



April 2021

TO: 2022 Young Scholars Program Applicants

RE: Examples of strong responses to Full Application questions

Dear Prospective Applicant,

Thank you for your interest in the Young Scholars Program (YSP). Please use the following packet as an additional resource when developing your proposal for the 2022 YSP LOI and Full Application process. This packet is a compilation of exemplary responses to the following sections:

- 1) Research Project Basis and Research Questions
- 2) Current State of Knowledge and the Significance of the Present Study
- 3) Public Policy and/or Practice Relevance
- 4) Methodologies and Measures
- 5) Data Analysis Approach

The examples represent excerpted written responses from various, previously awarded proposals. With each example, an overview of the project, the form question, the applicant's response, and annotations are provided. The responses in this packet are highlighted as strong written examples of question responses at the Full Application stage.

Also, please be advised that the following examples reflect responses to a previous version of the Full Application. The Foundation revised the application form for the current cycle, so please pay close attention as some of the question details might have changed. For additional questions regarding YSP please contact: [yvsp@fcd-us.org](mailto:yvsp@fcd-us.org).

Good luck, we are looking forward to receiving your application!

Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

**Vanessa Rodriguez, Ph.D.**  
New York University School of Medicine  
**Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example**

**Project Overview:**

The proposed research study is a mixed-methods design looking at social emotional learning (SEL) in preschool classrooms, focusing on the early care and education (ECE) teachers themselves as well as on their instructional practice. In the proposed study, 500 preschool teachers from 81 high-need, NYC public school districts within the Family Children and Teachers Thriving Together (FCTTT) study will be surveyed. Interviews will be completed with a subset of 60 of these teachers. The study will also utilize secondary data from the larger FCTTT study, including teacher self-report, observational, implementation fidelity, and administrative data.

**Research Project Basis and Research Questions**

*Describe the theoretical or empirical foundation(s), the specific research question(s), and the working hypothesis(es) which underlie the proposed work. This question may require a more in-depth response than in the LOI. In this instance, it is recommended that you build from your previous LOI response.*

*Please note there is an opportunity to upload the bibliographic citations for the application in Section VII. Data Analysis Approach.*

The ECE workforce is at the forefront of strengthening school readiness which is a critical strategy for reducing income and racial disparities in academic and life success (Blair & Raver, 2015; Pianta, Hamre, & Stuhlman, 2003). Substantial evidence indicates that the nature and quality of classroom interactions between teachers and young students predict a range of important child outcomes (Pianta, Barnett, Burchinal, & Thornburg, 2009) such as growth in academic achievement from Pre-K through Kindergarten (Mashburn et al., 2008), self-regulation (Raver et al., 2011) and social-emotional skills (Pianta, Mashburn, Downer, Hamre, & Justice, 2008).

SEL enables children to understand and manage their emotions, build healthy relationships, set positive goals, and make responsible decisions (CASEL, 2019). Numerous PD programs and classroom-based curricula have been shown to strengthen positive teacher-student interactions and teacher practice for promoting student SEL. Yet, little is known about how PD programs may support the teacher practices and interactions necessary for promoting student SEL or implementation of SEL interventions (Domitrovich et al., 2016).

**Commented [A1]:** The proposed research is well supported by the literature reviewed and the research questions are well stated. There is some rationale for each of the three hypotheses.

The study focuses on understanding teacher SEL, understanding in various ways its relationship to student SEL, and evaluating differential impacts of an underlying RCT.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

According to the PCM (Jennings & Greenberg, 2009), teachers' SEC and well-being are hypothesized to influence a teacher's ability to develop healthy teacher-student relationships, effectively manage classrooms, and implement student SEL interventions. Together these capabilities create a healthy classroom climate which ultimately impact student SEL and academic outcomes. Teacher SEC and well-being is particularly important for those who work with young children as they learn SEL primarily through observing adult models, rather than curricular content (Jennings & Frank, 2015). Further, when teachers lack adequate SEC to perform their roles, they experience high levels of stress which also has negative impacts on their students (Oberle, & Schonert-Reichl, 2016).

SEL interventions have demonstrated benefits on student SEL and indirectly on teacher SEC and well-being, particularly when the teacher is implementing an SEL intervention for students (Domitrovich et al., 2016). However, to our knowledge no studies have examined SEL in ECE teachers (as opposed to a teacher's competency in understanding student SEL domains e.g. SEC) in the context of implementing a student SEL curriculum. Such information is necessary to understand, inform and improve implementation of PD for teachers and student SEL interventions implemented by ECE teachers (particularly with YSP priority populations).

The FCTTT studies use the Stage-Based Framework for Implementation of Early Childhood Programs and Systems (Metz et al., 2015) to guide its efforts in systematically using data and feedback loops to drive decision-making and promote continuous improvement for PD implementation. The CEHD-DOE partnership is grounded in implementation frameworks drawing on the science of improvement, an emerging approach to improve mental health and education (e.g., Bryk, Gomez, Grunow, & LeMahieu, 2015). The process serves as a guide for how the insights from the proposed YSP study can be rapidly incorporated into improving implementation of ECE PD programs.

The proposed study aims to characterize Pre-K teacher SEL; examine relationships between Pre-K teacher SEL and classroom observations and implementation of a student SEL intervention; and evaluate the differential impact on Pre-K teacher SEL of 3 randomly assigned PD interventions. To achieve this, the YSP study will take advantage one FCTTT study, a hybrid implementation-effectiveness RCT examining the impact of PD and related resources on teachers/classrooms. The study is conducted in 81 high-poverty district schools with Pre-K programs and ~500 Pre-K teachers teaching >4500 children annually. Schools were randomized (in 2017) to one of three interventions: 1) Thrive PD-7 days focused on supporting student SEL through self-reflection and experiential activities that have the potential of building teachers SEL capacity; 2) Thrive+PC- the Thrive PD plus a one-day group training and 14 one-on-one coaching sessions to support implementation of ParentCorps, a 14-session student SEL classroom intervention; and 3)

**Commented [A2]:** PI provides strong rationale for the research and how it is relevant to the Foundation's goal of strengthening the ECE workforce.

PI grounds the research in PCM framework.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

Inspire PD- 7 days focused on supporting classroom management and instruction. FCTTT uses classroom environment data (CLASS, A-TSRS) already collected at scale by the NYCDOE as part of standard practice and quality monitoring.

Based on the PCM (Jennings & Greenberg, 2009), the YSP study utilizes a mixed methods, explanatory sequential design (Creswell & Guetterman, 2019) informed by the Stage-Based Framework for Implementation of Early Childhood Programs and Systems (Metz et al., 2015). It includes quantitative and qualitative assessments of teacher SEL (2019/20 school year), after 2 years of PD implementation and in parallel with the second year of a teacher implemented student SEL intervention.

### The study has the following Aims and Hypotheses:

Aim 1: To characterize SEL among Pre-K teachers (lead, assistant, paraprofessional, teacher's aide) through self-reports (N = 250, based on a 50% consent rate from the 500 available teachers) and cognitive interviews (N= 60). Quantitative direct measures of teacher SEL do not currently exist. However, teacher SEC and well-being, a complementary construct, will be indirectly measured through self-report in the following domains: mindfulness in teaching, teacher efficacy, comfort teaching diverse students, emotion regulation, perceived stress, sleep quality and burnout. These measures have been examined in several previous studies of teacher SEC and well-being and found to be sensitive to intervention effects (Jennings, et al., 2017; Jennings et al., 2019). We will also assess teacher demographics with a newly tested series of questions specifically designed to be culturally and linguistically sensitive for supporting ECE teachers in describing themselves. Cognitive interviews (Rodriguez & Mascio, 2018) designed to examine teacher awareness (awareness of: self-as-a-teacher, teaching process, learner, interaction, and context) allow for further exploration of the putative domains of teacher SEL beyond teacher SEC and well-being; affording an in-depth investigation into how these ECE teachers think about their own process of teaching and how that varies amongst them. Teachers will be strategically selected for cognitive interviews to ensure representation of FCTTT's 3 PD tracks as well as across racial/ethnic groups and years of teaching experience.

We hypothesize that by combining ECE teachers' self-reported SEC and well-being along with their qualitatively described teaching awarenesses we will be able to characterize their overarching teacher SEL.

Aim 2: To examine the relationship between Pre-K teacher self-reported SEC, well-being, and teaching awareness with directly observed classroom practices (CLASS) and teacher-student interactions (A-TSRS) in 125-250 classrooms. We will also examine associations between Pre-K teacher SEC, well-being and teaching awareness with implementation

**Commented [A3]:** Using a mixed methods, explanatory sequential design, this study addresses important gaps in this research area using the aims listed here.

PI explicitly ties the research to the Foundation's priority populations.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

quality of the student SEL intervention among teachers in the 20 schools (60 classrooms) randomly assigned to Thrive+PC track.

We hypothesize that teachers with higher scores on SEC and well-being domains will be observed to use more practices in support of student SEL and self-regulation and will have more positive teacher-student interactions. Although we will examine relations by PD condition, we do not make any specific hypotheses about differences in strength of relations. Within the Thrive+PC track, we hypothesize that teachers with higher scores on SEC and well-being domains will implement the student SEL intervention with greater fidelity. We further hypothesize that the qualitative examination of teacher awareness will corroborate observed relationships between teacher SEC and well-being with classroom practices, teacher-student interactions and implementation fidelity. We also hypothesize that the cognitive interviews may elicit new potential domains of teacher SEL that are not currently assessed by the established indirect measures of teacher SEC and well-being.

Aim 3: To evaluate differential impact on Pre-K teacher SEL (250 teachers from 81 schools) from 3 randomly assigned (at the school level) PD interventions.

After 2 years of PD, we hypothesize that teacher SEL (a combination of SEC, well-being and teaching awarenesses) will be greatest among teachers in the Thrive+PC condition, followed by teachers in the Thrive condition, followed by teachers in the Inspire condition. Given the nature of self-reflection in Thrive PD, teachers who participated in the 7-session experiential PD are expected to strengthen teacher SEL especially in domains of mindfulness, and comfort teaching diverse students. Teachers in Thrive+PC (who receive student SEL intervention training and one-on-one coaching in implementation) are expected to have higher levels of SEL, especially in domains of teaching efficacy, and emotion regulation.

In summary, the YSP study takes advantage of an existing FCTTT study in 81 schools labeled as high-poverty with Pre-K programs, to advance our understanding of teacher SEL, PD and SEL intervention implementation. This study has great potential to answer critical policy and practice questions faced by school districts and ECE systems throughout the country because it will take place in the context of an existing successful research-practice partnership guided by education and implementation science.

### **Current State of Knowledge and Significant of the Present Study**

*Please discuss the significance of the proposed project, how it relates to the current state of research knowledge and specifically how it contributes to the research field.*

**Commented [A4]:** The current research is well grounded in relevant theory about teacher SEL and cognition.

The study aims to make a significant contribution to the field of EC education and social emotional development and learning.

The applicant proposes to combine qualitative and quantitative data analysis to create classifications of teacher SEL. This is a unique contribution to the field.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

The proposed study will produce findings that are ultimately relevant for supporting the mental health and development of children of color from historically disinvested neighborhoods. It focuses on understanding the SEL of Pre-K teachers who are responsible for supporting student SEL in schools. This project uses mixed methods to refine our understanding of the salient factors that comprise the SEL of racially and culturally diverse Pre-K teachers from schools labeled as high-poverty. The YSP project will consider how teacher's own SEL relates to teacher-student interactions, practices in support of promoting student SEL and implementation of a student SEL intervention. Finally, it will consider the impact of 3 PD tracks, implemented by CEHD-DOE, on Pre-K teacher SEL. The study will take place with ~250 teachers in 81 district schools. Lessons learned from this project will be relevant to developing and improving PD for ECE teachers supporting minoritized children living in poverty.

**Commented [A5]:** The PI explains how the study will be beneficial for the Foundation's priority populations.

### ECE Teachers in Context.

Much of the current state of knowledge regarding ECE teachers who support children living in poverty and relevant PD, is in the context of Head Start (Head Start CARES Project, 2019). Much less is known about Pre-K teachers teaching in minoritized and underserved public schools. This project will contribute to the research field by studying teachers and teaching practices across >80 public schools supporting >4,000 Pre-K students annually.

### Pre-K Teacher SEL.

Regardless of setting, there is limited knowledge about Pre-K teacher's own SEL. According to the PCM (Jennings & Greenberg, 2009), teacher's SEC and well-being influences their ability to create a healthy classroom climate: a key factor in supporting student SEL and academic outcomes (Jennings & Frank, 2015; Pianta et al., 2008). The model posits that teacher's SEC and well-being influences teacher-student relationships, effective classroom management and SEL implementation. This combines to create healthy classroom environments. The PCM uses the broadly accepted definition of student SEL developed by the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2019). This definition comprises 5 domains by which to achieve competency: self and social awareness, responsible decision-making, self-management, and relationship management (Zins, Weissberg, Wang, & Walberg, 2004). It is important to note that the definition and measurement of Teacher SEC (as described in the PCM) is based on studies of Student SEL (as described by CASEL). Teacher SEC is derived from those competencies required to understand and support student SEL. This restrains our ability to improve practice and outcomes for children by narrowing our understanding of a teacher's own SEL.

The YSP project takes a unique approach to understanding teacher SEL; rather than exclusively characterizing teacher's competencies to support student's SEL, the study uses mixed methods to extend our understanding of a teacher's own social emotional cognition and the SEL domains that constitute that skill development. In my dissertation,

**Commented [A6]:** The study focuses on differences across teachers to be able to implement student SEL curriculum. It is making no assumptions about teachers.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

I used cognitive interviews with expert teachers to explore teachers' awareness of their teaching process. The Five Awarenesses of Teaching framework emerged from the data (Rodriguez, 2016; Rodriguez & Solis, 2013). Subsequent research observed a potential linkage and extension of the PCM to include this framework as an approach to explore teacher SEC and well-being utilizing a developmental lens to examine teachers as learners. In this study, 18 ECE teachers from 9 programs participated in cognitive interviews coded with the Five Awarenesses of Teaching framework. The study identified teachers' awareness of 1) Self-as-a-Teacher, 2) Teaching Process, 3) Learner, 4) Interaction, and 5) Context. Results supported the ability of the framework to capture ECE teacher cognition in relation to their SEC and well-being as well as highlighting tensions between teacher's robust awareness of student SEL but active suppression of their own SEL and well-being (Rodriguez et al., 2019).

This project will contribute to the field by expanding the consideration of teacher SEL beyond the specific competencies developed based on what is known about student SEL. By employing validated survey measures of SEC and well-being articulated by the PCM AND cognitive interviews coded according to the Five Awarenesses of Teaching framework, this project will expand our understanding of teacher SEL which will be relevant to all ECE teachers and specifically to Pre-K teachers supporting children living in poverty.

### Classroom Quality.

It is essential that ECE teachers be prepared to consistently provide high quality education through positive teacher-student interactions. Regulatory and emotional aspects of teachers' interactions with children are strongly linked to how children learn (Hamre & Pianta, 2005; Mashburn et al., 2008) and positive teacher-student interactions can mitigate factors that put children at risk of poor school performance (Rimm-Kaufman, La Paro, Downer, & Pianta, 2005). High-quality ECE programming can attenuate the relation between poverty and school readiness skills (McCartney, Dearing, Taylor, & Bub, 2007). The CLASS is an observational measure of classrooms that includes three domains intended to capture positive teacher-student interactions and classroom climate: emotional support, classroom organization, and instructional support. Although CLASS has advanced research on classroom quality and student outcomes, some argue that it has been misused to indicate teacher quality and drive PD. As part of FCTTT, the DOE conducted CLASS 3 times and A-TSRS (a measure of teacher practice developed in Head Start Cares; Abenavoli et al., 2019) 2 times over a 3 year period. Importantly, the A-TSRS includes a unique subscale that assesses teacher practices that promote student SEL.

### Professional Development for Pre-K Teachers supporting minoritized students living in poverty.

The provision of high quality ECE is emotionally demanding (Keller, Chang, Becker, Goetz, & Frenzel, 2014). These demands have increased substantially as local, state and federal mandates have increased programming hours for

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

young children (“extended duration”, Consolidated Appropriations Act of 2016, Pub.L. 114-113); high stress, burnout and turnover are higher among ECE teachers relative to teachers of older children (Faulkner, Gerstenblatt, Lee, Vallejo, & Travis, 2016; Whitaker, Dearth-Wesley, & Gooze, 2015), and these problems are further compounded in historically disinvested neighborhoods (Allensworth, Ponisciak, & Mazzeo, 2009; Ingersoll, 2001; Provasnik & Dorfman, 2005). Poor emotion management and stress contribute to teacher attrition (Darling-Hammond, 2001; Montgomery & Rupp, 2005) and there is growing recognition on the accumulation of teacher stress and turnover on student well-being (Oberle & Schonert-Reichl, 2016; Milkie & Warner, 2011) and educational quality (Travers, 2001). Taken together, these findings underscore the critical importance of providing supportive environments for ECE teachers and opportunities for teachers to build their own SEL skills to support them in managing the stressors associated with teaching young children.

Unfortunately, PD approaches typically focus on relaying information about child development and practice-based strategies for supporting development – that is, increasing knowledge – with little attention to the changes in skills and dispositions required to make and sustain change in teachers’ provision of high quality, emotionally-supportive classrooms. The National Center for Research on Early Childhood Education suggests that this practice is not effective at changing teacher behavior. PD aimed at changing classroom behavior must focus on changes in skills and dispositions, such as self-awareness skills, in addition to knowledge (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). Teachers describe the need for PD to address their own social-emotional health (Shernoff, Mehta, Atkins, Torf, & Spencer, 2011). Moreover, focusing on their emotional responses to their work is associated with greater student engagement, more so than simply learning to manage classroom problems (Parker, Martin, Colmar, & Liem, 2012). Given the high social emotional demands of teaching, particularly in supporting students from underserved communities, it is unfortunate that most PD experiences do not provide opportunities for teachers to self-reflect and develop their own SEL skills, even though this is likely necessary for positive teacher-student interactions (Sutton & Wheatley, 2003).

In summary, little is known about how ECE teachers’ SEL supports student SEL and academic outcomes. This project takes advantage of a large ongoing RCT of 3 PD conditions carried out in partnership with the largest school district in the country. By infusing cognitive interviews into the protocol, leveraging my unique perspective as a teacher of color, and considering teacher SEL through my Five Awarenesses Framework, this project will advance science in numerous areas. Importantly, as articulated in the Stage Based Frameworks for Implementation of ECE programs (Metz et al., 2015), this study will provide a more complete understanding the teacher’s role in implementing a student SEL intervention. Such information is necessary for future improvement efforts. The DOE and the developers of ParentCorps will look to the findings and learnings from this project to improve PD and program implementation.

Commented [A7]: PI provides a summary of the relevant literature and the directions for further research.



Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

**Policy-Practice Relevance**

*The research must have clear connections to policy and/or practice that have the potential to bring about positive change for the ECE workforce and YSP's priority populations in the implementation of a program and/or policy at the federal, state, local, and/or organizational/institutional level. Please describe how the proposed research could be used by the appropriate decision-makers in the course of their work. Also, briefly describe how results/recommendations could be communicated beyond scholarly outlets.*

The proposed work has numerous clear and direct connections to both policy and practice that have the potential to bring about positive change for practicing ECE teachers and racially and culturally diverse children enrolled in Head Start and Pre-K programs. This work may also have implications for teacher preparation programs.

This mixed methods project includes the voices of hundreds of Pre-K teachers from >80 Pre-K programs in historically disinvested communities teaching thousands of racially and culturally diverse children living in poverty. The specific aims are informed by regular conversations and questions posed by leadership of the NYCDOE's Division of Early Childhood Education (DECE). The DECE is responsible for >1800 Pre-K programs supporting ~70,000 four year olds annually.

CEHD is a contracted vendor to provide PD services to Pre-K teachers and part of this contract led by Dr. Brotman includes evidence-based consultation to DECE about policy and practice decisions. Together, CEHD and DECE are partnering on the 3 RCTs to "help make Pre-K as strong as possible". Therefore, as a co-investigator on these studies and principal investigator on the proposed study, I am already part of several well-established mechanisms that will ensure that this work is policy and practice relevant. The conversations with DECE will also help me to consider the policy and practice connections for Head Start programs and school-district run Pre-K programs nation-wide.

Findings from this study will inform content and best practices for PD to support healthy child development, and for strategies to support teachers with a range of SEL skills to implement student SEL interventions with fidelity. DECE is especially interested in understanding the differential impact on teacher SEL of 3 different PD tracks (varying in approach and content) that they have invested in disseminating broadly. As part of the partnership work with the DOE the investigative team prepares regular reports with policy and practice implications for DECE and City Hall. I plan to develop a series of policy and practice briefs that will be modeled on these reports that can be disseminated broadly.

Findings from these studies will have clear connections to improvements of the CEHD-DOE developed Thrive PD (focused on student SEL) and Training and Coaching for Pre-K teachers implementing the ParentCorps SEL classroom

**Commented [A8]:** PI describes how the proposed YSP research will contribute to an understanding of mental health and education policies/practices relevant for early care and education (ECE) teachers and students from low resourced neighborhoods. PI explicitly relates policy implications to YSP priority populations.

**Commented [A9]:** PI describes plans for dissemination of findings.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

intervention. CEHD-PC leadership, under the direction of my primary mentor Dr. Brotman, plan to incorporate findings from this work as they continue to scale PD and ParentCorps in NYC and cities across the country (currently in Detroit Head Starts and Corpus Christi Independent School District). The process for making improvements to PD and programming will serve as a model for other PD and program developers. We will collaborate on disseminating this information through scholarship and in practice and educational outlets.

The YSP study aims are particularly relevant for teacher preparation. A more holistic understanding of teacher SEL helps make explicit and transparent to those entering teacher preparation, what skills and aptitudes are central to the profession. Teacher preparation curricula can be used to revise coursework to include a focus on teacher SEL development – analogous to existing courses on learner’s development. Teacher SEL assessments may also be used by leaders of educational practice and training to evaluate gaps in teacher SEL and tailor curricular or practice experiences to enhance their development. For example, in recent conversations with Teach for America, they expressed enthusiasm for this proposal as a way to evolve their training of instructional coaches for in-service and pre-service teachers to better account for teacher SEL development and attend to the cultural and racial identity of their workforce.

In addition to the venues for dissemination and communication described above, I will plan to speak at various ECE relevant conferences (SRCD, AERA, Education First’s SEL in Action, National HeadStart Expo) and make myself available to speaking with policy makers (Dr. Brotman is an Ascend fellow at the Aspen Institute which affords me access to an influential leadership group).

The Five Awarenesses of Teaching framework and related theories have been presented at practitioner oriented symposia such as the widely attended Learning and the Brain symposium series which I recently co-chaired and was a featured keynote. I have also worked with the event organizers to establish a standing workshop on race and equity in teaching practice. These forums are a natural outlet for the study results and have the potential to influence large groups of teachers and decision makers with respect to the intersection of teacher SEL and equity. The teacher awareness concept has also been incorporated into teacher training at innovative educational organizations such as the Momentous Institute and the Peter Clark Center for Mind, Brain and Education, creating another powerful outlet for sharing the data and insights from the proposed YSP research. The Momentous institute alone supports ~5500 predominately Latinx families and children living in poverty annually through their therapeutic services program. Their mental health and instructional coaches support ~10,000 teachers across 20 states in outreach training. It also hosts an influential practice based conference with >1,000 attendees each year. This creates another powerful channel to translate my findings into action among the YSP’s priority populations.

Commented [A10]: PI ties study aims to policy/ practice relevance.

## Research Project Basis and Research Questions, Current State of Knowledge, and Policy-Practice Relevance Example

In summary, the collaboration with DOE-CEHDs established distribution channels for policy briefs, the access to influence widely used evidence-based PD programs, plans to present the study results to academic, policy and practice-based audiences, and the inherent linkage with the Five Awarenesses of Teaching framework, provide a robust platform to use the study findings to influence ECE workforce decision makers.

**Commented [A11]:** In addition to local impact, the findings can also be applied to develop PD for EC teachers in other contexts.

Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

**Bonnie Solomon, Ph.D.**  
Child Trends, Incorporated

**Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example**

**Project Overview:**

This primary research, mixed methods implementation study examines the extent to which, and how, the state of Maryland and its districts have supported early educators to improve their discipline practices in compliance with a new mandate banning suspension and/or expulsion as a discipline method in early care and education (ECE) community-based center, public school, and family child care settings. Using interviews as a primary data source and administrative data on disciplinary removals for secondary data analysis, this study will examine the perspectives and experiences of related individuals in the implementation of the policy, as well as develop a pre/post perspective after the ban was enacted.

**Research Project Basis and Research Questions**

*Describe the theoretical or empirical foundation(s), the specific research question(s), and the working hypothesis(es) which underlie the proposed work. This question may require a more in-depth response than in the LOI. In this instance, it is recommended that you build from your previous LOI response.*

*Please note there is an opportunity to upload the bibliographic citations for the application in Section VII. Data Analysis Approach.*

I will apply an ecological systems perspective (Bronfenbrenner, 1992) to examine the implementation of Maryland's ban on suspension and expulsion in ECE, by exploring individual, program, district, and state influences on, and supports for, ECE educators' transition to alternatives to exclusion.

The proposed study is also guided by the model of Active Implementation Drivers developed by the National Implementation Research Network (Fixsen et al., 2015). This framework conceptualizes successful implementation as changes in practice and recognizes that changes do not automatically follow the rollout of new innovations. The framework identifies three overarching drivers of successful implementation, discussed below, and additionally recognizes that organizations (e.g., ECE programs) operate within broader systems (e.g., state and district contexts) that must actively support implementation to achieve changes in practice.

**Commented [A1]:** The proposal is centered around an understudied topic that is both interesting and valuable.

This is a largely a theoretical project that is well designed to look at several dimensions of the implementation of a new behavior management policy. The multiple perspectives and multiple methods help to strengthen the study.

The proposed study aligns with FCD's workforce goals and focus on implementation research.

**Commented [A2]:** The study has a very well-defined purpose---to study the implementation of a MD state bill SB651.

**Commented [A3]:** PI describes a theory of successful implementation.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

(1) Competency Drivers reflect how new practices are taught and learned. In the proposed study, I will explore the extent to which, and how, state, district, and program supports address educator competence with respect to alternative discipline practices. For instance, I will ask ECE educators about the types of training, coaching, and other supports they have received to help them implement alternatives to exclusion. I will also ask about their confidence in implementing such alternatives, as challenging child behavior is a key reason cited for suspending or expelling young children (Irvin-Vitela, 2010). Additionally, because research points to implicit bias as a cause of discipline disparities in ECE (Downer et al., 2016; Gilliam et al., 2016), I will examine how educators perceive child behavior and discipline disparities, as well as steps programs have taken to reduce implicit bias, such as training staff on cultural awareness.

(2) Organization Drivers include robust data systems and other organization structures and practices that support decision-making. In the proposed study, I will examine how ECE programs have addressed contextual factors known to influence the use of exclusionary discipline, such as access to behavioral health supports for children. Limited access to mental health consultants has been found to be associated with higher rates of expulsion in ECE (Gilliam & Shabar, 2006), suggesting that children who are suspended or expelled may be those most in need of intervention (U.S. Department of Health and Human Services & U.S. Department of Education, 2014). I will also examine efforts to establish new program discipline policies and/or processes, including data systems. Access to smaller class sizes and professional development opportunities, and the existence of formalized discipline policies and processes, are among the contextual factors that may influence the use of exclusionary discipline (Gilliam & Shabar, 2006; U.S. Department of Health and Human Services & U.S. Department of Education, 2014).

(3) Leadership Drivers are often conceptualized as leaders who can navigate resistance, are engaged, and can readily identify and resolve problems that arise during implementation. In the proposed study, I will examine ECE program leadership attitudes toward discipline and the discipline-related expectations that have been communicated to ECE educators, either directly or indirectly. I will also examine other aspects of program leadership that ECE educators perceive to have facilitated or hindered shifts in discipline practice. School leadership attitudes toward exclusionary discipline have been found to predict the use of suspension and expulsion (Skiba et al., 2014).

My research questions, below, are designed to examine the extent to which competency, organization, and leadership drivers are present to support ECE educators to change discipline practice across a range of Maryland ECE settings consistent with SB 651.

(1) To what extent, and how, have state and district officials supported ECE programs and educators to reduce reliance on exclusionary discipline?

**Commented [A4]:** The PI lists a broad array of research questions.

The set of questions is comprehensive and attempts to capture policies or plans, and how they are interpreted in programs and classrooms.

The PI lists appropriate hypothesis in coordination with each research question.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

Based on a review of publicly available guidance issued by MSDE, I expect that the state has largely left implementation in the hands of districts and thus ECE program/educator supports may vary by district. For instance, I expect that some districts may have revised their policies and procedures to align with state law and/or begun providing training to ECE educators on alternatives to exclusion; however, I expect that other districts may still be preparing to implement the ban. This hypothesis is based on the stages of implementation outlined by Fixsen and colleagues (2005), which suggest that it often takes four years or longer to reach full implementation of an innovation.

(2) How do state and district supports vary by type of ECE setting and/or baseline district discipline prevalence?

I expect greater investment of state resources in communication and supports targeting districts with higher levels of baseline discipline prevalence. I also expect greater investment of state and district resources targeting public ECE settings, given more robust data systems that enable the state and its districts to monitor discipline practice in public settings.

(3) What approaches have ECE programs used to support changes in discipline practice that are aligned with the ban?

I expect variation with respect to the steps ECE programs have taken to support changes in discipline practice. In districts that have revised their student code of conduct, clearly communicated the requirements of SB 651 to ECE programs, and provided more high quality supports to ECE programs and/or educators (i.e., have made the ban a district priority), I expect more programs may have taken initial steps to shift discipline practice (e.g., by establishing new policies, providing access to additional behavioral health supports for children, and/or training staff on alternative approaches). The ecological systems perspective and model of Active Implementation Drivers both point to the influence of district context on implementation at the program level.

(4) How do the approaches used by ECE programs vary by type of setting?

I expect that public ECE settings may have taken more steps towards shifting discipline practice compared to other settings – again due to more robust data systems that enable the state and its districts to monitor discipline practice in public settings.

(5) How do ECE educators understand the requirements of the new law?

I expect that ECE educator awareness and understanding of the requirements of SB 651 will vary by program and by district, depending on efforts undertaken to raise awareness among ECE educators. The ecological systems perspective and model of Active Implementation Drivers both point to the influence of program leadership and district context on implementation at the educator level.

Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

(6) How do ECE educators perceive the supports they have received, and how do they perceive that SB 651 has affected discipline processes and practices within their program?

I expect that ECE educator satisfaction with the supports they have received, confidence for implementing alternatives to exclusion, and perceptions of program changes in discipline practice will vary by program and district implementation efforts—particularly efforts focused on competency and organization drivers. For instance, I expect higher levels of satisfaction and confidence, and more movement away from exclusionary discipline, in districts that have provided: professional development for ECE administrators, educators, and staff; district-wide resource guides and/or clearly written plans of action to address challenging child behavior; and community mental health consultants. The ecological systems perspective and model of Active Implementation Drivers both point to the influence of district context and program leadership on implementation at the educator level.

(7) What are ECE educators' perspectives on discipline and child behavior?

I expect that ECE educator perspectives on discipline and child behavior will vary widely, in part depending on district and program efforts undertaken to raise awareness about these issues. The ecological systems perspective and model of Active Implementation Drivers both point to the influence of program leadership and district context on implementation at the educator level.

(8) How do ECE educator knowledge of the ban, perceptions of support, and perspectives on discipline and child behavior vary by type of ECE setting?

I expect greater awareness and understanding, more favorable perceptions of supports, and less favorable attitudes toward exclusionary discipline in public ECE settings. This is based on my hypothesis for RQ #2—that the state and its districts may have invested more resources in communication and supports targeting public ECE settings compared to other settings, given more robust data systems that enable the state and its districts to monitor discipline practice in public settings.

(9) What trends can be identified in disciplinary removals over time, from before to after the enactment of SB 651?

Based on my hypothesis for RQ #1—that some districts may still be preparing to implement the ban—I expect that trends in disciplinary removals may differ by district. I expect sharper declines in disciplinary removals in districts that have made the ban a district priority and have invested in supports that target competency and organization drivers.

**Current State of Knowledge and Significance of the Proposed Study**

*Please discuss the significance of the proposed project, how it relates to the current state of research knowledge and specifically how it contributes to the research field.*

Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

**Significance:**

Suspensions and expulsions negatively affect children’s development (Gregory et al., 2010) and are especially harmful to students of color given reduced opportunities for instruction and for developing skills needed for school success (Reyes et al., 2013). There is evidence to suggest that children who are suspended or expelled early in their education may be more likely to be suspended or expelled later (Raffaele Mendez, 2003). Consequences for families may include missed work time or even job loss for parents and added family stress (U.S. Department of Health and Human Services & U.S. Department of Education, 2014; Van Egeren et al., 2011), as well as negative effects on parents’ attitudes toward school and/or their child (Meek & Gilliam, 2016). Furthermore, exclusionary practices may undermine opportunities to identify and intervene with undiagnosed disabilities or mental health issues (U.S. Department of Health and Human Services & U.S. Department of Education, 2014).

Meanwhile, lifetime suspension rates are 48% for black children, 23% for Latinx children, and 21% for white children (Musu-Gillette et al., 2016), and these disparities emerge as early as preschool (Gibson et al, 2014; Gilliam et al., 2016). In 2005, research at Yale (Gilliam & Shabar, 2006) revealed that preschoolers are expelled at three times the rate of K-12 students.

Federal data, coupled with research showing disparities in suspensions and expulsions based on race and gender, has prompted policymakers to reexamine discipline policy and practice in both ECE and K-12 settings. Lawmakers have responded with legislation to restrict suspension and expulsion and encourage alternative discipline strategies (Rafa, 2019). However, limited research has been conducted on preschool suspension and expulsion, specifically around how new state discipline policies have been implemented in the early childhood space and how ECE educators are supported to shift discipline practices following policy change and implementation.

**Research Exploring State Discipline Policy Implementation:**

There are few emerging studies examining the promise of policy change to shift discipline practices. Further, current research in this area has largely excluded any examination of how discipline policy changes are implemented in ECE settings and the implications for practice.

One exploratory study examined K-8 disciplinary practices in Philadelphia, which shifted its code of student conduct to mandate less punitive consequences (e.g., parent contacts, detention) for certain offenses in place of suspension (Gray

**Commented [A5]:** PI provides detailed information on the significant of this field of study.

**Commented [A6]:** PI provides contextual information regarding why conducting a study on this topic is important.

**Commented [A7]:** PI summarizes relevant literature.



## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

et al., 2017). While studied schools made an effort to reduce suspensions and expulsions, they reported both organizational and leadership barriers to implementation, including resource limitations (i.e., staffing, space, services) and different teacher and administrator perspectives regarding when suspensions were appropriate. Further, while school administrators reported clear communication from district leaders regarding the need to reduce suspension, administrators interpreted these messages differently—with some schools asserting that suspensions are ineffective, and others asserting that suspensions should only be used when necessary. Authors also found higher rates of suspension in schools that relied heavily on punitive discipline, where teachers believed in efficacy of suspension, and in schools that lacked resources, suffered from low teacher morale, and had inconsistent discipline practices. In a separate Philadelphia study, authors found that most schools, particularly those serving mostly children of color, did not comply with the new discipline policy, and found no changes in suspensions for low-level offenses (Steinberg & Lacoë, 2017).

Beyond these two studies, there are simple data analyses examining trends in discipline practice pre- and post-policy implementation. After Los Angeles Unified School District banned all suspensions for willful defiance, local schools saw a drop in the number of suspensions, from 17,595 to 2,796, in 6 years (Swaak, 2019). As a result of these trends, California enacted a statewide ban on willful defiance suspensions for children in grades K-8, expanding previous restrictions for children in grades K-3 only. While these studies provide the first step to understanding how we can move away from punitive practices, the rigor of these studies is not known.

### Research Exploring Strategies to Shift Discipline Practice:

As lawmakers work to encourage alternatives to exclusionary discipline, the strength of the evidence supporting different practices and frameworks varies. Further, popular strategies in discipline reform—e.g., building students' social and emotional competencies, using restorative practices to build relationships and repair harm, coaching with mental health consultants, and positive behavioral interventions and supports (PBIS)—vary in their attention to the leadership, competency, and organizational drivers that may influence the implementation of new discipline practices.

Research shows that strategies focused on building the competencies of preschool teachers (e.g., social and emotional learning, restorative practices), and providing them greater support in the classroom (e.g., mental health consultation) may improve child behavior and educator response to behavior. In a randomized control trial, researchers tested a social-emotional learning curriculum, paired with in-class support from a mentor teacher, in Head Start classrooms (Domitrovich et al., 2009). Results indicated that teachers who received additional in-class support talked with children more frequently, established a more positive classroom climate, and used more preventive behavior management

Commented [A8]: PI provides another summary of relevant literature.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

strategies. In a separate study, where Head Start teachers received classroom management training, and weekly coaching from mental health consultants, researchers found reductions in both internalizing and externalizing behaviors among low-income children (Raver et al., 2009). The evidence base supporting restorative practices in schools is the most nascent (Passarella, 2017), and research in preschool settings has not been undertaken. However, a preliminary, small-scale study in K-12 settings found reductions in out-of-school suspensions when three schools used circles to develop student empathy and repair harm (Stinchcomb et al., 2006).

PBIS, however, is notable for its attention to organizational drivers, including the use of a public health approach and data-driven decision-making to organize how services and supports are distributed to students. One study of PBIS in preschool settings found improvements in student on-task behavior (Jolstead et al., 2016). Experts have asserted that a combination of the above strategies, along with an explicit emphasis on addressing implicit bias and culturally responsive teaching practice, is necessary to reduce racial disparities in discipline (LaForett & De Marco, 2019). Gilliam et al. (2016) suggested that teacher education and in-service professional development can reduce implicit biases toward young children and reduce the risk for these children to be suspended or expelled. In K-12 settings, researchers have found that strengthening teacher-child relationships can help teachers manage child behavior and shift reliance on exclusionary practices, particularly with black students (Skiba & Losen, 2015). These perspectives align with research suggesting that implicit racial bias may influence preschool teachers' interpretation of their students' behaviors (Gilliam, 2005; Gilliam et al., 2016). Expectations for challenging behaviors seem to escalate with more students of color in the classroom, as a higher proportion of Latinx children in the class predicted an increased likelihood of suspension (Gilliam & Shabar, 2006), suggesting that teachers may be more likely to "see" challenging behaviors among students of color. This research echoes findings in K-12 settings. Mason et al.'s (2014) systematic review showed evidence of K-12 teachers' racial bias on behavior ratings in five of nine studies. Tenenbaum and Ruck (2007) conducted four meta-analyses and found that teachers held more positive expectations, made more positive and fewer negative disciplinary referrals, and used more positive or neutral talk toward white students compared with black or Latinx students, though these effects were small.

### Research Contributions:

The proposed study will make three contributions to expand the field's knowledge about discipline policy shifts and efforts to support programs and educators through the implementation process. First, we will conduct a study that specifically examines discipline policy change in ECE settings, including implementation facilitators and challenges (RQs #1, #3, #5, #6) and trends in disciplinary removals over time, from before to after policy enactment (RQ #9). Second, the study will provide the field with greater knowledge about the readiness of ECE educators to implement new

**Commented [A9]:** PI provides specific research contributions that the proposed study is intended to have, and how they align with each research question (or aim).

Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

policies restricting suspension and expulsion (RQs #5, #7), as we will investigate the range of supportive disciplinary approaches implemented across different program types (RQs #2, #4, #8). Third, our study will expand the field's knowledge with respect to the perspectives of ECE educators on their preparation to manage child behavior without exclusion (RQ #7), and their assessment of the adequacy and quality of the professional development and training they receive to transition to alternatives to exclusion (RQ #6).

**Policy-Practice Relevance**

*The research must have clear connections to policy and/or practice that have the potential to bring about positive change for the ECE workforce and YSP's priority populations in the implementation of a program and/or policy at the federal, state, local, and/or organizational/institutional level. Please describe how the proposed research could be used by the appropriate decision-makers in the course of their work. Also, briefly describe how results/recommendations could be communicated beyond scholarly outlets.*

Policy & Practice Relevance for ECE Stakeholders:

My research questions are designed to support decision-making for three groups of ECE stakeholders: state legislators, state and local education agencies, and ECE professional development providers.

State Legislators. As of 2019, 10 states (plus the District of Columbia) have passed legislation to strictly limit the use of discipline in preschool settings, including Arkansas, California, Colorado, Connecticut, Maryland, New Jersey, Ohio, Oregon, Texas and Virginia (Education Commission of the States, 2018). These legislative initiatives are driven by data and research. However, the range of research cited by legislators is thin—they generally quote simple statistics that illustrate the extent of disciplinary removals within the state and highlight persistent disparities by race and gender. While these data make a case for legislative action, they do not assist fellow legislators to properly weigh the likely benefits and challenges of a particular policy approach. When Colorado initially attempted a legislative ban on ECE suspensions and expulsions in 2017, the effort failed due to concerns raised by rural schools that preferred more flexibility for school administrators (Fish, 2019). By exploring educator perspectives on an ECE ban's influence on discipline processes (RQ #6) and examining how rates of disciplinary removals change post-enactment of an ECE ban (RQ #9), the proposed study can help legislators in the remaining 40 states to better understand the implications of using similar legislation to address their discipline policy goals.

State and Local Education Agencies. I anticipate that the state and districts have strong roles in clarifying the provisions of the ban for program providers and educators and supporting ECE programs to prepare for implementation. I will identify (under RQ #1) the range of strategies the state and districts have used to communicate the new restrictions and

**Commented [A10]:** The perspective to frame this study is strong from the policy side, however, it could build an even stronger case if ethnicity becomes part of the focus.

**Commented [A11]:** PI describes in detail how the research will influence three different groups of stakeholders.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

support implementation and compare these with educator and program administrator perspectives (under RQs #3, #5, #6) of the clarity, adequacy, and quality of state and local communications and supports, the approaches ECE programs have implemented, and the implications of both for shifts in discipline practice. This comparison will provide Maryland and its districts with a better understanding of the extent to which competency, organizational, and leadership drivers of successful implementation have been addressed in state-level, district-level, and program-level activities. Using implementation science as a guiding frame, we will help Maryland and its districts to identify gaps in implementation activity and areas where implementation supports may need retooling to have their desired impact. Heavy attention will be paid to the competency driver—and the range of approaches considered and used to improve educator knowledge, skills, and practice—as well as state and district efforts to improve competency in ways that would reduce discipline disparities by race and income.

ECE Professional Development Providers. While much of this project is designed to provide policymakers and practitioners with useful information about the implementation of state discipline policy, I suspect that the most valuable contribution to policy and practice may come from practitioner perspectives on discipline and child behavior (RQ #7) and the training and preparation they receive to shift practice (RQ #6). With stronger awareness of how practitioners view their responsibility for managing child behavior, the causes of discipline disparities, the collateral consequences of disciplinary exclusion, and their preparation to respond effectively to misbehavior, entities involved in developing and delivering professional development for ECE educators (e.g., state and local education agencies, non-profit and membership organizations, national technical assistance centers) will have rich information with which to consider the range of professional development opportunities available, properly frame the need for changes in practice and competency for educators, and improve the quality and delivery of professional development.

### Communication & Dissemination:

Maryland State Department of Education Briefing. Maryland's officials have repeatedly expressed their support for this research, as it will support their efforts to improve the implementation of the ban. Prior to the release of the final report, I will organize a briefing with the three leaders I have engaged to prepare this proposal: Maryland's Deputy Superintendent for Teaching and Learning, Assistant State Superintendent for Early Childhood, and Assistant State Superintendent of Student Support, Academic Enrichment, and Educational Policy.

Broad Public Communications and Dissemination. We will disseminate the final report through Child Trends' website, social media accounts, and E-News. More than 1.5 million people visited [www.childtrends.org](http://www.childtrends.org) in 2018 to access our research, and our website regularly receives over 100,000 pageviews each week. Our E-News reaches an audience of

**Commented [A12]:** Given how varied state policies are in this area, there might not be immediate broad impact, but the idea of understanding policy/practice dissemination is an important one.

Information on the dissemination of a policy change can be informative and useful beyond just this specific policy.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

nearly 40,000 policymakers, administrators, funders, researchers, and news reporters. We have a large social media following: Facebook (over 8,000 fans) and Twitter (over 24,000 followers). In 2018, with support from our communications team, Child Trends' experts were featured in leading national publications, including the New York Times, the Associated Press, NPR, the Washington Post, the Atlantic, and CNNMoney. Our research is regularly featured in leading trade (including Chalkbeat, the Chronicle of Social Change, and the Hechinger Report) and regional publications (including Atlanta Journal-Constitution, the Philadelphia Inquirer, and the Seattle Times), ensuring that our findings reach the people they directly affect.

Engaging Policymaker and Practitioner Intermediaries. Prior to the release of the final report, I will engage priority intermediaries—including, at a minimum, the National Conference of State Legislatures, and the National Association for the Education of Young Children—to share the findings and enlist their assistance in disseminating the report among their members. Each organization will receive a communications package, including the report, sample social media posts, and listserv blurbs, to support their dissemination.

### **Data Analysis Approach**

*Please describe in detail the specific analytic approaches for the proposed qualitative and/or quantitative data. The analytic plan should align with the research questions, the proposed methodology and measures, and the working hypothesis(es). If appropriate, include a discussion of power analysis results and plans for establishing inter-rater reliability.*

QUALITATIVE ANALYSIS: All focus group and interview data will be transcribed verbatim and the transcripts will be uploaded into Dedoose for analysis. Dedoose is a secure, inexpensive, web-based qualitative data analysis platform that offers a broad range of analytic tools (e.g., including a weighting function for data that has quantitative components) and is highly conducive to team-based coding and analysis. The research team will use a directed approach to content analysis (Hsieh & Shannon, 2005), which involves both deductive (a priori) and inductive (emergent) coding. Specifically, we will create an initial coding scheme based on the research questions. We will then add to and elaborate on this coding scheme based on the content of the interviews and focus groups. For instance, we may add codes related to lack of buy-in or increased classroom disruption, if participants discuss these as key implementation challenges. Similarly, we may add sub-codes related to specific types of alternative practices used by programs, if participants discuss these.

Coding will be approached as an iterative process; the coding team will review the data multiple times, refining the coding scheme until it can be used to categorize all the information contained in the raw data in a way that is both

**Commented [A13]:** Both qualitative and quantitative approaches are described in an accessible way and seem adequate for the data being used.

**Commented [A14]:** Pi describes adequate a priori and emergent coding schemes.

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

meaningful and accessible. Throughout this process, we will hold regularly scheduled debriefing meetings to ensure alignment of our understanding of the evolving coding scheme, reconcile any discrepancies, and discuss emerging themes.

The coding team will double-code approximately 25 percent of the interview and focus group transcripts. The first five percent of double-coded transcripts will be used as the basis for initial discussions about similarities and differences in how different coders understand and are applying the codes. Any discrepancies will be reconciled through a process of consensus. Once alignment in understanding is reached, an additional five percent of transcripts will be double-coded to formally assess inter-rater reliability before continuing with independent open coding. Dedoose has built-in features for testing inter-rater reliability. We will seek to establish a strong level of inter-rater reliability—a minimum of 80 percent agreement between coders on at least 90 percent of codes, as recommended by Miles and Huberman (1994). The coding team will engage in a process of codebook revisions (e.g., to clarify definitions, eliminate redundant codes with overlapping definitions) and recoding in order to improve reliability if we do not initially achieve the target level. Once achieved, an additional 15 percent of transcripts will be double-coded at various points in time throughout the coding process, to protect against potential unintentional drift in the manner in which the coding team applies the codes.

Once coding is complete, we will approach analysis following a three-step process. First, we will delve into each code individually, by reviewing the data (i.e., the sections of interview and focus group transcripts) that have been linked to each code and summarizing that information. For instance, we will examine individual codes related to competency, organization, and leadership drivers to summarize what the data tell us about the presence of each to support ECE educators to change discipline practice. Next, we will explore patterns in the data that are central to our research questions—for instance, by examining ECE educator knowledge, perceptions, and perspectives by type of ECE setting, level of district implementation, and program supports. We will also examine program implementation efforts by district, to explore any patterns related to district- and program-level implementation, as well as patterns based on participant role (e.g., the extent to which state officials, district officials, program administrators, and educators perceive the same implementation challenges). Finally, we will examine code co-occurrence frequencies to see which codes have been most frequently applied together, to explore unexpected themes related to implementation and supporting ECE educators to shift school discipline practice.

**QUANTITATIVE ANALYSIS:** We will conduct descriptive, exploratory analyses of publicly-available, statewide, district administrative data to examine trends in disciplinary removals around the implementation of the policy. In Maryland, preschool in-school suspension, out-of-school suspension, and expulsion data are available for all 24 districts annually beginning in 2009-2010. We have already accessed these data for years 2009-2010 through 2017-2018, which reflect

## Research Project Basis and Research Questions, Policy-Practice Relevance, and Data Analysis Example

eight years' worth of data prior to the effective date of the ban and one year following the effective date. By the second year of the proposed study, data will be available for years 2018-2019 and 2019-2020, so we will be able to examine a total of three years' worth of data following the effective date of the ban. To the extent possible, we will examine trends for exclusionary discipline overall as well as for different types of disciplinary removal, in order to gauge potential tradeoffs between discipline types (e.g., using in-school suspension instead of expulsion).

**COMBINED QUALITATIVE-QUANTITATIVE ANALYSIS:** Once all data have been collected and separately analyzed, we will conduct additional exploratory analyses to examine district implementation activities and processes by trends in disciplinary removals. This will allow us to explore whether districts with more supports for implementation seem to have sharper declines in suspension and expulsion. Although we will examine trends in disciplinary removals for all 24 districts statewide, these follow-up analyses will be limited to the nine districts in which we will conduct interviews with district officials.

We will first code the nine districts for trends in preschool suspension and expulsion based on the findings of the quantitative analysis. I propose to use similar categories to those developed by Steinberg and Lacoë (2017) if they adequately reflect the variation across Maryland districts: (1) "comparison" districts, which have no disciplinary removals before or after the policy change; (2) "full compliers," or districts that appear to have eliminated disciplinary removals as required by the policy; (3) "partial compliers," or districts that appear to have reduced—but have not eliminated—disciplinary removals following the policy change; and (4) "non-compliers," or districts that appear to have increased disciplinary removals or in which disciplinary removals appear to remain unchanged. These codes will be entered into Dedoose as district-level "descriptors" and then linked to all district interviews from the respective district. Then we will compare district implementation themes based on this code, similarly to how we will compare themes based on type of ECE setting. Although these analyses will be purely exploratory, they may help shed light on key implementation activities and processes that are needed to effectively support the ECE workforce to shift discipline practice following a change in state discipline policy.

Commented [A15]: PI describes coding scheme in detail.

Methodology and Measurement Procedures, and Data Analysis Approach Example

**Angie Zapata, Ph.D.**  
**The Curators of the University of Missouri**  
**Methodology and Measurement Procedures, and Data Analysis Approach Example**

**Project Summary**

This primary qualitative, research study examines the critical components of a university researcher-early educator collaborative inquiry model designed to improve multimodal literacy instruction for racially, linguistically, and ethnically diverse children in Missouri Kindergarten-3rd grade classrooms. Qualitative data will be collected across 3 years from 10-12 program administrators, teachers, and literacy coaches; teachers participating in the collaborative inquiry model will also serve as in-depth case studies.

**Methodology & Measurement Procedures**

*Describe the qualitative and/or quantitative methodologies and measures. Include a discussion of how they relate to the study questions and how they are developmentally, linguistically and culturally sensitive and appropriate.*

- Where both qualitative and quantitative approaches are proposed, describe the ways in which the combination enhances the proposed study.
- If your proposed study is longitudinal in design, please specify how you will sustain the participation of those involved, including plans for sample attrition.
- If the proposed research involves working with community-based organizations, schools and/or school districts, describe the planned process for gaining permission/access, whether the process has been initiated, and how far it has progressed. A letter of support confirming cooperation from each entity must be uploaded in Section IX. Time Commitment and Effort of the application.

*If applicable, please upload diagrams and/or tables that support the "Methodology and Measurement Procedures" section. If the diagrams and/or tables consist of multiple pages, please convert/save the pages as a single pdf and upload the pdf. Please add your name and request identifier to each page before uploading the required attachment.*

This design-based research (DBR) study is focused on examining the critical components of a collaborative inquiry model that can improve the ongoing professional learning of ECE in order to enhance the schooling experience of RLEL. To meet this objective, the aims of the study are to (1) advance theoretical and practical models of ECE development that serve RLEL; (2) generate policy/practical implications for ECE development through profiles & principles of teacher learning; and (3) extend the current research on MML instruction in the ECE settings. In Year 1 with

**Commented [A1]:** The sample for this study is small, but the in depth data being collected will provide information relevant for ECE professionals throughout the state

The PI shows strong attention to cultural and linguistic issues.

**Commented [A2]:** The collaborative inquiry approach lends itself well to the cultural and linguistic diversity of the potential sample.

**Commented [A3]:** In terms of cultural and linguistic sensitivity, the research project is presented and guided at various levels from a theoretical and resource perspective on Multilingualism and Multimodality (which is rare in professional development programs).



## Methodology and Measurement Procedures, and Data Analysis Approach Example

the support of 2 GRAs, we will use the first 4 months as a preparation period to 1) confirm inquiry partner participation and 2) prepare protocols to pilot in the following 6 months.

The cumulative Year 1 data sources and analysis allows the collaborative inquiry model to be refined over a 1-year cycle before collection of student data, maximizing refinement of the model based on data of teacher knowledge first. Year 2 will similarly include observations, interviews, and collection of relevant outputs as well as observation of 4 focal teachers' culturally- and linguistically-responsive MML practices, baseline and end of year interviews of teacher talk and text processes and productions as related to their stimulated recall interviews. To support interrater reliability across field notes, protocol implementation, and analysis, we will pilot field notes, observation protocols, and analytic procedures and peer debrief outcomes to ensure fidelity to a shared methodology during Year 1. The cumulative Year 1 data sources and analysis allows the collaborative inquiry model to be refined over a 1-year cycle before collection of classroom observation data, maximizing refinement of the model based on data of teacher knowledge first. The third year will focus on analysis and publishing of findings.

### STUDY PREPARATION AND MEASUREMENT

To understand the critical components of the model (Aim 1), I will investigate the qualitative shifts in ECE' understandings (Aim 2) and instruction (Aim 3) reflected in their talk and text productions and teaching. Data will be produced through ethnographic methods including participant observation, stimulated recall interviews, and the collection of MML related outcomes and further examined through the following measures: quarterly ECE questionnaires, pre/post focus group interview protocols and inquiry group and classroom observation protocols.

**Feasibility & Recruitment:** Dr. Mileidis Gort, with expertise developing and using such measures has agreed to be a mentor (see letter of support). Also, building upon an already established research partnership with a Midwest Elementary School, we already have more than 15 ECE interested in participating who meet the sampling criteria described previously. (See current IRB and already established MOU with Partner site). Should RLE diverse educators join the campus at any time during the study, I will actively recruit their participation to provide needed perspectives to our learning.

### DESIGN-BASED RESEARCH

I propose a DBR investigation to study a collaborative inquiry model of professional development focused on RLE linguistic and multimodal practices as learning resources. DBR is typically characterized by a collaborative partnership between researcher and school partners to maximize practical impact. DBR serves this proposed research as a methodology grounded in understanding both model design and how a model plays out in practice when enacted in real school contexts. Through micro (ongoing) and macro (yearly) cycle processes of analysis and data-based refinement,

**Commented [A4]:** PI organizes this section well and makes it clear what each piece of data being collected will be used for, when it will be collected, and how.

**Commented [A5]:** Describes piloting of data sources and discusses reliability.

**Commented [A6]:** Though the sample is small, there is a high probability that the methods and analyses will yield important findings.

**Commented [A7]:** The analysis follows a design-based research (DBR) approach; the PI is able to include an ongoing process of inquiry with research participants.

## Methodology and Measurement Procedures, and Data Analysis Approach Example

DBR examines how a model evolves through multiple iterations. DBR can be assessed on a wide variety of indices using multiple research methods, including qualitative, ethnographically informed approaches (Bradley & Reinking, 2008). I have utilized DBR in previous research to document implementation to capture all relevant, but unanticipated, consequences of the design upon enactment.

To advance theoretical and practical models of ongoing ECE development for RLE (AIM 1), two primary measures will be used in year 1 and 2:

### INQUIRY GROUP FIELD NOTE AND OBSERVATION PROTOCOLS

In the case of DBR, the researcher is both a participant and an agent for designing and enacting a model. Therefore, two bilingual graduate research (to capture movement across languages/language varieties) assistants familiar to the inquiry group partners will engage in participant observation and take ethnographic field notes during the monthly face-to-face, 2-hour meetings. I will also document my own field notes after each session as an additional source of data as informed by the observation protocol. In field notes, we will document the time, commitment, and contingencies involved in the creation, implementation, and refinement of the collaborative inquiry model in the context of interactions and discussions over two years. With sensitivity to the anonymity of the children referenced in the group, we will ask teachers to use pseudonyms when sharing classroom experiences and data about children. To support interrater reliability across field notes and analysis, we will pilot field notes, protocols, and analytic procedures and peer debrief outcomes to ensure fidelity to a shared methodology.

Guided by an observation protocol to study the relevance of the model's components, we will document as relevant data ECE' observed MML questions, hypotheses, confusions, understandings, appropriations of content, personal connections, and challenges to components such as readings, student data samples, and discussion (as examples) in professional interactions across face-to-face inquiry meetings using an observation protocol. How teachers participate in the model provides a rich context for data focused on how teachers respond to the inquiry model. This protocol will be developed during the preparation phase of this study and then refined after year 1 data analysis.

### FOCUS GROUP INTERVIEW

To further study the construct of teachers' perception of the model, I will conduct 30-minute semi-structured beginning and end-of-year interviews with teachers in small groups to gather data about their experiences learning and participating in the model. Although we will use a predetermined protocol to guide these interviews that will be refined during the preparation phase of this study, we will also use Grand Tour (Spradley, 2002) questions, invitations to talk extensively about a phenomenon, that will emerge from ongoing analysis during data production. Questions will elicit reflections on development of understandings and instruction, discuss favored and not favored aspects of the model,

**Commented [A8]:** The "open" nature of the data will not force participants into a limited view of diverse students' strengths and the MML model definitely is conceptualized to capture students' many abilities.

## Methodology and Measurement Procedures, and Data Analysis Approach Example

and review insights for next steps for the model and the classroom. All interviews will be video recorded and will be conducted in English or Spanish as determined by participants' preference.

To generate policy and practical implications for ongoing ECE development through profiles and principles (AIM 2), two primary measures will be employed in year 1 and 2:

### DEMOGRAPHIC QUESTIONNAIRE

To gather data on relevant ECE histories, all participating school partners will complete a questionnaire concerning demographic data such as gender, race, ethnicity, languages spoken, years of teaching, relevant professional development engagements, and experience with teaching in culturally and linguistically complex classrooms.

### QUARTERLY QUESTIONNAIRE

Teachers will be asked to complete quarterly questionnaires to follow up on preliminary findings and lines of inquiry that are identified from data analysis. Recognizing the common disconnect between what we say and what we do, this questionnaire will measure how ECE make sense of and rationalize their MML understanding and work with RLEL. Specifically, we will, for example, ask more general questions related to their own MML productions and processes and their understandings about those texts. As with the focus group interview, specific questions across the quarters will be partially informed by analysis during data production and guided by an interest in gaining insight into ECE MML negotiations.

To extend the current research and inform policy on MML instruction in the early childhood classroom (AIM 3), one primary measure will be used in year 2:

### CLASSROOM OBSERVATION PROTOCOL

We will also utilize classroom observation protocols during beginning and end of year observations in four focus classrooms for 2 hours, 3x a week for 3-5 weeks to note any connections between MML understandings and instruction in year 2. We rely on The Sheltered Instruction Observation Protocol (Echevarria & Short, 1999) and its critiques as a model to mentor the production of our own protocol. This protocol will be developed and piloted in the first year. All observations will be video recorded to capture both the verbal (multilingual) and nonverbal (multimodal) data produced.

As a complement to the protocol, we will also conduct stimulated recall interviews (Gass & Mackey, 2000) in each classroom to elicit teacher understandings of MML instruction. These interviews do not provide primary data but will provide complementary data that will give depth to the findings. During the brief interview, we will present teachers with

## Methodology and Measurement Procedures, and Data Analysis Approach Example

data on their instruction (point to the text being produced in the moment or related video data) and ask them to engage in “participant retrospection” (Rampton, 2003) by commenting on and explaining their process in their own words.

### Data Analysis Approach

*Please describe in detail the specific analytic approaches for the proposed qualitative and/or quantitative data. The analytic plan should align with the research questions, the proposed methodology and measures, and the working hypothesis(es). If appropriate, include a discussion of power analysis results and plans for establishing inter-rater reliability.*

I follow Miles & Huberman (1994) in defining qualitative data analysis as “consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification” (p. 10).

To advance theoretical and practical models of ongoing ECE development for RLE (AIM 1), two primary analytic processes will be used:

#### ONGOING AND YEARLY DATA REDUCTION

In micro(ongoing) and macro(yearly) cycles, data reduction will consist of video logging, transcription, coding, analytic memo writing, and multimodal discourse analysis of recorded model implementation and classroom instruction. Field notes and monthly analytic memos will document micro refinements to the model as well as the protocols for interview and observation. This data will serve to inform yearly macro revisions to the model.

**Video Logging.** We will view and log all video-recordings of monthly inquiry group meetings, classroom observations and interviews, highlighting key activities featured in each video file, and flagging segments of video-recorded data for subsequent transcription. This will facilitate subsequent retrieval for further analysis.

**Transcription.** GRAs will transcribe all video-recorded interviews with teachers, as well as all segments of video-recorded inquiry group interactions (AIM2) and classroom observations (AIM 3) that have been flagged in video logs. She will take a reflexive approach to transcribing data, knowing that the practice of transcription is necessarily embedded in larger power relations and that, as such, always involves interpretive and representational decisions that are fundamentally subjective in nature (Bucholtz, 2000; Ochs, 1979). When transcribing segments of video-recorded classroom interaction, she will use conventions based on the system developed by Bezemer and Mavers (2011) in the field of social semiotic analysis for multimodal discourse analysis to support more fine-grained analysis.

**Coding.** We will code all data sources, including field notes, interview transcripts, relevant artifacts, and questionnaires, observation protocol data and identify qualitative shifts in teachers’ MML talk and text productions and relevant instruction in order to refine and identify the components of the model. Coding will consist of two cycles. First Cycle (ongoing) coding (Saldaña, 2012) will focus on “breaking down data into discrete parts, closely examining them, and

**Commented [A9]:** Analyses are carefully constructed and with attention to details of how to get from qualitative data to multimodal discourse analysis, analytic induction, and theory building/generation via multimodal discourse analysis and analytic induction.

PI approaches data analysis in a theoretically informed and sound way. The analyses include: multimodal discourse analysis, analytic induction, and theory building/generation. Although small in scale, the significance of this approach is the rich quality in qualitative data analysis.

PI goes into detail on how each data source will be analyzed.

Strong organizations of this section, relating each piece of analysis the study aims.

**Commented [A10]:** PI describes in detail the various levels where they will code for teacher MML understandings, misconceptions, questions, personal connections, and pedagogies to inform micro-refinements to the model itself.

The coding procedures and data reduction methods are well described and align with research questions.

## Methodology and Measurement Procedures, and Data Analysis Approach Example

comparing them for similarities and differences” (p. 81). I will begin by using an inductive approach to analysis, generating codes that are grounded in the data. I will develop a preliminary coding scheme, refine my codes as I repeatedly apply them to the data sources, and then construct themes related to each data source. Once I have coded inductively, I will code specifically for themes drawn from the perspectives mentioned above. When analyzing field notes of collaborative work with teachers, teacher interview transcripts, and relevant samples, I will code for teacher MML understandings, misconceptions, questions, personal connections, and pedagogies to inform micro-refinements to the model. When analyzing transcripts of focus group interviews and multimodal transcripts of inquiry group interaction, I will code to identify various ECE uptake of MML as outcome data. Second Cycle (yearly) coding (Saldaña, 2012) will be aimed at reorganizing and reanalyzing data. During Second Cycle coding, all codes generated during First Cycle coding will be “reorganized and reconfigured to eventually develop a smaller and more select list of broader categories, themes, and/or concepts” (Saldaña, p. 149). During this Second Cycle, more attention will also be given to identifying patterns across data sources and connecting codes to the theoretical frameworks guiding my inquiry.

Analytic Memos. Throughout data analysis, we will regularly write analytic memos (Emerson, Fretz, & Shaw, 2001) to reflect on questions that emerge at different stages in the process, emergent patterns and themes that we begin to notice, the preliminary and refined codes we generate, the relationship among codes and categories of codes, and the relationship between the codes/themes/categories and theoretical frameworks. Memos will provide a space to integrate and synthesize codes alongside measure data, building theory as we analyze the data. Memo writing will generate additional codes to be incorporated into my coding scheme (Saldaña, 2012) and inform ongoing refinement of the model.

### DATA DISPLAY

Concurrently with the data reduction described above, I will display data in ways that allow me to begin to draw conclusions and engage in further analysis. Miles and Huberman (1994) define data display as the “organized, compressed assembly of information that permits conclusion drawing and action” (p. 11). Such data display will be critical near the end of year data reduction described above. I will create various charts, graphs, and matrices to look at compressed representations of data (e.g., codes, themes, and shorter verbatim data excerpts) simultaneously as opposed to just sequentially. Such displays from the questionnaires and protocols might include frequency counts related to codes, themes, and micro-level details identified in earlier analysis. An example might be a simple frequency count of the number of times ECE challenge deficit views of RLE in their talk or the number of times ECE refer to MML in their instruction. The systematic data display will allow me to develop a more global understanding of patterns and “repeatable regularities” (Kaplan, 1964) both within and across data sources, and to identify segments of data that merit additional analysis to better understand shifts in ECE MML understanding and instruction.

**Commented [A11]:** PI provides sufficient detail in the analytic approach and the data visualization approaches for the relatively small sample, which is a relevant approach given the sample size.

## Methodology and Measurement Procedures, and Data Analysis Approach Example

To generate policy and practical implications for ongoing ECE development through profiles and principles of teacher learning (AIM 2), I will rely on CONCLUSION DRAWING & VERIFICATION.

Having reduced and displayed data, I will begin to draw and verify conclusions based on preliminary analysis to refine the model. A key step will be to triangulate multiple data sources. For example, after examining data from observation protocols, model implementation may be revised or readings may be shifted to follow the focus of the emerging themes. In sum, through ongoing (micro) and summative (macro) conclusion drawing, we will make needed refinements to the finer qualities of the model, leading to contextually-sensitive design principles and theories (AIM 1), profiles and principles of ECE development (AIM 2) and sample MML instruction (AIM 3) that can be interpreted by other sites and directly inform policy. Attending to both the micro and the macro differences in the model iterations will inform the broader research objective of identifying the critical components of an ongoing professional learning model.

I will provide evidentiary warrant for all claims that I make and all hypotheses that I propose (Erickson, 1984). Drawing and verifying conclusions will involve systematically identifying disconfirming evidence (i.e., so called “negative” or “discrepant” cases) and constantly revising and refining my ongoing analyses by proposing potential counter-hypotheses. The goal of searching for discrepant cases and proposing alternative hypotheses is to avoid what Erickson (2005) calls “premature analytical closure and hypertification” (p. 1206). Committing to a thorough systematic search for disconfirming evidence will discourage me from ignoring outliers and other salient exceptions to patterns that I begin to identify throughout the ongoing data analysis.

To advance theoretical and practical models of MML instruction (AIM 3), I will use MULTIMODAL DISCOURSE ANALYSIS.

Because I am interested in how a collaborative inquiry model can support MML for RLE in the classroom, I will utilize the multimodal transcripts of video-recorded classroom interaction that reflect teacher MML instruction to conduct a multimodal discourse analysis (Norris, 2004; Scollon, 2001). Drawing on multimodal discourse analytic methods from the field of social semiotic analysis (Kress, 2009), I will examine transcribed segments of interaction that have been coded for MML productions as well as embodied or material MML processes in the classroom. Focusing on the details of language and multimodality in interaction, I will explore the relationship among conversations, utterances, and individual words and phrases and material or embodied text processes. Informed by Goodwin’s assertion that “any rigorous account of human interaction must pay close attention to the detailed structure of talk that occurs within it” (1990, p. 2), I will conduct a systematic, turn-by-turn analysis of these examples of MML classroom instruction. This fine-grained multimodal discourse analysis of the sequential organization of MML communication will help me begin to understand how RLE and their teachers draw on MML and embody everyday MML practices. It should be emphasized, however, that a close analysis of the micro-details of interaction is insufficient to fully understand everyday language

## Methodology and Measurement Procedures, and Data Analysis Approach Example

practices or the meanings that ECE ascribe to those MML practices (Duranti, 2005). Given that interactions “acquire their meaning from inside as well as from the outside of the exchanges themselves” (Duranti 1997, p. 278), I will analyze critical case samples of transcribed segments of classroom interaction in relation to the larger ethnographic context in which they were situated and from which they emerged in order to develop ECE profiles.



April 2021

TO: 2022 Young Scholars Program (YSP) Applicants

RE: Examples of strong responses to Full Application questions – Previous Application Template

Dear Prospective Applicant,

The following four application response examples are from the **2018 YSP Cohort and the application has since changed**. These changes are mostly reflected in the directions for completing each section, but the sections and the corresponding headings remain the same. The following four examples will provide exemplary responses to the following sections:

- 1) Research Project Basis and Research Questions
- 2) Public Policy and/or Practice Relevance
- 3) Methodologies and Measures
- 4) Data Analysis Approach

For additional questions regarding YSP please contact: [ysp@fcd-us.org](mailto:ysp@fcd-us.org).

Good luck, we are looking forward to receiving your application!



## Research Project Basis and Research Questions Example

### Research Project Basis and Research Questions

Anna D. Johnson, Ph.D.

Georgetown University

#### Project Overview:

This proposed primary research project will examine the workforce supports and wellbeing of early care and education (ECE) teachers across a range of publicly funded center-based ECE settings in Tulsa, Oklahoma. The Tulsa preschool program aims to prepare low-income children, including dual language learners (DLLs) and children with disabilities, for Kindergarten. The study will investigate the relationships between ECE workforce supports and teacher well-being, children's school readiness skills in prekindergarten and Kindergarten, and preschool classroom quality.

#### Research Project Basis and Research Questions

*Describe your proposed program or policy implementation research, the theoretical or empirical foundation, the specific research questions, and the working hypothesis(es) which underlie your proposed work. All research must focus on the ways in which the knowledge, skills, and dispositions of the early care and education workforce can support young children's development across the birth through age eight continuum within Foundation's priority populations. Please refer to the YSP Guidelines Purpose and Research Focus, especially item "III. Research Focus."*

Early care and education (ECE) teachers play pivotal roles in ECE classrooms, as they instruct children in academic content, support the development of underlying capacities that enable children to learn, and foster a classroom environment characterized by supportive adult-child and peer relationships (IOM & NRC, 2015; Diamond, Justice, Siegler, & Snyder, 2013). Yet ECE settings with teachers who, for example, lack professional and economic supports in the workplace, experience high rates of stress and depression, and are in poor physical health correlate with lower quality care and worse child outcomes (DeSchipper et al., 2009; IOM & NRC, 2015; Jeon, Buettner, & Snyder, 2014; Whitaker, Dearth-Wesley, & Gooze, 2015). Just as research links maternal stress and depression to reductions in maternal responsiveness and sensitivity (e.g., Goodman et al., 2011; Lovejoy et al., 2000; Wachs et al., 2009), ECE teachers who experience stress and depression and other challenges struggle to build healthy relationships with their students and have lower quality teacher-child interactions (e.g., Jeon et al., 2014; Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016). This may be especially true of ECE teachers in publicly funded programs targeted to low-income children, many of whom themselves come from stressful environments (e.g., Aikens et al., 2010); for instance, teachers who serve low-income children are more likely to be low-income themselves, and the programs in which they work may have fewer resources and supports, which contributes to workplace stress (Whitaker et al., 2015). Without knowing (1) the status and variation in ECE workforce wellbeing and supports among publicly funded ECE setting teachers, (2) whether these ECE teacher wellbeing and support factors link to children's school readiness outcomes, and (3) whether these ECE teacher wellbeing and support factors link to observed classroom quality, it is

## Research Project Basis and Research Questions Example

impossible to know how best to direct policy and program efforts to improve ECE teacher and, ultimately, student outcomes. The proposed study is designed to address these unanswered questions.

Specifically, the proposed study will document and describe the ECE supports and overall wellbeing of ECE teachers across the range of publicly funded center-based ECE settings currently occupying center stage in policy and education debates. These settings – public school-based pre-kindergarten (pre-k), Head Start, and other public preschool programs – offer an opportunity to launch low-income and otherwise vulnerable children on trajectories of educational success by helping close early school readiness gaps that exist at kindergarten entry and persist as children age (Lee & Burkam, 2002; Reardon, 2011; Yoshikawa et al., 2013). The proposed study will be among the first to comprehensively document a rich set of ECE workforce supports and wellbeing factors across the full landscape of public ECE programs serving low-income children, including those who are dual language learners (DLLs) and who have disabilities. I will go on to assess links between these ECE workforce characteristics and children's school readiness, first directly and then indirectly via classroom quality. All of the proposed work will take place in a state "laboratory" (Tulsa, OK) that is home to a renowned public pre-k program that serves predominantly low-income students, including high proportions of DLLs and children with disabilities. Tulsa has a mixed delivery system of public pre-k for 4-year old children, providing pre-k education in Tulsa Public Schools (TPS) school-based classrooms and Community Action Program (CAP)-Tulsa Head Start classrooms; outside of the Tulsa pre-k education system (TPS pre-k plus CAP-Tulsa Head Start), low-income children in Tulsa also attend community-based child care centers (CBCs) funded via federal child care subsidies, administered by the Oklahoma Department of Human Services (OK DHS). Through a larger, ongoing study that I am co-directing, I have built relationships with administrators in TPS, CAP-Tulsa Head Start, and OK DHS (see attached Letters of Support); these relationships assure the proposed project unique access to the full landscape of publicly funded center-based ECE programs that serve low-income preschool-aged children, including those who are DLLs and have disabilities.

Using these unique data, the proposed project will pursue 3 Specific Aims. Aim 1 seeks to document and describe variation in ECE workforce supports and wellbeing factors across the full range of publicly funded center-based ECE settings that enroll low-income children, including subgroups of DLLs and children with disabilities. To accomplish this, I will collect teacher responses to a rich, comprehensive set of questions tapping key dimensions of workforce supports, wellbeing, stress, and other experiences, and compare those responses (and their predictors) across public ECE settings. I hypothesize that teachers in TPS school-based public pre-k classrooms will have the greatest number of supports and the highest wellbeing, followed next by teachers in Head Start centers, with CBC teachers lagging the farthest behind. TPS school-based pre-k teachers receive wages and benefits on the same scale as K-12 teachers, and as a result may have better financial health, access to physical and mental health services, and a more professional identity, which could promote feelings of self-worth and self-esteem. Although CAP-Tulsa Head Start programs are affiliated with TPS, their teachers are typically paid at a somewhat lower hourly rate given their 12-month program year; they are also not co-located in public schools. However, they still may benefit from established infrastructure and linkages to the larger TPS system and early education community in Tulsa. I anticipate that support and wellbeing will be lowest among CBC teachers who serve subsidized children, as these programs tend to have fewer administrative supports, are not formally linked with TPS and its early

Commented [MOU1]: PI provides a brief statement about the motivation for the proposed research and includes references for its theoretical and empirical foundation.

Commented [MOU2]: PI's primary research question is related to one of the Foundation's three workforce goals.

Commented [MOU3]: PI's research proposal is on the ECE workforce serving YSP's 'priority populations' (see Section II. of 2020 YSP guidelines).

Commented [MOU4]: PI states specific aim to address the primary research question.

Commented [MOU5]: PI provides a hypothesis for Aim 1.

Commented [MOU6]: PI articulates rationale for Aim 1 hypothesis.

## Research Project Basis and Research Questions Example

childhood system, and have a less qualified and lower-paid staff. Indeed, prior research with national data suggests CBCs serving children with child care subsidies provide lower quality care than Head Start or state pre-k centers (Johnson, Ryan, & Brooks-Gunn, 2012).

Aim 2 of the proposed project is to test for links between the ECE workforce supports and wellbeing factors identified in Aim 1, and children's school readiness in the pre-k year and in kindergarten. In light of theoretical and empirical work linking teacher-child interactions in ECE settings to children's early development (see Hamre, 2014), and under the assumption that ECE teacher experiences and wellbeing shape teacher-child interactions (e.g., Roberts et al., 2016; Whitaker et al., 2015), I hypothesize that children in classrooms led by teachers with lower levels of support and wellbeing will have reduced school readiness outcomes at the end of the pre-k (age 4) year and in kindergarten.

Aim 3 of the proposed project is to determine, if ECE workforce supports and wellbeing factors are associated with children's school readiness, whether this association is mediated by pre-k year classroom quality. Teacher-child interaction – especially as it relates to the delivery of instructional content, emotional support, and classroom management, predicts children's development and learning gains (see Hamre, 2014 for a review). As part of a larger study, my research team and I will gather detailed classroom observational data on instructional quality and additional measures designed to capture classroom features that may be especially sensitive to variation in teacher supports and wellbeing; these features include the presence of consistent and supportive teacher-child relationships, predictably enforced behavioral norms, and strong supports for constructive peer interactions (see Table 1 for full list). These “self-regulatory” features of the classroom may be particularly important for the early learning and development of DLLs and children with disabilities because such features are expected to increase opportunities for positive peer interaction and social inclusion, which would benefit children who struggle with classroom integration due to linguistic or social barriers. I hypothesize that these classroom features will partially mediate associations between ECE workforce supports and wellbeing, and school readiness outcomes. Further, I anticipate that the mediating role of the non-instructional, self-regulatory features of ECE classrooms in particular will be stronger for DLLs and children with disabilities than for children in the general population.

Across all Aims, I will leverage additional resources by incorporating program administrative data as well as data collected as part of a larger, longitudinal study of young learners in Tulsa's public ECE programs that I am co-directing. Quantitative statistical methods will be used to illuminate variation in ECE workforce characteristics across the different public programs (Aim 1) and to predict school readiness directly from ECE workforce characteristics (Aim 2) as well as indirectly from workforce characteristics via observed classroom quality (Aim 3). Together, addressing these research aims will contribute to a small but growing knowledge base around the needs and challenges of the publicly funded center-based ECE workforce, illuminating policy mechanisms to better support ECE workforce wellbeing and children's development and early learning.

Commented [MOU7]: PI states specific aim to address the primary research question.

Commented [MOU8]: PI articulates rationale for Aim 2 hypothesis.

Commented [MOU9]: PI provides a hypothesis for Aim 2.

Commented [MOU10]: PI states Aim 3.

Commented [MOU11]: PI articulates rationale for Aim 3 hypothesis.

Commented [MOU12]: PI provides hypothesis for Aim 3.

Commented [MOU13]: PI previews how proposed research design will address each hypothesis across all aims.

**Public Policy and/or Practice Relevance of the Proposed Research**  
**Kelly Purtell, Ph.D.**  
**The Ohio State University**

**Project Summary**

The proposed secondary data analysis research study examines the associations among preschool director characteristics (e.g., education and experience, leadership style), classroom-level factors (e.g., job satisfaction and depression, teacher-child interactions, teachers' professional development and classroom practices), and child outcomes.

**Public Policy and/or Practice Relevance of the Proposed Research**

*Please describe the potential practical consequence on policy and/or practice relevance of the proposed research, and how these ideas could be communicated beyond scholarly outlets and used by the appropriate decision-makers. The research must have clear and actionable implications for public policy that have the potential to bring about positive change in the implementation of a program and/or policy at the federal, state, local, and/or organizational level.*

The overarching aim of this project is to better understand the center-level processes within preschools that influence teachers and classrooms, and ultimately, their implications for the early learning and development of young children. By focusing on understudied center-level processes, this project is poised to provide new insight into the center characteristics that produce high quality developmental contexts for children during preschool. Below I describe six specific actionable implications of this work, from both a policy and practice perspective.

First, the proposed study will test the association between center director education and a variety of leadership processes, teacher satisfaction and behavior, and ultimately, children's early learning and development. Thus, research results will shed light on what types of educational pathways are most beneficial for center directors. Importantly, this inquiry will go beyond level of degree and will also examine content of degree and additional training. Although educational experiences focused on early childhood content are likely to be important for center directors, it is also plausible that other types of training, such as business or finance, may help them navigate the multitude of administrative challenges they face on a day-to-day basis. By focusing on this aspect of the early childhood workforce, this work will provide unique information on what type of background characteristics preschool programs should look for when hiring center directors. It will also provide initial information that can inform policymakers who set standards related to center director hiring priorities. These may include federal Head Start guidelines, or guidelines that apply to the numerous state and local preschool initiatives across the country.

**Commented [MOU1]:** PI articulates multiple ways in which both policy (e.g. expectations of director training, credentialing, duty assignments) and practice (e.g. implementation of policy decisions in those domains) can be affected by the results of the proposed research.

**Commented [MOU2]:** PI describes potential implications for Center Director qualifications which could inform hiring practice.

### Public Policy and/or Practice Relevance of the Proposed Research Example

The second actionable implication of this research relates to the challenges that center directors' face and which ones are most likely to pose barriers to running an effective program. For example, I will examine how combining multiple funding sources relates to the time center directors can spend in other activities and how it is associated with their teachers' job satisfaction. Results may be used by states and other regulatory entities, those responsible for establishing standards for preschools, to determine which regulations are most burdensome and potentially problematic. It can also help centers identify what other supports are needed in order to maintain an effective center.

The third actionable item relates to the creation of future professional development activities for center directors. Analyses from this project will provide information on how supported teachers feel and how satisfied they are with their job. Associations between these teacher feelings and center director characteristics and behaviors will be tested. Results from this work will help shed light on which aspects of center director leadership behaviors are most predictive of teachers' satisfaction. For example, it may be lack of adequate communication from center directors that is most predictive of teachers' feelings of support. If so, this knowledge can be used to design future professional development programs for center directors that can help them improve their communication strategies in their center.

The fourth actionable item relates directly to the provision of high quality preschool education, especially for underserved (e.g., the children of immigrants) and low-income populations. By identifying what center-level factors are associated with classroom quality and other classroom supports and activities, the proposed work can provide information to programs and centers who are trying to increase their quality. Ultimately, the use of this knowledge to increase classroom quality has the potential to increase the school readiness of children across the country, including for vulnerable populations.

The fifth actionable item focuses on the specific supports provided to dual language learning students and their families, who represent a rising share of the U.S. population but remain underserved in early childhood programs. By identifying what center-level characteristics are associated with the availability of these supports, such as the availability of professional development focused on dual language learners, this study can provide information to policymakers who are trying to identify factors that lead to high quality experiences for children from immigrant families. At the same time, this work can simultaneously aid existing efforts that aim to boost the enrollment of dual language learners in early childhood programs by identifying the different ways in which center directors create more culturally responsive environments that might better fit the needs of this large and diverse segment of the population.

Lastly, this work will provide information that can be used by those taking action to directly improve children's school readiness. By identifying what center-level processes are associated with greater, or reduced, academic growth and social-behavioral development, this research will provide insights that can be used to design centers in ways that are optimal for children. The analyses that focus on associations between center-level challenges and children's outcomes will be particularly useful in the future as there is currently very little information available on this topic in preschool. Furthermore, because many of these challenges disproportionately affect preschools that serve vulnerable populations, including low-income children and dual language learners (e.g., multiple funding

**Commented [MOU3]:** PI outlines implications that lead to a more nuanced understanding of the center- & systems-level determinants of quality.

**Commented [MOU4]:** PI indicates how the proposed research has implications for YSP's 'priority populations'.

**Commented [MOU5]:** PI provides an explanation for why research is critical and relevant.

Public Policy and/or Practice Relevance of the Proposed Research Example

sources and requirements), understanding these linkages may provide information that is most beneficial to children from disadvantaged backgrounds.

Because these actionable items have implications for multiple stakeholders, my dissemination strategy will target multiple audiences. In addition to peer-reviewed publications, I will prepare white papers (disseminated through the Crane Center for Early Childhood Research and Policy) that summarize study findings and are tailored to policymakers and practitioners. I will also present findings to local and national audiences, including a local early childhood education leadership council here in Ohio and other practitioner-oriented audiences.

**Commented [MOU6]:** PI provides a plan for disseminating results, strategy for targeting multiple audiences/stakeholders.

**Commented [MOU7]:** PI will utilize resources within host institution, moving beyond traditional academic outlets (e.g. conferences, journal publications, etc.)

**R. Gabriela Barajas-Gonzalez, Ph.D.**  
**New York University School of Medicine**

**Methodologies and Measurement Procedures and Data Analysis Approach Example**

**Project Summary**

The proposed research project is a mixed-methods design focused on identifying the stressors and supports Pre-K-3rd grade teachers and social workers experience working with Latino children within immigrant families. Specifically, the project will examine how current federal immigration policy affects teachers and social workers in New York City (NYC) public schools, especially in the local context of NYC being a sanctuary city.

**Methodology & Measurement Procedures**

*Describe your methodology and measures and how they are linguistically and culturally sensitive and appropriate. To upload diagrams and/or tables, please see Attachments.*

- *If the proposed research involves working with community based organizations, schools and/or school districts, describe the planned process for gaining permission/access, whether the process has been initiated, and how far it has progressed. A letter of support confirming cooperation from each entity must be uploaded in the final section of the application.*
- *If your proposed study is longitudinal in design, please specify how you will sustain the participation of those involved, including plans for sample attrition.*
- *If your proposed study only involves qualitative or quantitative methods, please specify how you will use these methods and your specific analytic approaches for the data.*
- *Where both qualitative and quantitative approaches are proposed, describe the ways in which the combination enhances the proposed study.*

*If Applicable. Please upload diagrams and/or tables that support the Methodology and Measurement Procedures section. If the diagrams and/or tables consist of multiple pages, please convert/save the pages as a single pdf and upload the pdf. Please add your name and request identifier to each page before uploading the required attachment.*

We propose to collect survey data from 120 teachers and 30 social workers (at least 60% latino/immigrant) in NYC schools, and conduct semi-structured interviews with a subset of approximately 34 teachers and social workers. Feasibility: As of today, we have 20 PreK social workers who have indicated their willingness to be interviewed, as well as buy-in from the teachers and social workers at our 25 LINC's partner schools (PreK-3rd grade; please see letters of support). Dr. Jennifer Keys Adair, with expertise using qualitative methods in ECE settings, has agreed to be a consultant for the proposed study (please see letters of support).

**Commented [NMI]:** Measures development plan, sampling and design are appropriate.

The qualitative study approach is appropriate and will help to illuminate processes and patterns that might not otherwise be evident in quantitative measurement approaches. The analysis is structured appropriately, given the proposed data.

Note: Reliability and validity were addressed in a separate table of measures.



## Methodologies and Measurement Procedures and Data Analysis Approach Examples

A mixed method design will be used for this research project. Quantitative findings will add to the qualitative foundation and triangulate data by providing a statistical explanation of the impact of immigration-related anxiety and concerns on teacher and social worker perceived well-being. For this proposed study, a purposeful sample of 150 NYC teachers and social workers will be selected. A purposeful sample will allow the researcher to select participants who work in schools and centers with a large Latino immigrant population, are willing to reflect on the topic of interest, and are willing to participate. In-depth, semi-structured interviews will be completed with 34 individual teachers and social workers. Interviews will be completed by the PI (who is fully bilingual in English and Spanish) in the participant's school or another mutually agreed upon location. Semi-structured interviews will be audio recorded and transcribed verbatim by bilingual, bicultural team members, should there be any code switching (English/Spanish) during interviews.

Commented [MOU2]: Relevant to cultural and linguistic sensitivity.

Overview. The goals of the proposed study are: (1) to build on our previous needs assessment study with school social workers, and further study PreK-3rd grade teachers' needs in working with and engaging immigrant families and students; and (2) understand teachers' perspectives/attitudes related to immigration issues (Aim 1). In addition, this study will examine mechanisms of how immigration contextual indicators (at school, classroom, and school staff/individual levels) relate to teachers' practice and competency in providing support for students and families (Aim 2). Study results from Aims 1 and 2 and from our previous study with social workers will be used to guide intervention strategies and toolkit development to support school staff to work effectively with immigrant families and students (Aim 3).

Study Preparation and Measurement Development (MONTHS 1-9). During the preparation period, two key activities will be conducted: (1) School Recruitment (n=30). In partnering with NYC Department of Education (under our current NYU-NYC early childhood development promotion partnership), we will recruit 30 NYC public schools with high concentrations of Latina/immigrant students. Several of our LINC's partner schools have already agreed to participate. (2) Teacher and social worker recruitment. (3) Measurement development and study framework refinement. Because most immigration contextual and behavioral practice measures are not existed in the literature, we will first adapt the school, classroom environment (Huang et al., 2017), climate (Simpson, 2002), teacher attitudes/beliefs (Aarons, 2002), and competency/practice measures (Huang et al., 2017) that have been used in our previous school-based intervention implementation studies. To ensure the study measures and conceptual framework are comprehensive and capturing relevant immigrant-related contexts and behaviors, we will next conduct a qualitative individual interview study with 2 social workers and 15 teachers (PreK-3rd grade, at least 60% latino/immigrant). During the interview, we will ask questions regarding appropriateness and relevance of our conceptual framework (constructs) and adaptation of study measures. Each interview will be audiotaped and last about 1 hour. Qualitative data will be used to refine study measures and frameworks, which will be used for subsequent research Aim testing.

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Methodology for Aims 1 and 2 (Understand School Staff's Perception about Immigration Contexts and Needs; and Examine Mechanisms) (MONTHS 10-20). As shown in Figure 1, Aim 1 will focus on the yellow highlighted boxes. Guided by the ecological-transactional framework, we will study school staff's perspectives (with consideration of influences from larger Macrosystem and exosystem contexts). Multiple levels of school contexts and needs will be studied, including school-level immigration climate, classroom-level immigration-related contexts/needs, and staff-level wellbeing and perceive competency (e.g., distress, perceive



### Methodologies and Measurement Procedures and Data Analysis Approach Examples

stress). Aim 2 will focus on mechanism testing (see Figure 1). Specifically, we will study influence of school immigration contexts on school staff's wellbeing, practice and competency in addressing student and family needs guided by stress models (LaRocco, House & French, 1980; Greenglass, Burke & Konarski, 1997).

#### Participant Recruitment, Procedure, and Study Measures.

Quantitative data will be collected from 150 school staff (120 early childhood teachers, 30 school social workers) from 30 public schools with high concentration of Latina/immigrants. To ensure multiple perspectives are captured, 4 teachers from each school, with 1 representative teacher from each grade [pre-K, K, 1st & 3rd grade]; and 1 representative social worker from each school will be recruited. All research participants will be consented prior to any research activities. All study participants will complete a survey. Survey measures will include demographic information such as gender, race, ethnicity, languages spoken, nativity and years experience in PreK-3rd grade setting. Measures to assess immigration-related worry in classrooms and teacher and social worker immigration-related uncertainty, stress, their perceived psychological (distress) physical wellbeing (self-rated physical health and sleep quality), social support and competency will be utilized. Measures assessing immigration-related worry and uncertainty have been adapted from other assessments as described below as there are currently no immigration-specific measures that capture these phenomena. Items are adapted to reflect responses from the needs assessment completed by PI with 104 NYC DECE social workers. Assessment measures for Aims 1 and 2 study constructs are listed in Table 1.

Methods for Aim 3 (To identify strategies and develop resources for supporting school staff in working with families and students impacted by immigration contexts). (MONTHS 21-36) Guided by findings from Aims 1 & 2, which will inform intervention and capacity gaps/needs for school staff, this aim is to focus on identifying strategies and developing resource/tools to address these gaps and needs. Based on our prior work with school social workers, we anticipate strategies for addressing (i) education/knowledge gaps (e.g. legal knowledge about immigrant rights in sanctuary cities; knowledge about influence of immigration-related stress on school community members' well-being), (ii) psychosocial support skill gaps (e.g. skills in using developmentally appropriate strategies to help immigrant students cope with anxiety), and (iii) unsafe school climate may be needed. Additional gaps and needs may be identified from Aims 1 & 2, which will be added to study list. To develop relevant resources/tools/strategies to address the needs, this study will be guided by Proctor's (2011) service implementation framework, which proposes adapting relevant existing evidence-based interventions (EBIs) for special populations (instead of re-developing a new intervention) and incorporating additional implementation strategies (e.g., engagement, empowerment) to enhance utilization of the EBI strategies. Three research activities will be carried out. We will first conduct a literature review and identify relevant EBIs (i.e., stigma, discrimination, violence, trauma-based interventions) that have shown efficacy/effectiveness evidence in improving knowledge, attitude, social support, wellbeing, and climate. Systematic literature search through Ovid MEDLINE, PsycInfo, and EBM Reviews databased will be applied. Next, the mental health professionals from the CEHD research team will modify the intervention based on Aims 1 & 2 findings as well as with input from the PI. A qualitative study will then be conducted to study appropriateness of the adapted intervention and identify any additional intervention/capacity building strategies from school teachers' and social workers' perspective. Semi-structured interviews with 2 social workers and 15 early childhood teachers will be conducted. Interviews (last about 1 hour and be audiotaped) will focus on discussion around the fit, acceptability, feasibility, perceive effectiveness of the proposed adapted interventions, and additional

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## Methodologies and Measurement Procedures and Data Analysis Approach Examples

suggestions strategies/tools/ resources to support school staff. Findings will be disseminated via presentations with the CEHD/DOE team, presentations at national conferences, policy briefs and manuscripts.

### **Data Analysis Approach**

*Please describe in detail your data analysis approaches. The analytic plan should align with the research questions, the proposed measures, and the working hypothesis(es).*

Preliminary Analyses. Qualitative data collected during Year 1 preparation period (for measurement development and understand appropriateness of the study framework (Figure 1) will be transcribed by a professional transcription service and analyzed by the PI and a research assistant. Coding will focus on themes related appropriateness of the framework and measures, and additional constructs and factors that may be added to the framework and measures. Coding of qualitative data will apply constructivist grounded theory. In this tradition, it is assumed that the research process is an interpretive portrayal of the studied world; that is, findings are co-constructed through the researcher's involvement and interactions with participants, perspectives (i.e., theories and literature), and research practice (Charmaz, 2006). A constant comparative approach will be used within and between interview transcripts. The transcripts will be read, reviewed, labeled, and categorized using initial and focus coding. Initial coding will be completed independently by two team members, one of whom is the PI. In a collaborative process, analytical decisions will be made about categorizing the data into inclusive and comprehensive themes. Codes will then be used to complete focused coding. During focused coding, the most significant codes from the initial coding will be applied to the remaining data. Axial coding will be used within and across participants to derive dimensions and properties of themes. During axial coding we will also examine the relation between the major themes. Thematic development will involve a search for "core consistencies or meanings" in the dimensions being investigated. To optimize study rigor, we will conduct research team debriefings after each interview to discuss the interview process and address ethical concerns. We will record all analytic decisions, as well as discussions surrounding discrepancies among codes and consensus on the final codes and concepts. In accordance with the principles of qualitative research, we will rely on direct quotes as much as possible to ground our findings and interpretations. In summary, results of the qualitative data will be used to refine study framework and measurement tools.

Analysis Plan for Aim 1. Psychometric properties of the study measures will be examined first. Only reliable and valid measures will be used in the subsequent analyses. In addition, for measures that evaluate similar constructs, composite scales will be created (to minimize number of analyses). To characterize the school immigration contexts and needs (i.e., immigration climate, teacher and social worker well-being, classroom immigration related needs, and teacher and social workers' perceived competency in addressing classroom and family needs), a series of descriptive analyses and correlation analyses (to examine inter-relationship among three-level of immigration related contexts) will be conducted. Descriptive data will be used to understand the extent to which teachers and social workers observe immigration-related worry in classrooms as well as experience immigration related uncertainty. Bivariate correlations will allow us to examine the associations between worry, uncertainty, psychological distress and self-reported health.

**Commented [NMS]: Data Analysis**  
Strong organization of analysis by research question.  
The research plan aligns well with the research aims.

#### Methodologies and Measurement Procedures and Data Analysis Approach Examples

Chi-square tests will be conducted to see whether there are differences in worry and distress by respondent race, ethnicity, nativity or levels of perceived social support. Structural equation modeling will be used to understand the links between immigration related worry and uncertainty, perceived competency, stress, emotional exhaustion, sleep, and self-reported health to identify important points of intervention (e.g. resources for coping with stress, resources and skills to improve perceived competence). To test hypothesis 1a (association between school immigration contexts and school staff's wellbeing and perceive competency in address students' needs in classroom), we will model staff's wellbeing and perceive competency as a function of a set of school-level contextual factors. To consider school staff nested within schools, we will apply linear mixed effect models, using SAS PROC MIXED. School be included as a random effect. To test hypotheses 1b (immigrant and non-immigrant staff differences on school immigration context perception and needs), similar mixed effect models will be conducted (i.e., including staff's immigration status as the predictor, and perception of contexts as the outcomes).

Analysis Plan for Aim 2. To test hypotheses 2a &b (influence of school immigration-related climate, classroom immigration related needs, and school staff's wellbeing on school staff's behavioral competency/practice skills in addressing the needs), we will model 3 levels of immigration-related contexts as predictors, and school staff's practice competency in address classroom and family needs as the outcomes. Three sets of analyses will be conducted (one set for each level of predictors). Similar to Hypothesis 1a analysis, linear mixed effect models will be conducted.

Analysis Plan for Aim 3. For Aim 3, only qualitative data will be used. Literature review (of relevant EBIs) and individual interview data (to understand fit of the adaptive intervention and identify additional strategies) will be utilized. For the literature review, comparisons of relevant EBIs on their intervention contents, impacts, and potential needs for adaptation will be conducted. Summary tables will be created. For the interview data, similar qualitative data analysis approach as described above (during research preparation period) will be applied. Coding will focus on themes related to fit, acceptability, feasibility, perceive effectiveness of the proposed adapted interventions, and additional suggestions strategies/tools/ resources to support school staff. Products of this aim will be feasible intervention strategies/tools for supporting school staff that are ready for future implementation study.

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**Methodologies and Measurement Procedures and Data Analysis Approach**

**Michelle Maier, Ph.D.**

**MDRC**

**Project Summary**

This project is a secondary data analysis of a large-scale randomized control trial, Making Pre-K Count (MPC), of the evidence-based math curriculum, Building Blocks, which is being implemented within New York City early care and education programs. The implementation of the Building Blocks curricula also included extensive teacher training and in-classroom coaching. Within this larger effort, this study will examine how specific teacher classroom practices are predictive of child outcomes and will identify effective professional development supports for teachers in preschool classrooms.

**Methodology & Measurement Procedures**

*Describe your methodology and measures and how they are linguistically and culturally sensitive and appropriate. To upload diagrams and/or tables, please see Attachments.*

- *If the proposed research involves working with community based organizations, schools and/or school districts, describe the planned process for gaining permission/access, whether the process has been initiated, and how far it has progressed. A letter of support confirming cooperation from each entity must be uploaded in the final section of the application.*
- *If your proposed study is longitudinal in design, please specify how you will sustain the participation of those involved, including plans for sample attrition.*
- *If your proposed study only involves qualitative or quantitative methods, please specify how you will use these methods and your specific analytic approaches for the data.*
- *Where both qualitative and quantitative approaches are proposed, describe the ways in which the combination enhances the proposed study.*

*If Applicable. Please upload diagrams and/or tables that support the Methodology and Measurement Procedures section. If the diagrams and/or tables consist of multiple pages, please convert/save the pages as a single pdf and upload the pdf. Please add your name and request identifier to each page before uploading the required attachment.*

Study Design. The proposed study will involve secondary analysis of quantitative data from the Making Pre-K Count (MPC) study because MPC provides a rich data set that is perfectly suited to answer research questions about associations among specific teacher practices, teacher professional development, and a range of child outcomes. MPC is a cluster-randomized control trial evaluating the effect of an evidence-based math curriculum (Building Blocks) combined with extensive teacher training and in-classroom coaching on children's outcomes. A total of 69 full-day, DOE- and ACS-funded preschool sites—public schools and community-based centers, including Head Start—serving a low-income population of 4-year-old children were selected to reflect the geographic, racial, and ethnic diversity of NYC's low-income population (the sample was not designed to be statistically

## Methodologies and Measurement Procedures and Data Analysis Approach Examples

representative). The final sample included 173 preschool classrooms in 69 sites in Brooklyn, the Bronx, Manhattan and Queens. Sites were randomized to receive two years of curriculum plus PD (program group), or to a “preschool-as-usual” control group. The study was conducted during the 2013-2014 (“Year 1”) and 2014-2015 school years (“Year 2”). A total of 34 preschools were in the program group (88 classrooms) and 35 preschools (89 classrooms) were in the preschool-as-usual group. Data on children were collected in Year 2 (children received only one year of the program), when most teachers would have already taught the curriculum for a full year.

**Sample.** The research sample in the proposed study is confined to the lead teachers and their students in participating classrooms during Year 2 (2014-2015). The child sample has even proportions of boys and girls with an average age just above 4 years old at the start of preschool. Fifty-six percent of parents reported they were of Hispanic origin, and 36% were non-Hispanic Black. Nearly 20% of the children were predominantly Spanish speakers and therefore assessed in Spanish in the fall; 9% of children were assessed in Spanish in the spring. Lead teachers were mostly female (94%); and relatively evenly distributed by racial/ethnic group (approximately 32% Hispanic, 26% non-Hispanic Black, and nearly 34% non-Hispanic White.) A majority of teachers had a Master’s degree (86%) and, on average, had over a decade of teaching experience (M=15.2 years, SD=8.9).

**Measurement Plan.** A host of quantitative data was collected in MPC from participants in program and preschool-as-usual sites, making this data set an excellent fit for answering the research questions posed. These data include various aspects of teachers’ professional practices; provision of professional development; teacher and child demographic characteristics; and children’s language, math, and executive function outcomes. In addition, detailed information was collected in program group classrooms on implementation of the math curriculum and teacher attendance at the training and coaching provided as part of the intervention. Thus, MPC data are uniquely situated to answer the proposed study’s research questions about linkages among teacher practice, children’s learning, and teacher PD because multiple measures of these constructs were collected, yet explicit modeling of the associations among these constructs was not a primary aim of the MPC study.

See Exhibit 2 for a list of constructs of interest for the proposed study, their data sources, and the timing of their collection. Various modes of data collection were used including classroom observations, direct child assessments, surveys and online logs. See Section VI for information on the plans for characterizing the constructs of interest through data reduction and measure creation as well as the analytic approach.

Multiple dimensions of teachers’ professional practices were assessed by trained observers blind to treatment status via a 3-hour classroom observation on 2 days in spring of Year 2. During one visit, detailed data on classroom process quality was collected using the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). During the other visit, time spent on different content areas and use of instructional groupings were captured using the Narrative Record (Farran & Bilbrey, 2004), and the amount and quality of math instruction was collected using the Adapted-COEMET (a version of the COEMET [Clements & Sarama, 2008] modified by MDRC for use in MPC).

**Commented [MOU7]:** PI provides a description of the dataset; how the data were collected; who the data represents.

**Commented [MOU8]:** PI provides description of sample, includes key characteristics that are relevant to the proposed research.

## Methodologies and Measurement Procedures and Data Analysis Approach Examples

Child outcomes were collected by trained assessors via direct child assessments on a random subsample of children in Year 2 (5 children per classroom in the fall and 8 in the spring). Child math competencies were collected via Woodcock Johnson-III Applied Problems (Woodcock et al., 2001) and the ECLS-B math assessment (Najarian et al., 2010). Receptive language skills were assessed using the Receptive One-Word Picture Vocabulary Test (ROWPVT; Martin & Brownell, 2011). Children's executive function, which comprises working memory (ability to keep a number of pieces of information in the mind at once), cognitive flexibility (ability to flexibly shift between pieces of information), and inhibition (ability to stop or repress an immediate response) were assessed via a) Pencil Tap, a working memory and inhibition task (Diamond & Taylor, 1996; Luria, 1966); b) Corsi Blocks Forward Span, a short-term memory task (Corsi, 1972; Lezak, 1983); and c) Spatial Conflict Arrows, a cognitive flexibility task (Willoughby et al., 2012). Teacher characteristics, such as teacher education, teaching experience, PD experience, motivation to implement, and Spanish-speaking ability, were captured via teacher survey at entry to the study or at the end of Year 2. An administrator survey provided additional details on the PD provided to teachers. Online logs completed by coaches provided ongoing data on the provision of coaching, as well as the amount and quality of curriculum implementation, within the program group only. Child and parent demographic information was collected via a few questions on the parent consent form.

Data sources were carefully selected to be culturally and linguistically sensitive and appropriate. This was done through the execution of a systematic plan for reviewing potential measures and the convening of a group of advisors external to the project to help finalize measure selection. First, we identified a large group of potential classroom observational measures and direct child assessments that were purported to measure the constructs of interest. Second, we systematically reviewed the robustness and feasibility of the measures found in order to maximize the likelihood of detecting significant program impacts and to identify the benefits and drawbacks of specific research instruments. To review the robustness of the measures, we developed a list of criteria for consideration, some of which were deemed "foundational" (i.e., without which a measure could not be placed on the initial list). Such foundational criteria were: a) that the measure was appropriate for young children; b) had demonstrated evidence of reliability and validity; and for direct child assessments: c) had been developed with close attention to its cultural, linguistic and psychometric features. Next, we identified criteria that we considered "high priority." These criteria included: d) the administration time was not too long; e) the measure demonstrated evidence of predictive validity; and f) the measure assessed the appropriate content area. For the math assessments, in particular, we wanted to prioritize measures assessing a range of math content areas. Finally, other criteria considered included: ease of measure administration; use with populations similar to that of MPC (i.e., low-income, racially diverse, and language-minority populations); and use in prior studies in the field.

During data collection, we also took care to collect child assessments and observations in linguistically sensitive ways. First, a portion of the child assessors, as well as the classroom observers, were Spanish-English bilingual. Second, in both the fall and spring, the first measure in the child assessment battery (i.e., Simon Says and Art Show subtests from the preLAS) served as a language proficiency assessment to determine the language in which the battery should be administered. The preLAS (particularly these two subtests) has been used in previous studies as a screener for determining whether a child completes subsequent assessments in English or Spanish (Love et al., 2009; Moiduddin et al., 2012). In MPC, several "rules" were followed. If a child scored low on the preLAS (6 or more items incorrect), they were assessed using the Spanish battery if their home language was

Commented [MOU9]: PI describes process for how measures were chosen and the quality of each measure (e.g. reliability and validity, etc.)

## Methodologies and Measurement Procedures and Data Analysis Approach Examples

Spanish; if their home language was something other than English or Spanish, they were not assessed at that time point (because the selected assessments had been validated only in English and Spanish). If a Spanish-speaking child in the fall was “on the cusp” of scoring low on the preLAS (5 items incorrect), they began the next assessment (ECLS-B math assessment) in Spanish. But the assessor could toggle between administering items in Spanish or English depending on which language the child appeared to understand best. The child would receive the remaining assessments in Spanish or English depending on how much toggling occurred (i.e., if at least half of the items were administered in English, the remaining assessments would be given in English and vice versa).

### **Data Analysis Approach**

*Please describe in detail your data analysis approaches. The analytic plan should align with the research questions, the proposed measures, and the working hypothesis(es).*

Data Reduction Plan. As mentioned in the prior section and shown in Exhibit 2, multiple measures have been collected for most constructs of interest. Thus, data reduction is planned. First, descriptive statistics (means, standard deviations, frequencies, distributions, correlations) for the constructs of interest will be reviewed. Some measures proposed have already been determined to be reliable and valid through measurement work conducted as part of the original MPC study. This involved exploratory and confirmatory factor analysis, calculating alphas to evaluate measures’ internal consistency, and examining correlations with other outcomes to establish construct validity.

There are several constructs of interest whose measures were not created or examined in depth in the original MPC study, such as use of instructional groupings and administrator- and teacher-report of teacher training and coaching, among others. For these, data reduction will occur for a) sets of items that are thought to comprise a construct (e.g., items on motivation to implement), or b) multiple, individual items thought to capture the same or a similar construct (e.g., administrator and teacher reports of PD). For sets of items thought to capture a construct, factor analysis will be used to find distinct factors that explain variance in items. If a set of items have an expected factor structure (e.g., validated measures), confirmatory factor analysis will be used. If there is no prior research, exploratory factor analysis will be conducted. For individual variables capturing the same or similar constructs, criteria will be used to determine what variables to privilege: a) those that are straightforward and can be cleaned and used in a concise way; b) those from which some level of reliability or face validity can be assessed; c) those with multiple items so that we can assess internal consistency through alphas; and d) those that have the most variation and tell an interesting story.

Next, measurement models will be estimated for constructs with multiple data sources (e.g., training, coaching, aspects of teacher practice, child math and executive function outcomes). Measurement of such constructs may be adjusted based on results. For example, if different aspects of training (e.g., amount received by the district and from the teacher’s site) are not sufficiently correlated with one another to warrant creation of a latent construct, then they may be entered into model singly (that is, as an observed variable).

**Commented [MOU10]:** Relevant to cultural and linguistic sensitivity.

**Commented [MOU11]:** Clearly stated analytic plan, starting with data reduction and also describing both the variable-centered and person-centered approaches.

Good cross walk from question to analytic technique and use of profile analysis is appropriate.



#### Methodologies and Measurement Procedures and Data Analysis Approach Examples

Analysis Plan. Research questions 1a-b examine the pattern of associations among pathways hypothesized in the conceptual model, linking the provision of PD to teacher practice to children's learning. Further, they explore whether these associations vary based on different subgroups of teachers/classrooms and children. As such, the full sample of lead teachers will be used to examine the strength of relations among a) amount of training and coaching teachers receive as reported by teachers and administrators, b) multiple aspects of teacher practice, such as classroom quality, time spent on language/literacy and math instruction, use of instructional groupings, and c) children's language, math, and executive function competencies. The analytic approach proposed is multilevel Structural Equation Modeling (SEM) for several reasons: a) SEM allows for simultaneous testing of multiple, hypothesized pathways and mediators; b) it accommodates multiple data sources, allowing for more precise measurement of constructs of interest; c) it can account for interdependences of measures (e.g., among child outcomes) and units (i.e., multilevel data where children are nested within classrooms in sites); and d) it can assess whether pathways differ for groups of teachers/classrooms or children. See Exhibit 3 for an illustration of the proposed structural equation model.

Analyses will be conducted in Mplus (Muthén & Muthén, 1998–2010). First, as mentioned above, measurement models will be estimated for constructs with multiple data sources. Constructs assessed with a single measure will be included in the model as they are (that is, as an observed variable). Next, to test the hypothesized pathways of influence, the total, direct, and indirect paths will be estimated. Error terms for mediators and outcomes will be allowed to covary, when appropriate (for example, when they come from the same observational tool). Models will include covariates such as baseline child outcomes, child age and gender, treatment condition, and dummy variables representing random assignment block. The appropriateness of the model for the data will be evaluated using standard fit indices (e.g., NFI, SRMR). Nonsignificant pathways will be trimmed to improve overall fit and to be parsimonious. The model—and relevant pathways—will be tested separately for different subgroups of teachers/classrooms (i.e., classrooms serving a majority of DLLs or not; teachers with more or less experience teaching preschool; and teachers who are Hispanic, non-Hispanic white, or Non-Hispanic black) and children (i.e., children who are a dual language learner or not; children who are Hispanic or Non-Hispanic black; and children with higher or lower initial skill levels). Comparisons of fit statistics will tell whether there is a reasonable likelihood that a model is different across subgroups.

Whereas the first set of research questions takes a variable-centered approach to answer questions about associations among constructs of interest, the second set takes a complementary, person-centered approach to better understand and describe differences among classrooms in how constructs of interest (namely classroom interactions and processes) are related to one another. Accordingly, research questions 2a-b focus on classroom interactions and processes, including curriculum implementation, with an explicit focus on math instruction. This analysis will use the subset of teachers who were in sites randomly assigned to receive extensive training and coaching on math—that is, program teachers.

The analysis plan will follow several steps. First, latent profile analysis in Mplus will be used to answer research question 2a—to empirically identify latent profiles and describe patterns of curriculum implementation and classroom math practices. This person-centered approach is a multivariate technique for classifying subjects by identifying groups or clusters of cases (i.e., classrooms in



#### Methodologies and Measurement Procedures and Data Analysis Approach Examples

the proposed study) that are similar across a set of observable variables (e.g., Magnusson, 2003). This kind of approach has the advantage of addressing the interdependencies across these various measures of curriculum implementation and math practices.

In the proposed study, a profile will represent a group of classrooms observed to have similar curriculum implementation levels (in terms of dosage and quality) and classroom math practices (in terms of quantity and quality) across the different measures of the classroom environment (see Exhibit 2 for a list of the classroom variables under consideration). The multilevel nature of the data can be taken into account by using a sandwich estimator (the COMPLEX command) in Mplus. As recommended by Vermunt (2008) and Jung and Wickrama (2008), the number of profiles will be determined by comparing different profile solutions using multiple criteria: 1) the Bayesian Information Criterion (BIC; Schwarz, 1978) and sample-size adjusted BIC (ABIC; Burnham & Anderson, 2004), 2) the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR) and the Adjusted Lo-Mendell-Rubin likelihood ratio test (Adjusted LRT), 3) entropy, a summary value of the individual profile probabilities, and 4) the theoretical and practical applications of the profiles (Muthén, 2004). Lower values on BIC and ABIC indicate better fit. Likelihood ratio tests compare the current model to a model with one less profile; a significant p value suggests the model with one less profile should be rejected in favor of the current model (Lo et al., 2001; Nylund et al., 2008). High (greater than .80) entropy values signify a more accurate solution (Hix-Small et al., 2004). Standardized z scores for the curriculum implementation and math practice variables will be considered to facilitate model convergence and interpretation. After a solution is identified, the most likely profile membership for each classroom will be exported.

Second, multinomial logistic regression in SAS will be used to answer research question 2b and to examine how select teacher characteristics (education, experience, motivation to implement, Spanish-speaking ability) and classroom characteristics (percent DLL) are associated with the profiles resulting from the latent profile analysis. The outcome will be group membership in one of the profiles. See Exhibit 4 for the equation that will be used. Planned pair-wise comparisons between profiles will be conducted as a follow-up analysis to identify which profiles are significantly different from one another in terms of their association with teacher and classroom characteristics. The profile used as the reference group for all post hoc comparisons will be determined prior to running the multinomial logistic regression. Given the evidence base for an association between classroom quality and child outcomes, the profile chosen as the reference group is likely be the one considered to have the highest quality curriculum implementation and classroom math practices.