so if the kids are being slower eating that day, there's kind of pressure on us." Sarah reported similar comments. Regarding demands, Tracy commented, "Sometimes there's just a lot of other things going on in the classroom and we find sometimes that we don't even have time to sit down… but we try our best to sit down with them for a few minutes."

Five of the nine teachers in this study expressed that children's challenging behaviors can make mealtime difficult. Challenging behaviors are a common source of stress for many teachers (Coleman et al., 2013; Powell et al., 2006). These behaviors can carry over to mealtime. Fae, a preschool teacher, reported,

> Challenging behaviors are a little difficult…We have one kid that will completely meltdown and just throw his chair and scream and refuse to sit down to eat. Then when it's time to [finish] we have to throw away his plate and he gets mad because he didn't eat his food. But… nothing you do is going to fix it and make it better for him.

Teachers in this study commented on two main challenges that influence what they do during mealtimes. They may rush the mealtime due to time pressures or they may not get to interact with other children due to having to help a child manage challenging behaviors. These findings help bring awareness to specific challenges teachers may be facing during mealtime which may add insight into how to improve the quality of

mealtime. Current studies have reported barriers related to resources and misconceptions about mealtime practices (Dev, McBride et al., 2014; Dev, Caraway-Stage et al., 2017). The findings of this study highlight different challenges teachers may be facing. These challenges are important to consider as they reflect the amount of actual control teachers have over certain situations.

Limitations and Implications for Policy and Practice

This study has limitations. While the findings give valuable insights and a voice to teachers' lived experience, findings from this study are not generalizable given the qualitative nature of analysis and small sample size. Also, data was gathered from a one-time interview. Longer or additional interviews may provide richer information and uncover deeper insights. Although this study provides important insights on teachers' perspectives on the mealtime practices, direct observations of their mealtime practices were not included in this study. Future studies that are accompanied by observation of the mealtime practices with a longitudinal research design would confirm how teachers' knowledge, perspectives, roles, and goals have an impact on their actual practices in the classroom.

This study has implications for teacher education and training given the reported lack of specialized training and limited and consistent teacher knowledge related to mealtime practices. Findings from this study bring to light that teacher preparation programs and professional development opportunities may need to take a more holistic and interdisciplinary approach. In addition, teacher education programs need to address more content on nutrition and healthy eating through strategies like having nutrition

experts as guest speakers in class or assigning more class readings related to mealtime practices (e.g., Benchmarks for Nutrition in Child Care (Benjamin-Neelon, 2018)). This study also has implications that emphasize the value in taking a bottom-up and collaborative approach with ECE teachers to inform researchers and policy makers regarding what influences teacher practices during mealtimes. Considering teachers' points of view can guide policy recommendations and offer practical strategies and more focused solutions to improving the quality of mealtime practices in ECE classrooms.

Conclusion

This current study provides insight to the influence ECE teachers' knowledge, perspectives, and perceived roles may have on their goals at mealtime, and what challenges may impact their mealtime practices. This study adds to the understanding of what may shape teachers' mealtime practices by exploring the understudied areas of teachers' goals and perceived roles related to mealtime practices while also using the TPB as a framework to guide interpretation.

In order to encourage ECE teachers to use high-quality practices during mealtime, it is important to explore their point of view on what may motivate or influence their behaviors. Understanding the lived experiences of teachers can serve as a valuable tool when encouraging teachers to use recommended practices at mealtimes. This study asked ECE teachers to share their knowledge, perspectives, perceived roles, goals, and challenges regarding mealtime. Since these insights came directly from the teachers, they may offer more informed and practical guidance on how to support and educate teachers on how to implement high-quality teaching and feeding practices during the mealtime. Specifically, findings from this study suggest that the ECE teacher workforce needs more

consistent training and education regarding mealtime practices. In addition, ECE programs may need to alter the structure of the mealtime to allow for more time so that teachers can be more successful at supporting children's learning and development during this routine. Further, the findings from this study emphasize that teachers need support for challenging behaviors that extends across all contexts, including the mealtime.

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Appendix A

Teacher Interview Protocol

1. Can you tell me about your mealtime routine? (What you feel your goals are as a teacher during mealtime? What role(s) do you play?)
2. What is most important to you during mealtimes? What about children's health is important to you?
3. Do you feel you have the necessary resources to meet your goals during the mealtimes? What would be resources that make it easier?
4. Considering your other routines in the classroom (ex: group time, outside time, etc.), do you perceive that your role or responsibility as a teacher changes during the mealtimes? Why? / why not?
5. How do you feel about your relationship and interactions with children during the mealtime? Relationships and interactions with co/assistant teachers?
    a. Is this different from how you feel about these relationships and interactions during the other classroom routines? Why?/Why not?
6. Does your center's philosophy about nutrition/mealtimes align with your personal ideas and philosophy about mealtimes, food, or eating? (Probing: what ways are they the same/different?)
7. How do you feel about the food your center serves?
8. How do you feel about the structure of the meal style (ex: pre-plated, Family Style, etc.)? Do you feel like you have a say in what foods are served or how the mealtime is carried out?
9. Do you believe you have influence on children's eating? Can you explain? Do you notice an impact of your behavior on the children?
10. What influences how you feel or act during the mealtime? (ex: challenging behaviors, physical needs/restrictions such as allergies, known food insecurity, etc.)? Do these things influence how you feel and act in other classroom routines?
11. How do you feel about mealtimes overall? (Probing: Do you enjoy it? Is it stressful?)
    a. How is this different than other classroom routines?
    b. What makes meals enjoyable? What makes meals challenging?
12. How do you feel about the transitions before and after mealtimes?
13. What would you change about the mealtime experience?
14. Tell me about your professional development or training experience around mealtimes/ feeding children.
    a. Is there anything you'd like to learn/know?
15. Are you aware there are formal recommended practices for teachers related to mealtimes?

Questions related to your personal thoughts about food and meals.

16. Are you happy with your personal eating habits? (What is your personal relationship with food?)
17. Do you feel your personal food preferences and eating habits influence children's eating? (explain) Does the center influence your eating habits?

18. Do you feel you have a good understanding about food and nutrition for your own personal health and well-being? Where do you get your information from? How did you come to your understandings/beliefs?

APPENDIX A: PROSPECTUS

The Role of Teacher Mealtime Practices on Children's Eating Behavior in The Early Childhood Education Mealtime Setting

UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

The Role of Teacher Mealtime Practices on Children's Eating Behavior in The Early Childhood Education Mealtime Setting

A PROSPECTUS

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

By

ADRIEN D. MALEK-LASATER
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Table of Contents

LIST OF TABLES

LIST OF FIGURES

Abstract

The first five years of life are formative years for many health-related behaviors (Birch & Ventura, 2009). A young child's transition from breast or bottle feeding to consuming solid foods provides extensive opportunities to learn about food and portion sizes, and develop preferences and patterns. The development of eating behaviors that allow a child to choose healthy foods and regulate dietary intake can lead to long term benefits for both health and learning (Hegland, 2011). Significant caregivers in a child's life, including teachers, help shape the development of eating behaviors. Much of the current understanding of how teacher mealtime practices influence children's eating behavior is based on findings of parental practices and there are far fewer studies examining teacher practices in the classroom. There is also a lack of research showing associations of corresponding children's behaviors to these mealtime practices in the ECE setting, nor is there a good understanding of factors that may influence teacher practices. The purpose of this study is to examine children's eating behaviors in the classroom while also providing a comprehensive view of the practices teachers demonstrate during mealtime in the ECE classroom. This study will also examine teacher practices and their associations with children's eating behaviors. Lastly, this study will explore teacher perspectives of factors that may influence their practices during mealtime in the ECE setting.

Keywords: mealtime, early childhood education, nutrition, children's eating behavior, teacher, childcare, provider, health, children's health

The Role of Teacher Mealtime Practices on Children's Eating Behavior in The Early Childhood Education Mealtime Setting

The first five years of life are formative years for many health-related behaviors (Birch & Ventura, 2009). A young child's transition from breast or bottle feeding to consuming solid foods provides extensive opportunities to learn about food and portion sizes, and develop preferences and patterns. In fact, a child may learn more about food and food related behaviors in the first five years of life than any other developmental period (Birch & Fisher, 1998), a concept that aligns with the foundational understanding that the brain makes more neural connections in the early years of life than any other time (National Scientific Council on the Developing Child, 2004). These eating behaviors acquired during the early years have an influence on children's food habits and nutrient intake patterns that can last through adolescence and adulthood (Birch, 1999; Birch & Ventura, 2009; Campbell & Crawford, 2001; Campbell, Crawford, & Ball, 2006; Westenhoefer, 2002).

The development of eating behaviors that allow a child to choose healthy foods and regulate dietary intake can lead to long term benefits for both health and learning (Hegland et al., 2011). However, the fact that an alarming number of children aged two through five are considered obese in the United States (13.9%, NHANES, 2015-2016), suggest that children are not choosing and eating healthy foods and/or not regulating their intake of foods well. Obesity in early childhood is a distinct issue because evidence shows that excess weight during childhood increases the risk for obesity and related health outcomes (i.e. type 2 diabetes, hypertension, cardiovascular disease, stroke, asthma, and sleep apnea) in adolescence and adulthood (Reilly & Kelly, 2010). These

poor health outcomes are not only of significant concern to health practitioners, but also concerning to education professionals due to their contribution to long-term complications such as low self-esteem, psychological and social stress, and poor academic performance (Datar & Sturm, 2006; Freedman, Dietz, Srinivasan, & Berenson, 1999; French, Story, & Perry, 1995; Puhl & Latner, 2007; Taveras, Rifas-Shiman, Oken, Gunderson, & Gillman, 2008). Behaviors related to obesity may also impact skills that are important to a child's learning and development (Hughes, Power, O'Connor, & Fisher, 2015; Riggs et al., 2010).

Significant caregivers in a child's life are influential in shaping their eating behavior. A considerable amount of research has been dedicated to examining parental influence on children's eating behavior and health status (Burroughs & Terry, 1992; Fiese, Hammons, & Grigsby-Toussaint, 2012; Skinner et al., 1998). However, given that a substantial number of children age birth through five (i.e., 6.9 million according to the National Survey of Early Care and Education Project Team, 2014) spend approximately 30 hours per week or more in early childhood education (ECE) settings, parents and ECE teachers are more often sharing the responsibility of feeding children (Benjamin-Neelon, 2018). Children consume between an estimated one-half to three-quarters of their daily nutrition needs through meals and snacks in ECE settings (Larson, Ward, Neelon, & Story, 2011; US Census Bureau, 2013), which provides multiple opportunities for ECE teachers to influence children's eating behaviors.

Obesity prevention researchers and practitioners have recognized ECE mealtime settings and teacher mealtime practices as an important target for examining contributing factors of childhood obesity and developing intervention strategies for reducing obesity

rates and improving overall health trajectories among children (Dev, McBride, Fiese, Jones, & Cho, 2013; Gubbels et al., 2010). Although there is a growing body of research examining various components of the ECE mealtime environment and teacher mealtime practices (e.g., Benjamin-Neelon, 2018; Birch & Fisher, 1998; Dev, McBride, Speirs, Blitch, & Williams, 2016), there is still much to be learned in this area. Much of the current understanding of how teacher mealtime practices influence children's eating behavior is based on empirical findings of parental practices in the home, and there are far fewer studies examining teacher practices in the classroom. Furthermore, there is a lack of research showing associations of corresponding children's behaviors to these mealtime practices in the ECE setting. Lastly, given the importance being placed on teacher practices during the mealtime, it is important to understand factors that may influence these practices. While some qualitative studies have explored potential barriers and challenges (Dev et al., 2013; Dev et al., 2016), more research needs to be done to provide a deeper understanding of the influencing factors that shape teachers' mealtime practices.

In order to address these gaps in the literature, the purpose of this study is to examine children's eating behaviors in the classroom while also providing a comprehensive view of the practices teachers demonstrate during mealtime in the ECE classroom. This study will also examine teacher practices and their associations with children's eating behaviors. Lastly, this study will explore teacher perspectives of factors that may influence their practices during mealtime in the ECE setting.

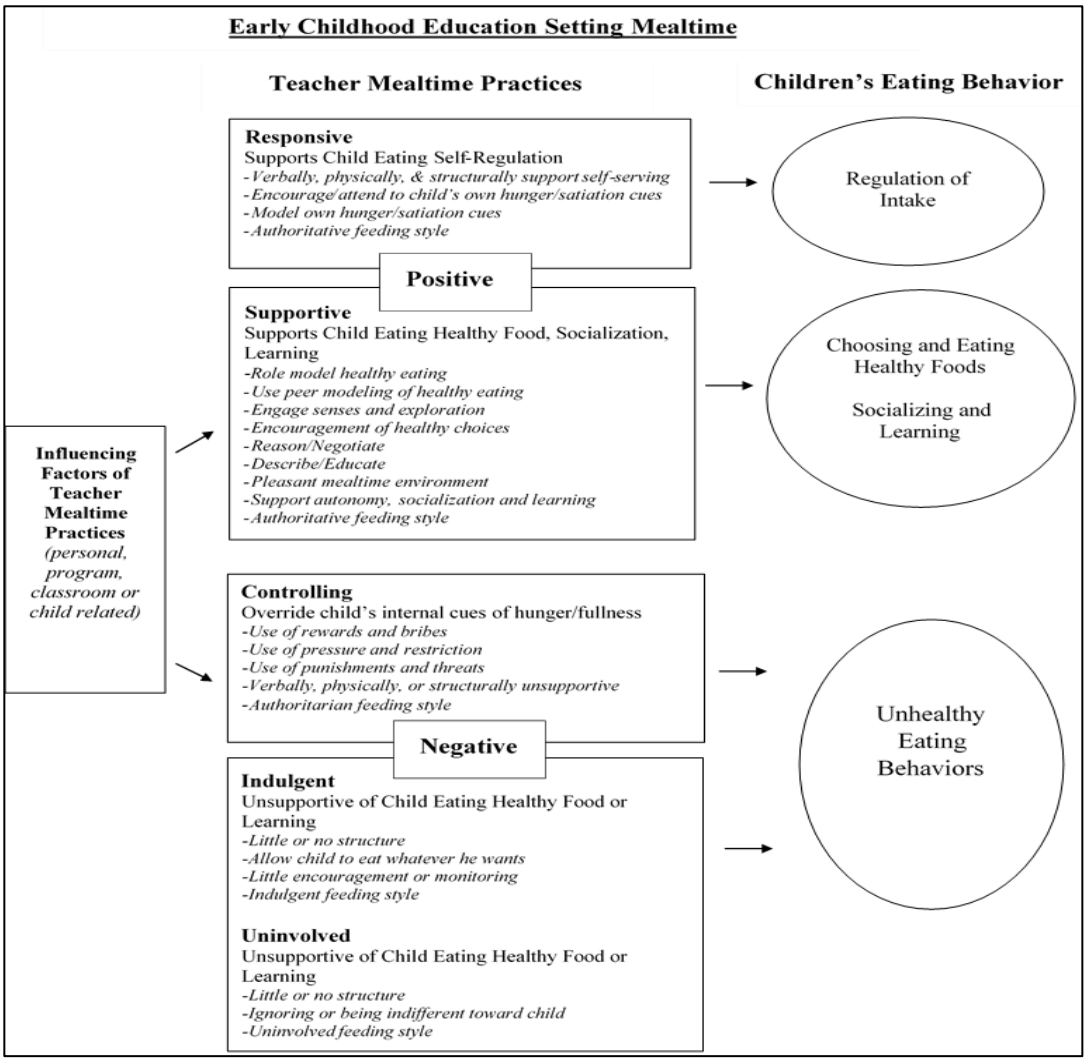
Conceptual Framework

The conceptual framework for the current study (see Figure 1) was developed based primarily on national recommendations and standards around children's health and nutrition, and Baumrind's (1971) models of parenting styles of authoritarian, authoritative, and permissive that have also been used to describe caregiver feeding styles (Hughes et al., 2007). Guiding organizations provide recommendations and standards for teacher mealtime practice, yet since these organizations represent different fields and disciplines (i.e. nutritional science, medicine, early childhood education) they highlight teacher practices in different ways. For example, the Academy of Nutrition and Dietetics, the largest association of food and nutrition professionals in the United States and leader of the nation's food and nutrition issues, highlight in their position statement, *Benchmarks for Nutrition in Child Care* (Benjamin-Neelon, 2018), that child care providers should create healthy physical and social eating environments, respect children's hunger and satiety cues, and encourage role modeling. The Institute of Medicine (IOM) Early Childhood Obesity Prevention Policies (2011) state that child care practitioners should promote the consumption of a variety of nutritious foods and encourage and support breastfeeding during infancy, create a healthful eating environment that is responsive to children's hunger and fullness cues, and help increase children's healthy eating. The American Academy of Pediatrics' (2019) report entitled *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs* highlight childcare teachers encouraging the intake of healthy foods through nutrition education and the exploration of food. Lastly, the Head Start Program Performance Standards (Bureau H. S., 2016) state

that childcare providers should provide sufficient time for children to eat, not use food as a reward or punishment, and not force children to finish their food. These Standards also state that meal and snack time should support the child's development and learning, and be structured so communication and conversations between teachers and children can contribute to the child's learning, development, and socialization.

Figure 1

Conceptual Framework



Caregiver feeding styles are defined as authoritarian, authoritative, permissive, and indulgent. Authoritarian feeding style is characterized by extensive external control by the caregiver, such as the use of restrictive behaviors (e.g., tells child to eat or uses rewards and bribes). Authoritative feeding style is characterized by adequate control over the child's eating through reasoning and involvement (e.g., helping child eat, asking questions about food). Permissive feeding style is characterized by little or no structure, encouraging the child to eat whatever he wants with little encouragement or monitoring. Permissive feeding style can be further categorized into indulgent (e.g., no monitoring of food) and uninvolved (e.g., ignoring or being indifferent toward child). There are influencing factors that shape parenting styles (Baumrind, 1971) as well as caregiver feeding styles.

Drawing on each of these resources, the conceptual framework for this study is an effort to comprehensively organize teacher mealtime practices, corresponding children's eating behaviors, and factors that influence the teacher's mealtime practices. For this study, teacher mealtime practices are defined in five main categories of responsive, supportive, controlling, permissive, and uninvolved. Responsive mealtime practices are those practices that support the child's ability to regulate their intake of food (Black & Aboud, 2011; Disantis, Hodges, Johnson, & Fisher, 2011). Supportive mealtime practices are practices that support the children choosing and eating healthy foods as well as their socialization and learning in the classroom (Benjamin-Neelon, 2018; Davison et al., 2015; Larson et al., 2011). Controlling mealtime practices those actions and verbal comments that are unsupportive and can potentially override the child's internal cues of hunger and satiety (Johnson, 2000). Indulgent and uninvolved mealtime practices offer

little to no structure and are unsupportive of the child's healthy eating and learning. These mealtime practices and corresponding eating behaviors are based in the context of the ECE mealtime setting.

Literature Review

It is well established that high-quality teacher-child interactions that consist of warm, responsive, emotionally sensitive, engaging, cognitively stimulating, and behaviorally supportive exchanges between a teacher and child are crucial to the early childhood education (ECE) classroom (Phillips & Lowenstein, 2011). These types of interactions have been shown to foster children's learning, social interactions, and overall school readiness (Curby et al., 2009; La Paro, Hamre, & Pianta, 2012; Mashburn et al., 2008; Mortensen & Barnett, 2015; Pianta & Stuhlman, 2004; Sroufe, 2005). Teacher-child interactions during mealtime that also consist of responsiveness and support can also shape the development of children's eating behaviors (Benjamin-Neelon, 2018).

Children's Eating Behaviors

In order to fully and clearly understand the importance and purpose of teacher mealtime practices, it is necessary to first define children's eating behaviors. The development of certain eating behaviors is thought to have long-term impacts on a child's health and development (Centers for Disease Control and Prevention, 2019) and may also predict eating behaviors in adulthood (Kelder, Perry, Klepp, & Lytle, 1994).

Regulation of intake. The behavior of eating self-regulation is thought to prevent over or undereating, thus maintaining a healthy weight and preventing diseases (Benjamin-Neelon, 2019; Birch, Johnson, Andresen, Peters, & Schulte, 1991; Frankel et al., 2012). Children are born with an innate ability to regulate their intake of food. In

other words, they are capable of eating in response to internal cues of hunger and not eating in response to internal cues of fullness (Baumeister & Vohs, 2004). Evidence suggests this capacity to recognize hunger and satiation and self-regulate food intake begins in infancy (Birch et al., 1991; Birch, McPhee, Shoba, Steinberg, Krehbiel, 1987; Fox, Devaney, Reidy, Razafindrakoto, & Ziegler, 2006). Although young children's intake may vary from meal-to-meal, it has been shown to will stabilize over a 24-hour period, further indicating their ability to self-regulate (Birch, et al., 1991).

Choosing and eating healthy food. Choosing and eating healthy foods is another behavior that will impact long-term health and well-being (Benjamin-Neelon, 2019). Children's tastes evolve as they age, and young children may exhibit a reluctance to try to foods, particularly certain fruits and vegetables with bitter tastes (Dovey, Staples, Gibson, & Halford, 2008). This reluctance, thought to potentially stem from an evolutionary beneficial survival mechanism that prevents young children from eating toxic or poisonous foods (Rozin, 1979; Rozin & Vollmecke, 1986), is often displayed when an unfamiliar food is presented (Birch & Fischer, 1998), and may require a learned taste acceptance brought about by repeated exposure (Birch & Marlin, 1982; Pliner, 1982; Rolls, 1994). When children are supported in their exploration of food through each of the senses, and allowed to decide when they are ready to try a food, they can show more willingness to try new and nutritious foods and display an overall interest in food.

Rising childhood obesity rates suggest children may not be choosing or eating healthy food. Data consistently shows that children are not meeting dietary intake guidelines (Ball, Benjamin, & Ward, 2008; Erinosho, Dixon, Young, Brotman, & Hayman, 2011; Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012; Reedy, Krebs-Smith,

2010). For instance, Kirkpatrick and colleagues (2012) found that children and adolescents in the United States consume less than 10% of recommended vegetable and whole grain intake, only 29% of fruit intake, and 37% of milk intake. In addition, most are exceeding recommended limits for solid fats and added sugars. Various studies have shown that specifically children in the United States who attend child care do not meet these dietary recommendations (Bollella et al., 1999). Some studies found that particularly children's intake of sugar in preschool settings is higher than recommended (Ball, Benjamin, & Ward, 2008; Erinosho et al., 2011; Padget & Briley, 2005). Few studies however have yet to examine the children's eating behavior in the classroom that is thought to support their choosing and eating healthy foods.

Socialization and learning. Eating in the classroom offers unique opportunities for other mealtime behaviors to be displayed. Children can practice socializing with their peers and teachers during mealtime which may look like asking questions, sharing about experiences at home, or talking about their food (Mita, Gray, Goodell, 2015). Locchetta, Barton, and Kaiser (2017) found that the mealtime can have an impact on increasing children's social interactions. Children can also practice motor skills such as using utensils or pouring, self-help skills such as cleaning up spills, and independence such as taking their waste to the trash (Endres & Rockwell, 1980; Fletcher, Branen, & Price, 2005). Mealtime may also provide a space for children to display their learning of colors, food groups, language, or shapes (Mita, Gray, Goodell, 2015). While many studies have examined the positive benefits attending an ECE program can have on a child's socialization and learning, very few have examined the impact of the mealtime in particular on children's socialization and learning.

Unhealthy eating behaviors. On the other hand, children may also display behaviors that are counter to supporting their development of healthy eating. For example, children may eat in response to external pressures, bribes, rewards, or punishments. Children may also show frequent food refusals, picky eating, or an overall lack of interest in food.

Children's eating behaviors can be innate or learned. Research continues to support that significant adults in young children's lives, as well as the mealtime environment, can influence these eating behaviors, and therefore influencing the child's overall health. For instance, strong significant correlations have been found between parents prompting a child to eat and child's weight (Klesges et al., 1983). The understanding of the development of children's eating behaviors have come about based on studies focusing on children's eating experiences with parents and at home. Besides the studies already mentioned, there are a limited number of other studies examining children's eating behaviors in the ECE classroom, including children's eating regulation, food intake, or skills developed and practiced during mealtime.

Teacher Mealtime Practices

Teachers implement a breadth of strategies within the classroom setting to support the development and learning of the child. Similarly, within the mealtime routine there are varying types of practices a teacher can implement that are thought to influence the development of a child's eating behavior. Teacher mealtime practices can be either positive or negative.

Positive mealtime practices. Positive mealtime practices are both responsive and supportive and can be associated with an authoritative feeding style (Hughes et al., 2007).

Responsive mealtime practices can support a child's regulation of intake. Supportive mealtime practices can support a child choosing and eating healthy foods, and socialization and learning.

Responsive mealtime practices. Responsive mealtime practices describe practices that support children's eating self-regulation. Black and Aboud (2011) use a framework of responsive caregiving that describes responsive mealtime practices as prompt, emotionally supportive, contingent, and developmentally appropriate, to apply to the feeding context:

> For caregivers, responsive feeding includes: 1) ensuring that the feeding context is pleasant with few distractions; that the child is seated comfortably, ideally facing others; that expectations are communicated clearly; and that the food is healthy, tasty, developmentally appropriate, and offered on a predictable schedule so the child is likely to be hungry; 2) encouraging and attending to the child's signals of hunger and satiety; and 3) responding to the child in a prompt, emotionally supportive, contingent, and developmentally appropriate manner (p. 491).

One way adults can support a child's internal capacity to self-regulate hunger and satiation is to allow children to choose how much of the food they want to eat from the foods the adults offer (Satter, 2012). Therefore, setting up a mealtime in the classroom that allows children to serve themselves is one way teachers can support children's eating self-regulation. Children self-serving is often associated with family style meal service (FSMS). Unlike the other types of meal service styles offered in childcare settings including prepared/pre-plated food portions or food delivered in bulk and portioned by providers, FSMS is thought to be supportive of enhancing a child's ability to attend to

their internal cues and support self-regulation of intake (Sigman-Grant, 2008). The thought is that as children serve themselves, they are able to have control over how much food is on their plate based on their own internal state of hunger (Benjamin Neelon, 2018). There also appears to be a relationship between self-serving and childhood weight. When preschool aged children served themselves, they ate less than children who were served pre-plated meals (Fisher, Rolls, & Birch, 2003). When children are able to serve themselves, such as with FSMS, teachers have the opportunity to be supportive of children's self-serving efforts through their interactions including verbal prompts on serving and passing or encouraging children in their attempts and progress.

Verbal communication that cues children to attend to their hunger and satiation cues is thought to also support eating self-regulation. After a six-week intervention designed to help preschool children recognize internal cues that included strategies such as adult role play that introduced concepts of hunger and fullness (e.g., acting out the rumbling of the stomach, stomach extension and distention, discomfort, and where you chew food), one-on-one interactive play with dolls, and developmentally appropriate instruction about the anatomy of eating, a posttest revealed despite great initial variation in children's eating regulation, significant improvements in the ability to self-regulate intake were made after the intervention (Johnson, 2000). Adults can also role model their own internal states of hunger and fullness to help children attend to their own internal cues. The study by Johnson (2000) also looked at relations between parent eating regulation and children's outcomes. Eating Inventory (Stunkard & Messick, 1985) scores revealed that mothers who had difficulty controlling their own food intake had children who did not show evidence of good self-regulation. Interestingly, the relations between

mother's disinhibition and the child's eating regulation were no longer significant after the intervention, suggesting that strategies that support children in recognizing internal cues of hunger and satiety were helpful in correcting the effects of parents' role modeling of negative eating behaviors.

There is great importance being placed on teachers ability to implement responsive mealtime practices (Benjamin-Neelon, 2018). However, some studies are finding that ECE teachers are not using these practices often (Dev et al., 2016). Ramsay and colleagues (2010) found that during observations, Head Start staff used comments thought to be responsive to the child's internal cues only 11% of the time. Additionnally, parental responsive mealtime practices have been examined to a much greater extent than teacher responsive mealtime practices. More studies are needed examining teacher responsive mealtime practices.

Supportive mealtime practices. For the purpose of this paper, supportive mealtime practices are those that are supportive of children choosing and eating healthy foods. In the context of the classroom setting, supportive mealtime practices also encourage children's socialization and learning. As mentioned, it has been shown that children are not consuming recommended intakes of healthy foods, and children can be reluctant to try to foods, particularly fruits and vegetables (Dovey, Staples, Gibson, & Halford, 2008). Young children are more likely than older children to be influenced by the adults in their eating environment (Addessi, Galloway, Visalberghi, & Birch, 2005), suggesting that ECE teacher supportive mealtime practices have a great potential for shaping the foods children choose to eat.

The *Benchmarks for Nutrition in Child Care* (Benjamin-Neelon, 2018), the Institute of Medicine (IOM) Early Childhood Obesity Prevention Policies (2011), the American Academy of Pediatrics' (2019), and Head Start Performance Standards (U.S. Department of Health and Human Services, 2016) all recommend that child care providers should create healthy and social eating environments that promote the consumption of a variety of nutritious foods, provide nutrition education and allow for exploration of food. One mealtime practice recommended to support children's healthy eating is teachers role modeling eating healthy foods. National standards recommend caregivers' use of role modeling during mealtimes, but also call for more studies to further examine and clarify the extent to which caregivers engage in these practices (Benjamin-Neelon, 2018). One evaluation of 50 childcare centers in North Carolina found that while most providers reported and were observed using role modeling, there were still several that were observed modeling eating unhealthy foods such as fast food, salty snacks and sugary beverages (Erinosho et al., 2012). FSMS provides many opportunities for teachers to role model. However, implementation of FSMS or role modeling may differ by ECE center or program. Dev, McBride, and The STRONG Kids Research Team (2013) found that a higher proportion of providers in Head Start used FSMS and modeled healthy eating compared to Child and Adult Care Food Program (CACFP) and non-CACFP providers.

Teachers may also encourage healthy eating through the use of peer modeling and encouraging food exploration. It has been shown that social facilitation, or the frequency of a familiar behavior in the presence of others displaying the same behavior (Clayton, 1978), has a positive impact on a child's willingness to try new foods (Visalberghi &

Addessi, 2000). Although children may observe others eating healthy food, they may need to be positively exposed up to 15 times to the food to be willing to try it (Wardle, Carnell, & Cooke, 2005). There are few studies examining the frequency of the use of peer modeling of healthy eating or allowing food exploration in the ECE classroom.

Providing an overall positive emotional tone through positive and pleasant mealtime conversations can support children's healthy food choices, socialization, and learning (Mita, Gray, & Goodell, 2016; Tovar et al., 2018). Mealtime conversations at the home dinner table offer children opportunities to acquire vocabulary, acquire new knowledge, and learn positive communication skills, and have also been shown to have positive impacts on children's physical and mental health (Hallam, Fouts, Bargreen, Perkins, 2016). However, some studies reveal that ECE teachers may display limited communication during mealtime. More understanding of supportive mealtime practices in the classroom is needed.

Negative mealtime practices. Negative mealtime practices can shape unhealthy eating behaviors in children. Controlling mealtime practices do not support a child's eating self-regulation. Indulgent and uninvolved mealtime practices neither support a child's choosing and eating healthy foods nor learning.

Controlling mealtime practices. Controlling mealtime practices are adults' actions and verbal comments can potentially override the child's internal cues of hunger and satiety. These practices can be associated with an authoritarian feeding style and have been shown to have a negative association with children's intake and eating self-regulation (Wake, Nicholson, Hardy, Smith, 2007). Controlling feeding practices include pressuring children to eat, restricting unhealthy foods, praising children for having a

"clean plate", and offering bribes and rewards for consuming food (Gregory, Paxton, Brozovic, 2010; Wehrly, Bonilla, Perez, & Liew, 2014). Examples of statements that are considered to be controlling include "If you eat 3 more bites of meat, you can have a Popsicle," "If you don't finish your peas, no brownie," or "When I say you eat, you eat" (Orrell-Valente et al., 2007).

Studies examining the use of responsive and controlling mealtime practices in ECE are finding that despite recommendations to avoid using controlling mealtime practices (Benjamin-Neelon, 2018), teachers often continue to use controlling practices during mealtimes (Dev et al., 2016). As part of a larger study (Sigman-Grant, Christiansen, Branen, Fletcher, & Johnson, 2008), Ramsay and colleagues (2010) used video data observations collected during mealtime at 26 different childcare centers serving children age 14 months to 67 months, to examine the frequency of controlling and responsive mealtime practices, and found that providers used controlling practices 10 times more often than responsive feeding practices. Mita, Li, & Goodell (2013) and Sigman-Grant et al., (2008) have found similar results. Even teachers who were recognized as implementing high-quality practices overall, used verbalizations that were primarily directive in nature, such as "eat your food up," during mealtimes (Hallam, Fouts, Bargreen, Perkins, 2016).

Indulgent and uninvolved mealtime practices. Indulgent mealtime practices are actions and communications that allow the child to eat whatever he wants. Uninvolved mealtime practices are actions and communications that are ignoring of or indifferent toward the child. Both of these practices provide little to no structure, monitoring, or encouragement to children's choosing or eating healthy foods (Hughes et al., 2007). The

nature of these two practices also do lend themselves to supporting learning and socializations. These practices are associated with indulgent and uninvolved feeding styles. One study shows limited interactions between teachers and children during mealtime (Hallam, Fouts, Bargreen, Perkins, 2016). There are few other studies that examine these types of feeding practices.

As described, there are numerous practices a teacher can implement during mealtime. Most studies that have examined teacher mealtime practices have focused on individual types of practices rather than a comprehensive view of mealtime practices (Toval et al., 2018). While there are set guidelines for teacher mealtime practices, there is limited research examining teacher mealtime practices in the ECE setting. Additionally, there are even fewer that provide a comprehensive view of teacher mealtime practices in the classroom. This current study aims to fill the need for more observational studies that help describe the ECE mealtime environment.

Mealtime Practices on Eating Behavior in the Classroom

There is much room to grow in the current knowledge of how mealtime practices shape a child's eating behavior. There are some studies examining associations of mealtime practices in the classroom and children's eating behavior. At this time however, most of the current understanding is based on research examining parental feeding practices.

Positive mealtime practices. Exerting appropriate control such as parents determining what foods are served and when (Satter, 2012), coupled with a warm and supportive manner of involvement and praise has been associated with a healthy weight and thought to support healthy eating behaviors (Mosli et al., 2015). One way teachers

can display involvement and encouragement of healthy eating is through role modeling (Hendy & Raudenbush, 2000). It is thought that caregivers can convey messages of healthy eating behaviors through instruction, conversation, and role modeling during mealtime. Hendy and Raudenbush (2000) found that children were more likely to accept new foods when caregivers combined role modeling and enthusiastically commenting on these foods. However, Gubbles (2009) found that children ate more when teachers ate with them regardless of whether they were eating the same or unhealthy foods.

Prompting may encourage the intake of healthy foods. Iannotti et al (1994) observed children to investigate the extent to which various maternal feeding prompts successfully encouraged a child to eat. Maternal encouragement in prompting child was more successful than discouragement in prompting child to eat or not eat. The use of commands, actions, and rationales were more likely to succeed in influencing child eating compared to the use of negative consequences.

Teachers may use prompting during mealtime to support healthy eating and socialization. In instances where a child may be hesitant to try new foods, a teacher may encourage food acceptance by pointing out when a peer is eating that same food. Children may be more likely to eat a new food if they see a peer positively modeling consumption, and less likely to eat it if they see negative peer modeling (Greenhalgh, et al., 2009). This type of interaction can draw children's awareness to their peers and potentially initiate conversations about food or other topics, therefore supporting social development skills. Teachers may prompt children to interact with their peers as they pass food to one another. For example, as a child is reaching for a serving bowl, the teacher may prompt him to ask his peer to pass the bowl to him. Locchetta, Barton, and Kaiser

(2017) found increased levels of social initiations in preschool children when FSMS was implemented. Although mealtimes are social settings and could potentially be ideal for facilitating meaningful social interactions there are a limited number of studies looking at the support of social development during mealtime.

Negative mealtime practices. Mealtime practices that are controlling in nature have been associated with a lowered ability to self-regulate intake under the premise that adults' actions and verbal comments can potentially override the child's internal cues (Batsell, Brown, Ansfield, & Paschall, 2002; Birch, Fisher, Davison, 2003; Carper, Orlet Fisher, & Birch, 2000; Galloway, Fiorito, Francis, & Birch, 2006).

One influential study that examined parent practices on children's eating regulation show that children who were given rewards for eating showed less responsiveness to hunger and satiation compared to children who were cued to their hunger and satiation while eating (Birch, McPhee, Shoba, Steinberg, & Krehbiel, 1987). What children experience at a young age can influence how they eat later in life. Fletcher, Branen, Lawrence (1997) found that older adolescents' perceptions of their caregivers' feeding behaviors of being required to clean their plate, being given food incentives, and parents determing how much they were to eat during early childhood, disrupted their internal cues. Fisher and Birch (2002) found that daughters of parents who restricted their food intake at 5 years old were more likely to eat a higher amount of snack food in the absence of hunger at 7 years old compared to daughters of parents who did not restrict food intake. Girls with higher snack intake in the absence of hunger at 5 and 7 years of age were about five times as likely to be overweight at both ages compared to girls who did not eat much food in the absence of hunger.

Controlling mealtime practices have also been associated with negative child outcomes such as overating, increased intake of sugary beverages and high calorie snack food (Birch, Fisher, & Davison, 2003; Loth, 2016), increased food refusals (Galloway et al., 2006) and childhood obesity (Dev, McBride, Fiese, Jones, & Cho, 2013; Francis & Birch, 2005; Ventura & Birch, 2008). In reference to the classroom, one study found using food to control behavior was associated with lower fiber intake, but giving a child food without asking was associated with higher dietary fibre intake. Also encouragement to overeat was associated with lower intakes during lunch (Gubbels et al., 2010).

It is not well understood how indulgent or uninvolved mealtime practices influence children's eating behavior. Hughes and colleagues (2007) are one of few studies examining these types of mealtime practices. They found a positive association between indulgent feeding behavior and child food consumption yet do not provide any insight into other eating behaviors or the use of uninvolved mealtime practices. These findings suggest more is needed to understand the association between negative mealtime practices and children's food intake in the classroom.

Factors Influencing Mealtime Interactions

Teacher practices, children's behavior, and teacher-child interactions may vary by classroom activity settings (e.g., large group, free play, mealtime, etc.) (Booren, Downer, & Vitiello, 2012; Fuligni, Howes, Huang, Hong, & Lara-Cinisomo, 2012). These activity settings, or daily routines, are an organizational feature that teachers use to structure children's time throughout the day. Since behaviors are contextually based (Tseng & Seidman, 2007), these daily routines may influence how teachers and children behave and engage.

Few studies have examined the factors that may influence teachers' mealtime practice (Dev et al., 2013; Erinosho et al., 2012). One exploratory examination of childcare providers' use of controlling mealtime practices (Dev et al., 2016) reveals potential barriers to avoiding controlling practices. Providers report using controlling practices because they felt they were effective at getting children to eat, especially picky or stubborn children. Some also reported that the use of bribes or rewards made mealtime easier. Providers also held misconceptions about controlling practices and were not clear about the difference between encouraging and pressuring. Another barrier was that providers were fearful that parents would respond negatively if their child did not eat in childcare. Ramsay and her colleagues (2010) also speculated that providers may not realize that their comments are influential on the child's internal cues and regulation of intake. Further research is needed to better understand how to support providers in their use of positive mealtime practices over negative mealtime practices.

Feeding children in the ECE classroom setting has different characteristics than feeding children at home (Tovar et al., 2018). Oftentimes, teachers do not have control over what foods they serve. The responsibility of feeding multiple children at once can also bring some added pressures from the center and parents. These possible influencing factors as well as others have not been thoroughly explored yet understanding influencing factors can help improve teacher mealtime practices and thus the overall mealtime experience. There is a need for further research in this area.

Preliminary Findings

The interest for the current study was based, in part, on the descriptive findings from a larger, interdisciplinary, mixed methods study that examined overall teacher well-

being (Happy Teacher Project, Kwon et al., 2019) in a metropolitan city in the Midwestern state in U.S. As part of the second phase of this study, a subsample of 31 toddler and preschool teachers were observed during lunch for mealtime practices using the Mealtime Observation in Childcare (MOCC) observation checklist (described in detail in the Methodology section of this paper). Analysis of frequencies of teacher mealtime practices showed that in most of the classrooms, the physical characteristics of the classrooms during observed mealtimes supported children's ability to sit comfortably and serve and eat independently. The use of modeling was varied among the observed classrooms. While most of the teachers (77.4%) sat with the children during mealtimes, 38.7% were observed being distracted or getting up frequently throughout the mealtime for reasons such as retrieving more food or attending to classroom duties. Over half of the teachers displayed showing an interest in healthy foods served, but only 44.8% were observed eating the same foods as the children which included 24.1% observed eating the same fruit and 38.7% observed eating the same vegetable. Teachers led pleasant conversations with children during mealtimes about half of the time which included some positive talk about the food served (48.4%) and discussions pairing food with health outcomes (25.8%).

Very few teachers were observed modeling their own feelings of hunger or fullness. A somewhat higher occurrence of teachers talking to children about the child's hunger and fullness was observed. However, overall, the percentage of teachers observed supporting the child's eating self-regulation was low. For example, 65.5% of teachers served seconds to children when the children did not ask for more. Some teachers were observed using food as a reward for eating specific foods (e.g. giving a child more fruit

once he finished his vegetables). Yet many were observed offering supportive praise to children for trying a healthy food option. Observers categorized teachers' general feeding style at the end of the mealtime observation. Most teachers used either an uninvolved (42%) or authoritative (39%) feeding style during mealtime. Fewer teachers used an indulgent (10%) or authoritarian (9%) feeding style (Kwon et al., 2019). These results highlighted the need for further examination of mealtime practices.

Purpose

Taken together, the previous literature and the preliminary findings mentioned above warrant the need for further investigation into mealtime practices in the ECE setting. Children's eating behavior in the classroom has not been thoroughly examined. The current body of research that focuses on teachers during mealtime have mostly targeted one aspect of their mealtime practice such as the teacher's use of controlling feeding practices (e.g., offering rewards or bribes, Ramsay et al., 2010), or use of role modeling (Hendy & Raudenbush, 2000), and there are only a limited number of studies offering a more comprehensive view of the variety of practices that take place within the ECE mealtime setting. Guiding organizations such as The Academy of Nutrition and Dietetics (Benjamin-Neelon, 2018) and Head Start (Bureau, H. S., 2016) provide recommendations for teacher mealtime practices in the ECE setting based on the assumption that it will shape a child's eating behavior. However, even though there is a growing body of research examining mealtime in the ECE classroom, most of the literature documenting the influence of caregiver mealtime practices on children's eating behavior is focused on parental practices. There needs to be a larger amount of empirical evidence that supports the impact of teacher mealtime practices in the classroom.

The preliminary findings presented (Kwon et al., 2019) suggest that teachers are not consistently providing positive mealtime practices, particularly responsive mealtime practices that support the child's eating self-regulation. However, the findings represent a small sample size. In addition, the preliminary findings do not shed light on children's eating behavior or associated teacher practices. The current study will build on these findings by using a larger sample size and collecting and analyzing data related to child's eating behavior and associations between mealtime practices and eating behavior.

In order to build on the knowledge gained from these preliminary results, and to address the gaps in literature, this study seeks to use both quantitative and qualitative analysis to answer the following questions:

1) What eating behaviors do children demonstrate during mealtime in the ECE classroom?
2) What practices do teachers demonstrate during mealtime in the ECE classroom?
3) Are teacher mealtime practices associated with children's eating behavior during mealtime in the ECE classroom?
4) What are the teacher perspectives on the ECE mealtime experience and what factors influence their practices?

Methods

Research Design

The current study will implement an explanatory sequential mixed-methods research design (Creswell, 2015). In this design, quantitative data are collected first followed by the collection of qualitative data. Quantitative data will be collected through observations using an observation checklist and a time sampling. Collection of the

qualitative data will follow with the purpose of explaining in more depth the teacher's perception of the mealtime experience and potential influencing factors. The researcher will use a phenomenological perspective to examine the teachers' lived experience and perspectives on their mealtime routine and practices through face-to-face interviews (Merriam & Tisdell, 2016). The table below provides an overview of the methodology including the data source and procedure, data analysis, and sample.

Table 1

Analysis Plan

Research Questions	**Measures**	**Analysis**	**Procedure**
1) What eating behaviors do children demonstrate during mealtime in the ECE classroom?	Mealtime time sampling of children's eating behavior (120 children)	Quantitative Analysis of frequency of behaviors from time sampling	Video observation
2) What practices do teachers demonstrate during mealtime in the ECE classroom?	Mealtime Observation in Childcare Checklist (MOCC) (Global measure of mealtime practices, 40 teachers) Mealtime time sampling of teacher mealtime practices (120 teacher interactions with children)	Quantitative Analysis of descriptive statistics of MOCC subscales Analysis of frequency of practices from time sampling.	Live observation Video observation
3) Are teacher mealtime practices associated with children's eating behavior during	Mealtime time sampling of mealtime interactions (120 teacher-child dyads)	Quantitative Correlations of teacher mealtime practices and children's eating behavior from time sampling	Video observation

mealtime in the ECE classroom?	Mealtime Observation in Childcare Checklist (MOCC)	Multilevel analysis of MOCC subcales and children's eating behavior	Live observation
4) What are the teacher perspectives on the ECE mealtime experience and what factors influence their practices?	Interview Protocol (10 teachers)	Qualitative Level 1 and Level 2 coding, assigning categories and themes emerging from the data	Face-to-face interview

Quantitative Data

Sample and setting. The population of interest for this study are children age 2-5 years of age who attend an early childhood education center-based program and their teachers. The quantitative data will consist of a two-level nested structure where the children (level 1) are nested within teachers (level 2), meaning that the smaller levels of analysis of children's eating behavior are contained within the larger grouping of teachers. This type of data structure will lend to the use of multilevel modeling analysis (Robson & Pevalin, 2016) which is important to consider when determining a target sample size that will provide reliable estimates. Richter (2006) proposes the need of at least 30 groups comprised of at least 30 observations. Hox (1998) proposes at least 50 groups comprised of at least 20 observations. For this study, the researcher will use a convenience sample of at least 40 early childhood education teachers who meet the criterion set by the researcher. To participate in the study, the teacher must work full-time at an early childhood education center-based program in a classroom that serves children between the ages of 2-5 years old.

Mok (1995) and Snijders (2005) have both determined that the number of groups (i.e., teachers for level 2 data for this study) is more important in determining statistical

power than the number of units at level 1 (i.e., children in this study). The researcher will select children from the classrooms of participating teachers. The proposed sample size for children for this study is three children per teacher for a total of 120 children. Children must be between the ages of 2 and 5 years old and be in a classroom with their participating teacher. Parent permission must be granted for the child to participate in the study.

The setting for this study will be the participating teacher's classroom's typical lunch mealtime location. Recruitment for participants of this study will begin by contacting directors from various ECE settings. The researcher will develop a plan for recruitment of teachers with the directors who wish to participate in a manner that is least disruptive to the teacher's normal classroom routine. Children will be selected from participating teachers' classrooms and seek their parent's permission to participate in the study.

Procedures. Data will be collected using live and video observations. These observations will measure teacher mealtime practices, children's eating behavior, and associations between teacher mealtime practices and children's eating behavior.

Video recorded observations. Video recording will be used to observe children's eating behavior, teacher mealtime practices, and teacher-child interactions during mealtime. As necessary, children can be strategically seated at mealtime to ensure the video captures the participating children's eating behavior. The video camera will also need to be placed where the teacher can also be captured. Children who are not participating in the study will be placed out of view of the camera or the possibility of blurring any identifying factors of the non-participating children in the video can be

looked in to if needed. The researcher will ensure technology is prepared and back-up devices are available prior to the scheduled observation time. The video observations will begin when the mealtime preparation begins and end when the last child eating leaves the table.

Live observation. At the same time as video observations, teacher mealtime practices will be observed through live observation using an observation checklist (MOCC). For this study, the researcher will observe the participating teacher's mealtime. In order to capture the transition into mealtime and the start time of the first child sitting at the mealtime table, the researcher will arrive a few minutes prior to mealtime. The researcher will sit in a location within the classroom where the participating teacher can be observed. The observation will end once the last child has left the mealtime table.

Instruments. A mealtime time sampling tool will measure individual children's eating behavior. The mealtime time sampling tool will also be used during video observations to measure teacher mealtime practices for individual children. An observation checklist will be used during live observations to measure teacher mealtime practices in the classroom.

Mealtime time sampling. The mealtime time sampling tool will measure individual children's eating behavior, teacher mealtime practices for individual children, and teacher-child interactions during mealtime.

The mealtime time sampling tool was developed for the purpose of this study by adapting portions of the Bob and Tom's Method of Assessing Nutrition (BATMAN, Klesges et al., 1983) and a child-peer interaction time sampling (Kwon, 2004). The BATMAN is a time sampling tool that evaluates child eating behavior and concurrent

parental behavior. The child-peer interaction time sampling tool documented the frequency of a child's peer interaction and the frequency of teacher interventions to promote their peer interactions. Psychometric properties for the BATMAN include interobserver agreement of 92% for parent behavior and 96% for child behavior. Weighted Kappy coefficients ranged from .88 to .94. Test-retest correlations ranged from .61 to .94 (Klesges et al., 1983). Inter-coder reliability for the child-peer interaction time sampling was 90% with average reliability over all training session to equal 99% for teacher elicitation, 97% for peer child interaction, and 95% for child non-peer play (Kwon, 2004).

The mealtime time sampling will document the frequency of a teacher's mealtime practice, the frequency of a child's eating behavior, and the frequency of the teacher mealtime practice promoting specific child's eating behavior. The videos will be coded over 30 second intervals for a total of approximately 30 minutes, resulting in up to 90 observation points.

Teacher mealtime practices are categorized into 18 different practices. There are 12 positive mealtime practice categories. Of the 12, responsive practices include Acknowledge hunger/fullness (Self), Acknowledges hunger/fullness (Child) and supportive practices include Physical encouragement, Verbal encouragement, Prompt/suggest (using peer), Prompt/suggest (not using peer), Offer choices, Engage children's senses, Describe/educate, Model eating healthy food, Offers food, Negotiate/reason. There are 6 negative mealtime practices including Physical discouragement, Verbal discouragement, Offers reward/bribe, Model eating unhealthy food, Present food, and No observed mealtime practice (See Appendix B).

Child eating behaviors are categorized into 17 different behaviors. Categories include Request food, Refuse food, Verbalize hunger/satiation, Self-serves, Bites/places food in mouth, Explores food with senses, Explores utensils or non-food material, Talks about food in a positive way, Talks about food in a negative way, Tries new food, Ask questions, Verbal communication (socialization), Cries/whines, Engaged in other activity, Moves away from table, Passes tableware to a peer, Disruptive behavior (See Appendix B).

Teacher-child interactions are categorized in 6 different categories. These categories capture whether the teacher promoted the child's behavior or whether the behavior was spontaneous. The categories include Teacher initiated interaction, Teacher responded to behavior, Teacher spontaneous interaction, Child responded to teacher, Child initiated behavior, Child spontaneous behavior (See Appendix B). It will also be noted if teachers are present or not at time points of the observation.

Mealtime observation in childcare (MOCC). Teacher mealtime practices in the classroom will be measured using the Mealtime Observation in Childcare (MOCC) (See Appendix A). The MOCC is an observation checklist that was developed by adapting previously validated measures (Hughes et al., 2007; Swindle, Rutledge, Dix, & Whiteside-Mansell, 2017; Tovar et al., 2018) to provide a global perspective of mealtime practices. The MOCC measures the childcare mealtime environment and provider mealtime practices in children ages two to five years old. The MOCC is composed of seven subscale areas that measure different components of mealtime. Items within each area use either a 3-point Likert rating (e.g., No, Sometimes, Regularly) or a dichotomous question of yes/no. The option of "unable to observe" is an option for both of these types

of questions. Descriptive items such as food served or meal start time are either multiple choice or open-ended questions.

The seven areas of the MOCC are Children Serve Themselves (e.g., "The provider used child size appropriate tableware"), Role Modeling (e.g., "The provider drank a soda or sweetened beverage"), Sensory Exploration (e.g., "The provider engaged chidlren's senses"), Peer Modeling (e.g., "The provider prompted peer models to encourage other children to try foods at mealtime"), Self-Regulation (e.g., "The provider prevents over-serving while supporting self-regulation"), Rewards and Praise (e.g., "The provider praised a child for taking a taste or trying a bite of food"), and Overall Feeding Style (e.g., "The provider used an authoritative feeding style"). In addition, the MOCC has an area to record the type of meal, length of meal, number of children and providers present, and a description of the food served. Items on the MOCC that are reverse coded will be used to measure negative mealtime practices.

When collecting data for the Happy Teacher Project (Kown et al., 2019), the researcher and three other observers were trained how to use the instrument and practiced using the tool on video and live observations until becoming reliable. Higher than 90% agreement across all subscales was achieved among the observers (Kwon et al., 2019). No other psychometric properties are available for this tool at this time as it is still in the process of becoming validated.

Qualitative Data

Sample and setting. Teachers will be randomly selected from the sample of teachers observed during mealtimes. The target sample size for this portion of the study is 10 teachers.

Data sources and procedures. Qualitative data will seek to explore teacher's perceptions of their mealtime experiences and possible influencing factors that could influence mealtime practices. Qualitative data will be collected through face-to-face interviews. Interviews will take place at an agreed upon location that is private and easily accessible by both researcher and participant.

Interviews. Conducting interviews is the principle method for data collection in phenomenological studies (Merriam & Tisdell, 2016). Face-to-face, semi-structured and informal interviews will be used in this study. Open-ended questions about the teachers' mealtime experience, knowledge of healthful feeding practices, and personal biases and preferences for food will be considered (see Appendix C). All interviews will be voice recorded.

Field notebook. The researcher will keep a field notebook to document the physical and social context of the research setting, actions, and experiences (Bazeley, 2013). The context is crucial for understanding, interpreting, and transferability of data. Field notes including date, time, place, details of the interactions, and reflective commentary will be handwritten in the notebook when in the field so as not to lose the detail of the entry (Merriam & Tisdell, 2016). Jottings, connections, and informal thoughts of the researcher will also be documented in the field notebook as well as personal thoughts and biases that need to be confronted (Miles, Huberman, & Saldana, 2014).

Data Analysis

Quantitative Analysis

RQ1 - Child eating behavior. Individual children's eating behavior will be analyzed using scores from the mealtime time sampling. Frequency of occurrence of child eating behavior will be calculated by finding the sum of each observed behavior on the mealtime time sampling and calculating the percentage.

RQ2 - Teacher mealtime practices. A global perspective of teacher mealtime practices in the classroom will be analyzed using scores from the MOCC. MOCC area subscale scores will be calculated by totaling the item scores for each area divided by the number of items in each area to equal the mean. The sum of the area subscale mean scores will provide the total MOCC score. Percentages of items with subscales will be calculated.

Teacher mealtime practices with individual children will be calculated using scores on the mealtime time sampling. Frequency of occurrence of teacher mealtime practices will be calculated by finding the sum of each observed practice on the mealtime time sampling and calculating the percentage.

RQ3 - Teacher-child interactions. Associations between teacher mealtime practices and child eating behavior will be analyzed through correlations of individual teacher mealtime practices and children's eating behavior from the mealtime time sampling. Associations between individual children's eating behavior and classroom level teacher mealtime practices will be analyzed through multi level analysis.

Qualitative Analysis

RQ4 - Teacher's mealtime experience and influencing factors. Teacher's mealtime experiences and any influencing factors on mealtime practice will be analyzed using interview data. Interview data will be transcribed and uploaded to Dedoose. The researcher will begin data analysis by reading through the interview transcripts and recording jottings and notes in the field notebook. Provisional coding begins with a list of researcher-generated codes to start with based on what preparatory investigation suggests might appear in the data before it is collected (Miles, Huberman, & Saldana, 2014). Analysis for teacher interviews will using provisional codes for level one analysis. These provisional codes are based on the preparatory examination of the literature and the interview protocol questions. Level one provisional codes will be Positive Mealtime Experience, Negative Mealtime Experience, Influence on Children's Eating, Challenges, Barriers, How Children Influence Practices, Changes to Mealtime, Understanding of Mealtime Impact, and Personal Eating Habits. The researcher will document notes, comments, and questions that arise while reading through the transcripts and assigning level one codes. After working through the entire set of transcripts in this manner, categories or themes will be developed that represent reoccurring patterns in the data. As these categories and themes may be tentative, the researcher will read through the transcripts a third time to sort through the categories and themes, assigning codes for level two coding.

Trustworthiness

Research results are considered trustworthy when it is evidenced that the research has been conducted with some rigor (Merriam & Tisdell, 2016). In addition, the

consideration and implementation of ethical practices of a research study are important to establishing trustworthiness. The concepts of credibility, transferability, dependability, and confirmability are widely adopted in qualitative research to ensure trustworthiness (Merriam & Tisdell, 2016).

Credibility

Credibility refers to how the research findings capture what is really happening in reality (Merriam & Tisdell, 2016). Based on the assumption underlying qualitative research that reality is not fixed nor an objective phenomenon, thus the researcher can never capture an objective reality. However, there are a number of strategies that can be implemented to increase the credibility of findings. Triangulation of multiple data sources can increase credibility. This study will use interviews and a field notebook and findings will be connected back to existing literature (Merriam & Tisdell, 2016; Miles, Huberman, & Saldana, 2014). Another strategy this study will use to ensure credibility is member checks. Member checks involve soliciting feedback on emergent findings from some of the interviewees. This will help rule out the possibility of misinterpreting the meaning of what participants say. This will also help the researcher identify biases and misunderstandings (Merriam & Tisdell, 2016).

Dependability and Transferability

To increase dependability in the proposed study, the researcher will keep an audit trail of the research process (Bazeley, 2013; Merriam & Tisdell, 2016). This can help explain how the researcher arrived at the results. Rich and clear description about the research methodology ensuring that the features of the study are congruent with the

research questions will also increase dependability. Opportunities for peer examination and review are also in place.

To ensure transferability, the researcher will provide sufficient description of characteristics of the sample to allow for adequate comparisons with other samples. Thick description of the mealtime and interview setting will be provided. An interview guide is provided (Merriam & Tisdell, 2016; Miles, Huberman, & Saldana, 2014).

Confirmability

Confirmability is concerned with neutrality and reasonable freedom from research biases. Rich description of the study's methods and procedures will be described in detail. Documentation of the data collection and analysis process will be recorded. Screen shots will be taken to keep record of iterative coding. The research will document personal awareness, assumptions, biases, and affective states in the field notebook throughout the study process (Miles, Huberman, & Saldana, 2014).

Triangulation

Once all the data has been analyzed, findings will be triangulated across all data sources and between quantitative and qualitative sources. A third cycle of coding will be the construction of the narrative of findings, which will incorporate relevant themes and ideas that will surface among and across the different data types. The information recorded in the field notebook will be helpful for generating a synthesis of findings and triangulating the various sources of data in the study. To preserve the objectivity and reliability of findings from quantitative and qualitative sources, peer audits will be conducted through multiple points throughout the study (Anney, 2014).

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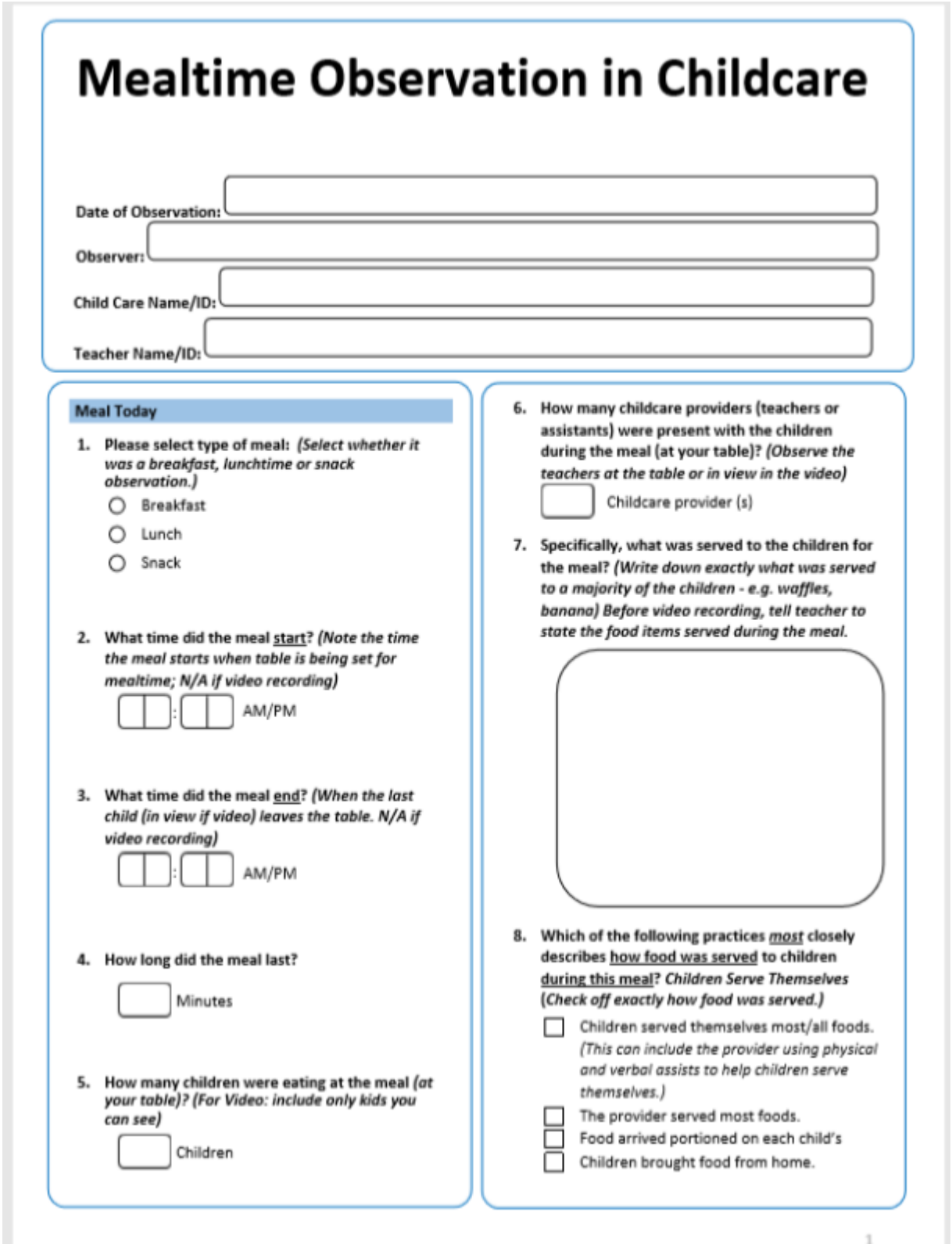
Appendix A

Mealtime Observation in Child Care



Mealtime Observation in Childcare

Date of Observation:

Observer:

Child Care Name/ID:

Teacher Name/ID:

Meal Today

1. **Please select type of meal:** ***(Select whether it was a breakfast, lunchtime or snack observation.)***
   - ○ Breakfast
   - ○ Lunch
   - ○ Snack

2. **What time did the meal start?** ***(Note the time the meal starts when table is being set for mealtime; N/A if video recording)***
   - ☐☐:☐☐ AM/PM

3. **What time did the meal end?** ***(When the last child (in view if video) leaves the table. N/A if video recording)***
   - ☐☐:☐☐ AM/PM

4. **How long did the meal last?**
   - ☐ Minutes

5. **How many children were eating at the meal** ***(at your table)? (For Video: include only kids you can see)***
   - ☐ Children

6. **How many childcare providers (teachers or assistants) were present with the children during the meal (at your table)?** ***(Observe the teachers at the table or in view in the video)***
   - ☐ Childcare provider (s)

7. **Specifically, what was served to the children for the meal?** ***(Write down exactly what was served to a majority of the children - e.g. waffles, banana) Before video recording, tell teacher to state the food items served during the meal.***

8. **Which of the following practices** ***most*** **closely describes how food was served to children during this meal?** ***Children Serve Themselves (Check off exactly how food was served.)***
   - ☐ Children served themselves most/all foods. *(This can include the provider using physical and verbal assists to help children serve themselves.)*
   - ☐ The provider served most foods.
   - ☐ Food arrived portioned on each child's
   - ☐ Children brought food from home.

Location/physical environment of meals/Involvement – Children Serve Themselves (CST)

9. **Did the children serve themselves most or all the food?**

- ○ No → **Go to #11**
- ○ Yes → **Go to #10**
- ○ Unable to observe

10. **Did the serving bowls and pitchers remain on the table for serving seconds?**

- ○ No
- ○ Yes
- ○ Unable to observe

11. **Did the childcare center have <u>child size appropriate tables and chairs</u>?** ***(The children's legs are touching the floor and the children can reach their plates easily.)***

- ○ No
- ○ Yes
- ○ Unable to observe

12. **Did the provider use <u>child size/child-friendly appropriate tableware?</u>** ***(If a majority of the tableware/dishware is child sized where it is developmentally appropriate for the child to hold it, this item is marked yes. If the specific tableware below is not present the item should be marked unable to observe.)***

	No	Yes	Unable to observe
a. Plates/trays	○	○	○
b. Cups/glasses	○	○	○
c. Serving bowls	○	○	○
d. Pitchers	○	○	○
e. Serving spoons/ladles/spoodles	○	○	○
f. Serving tongs	○	○	○

13. **Did the provider use a child-friendly food unit making fruits and vegetables easier for the children to eat (e.g., offered slices, peeled oranges, diced up peaches)? (*Overall, children are able to easily hold and eat the food. E.g. the sandwich may not be cut into half, but as long as the child is able to hold it with their hands and eat it, then give 'yes'. The food units should be developmentally appropriate for the age group.)***

- ○ No
- ○ Yes
- ○ Unable to observe

14. **Were there unhealthy snack foods (potato chips, Doritos, cheese puffs) visible to children? (*This is visible in the environment e.g. countertops and not food served to the children or toys in the environment.)***

- ○ No
- ○ Yes
- ○ Unable to observe

15. **Were there visual image(s) (e.g., poster, sticker, magnet) visible with healthy foods (whole grains, lean meats, diary fruits, vegetables) to children?**

- ○ No
- ○ Yes
- ○ Unable to observe

16. **Were children involved in meal preparation (e.g., setting table, preparing foods)?**

- ○ No
- ○ Yes
- ○ Unable to observe

17. **Were children involved in clean up (clearing and cleaning table) after the meals? *(E.g. picking plates up, discarding foods that were not eaten during the meal)***

- ○ No
- ○ Yes
- ○ Unable to observe

18. **Did the provider help children serve themselves at mealtime reducing spills and messes by following at least one strategy:**

		No	Yes	Unable to observe
a.	Filling the pitcher half full or not filled to the top	○	○	○
b.	Keep cleaning supplies such as paper napkins nearby	○	○	○
c.	Providing a tub or trash for dirty dishes and food waste	○	○	○
d.	If spills happen, letting children help clean-up	○	○	○

19. Did the provider use at least one of the following strategies to <u>maintain hygiene and safety</u> when children serve themselves by:

		No	Yes	Unable to observe
a.	Using colored serving utensils and silver eating utensils so that children can remember to avoid licking or eating from colored utensils	○	○	○
b.	Providing two sets of scooping utensils and tongs for serving food in the classroom, in case of contamination	○	○	○
c.	Reserving half servings of each food in additional bowls, in case of contamination or second helpings	○	○	○
d.	Keeping extra helpings of food on a cart or table nearby	○	○	○
e.	Provider using verbal communication to maintain hygiene and safety (e.g., saying, "don't put your hand in your milk")	○	○	○

20. Was a moment taken to settle <u>before eating</u> e.g. singing song before meal? ***(This is before eating and can include: saying grace or taking a minute to say how thankful they are for the food or just being silent for a minute prior to eating.)***

- ○ No
- ○ Yes
- ○ Unable to observe

21. Did the provider encourage the children to sit around the table during the meal? ***(The provider is trying to set structure in order to have a family meal like atmosphere. If children are running around or standing up this is used as a way to encourage them back to the table. e.g. provider says "Belly to the table" or "Feet on the floor")***

- ○ No
- ○ Yes
- ○ Unable to observe

22. Did the provider talk on the phone, text, or use the computer during the meal? ***(This can be directly at the table where they are eating or away from the table, either standing or at another table or desk.)***

- ○ No
- ○ Yes
- ○ Unable to observe

23. Was the TV/ screen on during this meal today? ***(Check all that apply.)***

- ☐ No screen/TV seen or heard from eating area
- ☐ No screen/TV in view, but not on during meal
- ☐ Yes, screen/TV was on, but in another room where it can only be heard from eating area
- ☐ Yes, screen/TV was on and visible from eating area
- ☐ Unable to observe

Role Modeling

24. During the meal in this classroom, did the provider do any of the following in front of children (eat more than one bite)?

		No	Yes	Unable to observe
a.	Eat fast food? *(Includes food not served but that the provider brought on their own, mainly energy dense food)*	○	○	○
b.	Eat a salty snack (e.g., chips)? *(Includes energy dense food not served but that the provider brought on their own)*	○	○	○
c.	Eat a sweet snack (e.g., donuts, pastries, cookies, candy)? *(Includes food not served but that the provider brought on their own; this does not include granola bars, energy bars or other snack bars, graham crackers, or animal crackers)*	○	○	○
d.	Drink a soda or other sweetened beverage? *(Includes beverages not served but that the provider brought on their own; sugar sweetened coffee drinks may be hard to discern but count only if there is an indication it is a sugary drink. This does not include 100% fruit juice.)*	○	○	○
e.	Eat fruits? *(Includes food served and food the provider brought on their own; this includes fresh, frozen, or canned fruits*	○	○	○
f.	Eat vegetables? *(Includes food served and food the provider brought on their own; this includes fresh, frozen, or canned vegetables)*	○	○	○

Interactions with children during meals

25. Did the provider sit at the table with the children during the meal? *(If more than one provider is present, this item counts if at least one of the providers sits with the children at the same table for a majority of the time. This does not count if a teacher sat at an adult-sized table separate from the children's table.)*

- ○ No
- ○ Sometimes
- ○ All/most of the time
- ○ Unable to observe

26. Did the provider eat the same foods as the children during the meal? (*This includes providers eating more than just one bite.*)

- ○ No
- ○ Ate 1-2 components
- ○ Ate all/most components
- ○ Unable to observe

27. Did the provider have each of the following interactions with children during the meal?

		No	Sometimes (1-2 times)	Regularly (3+ times)	Unable to observe
a.	The provider used subtle physical prompts to encourage the children to serve themselves? (*For example, gently moving the bowl of food toward the child or e.g. using physical assists like hand-over-hand physical prompts. Physical prompts for coercing children to eat or finishing the food do not count.)*	○	○	○	○
b.	The provider provided verbal assists to support children's ability to serve themselves? *(e.g., "Use your thumb to keep the plate steady." If no child needed help or all children were able to serve themselves then mark unable to observe)*	○	○	○	○
c.	The provider led/encouraged pleasant conversations during meals? *(The goal of this item is to try and capture meal atmosphere. Is the provider asking children questions that might help encourage a pleasant conversation? The provider should not be totally silent and unengaging.)*	○	○	○	○
d.	The provider talked with the children about the served foods? *(Includes any informal discussion about the served foods. Topics may range from naming the foods served, where they came from or the nutritional content of foods served to something as simple as what color a food is.)*	○	○	○	○
e.	The provider made specific and descriptive statements about the food being offered? *(For example, "This lettuce looks so fresh and crunchy.")*	○	○	○	○
f.	The provider enthusiastically role modeled eating healthy foods? *(Includes any verbal (e.g. Yummy!) or nonverbal cues (e.g. facial expression) that the provider gives to indicate that they like the healthy foods they're eating. (e.g., I am really enjoying the peas today. Yummy.)*	○	○	○	○
g.	The provider verbally encouraged (not forced or coerced) children to try the healthy foods (fruits, vegetables, legumes, and lean meats) on their plate? *Positive, gentle encouragement ("Mmm. Those bananas look good.")*	○	○	○	○
h.	The provider made negative comments about the food served? *(e.g., I can't believe we're having this again. I don't like peas)*	○	○	○	○
i.	The provider showed preference for unhealthy food? *This includes any provider conversation about unhealthy foods (e.g., I love pizza, Fritos, we will have cupcakes on John's birthday, on thanksgiving we will have candy.)*	○	○	○	○
j.	The provider paired a food with its health benefit or reason with children to eat healthy foods? (*For example, "This yogurt gives us calcium and is healthy for our bones." [nutrition education])*	○	○	○	○

Sensory Exploration

28. **Did the provider engage children's senses (sight, smell, touch, hearing and taste)? (*By describing, asking questions about or comparing the sensory characteristics [appearance, smell, sounds, texture and taste] of foods served at mealtime.*)**

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (3+ times)
- ○ Unable to observe

29. **Did the provider discourage manipulating or touching food on their plate to explore it? *(e.g., don't eat the pineapple with your hand, use your fork.)***

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regulalry (3+ times)
- ○ Unable to observe

Peer Modeling

30. **Did the provider encourage peer models to pass food to other children around the table during mealtime or encourage children to pass food to each other? *(e.g. "Johnny, can you pass the peas to Jessica please.")***

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (3+ times)
- ○ Unable to observe

31. **Did the provider prompt peer models to encourage other children to try foods at mealtime? (e.g., provider says, "Good job trying mangoes, Bella! Would you like to try some, Max?" or "Khaleel, I see you put some mandarin oranges on your plate. Max, would you like to try them, too?")**

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (3+ times)
- ○ Unable to observe

32. Did any child refuse food?

- ○ No → ***Go to #35***
- ○ Yes
- ○ Unable to observe

33. When children refused food, did the provider do each of the following?

		No	Yes, sometimes (1-2 times)	Yes, regularly (3+ times)	Unable to observe
a.	Teach children polite ways to refuse food *(e.g., "If you don't want the food, say, 'No thank you, maybe next time.')*	○	○	○	○
b.	Acknowledge that everyone has likes and dislikes *(e.g. "Everyone likes different foods. It is okay to have likes and dislikes. If you try it next time, you may like it.")*	○	○	○	○
c.	Give children an option to choose between 2 healthy foods	○	○	○	○
d.	Engage children's senses as a way to encourage children to taste the foods *(e.g. "The berries smell fruity. Would you like to try one and tell me how it tastes?")*	○	○	○	○
e.	Role model healthy eating *(e.g. "This broccoli tastes so yummy! Would you like to take a bite with me?")*	○	○	○	○
f.	Practice peer modeling (*e.g., provider says, "I see you are drinking milk, Bella. Milk makes our bones strong! Max, would you like to try some milk, too?" or "Max can you pass the bowl to Bella to try also?")*	○	○	○	○
g.	Continue to encourage children to eat healthy foods *(e.g. reasons with child, e.g. "what about a trying one bite and if you don't like it, you don't have to finish it")*	○	○	○	○

34. Did the providers pressure children to eat food when they <u>refused</u> to try it? (*e.g., taking a no thank you bite, saying come on be brave give it a try, mom will be happy if you try it, insisting that the child should try the food. Consider if the provider is insisting or using a controlling tone of voice.)*

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (at least 3 times)
- ○ Unable to observe

Self-Regulation

35. How did the provider support or hinder children's self-regulation?

		No	Sometimes only	All/most the time	Unable to observe
a.	The provider prevented over-serving while supporting self-regulation. *(Provider's statement must include a self-regulation component; e.g. provider says, "Take one scoop now and you may have another if you are hungry later." or "If you are still hungry you may have another food that is available; so enough food is left for everyone.")*	○	○	○	○
b.	The provider asked a child if he/she was full before removing the plate.	○	○	○	○
c.	The provider modeled his/her own feelings of hunger and fullness by describing his/her feelings to children. *(e.g. "My stomach no longer feels hungry, so I am going to stop eating.")*	○	○	○	○
d.	The provider required a child to sit at the table until he/she cleaned their plate? (*This does not include children sitting around the table waiting until all the children are done.)*	○	○	○	○

36. Did the provider do each of the following when it was time for second helpings?

		No	Sometimes only	All/most the time	Unable to observe
a.	Serve to a child even when the child did NOT ask for more (*Non- supportive, even it happens 1 time, then it is still a single time.)*	○	○	○	○
b.	Serve a child seconds only after asking the child if he/she was still hungry	○	○	○	○
c.	Cue children to feelings of fullness *(e.g., are you full? How does your belly feel?)*	○	○	○	○
d.	Pressure a child to eat more than they seemed to want (e.g., after the child said they were finished or full or served the child food even if they said no.)	○	○	○	○
e.	Spoon feed a child to get them to eat	○	○	○	○
f.	Rush a child or children to eat/or the provider hurries to finish eating during the meal *(e.g., we're waiting on you. Let's hurry it's time to go. There may also be non-verbal cues such as the provider cleaning up plates and the table before children are done eating.)*	○	○	○	○

Rewards and Praise

37. How did the provider use rewards or bribes?

		No	Yes, sometimes (1-2 times)	Yes, regularly (3+ times)	Unable to observe
a.	Did the provider praise a child for taking a taste or trying a bite of the food? (*Response for children eating behavior (healthy food acceptance)*)	○	○	○	○
b.	Did the provider praise a child for eating unhealthy foods? (*Response to child eating behavior (unhealthy food acceptance) *If no unhealthy food is served check unable to observe.)*	○	○	○	○
c.	Did the provider promise something other than food for eating a specific food? (*e.g. "If you eat your beans, we can play ball outside." - Response to child eating behavior (food refusal or negative comment on food.)*	○	○	○	○
d.	Did the provider use food as a reward for eating a specific food? (*e.g. "If you eat your spinach, you can have your cake". Response to a child eating behavior (food refusal or negative reaction to food.)*	○	○	○	○
e.	Did the provider praise children for finishing their food or cleaning their plates? *(e.g., "Very good! You have a happy (clean) plate."- Non- supportive.)*	○	○	○	○
f.	Did the provider use statements that are individualized to the child and the specific behavior, during praising children for trying/eating healthy foods (fruits, vegetables, legumes, and lean meats)? (*e.g. "Bobby you tried spinach for the first time. Good job!)*	○	○	○	○
g.	Did the provider use non-food reward to children for trying new foods or eating healthy foods? *(e.g. a. Action rewards. For example, high-fives, hugs or thumbs-up. b. High interest rewards that are interesting to the child. e.g., reading a book, choosing a song for music or movement.)*	○	○	○	○
h.	Did the provider use non-food reward to children for trying new foods or eating healthy foods? *(e.g. a. Action rewards. For example, high-fives, hugs or thumbs-up. b. High interest rewards that are interesting to the child. e.g., reading a book, choosing a song for music or movement.)*	○	○	○	○

Permissiveness/Indulgence

38. Did the provider ignore or show indifference to a child or children?

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (3+ times)
- ○ Unable to observe

39. Did the provider allow children to continue to take multiple servings of the same foods, even if they weren't consuming the foods?

- ○ No
- ○ Yes, sometimes (1-2 times)
- ○ Yes, regularly (3+ times)
- ○ Unable to observe

Overall Feeding Style

40. Did the provider use an authoritative feeding style? *(Definition: authoritative feeding styles strike a balance between encouraging children to eat healthy foods and allowing children to make their own food choices. Providers use reason and education, rather than bribes or threats. Note: In order to get 'most', provider has to do the whole spectrum of responsive feeding as defined here.)*

- ○ None
- ○ Sometimes
- ○ Most
- ○ Unable to observe

41. Did the provider use an authoritarian feeding style? *(Definition: authoritarian represents behaviors such as restricting the child from eating certain foods and forcing or bribing the child to eat other foods. Thus, authoritarian feeding is characterized by attempts to control the child's eating with little regard for the child's choices and preferences.)*

- ○ No
- ○ Sometimes
- ○ Most
- ○ Unable to observe

42. Additional notes regarding the meal. (Include any distractions or unusual events that occur. E.g. fire alarm, child throws up during the meal, child has a tantrum, child is hurt.)

12

Appendix B

Mealtime Time Sampling

Teacher Mealtime Practice	Description	Examples
1. No Observed Mealtime Practice	Teacher does not engage with children in any way	Not talking, not prompting, not serving food
2. Physical Encouragement	Teacher provides hands on ways of encouragement	Pats, hugs, kisses, moves, directs physically, holds and points, models a movement, helps a child use an eating utensil or serving tableware
3. Physical Discouragement	Teacher provides hands on ways of discouragement	Hits or spanks, restrains from action, removes child or object, physically redirects or moves in another direction
4. Verbal Encouragement	Teacher provides encouragements with words	Directs in a gentle way, makes positive statements about ("You tried a berry!")
5. Verbal Discouragement	Teacher provides discouragement with words	Forbids, scolds, commands, makes negative statements about, yells ("Eat your food!")
6. Prompt/Suggest (using peer)	Teacher gently suggests child to try a food	"Apples are sweet. You might like them if you try one."
7. Prompt/Suggest (not using peer)	Teacher uses peer modeling to gently prompt a child to try a food.	"Jenny ate a carrot. Leslie, would you like to try one?"
8. Offer Choices	Provider offers choices or alternative when a child refuses a food	"You can choose between the broccoli and the banana" or "You can choose to eat one of the following – green beans or rice"
9. Engage Children's Senses	Teacher allows child to explore food with senses or discusses sensory properties with child	Describes or discusses sensory characteristics of sight, smell, touch, taste. Teacher doesn't discourage child touching, squeezing, licking food. ("This orange is juicy")
10. Acknowledge Hunger/Fullness (Self)	Teacher talks about own hunger and fullness.	"My tummy is full. I'm going to stop eating now."
11. Acknowledges Hunger/Fullness (Child)	Teacher draws attention to child's state of hunger and fullness	"You're asking for more. Is your tummy still hungry?"
12. Offers Reward/Bribe	Provides any incentive to get child to eat or stay at the table	"If you eat all your green beans you can have more fruit." Or "If you eat all your meat you can play with dolls"
13. Describe/Educate	Teacher talks about nutritional or healthy properties of a food	"This yogurt gives us calcium and is healthy for our bones."
14. Model Eating Healthy Food	Teacher eats healthy food in front of children and may talk about the food in a positive way	Teacher eats same healthy food as children, Teacher talks about eating the food ("I like pears!"). Teacher talks about other healthy food.
15. Model Eating Unhealthy Food	Teacher eats unhealthy food in front of children and may talk about the unhealthy food	This includes fast food, chips, soda, sweets. Teacher may talk about unhealthy food. ("I love chips")
16. Present Food	Teacher gives food to children	Putting food on child's plate, giving pre-plated food
17. Offers Food	Teacher asks child if they would like food	"Would you like pears on your plate?" or "Would you like to try some peas?"
18. Negotiate/Reason	Teacher continues to encourage eating healthy food.	This is a positive practice and does not include pressure or bribes. ("What about trying one bite and if you don't like it you don't have to finish it."

Child Eating Behavior	Description	Examples
13. Request Food	Child asks for food verbally or non-verbally	Child points to food so as to request it, asks for food, or begins to whine or cry for food
14. Refuse Food	Child refuses food that is presented verbally or non-verbally	Child closes mouth, turns head away or shakes head no, pushes food away when presented, verbally refuses food
15. Verbalize Hunger/Satiation	Child talks about internal states of hunger and fullness	Child verbally states that he is hungry or full. Child describes feelings of hunger or fullness ("My tummy is rumbling")
16. Self-Serves	Child serves food to self or attempts to serve food to self	Child uses serving materials to give food or drink to self, child makes attempts to serve food or drink to self
17. Bites or Places Food in Mouth	Child eats, bites, or places food in mouth	Child does not have to swallow food, child takes a bite of food, child puts food in mouth and takes it out, this can include teacher placing food in child's mouth
18. Explores Food with Senses	Child explores food through taste, smell, touch or other senses	child licks, smells, touches, messes, stirs, or crumbles food
19. Explores Utensils or Non-Food Material	Child explores materials on the mealtime table or explores self	Child manipulates tableware or other non-food items on the table, Child plays with or explores clothes or parts of their own body
20. Talks about food in a positive way	Child makes positive comments about healthy food	Child says positive words about healthy food that he is either eating or not eating
21. Talks about food in a negative way	Child makes negative comments about healthy food	Child says negative words about healthy food that he is either eating or not eating
22. Tries new food	Child tries a food that is new to him	Child eats a new food that he has not tired before
23. Asks Questions	Child asks question during mealtime	Child asks questions about food or non-food topics
24. Verbal Communication (socialization)	Child talks during mealtime for socialization	Child communicates with teachers and/or peers
25. Cries/Whines	Child cries or whines during mealtime	Child cries or whines during mealtime for general reasons
26. Engaged in other activity	Child is engaged in an activity other than eating	Child is not eating or participating in mealtime conversation, Child is playing with toy
27. Moves away From Table	Child leaves the table	Child leaves the table either because he is finished or not finished eating, Child is taken away from table by another person
28. Passes tableware to peer	Child passes tableware to a peer	Child gives serving bowl, pitcher, or utensil to peer
29. Disruptive behavior	Child displays behavior that is disruptive to mealtime	Child hits teacher or peer, Child throws food or non-food materials, Child displays any other disruptive behavior during mealtime

Appendix C

Teacher Interview Protocol

19. Tell me about your mealtime routine.
20. What do you enjoy about mealtime?
21. What challenges and/or barriers during mealtime do you have? (probing: how does this influence your mealtime practices?)
22. Do certain children's behavior make mealtime time enjoyable? Challenging? (probing: how does this influence your mealtime practices?)
23. What would you change about the mealtime experience?
24. Tell me about your influence as a teacher on children's eating. (probing: what are your goals for children during mealtime?)
25. Tell me about your professional development or training experience around mealtimes.
26. Are you satisfied with your own eating habits? Can you tell me more about that?

Time Line

November 8, 2019 – Defend prospectus

November 15, 2019 – Meet with Dr. Decker at Educare to discuss recruitment possibilities

November 20, 2019 – Submit for IRB approval

December, 2019 – Preparation for recruitment

December, 2019 – Practice using time sampling with video observations, make changes to tool, become reliable, find another person to check for reliability

December, 2019 – Practice MOCC and check for reliability

January, 2020 – Begin data collection

February – April, 2020 – ongoing qualitative data analysis

April, 2020 – Complete data collection and begin quantitative data analysis

May, 2020 – Begin writing three articles

May-July, 2020 – Writing and revising

End of Summer, 2020 – Prep to defend dissertation

The Role of Teacher Mealtime Practices on Children's Eating Behavior in the Early Childhood Education Mealtime Setting

Addendum to the Methods

Due to the impact of the COVID-19 pandemic, in-person data collection for the dissertation study titled, *The Role of Teacher Mealtime Practices on Children's Eating Behavior in the Early Childhood Education Mealtime Setting*, was put on hold until it was deemed safer to resume. It was originally anticipated this would occur in the Fall 2020. However, at this time, most center-based programs are not accepting visitors into the building in order to reduce the community spread of COVID-19. In addition, many center-based programs have mealtime routines that look different than before the impact of the pandemic. For instance, children may sit farther away from each other, and the use of components of Family Style Meal Service such as serving food family style to allow for self-serving has stopped. Therefore, in-person data collection of mealtimes as initially proposed cannot resume for this study at this time.

An alternative plan to the methods of this study is proposed below. The highlighted changes are 1) adding the use of secondary data and 2) adding a measure of teaching practices during mealtime.

1. Adding the use of secondary data that consists of videos of mealtimes in center-based program classrooms serving children age 3-5.

    I have already collected 15 mealtime videos which include observations for 15 teachers and 40 children. The initial proposed sample size for my study was 40 teachers and 120 children. These proposed numbers were calculated to achieve appropriate statistical power needed to conduct multilevel

modeling analysis, therefore the current sample collected (15 teachers, 40 children) is too low.

Dr. Dipti Dev from the University of Nebraska-Lincoln has offered to share videos from an intervention project for this dissertation study. There are 35 baseline videos capture both the teacher and children's behavior during lunch times in the classroom, in a similar manner as the in-person observations that I have already completed/collected. The combination of the already collected 15 videos from me, and these 35 videos will allow for a total sample size of 50 teachers and 150 children (average 3 children per teacher). Additionally, Dr. Dev has offered to share the Mealtime Observation in Child Care checklist scores from the 35 baseline videos since they were already coded for her other study.

2. Examining both the teaching and feeding practices exhibited by the teacher during mealtime through coding mealtime videos using the MOCC and the CLASS-PreK.

The initial proposal for my dissertation study focused on teacher feeding practices during mealtimes. This has already been done with Dr. Dev's 35 videos. Therefore, adding an additional examination of teaching practices (measured through CLASS-PreK) will allow for the furthering of science in understanding mealtime practices by looking at the relationship between high-quality teaching practices and responsive feeding practices.

Correlational associations between responsive feeding practices and high-quality teaching practices have been found and described in the paper titled

Supporting Children's Healthy Development During Mealtime in Early Childhood Settings currently under review with the Early Childhood Education Journal (Malek-Lasater, Kwon, Horm, Sisson, Dev, & Castle, 2020). However, the findings are based on observations of teaching outside of the mealtime and observations of responsive feeding practices during mealtime. My dissertation will compare CLASS and MOCC measures both taken at mealtimes. This examination will add to the understanding of how recommended responsive feeding practices and teaching practices align which can aid in improving professional development opportunities and interdisciplinary communication efforts for implementing responsive feeding practices and can expand quality assessment to extant high-quality care to incorporate classroom routines.

(Changes below are highlighted in red)

Research Questions

Original research questions:

5) What eating behaviors do children demonstrate during mealtime in the ECE classroom?
6) What practices do teachers demonstrate during mealtime in the ECE classroom?
7) Are teacher mealtime practices associated with children's eating behavior during mealtime in the ECE classroom?
8) What are the teacher perspectives on the ECE mealtime experience and what factors influence their practices?

Revised research questions:

3) What is the relationship between responsive feeding practices and high-quality teaching practices during the mealtime?
4) What are teacher's perspectives, goals, and their perceived roles of the ECE mealtime experience?
5) What are the associations between children's mealtime behavior and teacher practices?

Methods

Research Design

The current study will implement an explanatory sequential mixed-methods research design (Creswell, 2015). In this design, quantitative data are collected first followed by the collection of qualitative data. Due to the impact of COVID-19, this study will utilize both in-person collected data and secondary data for quantitative analysis. Collection of the qualitative data will follow in-person data collection with the purpose of explaining in more depth the teacher's perception of the mealtime experience and potential influencing factors. The researcher will use a phenomenological perspective to examine the teachers' lived experience and perspectives on their mealtime routine and practices through face-to-face interviews (Merriam & Tisdell, 2016). The table below provides an overview of the methodology including the data source and procedure, data analysis, and sample.

Table 1

Analysis Plan

Research Questions	Measures	Analysis	Procedure
1) What is the relationship between responsive feeding practices and high-quality teaching practices during the mealtime?	Mealtime Observation in Childcare Checklist (MOCC) (Global measure of mealtime practices, 50 teachers) Classroom Assessment Scoring System (CLASS-PreK)	Descriptive statistics for MOCC subscale and total scores & CLASS-PreK dimension and composite domain scores. Correlation analysis of MOCC scores and CLASS-PreK domain scores	Video observation collected by researcher (15 teachers) and collected by Dr. Dev's research team (secondary data; 35 teachers from 35 baseline videos). Secondary data of 35 scored MOCCs (from 35 baseline videos)
2) What are teacher's perspectives, goals, and their perceived roles of the ECE mealtime experience?	Interview Protocol (10 teachers)	Qualitative Level 1 and Level 2 coding, assigning categories and themes emerging from the data	Zoom interview
3) How are children responding to feeding practices and high-quality teaching practices during mealtime?	Mealtime time sampling of children's eating behavior (150 children) Mealtime time sampling of mealtime interactions (150 teacher-child dyads)	Analysis of frequency of mealtime behaviors from time sampling Correlations of teacher mealtime practices and children's mealtime behavior from time sampling Correlations of CLASS PreK scores and the frequency of children's mealtime behavior	Video observation collected by researcher (40 children) and collected by Dr. Dev's research team (secondary data; 110 children) Video observation collected by researcher (15 teachers) and collected by Dr. Dev's research team (secondary data; 45 teachers).

		Multilevel analysis of MOCC subcales and children's mealtime behavior	Secondary data of 45 scored MOCCs

Quantitative Data

Sample and setting. The population of interest for this study are children age 2-5 years of age who attend an early childhood education center-based program and their teachers. The

quantitative data will consist of a two-level nested structure where the children (level 1) are nested within teachers (level 2), meaning that the smaller levels of analysis of children's behavior are contained within the larger grouping of teachers. This type of data structure will lend to the use of multilevel modeling analysis (Robson & Pevalin, 2016) which is important to consider when determining a target sample size that will provide reliable estimates. Richter (2006) proposes the need of at least 30 groups comprised of at least 30 observations. Hox (1998) proposes at least 50 groups comprised of at least 20 observations. The original targeted sample size for this study was 50 early childhood education teachers who met the criterion set by the researcher, which included being a full-time teacher at an early childhood education center-based program in a classroom that serves children between the ages of 2-5 years old. Due to the impact of the COVID-19 pandemic, only a portion of the data will be collected by the researcher. The sample collected by the researcher is 15 teachers. The remaining sample of early childhood teachers will come from secondary video data collected by Dr. Dipti Dev at the University of Nebraska-Lincoln. This video captures mealtimes in early childhood center-based programs participating in the Child and Adult Care Food Program (CACFP) in

Lincoln, Nebraska. The sample size of secondary video data is 35 teachers which will create a total of 50 teachers participating in this study.

Mok (1995) and Snijders (2005) have both determined that the number of groups (i.e., teachers for level 2 data for this study) is more important in determining statistical power than the number of units at level 1 (i.e., children in this study). The original proposed sample size for children for this study is three children per teacher for a total of 120 children. Criteria for children to be included in the study are that children must be between the ages of 2 and 5 years old, be in a classroom with their participating teacher and parent permission must be granted for the child to participate in the study. Again, due to the impact of the COVID-19 pandemic, only a portion of the data will be collected by the researcher. The sample collected by the researcher is 40 children. The remaining 110 children will come from the secondary video data for a total sample size of 150 children. The interaction between one child and his or her corresponding teacher will create one dyad. Therefore, the total sample of teacher-child dyads will be 150.

For both data collected by the researcher and secondary data, the setting for this study will be the participating teacher's classroom's typical lunch mealtime location. Recruitment for participants of this study began by contacting directors from various ECE settings. Once receiving agreement from the ECE directors, the researcher visited centers in-person and/or via email to recruit teachers. Teachers were also invited to participate in the study through a social media posting. All children in participating teachers' classrooms were invited to participate in the study and parent permission packets were distributed that included permission and consent forms and a parent questionnaire. For secondary data, videos of lunch mealtimes in CACFP participating

center-based programs will be shared with the researcher for analysis once IRB approval is granted.

Procedures

Video recording will be used to observe children's behavior during mealtime, teacher practices during mealtime, and teacher-child interactions during mealtime.

Data collected by the researcher. Video recording devices (two per classroom) were strategically set by the researcher to ensure the video captured both the participating children's behavior during mealtime and the participating teacher during mealtime. Video recording devices were also set to place children not participating in the study out of view of the camera. When this was not possible teachers placed participating children next to each other in a way that created minimal or no disruption the natural flow of the mealtime. The video observations began when the mealtime preparation started and ended when the last child eating left the table.

Instruments

A mealtime time sampling tool will measure individual children's behavior during mealtime. The mealtime time sampling tool will also measure teacher practices and teacher-child interactions. The Mealtime Observation in Childcare (MOCC) will measure teacher responsive feeding practices during mealtime, and the Classroom Assessment Scoring System (CLASS PreK) will measure teaching practices during mealtime.

Mealtime time sampling. The mealtime time sampling tool will measure individual children's mealtime behavior, teacher practices and teacher-child interactions during mealtime.

The mealtime time sampling tool was developed for the purpose of this study by adapting portions of the Bob and Tom's Method of Assessing Nutrition (BATMAN, Klesges et al., 1983) and a child-peer interaction time sampling (Kwon, 2004). The BATMAN is a time sampling tool that evaluates child eating behavior and concurrent parental behavior. The child-peer interaction time sampling tool documented the frequency of a child's peer interaction and the frequency of teacher interventions to promote their peer interactions. Psychometric properties for the BATMAN include interobserver agreement of 92% for parent behavior and 96% for child behavior. Weighted Kappa coefficients ranged from .88 to .94. Test-retest correlations ranged from .61 to .94 (Klesges et al., 1983). Inter-coder reliability for the child-peer interaction time sampling was 90% with average reliability over all training session to equal 99% for teacher elicitation, 97% for peer child interaction, and 95% for child non-peer play (Kwon, 2004).

The mealtime time sampling will document the frequency of a teacher's mealtime practice, the frequency of a child's mealtime behavior, and teacher-child interactions during mealtimes. The videos will be coded over 10 second intervals for a total of approximately 30 minutes, resulting in up to 180 observation points.

Teacher mealtime practices are categorized into 18 different practices. There are 12 positive mealtime practice categories. Of the 12, responsive practices include Acknowledge hunger/fullness (Self), Acknowledges hunger/fullness (Child) and supportive practices include Physical encouragement, Verbal encouragement, Prompt/suggest (using peer), Prompt/suggest (not using peer), Offer choices, Engage children's senses, Describe/educate, Model eating healthy food, Offers food,

Negotiate/reason. There are 6 negative mealtime practices including Physical discouragement, Verbal discouragement, Offers reward/bribe, Model eating unhealthy food, Present food, and No observed mealtime practice (See Appendix B).

Child eating behaviors are categorized into 10 different behaviors. Categories include Request food, Refuse food, Verbalize hunger/satiation, Bites/places food in mouth, Explores food with senses, Uses/Explores utensils or non-food material, Talks about food, Verbal social behavior (talks/laughs/cries/whines), Engaged in other activity/Away from table, Disruptive behavior (See Appendix B).

Teacher-child interactions are categorized in 6 different categories. These categories capture whether the teacher promoted the child's behavior or whether the behavior was spontaneous. The categories include Teacher initiated interaction, Teacher responded to behavior, Teacher spontaneous interaction or interacting with another child, Child responded to teacher, Child initiated behavior, Child spontaneous behavior or interacting with peer (See Appendix B). It will also be noted if teachers are present or not at time points of the observation.

Mealtime observation in childcare (MOCC). Teacher feeding practices during mealtime will be measured using the Mealtime Observation in Childcare (MOCC; Sleet et al., 2019), which is an observation tool designed to measure ECE teachers' mealtime practices in classrooms serving children between ages 2 to 5, and was developed by adapting previously validated measures (Hughes et al., 2007; Swindle et al., 2017; Tovar et al., 2019) and the AND best practice feeding domains (Benjamin-Neelon, 2018).

The most updated version of the MOCC has 43 questions clustered into 12 subscales plus an area to record characteristics of the meal (e.g., type of meal, length of

meal, number of children and staff present, foods served, and food units). The 12 subscales are Mealtime Environment, Style of Meal Service, Role Modeling (Sitting Together, Eating Together, Verbal Communication), Sensory Exploration, Offering Condiments and Dips, Peer Modeling, Pressure, Praise, Rewards, and Threats, Provider's Response to Food Refusal, Self-Regulation, End of Meal and Overall Feeding Style.

As suggested by the MOCC authors, responses are to be coded as "no, not observed," "yes sometimes (1-2 times)," "yes regularly ≥ 3," or "unable to observe or not applicable." For scoring, responses were converted to a numerical scale (0 = no, not observed, 1 = yes, sometimes, 2 = yes, regularly > 3 times). The code "unable to observe" is to be used if observers could not observe a situation. For example, if no vegetable or fruit was served then the observer could not observe the teacher eating vegetables or fruit and the code "unable to observe" was used. However, if vegetables were served and the teacher was not eating vegetables, then the response was "no, not observed." Scores are not penalized for questions marked as "unable to observe or not applicable" therefore the number of items in the subscale with this code is deducted from the total possible points scored (the denominator for the calculation) as to not affect the score. Total points are summed for each subscale and divided by the total possible points for that subscale. Subscale means are then multiplied by 10. Some items are to be reverse coded in order to reflect the desirable practice with a higher number.

When collecting data for the Happy Teacher Project (Kown et al., 2019), the researcher and three other observers were trained how to use the instrument and practiced using the tool on video and live observations until becoming reliable. Higher than 90% agreement across all subscales was achieved among the observers (Kwon et al., 2019).

Classroom Assessment Scoring System PreK (CLASS-PreK). The CLASS-Pre-K has three domains of Emotional Support (Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspectives), Classroom Organization (Behavior Management, Productivity, and Instructional Learning Formats), and Instructional Support (Concept Development, Quality of Feedback, and Language Modeling). The CLASS Pre-K has been deemed valid and reliable with internal consistency alpha scores for the three domains ranging from .82 to .92 (Downer et al., 2012; Johnson et al., 2017).

Qualitative Data

Sample and setting. Due to the impact of the COVID-19 pandemic, interviews for teachers who had already been observed began. All teachers who had been observed were invited to participate in an interview via Zoom. The target sample size for this portion of the study is 10 teachers.

Data sources and procedures. Qualitative data will seek to explore teacher's perceptions of their mealtime experiences and possible influencing factors that could influence mealtime practices. Qualitative data will be collected through interviews via Zoom.

Interviews. Conducting interviews is the principle method for data collection in phenomenological studies (Merriam & Tisdell, 2016). Virtual, semi-structured and informal interviews will be used in this study. Open-ended questions about the teachers' mealtime experience, knowledge of healthful feeding practices, and personal biases and preferences for food will be considered (see Appendix C). All interviews were voice and video recorded via Zoom.

Field notebook. The researcher will keep a field notebook to document the physical and social context of the research setting, actions, and experiences (Bazeley, 2013). The context is crucial for understanding, interpreting, and transferability of data. Field notes including date, time, place, details of the interactions, and reflective commentary will be handwritten in the notebook when in the field so as not to lose the detail of the entry (Merriam & Tisdell, 2016). Jottings, connections, and informal thoughts of the researcher will also be documented in the field notebook as well as personal thoughts and biases that need to be confronted (Miles, Huberman, & Saldana, 2014).

Data Analysis

RQ1 – Teacher mealtime practices. A global perspective of teacher feeding practices during mealtime will be analyzed using scores from the MOCC. MOCC area subscale scores will be calculated by totaling the item scores for each area divided by the number of items in each area to equal the mean. The sum of the area subscale mean scores will provide the total MOCC score. Percentages of items with subscales will be calculated.

A global perspective of teaching practices during mealtime will be analyzed using scores from the CLASS-PreK. CLASS-PreK composite scores are calculated by taking individual observation cycle scores for each dimension and averaged across the number of cycles of observations completed. Domain subscale scores represent the average of each of the corresponding dimension scores.

Teacher mealtime practices with individual children will be calculated using scores on the mealtime time sampling. Frequency of occurrence of teacher mealtime

practices will be calculated by finding the sum of each observed practice on the mealtime time sampling and calculating the percentage.

RQ3-Child behavior and teacher-child interactions. Individual children's mealtime behavior will be analyzed using scores from the mealtime time sampling. Frequency of occurrence of child behavior will be calculated by finding the sum of each observed behavior on the mealtime time sampling and calculating the percentage.

Associations between teacher mealtime practices and child behaviors will be analyzed through correlations of individual teacher mealtime practices and children's mealtime behavior from the mealtime time sampling. Associations between children's behavior and teaching practices during mealtime will be analyzed through correlations between CLASS PreK scores and frequency of child behaviors. Associations between individual children's mealtime behavior and classroom level teacher feeding practices and teaching practices during mealtime will be analyzed through multilevel analysis.

Qualitative Analysis

RQ2 - Teacher's mealtime experience and influencing factors. Teacher's mealtime experiences and any influencing factors on mealtime practice will be analyzed using interview data. Interview data will be transcribed and uploaded to Dedoose. The researcher will begin data analysis by reading through the interview transcripts and recording jottings and notes in the field notebook. Provisional coding begins with a list of researcher-generated codes to start with based on what preparatory investigation suggests might appear in the data before it is collected (Miles, Huberman, & Saldana, 2014). Analysis for teacher interviews will using provisional codes for level one analysis. These provisional codes are based on the preparatory examination of the literature and the

interview protocol questions. Level one provisional codes will be Positive Mealtime Experience, Negative Mealtime Experience, Influence on Children's Eating, Challenges, Barriers, How Children Influence Practices, Changes to Mealtime, Understanding of Mealtime Impact, and Personal Eating Habits. The researcher will document notes, comments, and questions that arise while reading through the transcripts and assigning level one codes. After working through the entire set of transcripts in this manner, categories or themes will be developed that represent reoccurring patterns in the data. As these categories and themes may be tentative, the researcher will read through the transcripts a third time to sort through the categories and themes, assigning codes for level two coding.

Trustworthiness

Research results are considered trustworthy when it is evidenced that the research has been conducted with some rigor (Merriam & Tisdell, 2016). In addition, the consideration and implementation of ethical practices of a research study are important to establishing trustworthiness. The concepts of credibility, transferability, dependability, and confirmability are widely adopted in qualitative research to ensure trustworthiness (Merriam & Tisdell, 2016).

Credibility. Credibility refers to how the research findings capture what is really happening in reality (Merriam & Tisdell, 2016). Based on the assumption underlying qualitative research that reality is not fixed nor an objective phenomenon, thus the researcher can never capture an objective reality. However, there are a number of strategies that can be implemented to increase the credibility of findings. Triangulation of multiple data sources can increase credibility. This study will use interviews and a field

notebook and findings will be connected back to existing literature (Merriam & Tisdell, 2016; Miles, Huberman, & Saldana, 2014). Another strategy this study will use to ensure credibility is member checks. Member checks involve soliciting feedback on emergent findings from some of the interviewees. This will help rule out the possibility of misinterpreting the meaning of what participants say. This will also help the researcher identify biases and misunderstandings (Merriam & Tisdell, 2016).

Dependability and Transferability. To increase dependability in the proposed study, the researcher will keep an audit trail of the research process (Bazeley, 2013; Merriam & Tisdell, 2016). This can help explain how the researcher arrived at the results. Rich and clear description about the research methodology ensuring that the features of the study are congruent with the research questions will also increase dependability. Opportunities for peer examination and review are also in place.

To ensure transferability, the researcher will provide sufficient description of characteristics of the sample to allow for adequate comparisons with other samples. Thick description of the mealtime and interview setting will be provided. An interview guide is provided (Merriam & Tisdell, 2016; Miles, Huberman, & Saldana, 2014).

Confirmability. Confirmability is concerned with neutrality and reasonable freedom from research biases. Rich description of the study's methods and procedures will be described in detail. Documentation of the data collection and analysis process will be recorded. Screen shots will be taken to keep record of iterative coding. The research will document personal awareness, assumptions, biases, and affective states in the field notebook throughout the study process (Miles, Huberman, & Saldana, 2014).

Triangulation

Once all the data has been analyzed, findings will be triangulated across all data sources and between quantitative and qualitative sources. A third cycle of coding will be the construction of the narrative of findings, which will incorporate relevant themes and ideas that will surface among and across the different data types. The information recorded in the field notebook will be helpful for generating a synthesis of findings and triangulating the various sources of data in the study. To preserve the objectivity and reliability of findings from quantitative and qualitative sources, peer audits will be conducted through multiple points throughout the study (Anney, 2014).

Possible Journal for Articles

- Article 1: Conceptual Article - *Early Childhood Research Quarterly*

  Scope: Research on early childhood education and development from birth through 8 years of age; predominately empirical research on issues of interest to EC development, theory, and educational practice.

- Article 2: Empirical Article - *Early Education and Development*

  Scope: Primarily empirical research on the links between early childhood education and children's development from birth to age 8.

- Article 3: Practical Article - *Young Children*

  Scope: Practical, research-based articles on topics related to young children birth through age 8.

Timeline

- September - October, 2020 – Work on changes to IRB and begin coding videos from in-person data collection. Once approved, begin coding secondary data videos.
- September-December, 2020 – Video data coding, coding interviews, and writing of conceptual/theoretical paper
- December, 2020 – Have coding complete and begin analysis
- January-February, 2021 – Writing and revising empirical and practitioner paper. Revising and completing conceptual/theoretical paper.
- March, 2021 – Revising and completing empirical and practitioner paper
- March-April, 2021 – Preparation for defense and defend

Appendix B: Internal Review Board Study Approval Letter

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Approval of Initial Submission – Expedited Review – AP01

Date: January 14, 2020

IRB#: 11571

Principal Investigator: Adrien Malek

Approval Date: 01/14/2020

Status Report Due: 12/31/2020

Study Title: Early Childhood Mealtime Practice Research

Expedited Category: 6 & 7

Collection/Use of PHI: No

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

Requirements under the Common Rule have changed. The above-referenced research meets one or more of the circumstances for which continuing review is not required. However, as Principal Investigator of this research, you will be required to submit an annual status report to the IRB.

As principal investigator of this research study, you are responsible to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
- **Submit an annual status report to the IRB to provide the study/recruitment status and report all harms and deviations that may have occurred.**
- **Submit a final closure report at the completion of the project.**

If you have questions about this notification or using IRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,

Aimee Franklin

Aimee Franklin, Ph.D.