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**Early Childhood Mental Health Consultation to Promote Positive  
Teacher and Child Behaviors: A Single Case Design**

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**Early Childhood Mental Health Consultation to Promote Positive  
Teacher and Child Behaviors: A Single Case Design**

**by**

**Katherine Elizabeth Hess**

**Report**

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

**Master of Arts**

**The University of Texas at Austin**

**May 2021**

## **Abstract**

### **Early Childhood Mental Health Consultation to Promote Positive Teacher and Child Behaviors: A Single Case Design**

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Early Childhood Mental Health Consultation (ECMHC) promotes young children's school readiness by building the capacity of the adults and systems with whom they interact. In ECMHC, consultants may work with teachers to increase their use of behaviors that enhance classroom management and teacher-child relationships, which are in turn linked to the development of children's social-emotional competence. Motivational Interviewing (MI) can be incorporated to increase teachers' motivation to implement and maintain these behaviors. The proposed study will examine the effects of ECMHC and MI on teacher behaviors and secondary child-related outcomes using a multiple-baseline single case design. Outcomes will be analyzed using visual inspection and calculating a single-case design effect size.

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## **Introduction**

School readiness is broadly defined as the set of prerequisite skills that children need to be successful in kindergarten, as well as throughout their education (Snow, 2010). Colloquially, these skills allow children to be “ready to learn.” The National Education Goals Panel defined school readiness across five dimensions: (1) physical well-being and sensory motor development, (2) social and emotional development, (3) approaches to learning, (4) language development, and (5) general knowledge and cognition, including pre-academic skills such as early literacy and math skills (Copple, 1997). School readiness, as rated by teachers at kindergarten entry, is a consistent predictor of later academic and behavioral outcomes, with lower school readiness associated with poorer reading performance and more disruptive behavior at the end of first grade (Stormont et al., 2019), lower academic achievement in third grade (Nichta et al., 1982), and increased rates of grade retention in third through eighth grade (Davoudzadeh et al., 2015).

A meta-analysis of longitudinal studies found that early math skills most strongly predicted later learning measured by teacher report and math and literacy achievement scores (Duncan et al., 2007). Additionally, significant but less powerful predictors of future achievement were early language and literacy, as well as attentional control. Not only are these pre-academic skills important for kindergarten success, but children with early literacy and math skills are more likely to have greater academic achievement in the future, complete higher levels of education, and have greater job security as adults (Duncan et al., 2007; Hahn et al., 2016; Hair et al., 2006). Teachers report that students who struggle in kindergarten are those who lack strong pre-math and pre-literacy skills,

and those who show deficits in social skills (Rimm-Kaufman et al., 2000).

In fact, teachers report that child social-emotional skills, including social skills, are most important for kindergarten success, even over these academic skills (Heavenside and Farris, 1993; Lin, Lawrence, & Gorrell, 2003). These necessary social skills include being able to communicate needs and thoughts, to attend class without disruption, to follow directions, and to take turns and share (Lin et al., 2003). These skills are seen as prerequisites to acquiring academic skills, as they allow students to function in the classroom so they are able to engage in activities that promote learning (Raver & Zigler, 1997). Students with less well-developed social-emotional skills struggle to engage in these activities which limits their access to learning opportunities (Arnold et al., 1999; Fantuzzo et al., 1999). Instructional time for all students is also lost when teachers spend time addressing disruptive behavior in class (Arnold et al., 1999).

Socioeconomic status and membership in a marginalized racial or ethnic group are associated with lower teacher reports of school readiness, especially in the social-emotional competence domain (Brooks-Gunn et al., 2007). Young children in low socioeconomic communities are at risk for delayed social-emotional development (Raver et al., 2009). This delay in social-emotional development may account, in part, for the gap in school readiness between children from families with high versus low SES (Raver et al., 2011).

Early Childhood Education (ECE) prior to kindergarten is broadly linked to future positive outcomes and may be one way to increase school readiness (Camilli et al., 2010). Preschool, pre-kindergarten, or ECE can colloquially mean many different types of

experiences for children, and even within the educational literature these names are often used interchangeably. For simplicity, ECE will be used as an umbrella term for formal, out-of-home care for children, except when specified as Head Start. The particular outcomes associated with ECE and the strength of the relationship among ECE and these outcomes varies depending on the type of ECE. Generally, private all-day academic ECE and public school-based pre-kindergarten ECE show the strongest and most sustained associations with later academic achievement and school readiness outcomes (Brooks-Gunn et al., 2007; Fitzpatrick, 2008; Goldstein et al., 2013).

However, although many studies of ECE show that it increases preacademic skills, typical ECE does not appear sufficient to foster the development of social-emotional skills necessary for primary education (Liew et al., 2010). Many recent interventions for school readiness address domains of social-emotional competence, for instance self-regulation which underlies both social and academic skills (e.g. Lin et al. 2003, Zhai, Raver, & Li-Grining, 2011, Brotman et al., 2013). These interventions also take a preventative intervention approach and target schools in low-SES communities to help increase their school readiness.

Children from low-SES backgrounds are less likely to have access to ECE, a barrier that Head Start seeks to address (Tucker-Drob, 2012). Head Start aims to increase school readiness for low-income children through an array of social services including center-based preschool programs (Head Start Early Knowledge & Learning Center, 2018). Head Start center-based care is also generally found to have positive effects on early cognitive and early reading and math skills at kindergarten, but these initials

benefits tend to fade faster than other types of ECE (Abbott-Shim et al., 2003; Magnuson et al., 2004). This may signal the importance of later classroom experiences to sustain initial benefits (Magnuson et al., 2004). When children attend lower quality elementary schools, as is more common for children who attend Head Start, the benefits of ECE are often lost. Additionally, while Head Start is a national program, programming may differ at the state level and quality tends to vary (Boyce et al., 2000). Head Start classrooms tend to be larger, teachers' certification and continuing education requirements for providers may be lower, and children who attend Head Start may face additional risk factors that are associated with living in poverty.

Some of the interventions to bolster the impact of ECE and Head Start in particular utilize Early Childhood Mental Health Consultation (ECMHC) as a means to increase positive teacher-child relationships and effective classroom management, both of which are linked to school readiness for children. ECMHC uses an indirect service model to address the needs of children. In ECMHC, a mental health professional works with a teacher and/or parent in a collaborative, problem-solving relationship to prevent or address social-emotional concerns for a particular child or for the classroom in its entirety. ECMHC is a common practice, especially in Head Start, but has rarely been tested as a stand-alone intervention. Therefore, the proposed study uses a single-case design to determine a functional relationship between ECMHC and positive teacher and student behaviors that have been linked to social-emotional competence for children within a Head Start setting.

## **Integrative Analysis**

### **Social-Emotional Development in Early Childhood**

There are various models and definitions of social-emotional competence. For example, the Center for Social and Emotional Foundations for Early Learning's definition includes children's abilities to develop and sustain relationships with peers and adults, to regulate their emotions and to identify them, and to explore the world and learn (2008). Another by the Collaborative for Academic, Social, and Emotional Learning includes self-awareness, social awareness, responsible decision making, self-management, and relationship management (2013). Domitrovich and colleagues suggest conceptualizing social-emotional competence as two domains: intrapersonal skills, essential to function as an individual, and interpersonal skills, essential to function well in relation to others (Domitrovich et al., 2017). While it is acknowledged that social-emotional competence has distinct domains associated with their own outcomes, these domains may be more interrelated in younger children (Raver & Zigler, 1997). Each domain is described in greater detail below.

#### ***Intrapersonal Competence***

With regard to the intrapersonal domain, children's ability to function individually includes emotional self-regulation. Children who are able to emotionally regulate are able to manage their attention and impulsivity (Raver et al., 2011). Among children from low-income homes, emotional regulation has been found to moderate their response to the stressors such as interparental conflict (Ingoldsby et al., 1999) and risks factors such as low maternal education and unfavorable environmental settings (e.g.,

crowding, noise, exposure to toxins; Evans & Kim, 2007; Lengua, 2002). While some studies show that emotional-regulation skills are stable across time (Eisenberg et al., 2010), other studies show that amongst children considered high-risk for emotional-regulation difficulties due to poverty and its correlates, emotional regulation can be increased with support or decreased in the context of a harmful environment (Montroy et al., 2016; Raver et al., 2011). These changes to emotional regulation have an impact on child outcomes, including cognitive ability and academic achievement (Evans & Kim, 2013). This underscores the importance of high-quality early childhood environments that may bolster children's emotional self-regulation.

### *Interpersonal Competence*

In terms of interpersonal competence, children demonstrate competence by learning to listen to others, communicate their needs, and socially problem-solve (Domitrovich et al., 2017). Teachers also rate these skills as important for students' school success (Heavenside and Farris, 1993; Lin, Lawrence, & Gorrell., 2003). These interpersonal skills are linked to the positive development of prosocial relationships with adults and children, allowing young children more time accessing learning activities in ECE settings (Domitrovich et al., 2017). Interpersonal competence in kindergarten has been linked to positive outcomes in adulthood; those rated higher in this domain in kindergarten were less likely as adults to need public assistance, be involved in criminal activity, or abuse substances than their peers who were rated lower in these aspects (Jones, Greenberg, & Crowley, 2015).

In sum, social-emotional development in early childhood is important to

children's overall development and predicts later functioning (Domitrovich et al., 2017). Relatedly, social- emotional concerns among young children are prevalent (Huaqing Qi & Kaiser, 2003), and they predict poor outcomes in later childhood and into adulthood (Evans & Kim, 2007), but these concerns are amenable to intervention (Jones et al., 2013). For some children these concerns may reach clinical significance and be categorized as a mental, behavioral, or developmental disorder, discussed next.

### **Social-Emotional Concerns in Early Childhood**

The Center for Disease Control and Prevention (CDC) estimates that 17.4% of children aged 2-7 had received a diagnosis of a mental, behavioral, or developmental disorder (MBDDs) in a community sample (Cree, 2018), while other studies have suggested that the prevalence of diagnosable MBDDs in this age group range from 14% to 26.4% (Egger et al., 2006; Egger & Angold, 2006; Kataoka et al., 2002). Children are most commonly referred to mental health services for disruptive behavior disorders (DBDs) (Gadow et al., 2001; Lavigne et al., 2009), specifically Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD), and the patterns of behavior associated with these clinical diagnoses starts in early childhood (Egger & Angold, 2006). While less common than disruptive behavior disorders, almost 9% of preschoolers are reported to some form of anxiety and around 2.7% for any type of depression disorder (Egger & Angold, 2006; Franz et al., 2013).

ADHD symptoms of inattention and/or hyperactivity may include a child often leaving their seat, having difficulty waiting their turn, and having trouble paying attention to details (American Psychiatric Association, 2013). ADHD symptoms in young children

can be hard to identify due to the rapid development of the attention span and impulse control during this period (Egger et al., 2006). However, young children resemble older children in terms of impairment across home and school settings due to problems related to ADHD symptoms (Gadow & Nolan, 2002; Lahey, et al., 2004). These symptoms present a significant challenge in the classroom as they are essentially opposite of the qualities teachers define as most important for children to succeed in kindergarten (e.g., attending without disruption, following directions, taking turns) (Heavenside and Farris, 1993; Lin, Lawrence, & Gorrell., 2003). This functional impairment in school may contribute to the finding that 40% of children who met criteria for ADHD had been suspended from ECE and nearly 16% had been expelled (Egger & Angold, 2006).

Irritability, oppositional behavior, and aggression typically decrease in early childhood, as children begin to develop emotional and behavioral regulation (Raver & Zigler, 1997). However, some children continue to show clinically significant levels of noncompliance, physical and verbal aggression, and irritability during early childhood, in contrast to expected developmental trends (Nagin & Tremblay, 1999). This may manifest as defiance of classroom rules; hitting, kicking or biting; and throwing tantrums. These behaviors are typical of externalizing disorders such as Oppositional Defiant Disorder (ODD) (American Psychiatric Association, 2013), characterized as a well-established pattern of noncompliance, defiance, and anger/irritability. In the school setting, children with aggression or inattentive behaviors have fewer positive interactions with both teachers and other students (Denham and Burton, 2003). These symptoms are associated with increased risk for future academic failure, substance abuse, risky sexual behavior,



and antisocial behavior (Vitaro et al., 2005).

Early internalizing symptoms, such as anxiety and sadness, are conceptualized as those that result from high levels of effortful control (Eisenberg et al., 2001). Family history is considered an important risk factor for internalizing disorders in children, both the genetic and the psycho-social components (Luby et al., 2002). The onset of internalizing problems during the early childhood years is associated with greater severity and more comorbidity with other mental health disorders (Campbell et al., 2003). Additionally, tantrums were common amongst preschoolers in a study of anxiety that included ECE aged children (Copeland et al., 2013).

These problems are also correlated with school problems, such as attendance, performance, and relationships with peers (Hopkins et al., 2013, Hughes et al. 2007, & Katz et al., 2011).

Numerous studies have shown that disruptive behavior disorders it such as ADHD and ODD and other types of psychological distress are more prevalent among children from economically disadvantaged communities (Bossarte, Swahn, & Breiding, 2009; Centers for Disease Control and Prevention, 2004; Grant et al., 2004; Li, Nussbaum, & Richards, 2007), likely because of the sequelae of risk factors that are associated with poverty. The relationship among economic hardship and social-emotional concerns is described next.

### ***Social-Emotional Concerns in the Context of Poverty***

The single most predictive risk factor for social-emotional concerns in early childhood is living in poverty (Huaqing Qi & Kaiser, 2003). Other risk factors include

harsh parenting, exposure to community violence, and adverse childhood experiences (Freeman, 2014; Nix et al., 1999; Voisin et al., 2016). Poverty is highly correlated with these other risk factors, and when these risk factors co-occur the likelihood of negative outcomes increases (Evans et al., 2013).

Negative outcomes include more proximal outcomes like childhood internalizing and externalizing disorders, and more distal outcomes such as adult risky behavior and physical health diseases (Felitti et al., 1998; Freeman, 2014). Children living in poverty, relative to their more affluent peers, are more likely to have parent report of social-emotional concerns (Kaiser et al., 2000) and teacher report of lower levels of social-emotional competence at the transition to kindergarten (Rimm-Kaufman et al., 2000). Children living in poverty are also more likely to be diagnosed with a mental health disorder (Cree, 2018).

Cumulative risk research looks at the relationship between child outcomes and these combinations of risk factors, which can be difficult to disentangle because of the high levels of correlation (Evans et al., 2013). Cumulative risk indices sum the number of risk factors reported for each child (Sameroff, Seifer, & McDonough, 2004). Generally, researchers have found a positive linear relationship between the number of risk factors present for a child and negative outcomes such as social-emotional concerns and their later related outcomes (Evans et al., 2013). A longitudinal study found that cumulative risk mediated the relationship between childhood chronic poverty and physiological stress response in adolescents (Evans & Kim, 2007). Again, children in poverty experience many correlated risks, such as physical risks like exposure to neighborhood

violence, crowding and noise, and environmental toxins, and social risks such as lower quality early childhood education, and less responsive and harsher parenting (Evans, 2004; Evans et al., 2001; Magnuson et al., 2004; Masarik & Conger, 2017; Miranda et al., 2011). Black and Latinx children are more likely to live in poverty (Conger et al. 2002) and may face added stressors related to racial and ethnic oppression (Priest et al., 2014). Trentacosta et al. (2008) argue that looking at proximal risk factors (e.g., financial stress) as mediators between distal risk factors (e.g., income) and outcomes (e.g., child behavior concerns) may be particularly important when a large part of the relationship may be accounted for by the quality of the caregiving context. One possible framework for both the common co- occurrences of these risk factors and their related outcomes is the Family Stress Model.

The Family Stress Model (Conger et al., 1994) describes the relationship between poverty and child maladjustment as mediated by parents' economic stress, psychological distress, and parenting practices. Studies examining the model have shown that poverty is linked to parents' economic stress, defined as the worries related to being able to financially support the day-to-day functioning of the family (Schramm & Adler-Baeder, 2012). This stress predicts parent psychological symptoms such as depression and anxiety (Newland et al., 2013; Nievar et al., 2014). In studies with children under 5 years old, psychological distress related to economic stress was prospectively linked to a variety of parenting practices, and families facing higher economic stress reported less supervision of children, less time and lower quality time spent with children, and less provision of social and cognitive enrichments compared with more affluent parents (Iruka et al., 2012;

Newland et al., 2013; Schramm & Adler-Baeder, 2012). These parenting practices were linked to the development of both externalizing and internalizing symptoms, as well as lower levels of early literacy and numeracy relative to peers (Iruka et al., 2012; Kataoka et al., 2002; Neppl et al., 2016).

In sum, economic stress may reduce parents' capacity to provide optimal support for healthy social-emotional development (Masarik & Conger, 2017). As previously discussed, poverty and therefore economic stress are often associated with other factors such as limited opportunities for education and employment, increased barriers to physical and mental health services, and housing and food security (Evans et al., 2013). These issues disproportionately affect families of color, who, as a result of institutionalized racism, are more likely to live in poverty and also may experience additional stress from discrimination and racism (Conger, 2002; Priest, 2014).

Studies of outcomes related to poverty show that young children under the age of five are particularly vulnerable to the negative impact of poverty on development (Axinn, Duncan, & Thornton, 1997; Duncan, Ziol-Guest, & Kalil 2010; Duncan, Yeung, Brooks-Gunn, & Smith, 1998). Importantly, these developmental outcomes, including social-emotional competence, are malleable (Jones et al., 2013; Raver et al., 2009). Further, young children with self-regulation skills cope better with cumulative stress (Blair & Raver, 2012). This highlights the necessity of early childhood education as a means to support children's social-emotional development.

### **ECE as Preventative Intervention**

Although individual and group interventions for children's social-emotional

concerns do exist, only about 20% of all children who need mental health care receive services (Farmer et al., 2003). Among children ages 3-5, only 3-6% of children identified as needing services receive them (Kataoka et al., 2002; Lavigne et al., 2009). Studies that look at the differences in rates of unmet mental health needs for children by race and ethnicity vary, in part, due to differences in sampling methods and diagnostic criteria (Alegria et al., 2010), but most show that racial and ethnic minorities receive fewer services and have increased barriers to access than non-Latinx White children (Hough et al., 2002; McCabe et al., 1999).

Barriers to mental health services for children may include a limited amount of service providers, which results in long wait times for an appointment and higher costs for services; issues related to transportation; and stigma related to mental health or negative previous experience with behavioral health providers (Brown et al., 2014). While public schools are the most common source of referrals and the most frequent service provider for children (Stephan et al 2007, Williams et al 2007), most school-based programs do not refer children until kindergarten or later (Forness et al., 2000). Even within Early Childhood Intervention, the publicly funded service for children 0-3 whose development may be impacted due to delay, disability, or medical condition, only 3.7% of services are provided for social/behavioral impairment or delay (Hebbeler et al., 2007). State agencies, which provide and pay for services for school-age children, often do not provide mental health care for children under 6 years old, or do not provide reimbursement for evidence-based interventions such as family therapy (Knitzer & Cohen, 2007).

High quality ECE can provide the necessary environment for children to develop social- emotional competence (Frede, 1995), and many children attend some sort of center-based care. Belfield (2008) found that nearly 75% of children enrolled in kindergarten in 2005 had attended ECE the year before. Additionally, Black and Latinx children are most likely to attend ECE in some form (McCabe et al., 1999) and as discussed previously often face additional risk factors related to systemic racism (Priest, 2014). In this way, ECE can serve as a setting to provide early intervention and increase prevention efforts for the later development of problems related to common risk factors such as those associated with childhood poverty.

ECE itself can be viewed as a prevention program, as it is associated with positive outcomes for children. ECE attendance is linked with cognitive gains over time, with fadeout effects varying in different studies (Barnett, 1995; Camilli et al., 2010; Gilliam & Zigler, 2000). Most studies show that children benefit from preschool in the realms of pre-literacy skills, language development, and mathematics skills (Duncan & Magnuson, 2013). ECE attendance is also linked to long term effects such as decreased rates of grade retention and special education placement (Barnett, 1995; Gilliam & Zigler, 2000). The generally positive impacts of preschool vary in size and can be lost if children do not have access to high quality education moving forward following ECE (Duncan & Magnuson, 2013; Zhai et al., 2012).

One meta-analysis of ECE found positive effects on children's social outcomes (Camilli et al., 2010), and another found mixed evidence (Gilliam & Zigler, 2000). These meta-analytic studies differ in part due to the educational programs included their

analysis and the tools of measurement utilized. Camilli et al. (2010) included studies of model programs such as the Perry Preschool Project and the Abecedarian Study, which typically have very high effect sizes in all domains. They additionally do not define what social/emotional outcomes were grouped together in their meta-analysis. Gilliam & Zigler (2000) reviewed studies of large-scale state funded programs. Two states reported positive impacts of ECE on teacher ratings of behaviors, which did not persist beyond preschool, while Washington D.C. reported no significant effect. Florida additionally reported a significant effect of preschool on behavior through fourth grade as measured by school records of discipline. A third review by van Huizen and Plantenga (2018) included studies reporting on naturalistic experiments where universal early childhood education and care was implemented. They included studies from both the United States, Europe, and nations. They found that the most consistent correlate with positive student outcomes was high quality ECE, over other predictors such as age of enrollment, source of funding, and length of day.

Whereas universal prevention focused approaches such as ECE target a whole group of people without identifying individuals as at risk, selective preventive interventions target subgroups with increased risk. As previously discussed, children in poverty are at increased risk for social-emotional concerns (Cree, 2018), and ECE programs such as Head Start that provide services to children of low SES backgrounds serve as natural environments for selective preventive interventions (Bagdi & Vacca, 2005). This model of tiered services has been adopted in education and mental health, and can be found in the educational literature as *Response-to-Intervention* (Ardoin et al.,

2005), *The Pyramid Model* (Hemmeter et al., 2016), and *Multi-tiered System of Supports* (Citro et al., 2020).

There is evidence that the quality of ECE provided, including within Head Start, is linked to the positive outcomes described above (Duncan & Magnuson, 2013; Heckman & Masterov, 2007; Keys et al., 2013; Zaslow, 2011). In a study of Early Head Start, participation in the treatment condition was linked to modest increases in language and social development of children, and these increases were greatest for programs that had higher levels of implementation to prescribed elements of the program compared with those with lower implementation fidelity (Love et al., 2005). Another review of ECE programs also found that positive gains related to participation were moderated by implementation quality, as well as the age when the program began (Love et al., 2005).

Many components of quality early childhood education have been identified throughout the literature, which Pianta and colleagues (2016) classify in four categories. The first includes structural elements, such as small class size and full-day instruction, both of which are linked with literacy (Francis & Barnett, 2019). Full day instruction also predicts other domains of school readiness and attendance when compared to half day preschool (Reynolds et al., 2014; Valenti & Tracey, 2009). The second component includes classroom environment variables, such as equipment available and teachers' language behaviors. Most commonly these variables are measured using the Early Childhood Environmental Rating Scale-Revised Edition (ECERS-R), and scores on this measure are linked to school readiness in kindergarten (Keys et al., 2013). The third component includes the use of Quality Rating and Improvement Systems (QRIS) to



promote the quality of ECE through monitoring. QRISs have been found to be correlated to other measures of ECE quality, such as the classroom environment. In one study of QRIS in Virginia, researchers found that the QRIS was able to predict gain in literacy, when controlling for community and child level variables (Sabol & Pianta, 2015). Another study found that QRIS ratings significantly predicted lower levels of externalizing concerns, and approached significance in their ability to predict higher levels of student self-efficacy (Hestenes et al., 2015). The last element of quality identified by Pianta and colleagues (2016) is teacher-child interactions and relationships, which is the focus of the next section.

### ***Teacher-Child Relationships***

Positive teacher-child relationships are defined by high levels of warmth and low levels of dependency and conflict (for a review see Myers & Pianta, 2008). Positive teacher-child relationships are linked with academic performance, school adjustment, and student engagement. Higher degrees of warmth, empathy, and closeness among teachers and young children are also associated with lower rates of student disruptive behaviors in preschool (McLeod et al., 2017). Warm, positive relationships with teachers have been shown to be protective factors for children at risk for developing behavioral problems by acting as a buffer to the negative outcomes associated with poverty and cumulative risk discussed previously (Driscoll et al., 2011).

The value placed on positive teacher-child relationships in ECE extends naturally from a key theory of early child development, Attachment Theory. Attachment theory posits that children's relationships with their caregivers help them construct their working

model of social interactions (Ainsworth, 1978). Early relationships with caregivers provide examples of behaviors that build schema through repetition (Delius et al., 2008). Additionally, through repetition, young infants learn how to get their attachment needs met and these experiences shape their later behavioral patterns. Early attachment relationships teach children skills like social referencing, the understanding of a situation by using another's interpretation, and joint attention, which are important for later learning in schools (Ranson & Urichuk, 2008).

While this work was originally conceptualized around the parent-child relationship, Pianta and others have used it as a foundation for understanding the importance of the teacher- child relationship (Pianta, 1999). Extending again from the attachment literature, teacher-child relationships are defined as the following three dimensions: closeness, conflict, and dependency (Pianta, 1999). The closeness dimension is defined as the level of warmth, affection, and open communication between the teacher and child. This dimension is important as children develop their social-emotional skills, such as learning to express themselves effectively. Additionally, this is important for learning because children should feel that their teacher welcomes questions and provides appropriate, non-critical feedback. Conflict reflects the amount of negativity and levels of discord between the teacher and child. High levels of conflict may promote oppositional, disruptive behaviors, making it more difficult for the child to engage in the learning process. The dependency dimension is related to a child's overreliance on the teacher for their given developmental stage (Pianta, 1999).

One area of ECE literature relates positive teacher-child relationships to other

positive outcomes for children, such as greater peer acceptance and higher levels of achievement than those who have more negative teacher relationships (e.g., Berry & O'Connor, 2010). In classrooms with high-quality interactions and relationships, children develop stronger social skills and display fewer behavior problems than those in with lower quality relationships with teachers (Grining et al., 2010). These high-quality relationships in ECE are also associated with later cognitive and academic achievement and decreases in externalizing behaviors over time (Burchinal et al., 2008; Silver et al., 2005). The benefits of positive teacher-child relationships are more impactful on children from impoverished backgrounds than their more affluent peers, especially when they have access to these relationships for multiple years (Cash et al., 2019; Liew et al., 2010).

Interventions that increase teacher behaviors such as praise and effective commands are linked with positive outcomes on preschool student behavior, providing further evidence that teacher-child relationships may be a mechanism for preventing social-emotional concerns in early childhood (Fawley et al., 2019, Lyon et al., 2009, Reinke et al., 2007; Erchul & Sheridan, 2014). Some interventions specifically target the teacher-child relationship, such as Banking Time, an intervention where teachers spend one-on-one time with students in order to develop closeness (Fawley et al., 2019). An exploratory study of Banking Time in Head Start found that students who received the intervention showed increased frustration tolerance, task orientation, and competence, and decreased conduct problems (Driscoll & Pianta, 2010). Single case design studies have likewise found that Teacher-Child Interaction Therapy, a very similar intervention that focuses on increasing teacher responsiveness to child appropriate behavior, has had

positive effects on teacher-child relationships and also on child behavior (Lyon et al., 2009; McIntosh et al., 2000; Tiano & McNeil, 2014).

Positive and responsive relationships between teachers and their students are part of the classroom processes that define high quality environments for children, specifically classroom management. The role of classroom management in ECE is discussed next.

### ***Classroom Management***

Classroom management is seen as one way to provide structured, nurturing, warm classrooms that support children's development. Children have fewer behavioral concerns in classrooms with teachers who effectively manage their classrooms (Raver et al., 2008). The predictable nature of well-managed classroom may set the stage for children to build attachment relationships with their teachers, which may play a protective role for children at risk of developing disruptive behavior problems. Most classroom management approaches use behavioral theory principles as a foundation and use behavioral strategies delivered by the teacher to enhance child appropriate behavior (e.g., Fox et al., 2003; Hemmeter et al., 2016; Webster-Stratton et al., 2008; Zhai et al., 2012).

In a systematic review of 49 published studies evaluating classroom-level early education interventions using experimental, quasi-experimental, or single-case experimental designs, McLeod et al (2017) identified common strategies that were associated with positive child outcomes across different early childhood studies. McLeod and colleagues (2017) identified altering antecedents, such as providing children choices or engaging students through opportunities to respond, as one of the most commonly

occurring strategies. Additional effective antecedent strategies common to interventions with positive child outcomes include precorrections (M. A. Stormont et al., 2007), which provide a reminder to students about upcoming behavioral expectations; monitoring (Lyon et al., 2009), where teachers scan classroom to provide positive reinforcement and anticipate challenging behaviors; and teaching rules, problem-solving, and social skills (Webster-Stratton et al., 2001). Other effective strategies identified by McLeod et al. (2017) and others include those that influence behavior by creating predictable consequences, such as attention for positive behaviors and ignoring inappropriate or disruptive behaviors (Reinke et al., 2007; M. A. Stormont et al., 2007). In summary, most classroom management programs that have shown benefit in experimental designs encourage teachers to provide children opportunities to exhibit appropriate behaviors and to provide positive reinforcement to increase the chance that children will exhibit these appropriate behaviors again in the future (McLeod et al., 2017).

Studies on classroom management interventions range from identifying the effects of highly-manualized programs such as the *Incredible Years Classroom Management Program* (Webster-Stratton et al., 2008) to experiments using individual strategies such as behavior-specific praise or opportunities to respond (Reinke et al., 2007). Additionally, these types of interventions are often included in multimodal packages to address more complex outcomes, such as school readiness. These include programs such as *The Head Start REDI Project* (Bierman et al., 2008), *School Wide Positive Behavior Support* (Muscott et al., 2008), and *ParentCorps* (Brotman et al., 2016). There is overlap between the literature that studies teacher-child relationships and

the literature on classroom management. Programs like *Incredible Years* and *The Pyramid Model* are aimed at both behavior management, as well as nurturing teacher-child relationships.

Demonstrating the overlap in these constructs, behavior management interventions are often evaluated using the *Classroom Assessment Scoring System* observational measure, which is designed to capture the many elements of teacher-child relationships. A meta-analysis that included studies of interventions that addressed teacher-child relationship and classroom management interventions found that these types of interventions generally benefit children's social-emotional and academic development, and these outcomes were not moderated by demographic variables such as SES (low vs. mid or high), grade, or country (United States vs. non-United States) (Korpershoek et al., 2016).

While positive teacher-student relationships and classroom management are key to child development, most teachers will not receive training in any of the scientifically-supported manualized programs described previously. Many teachers feel unprepared to address the needs of their students with behavior problems (Kauffman & Wischmann, 1999). Teachers report that behavior problems are their greatest challenge in the classroom (Spilt et al., 2011). Preschool teachers who face behavior problems in the classroom report high levels of stress, which is correlated with rates of preschool student expulsion (Gilliam & Shahrar, 2006). Preschool teachers typically have less formal professional training than their elementary and secondary school counterparts (McGoey et al., 2013) and specifically lack training related to working with children with behavior

problems (Gallagher et al., 1997). One approach that has been recommended to address these gaps in training is Early Childhood Mental Health Consultation.

### **Early Childhood Mental Health Consultation**

Early Childhood Mental Health Consultation (ECMHC) aims to build a collaborative relationship between a mental health professional and an early childhood care provider to address the needs of children through problem solving (Gilliam & Shaha, 2006). The goals of ECMHC range from addressing an individual child's difficulties, supporting a teacher's use of effective strategies at the classroom level, and creating and developing systems that would increase an entire childcare center's ability to provide high quality care for all children. One overarching goal of ECMHC is to increase the capacity of teachers to build warm, protective relationships and to provide consistent and predictable environments, therefore increasing positive outcomes for children. ECMHC is downward extension of Behavioral Consultation, a well-established problem-solving process facilitated by a consultant in order to for a consultee to address a client's need (Kratochwill & Bergan, 1990). Behavioral Consultation has been widely tested and implemented in elementary schools and will be described next.

### ***Behavioral Consultation***

Behavioral Consultation was developed by Bergan and Kratochwill (1977) to identify and address the needs of clients. Behavioral consultation provides services to clients, which can be individual children or whole classrooms, indirectly through interventions implemented by teachers and/or parents based on behavioral and social learning theories (Lewis & Newcomer, 2002). In order to address the behavior of the

client, the consultant and the consultee (a teacher in most cases) use functional analysis to determine the antecedents, behaviors, and consequences of a child's behavior, or generally how classroom behaviors are reinforced. Once an intervention plan is determined, consultation activities can include didactics, in-vivo modeling and practicing, and performance feedback (Reinke, Stormont, Herman, & Newcomer, 2014) in order to support teachers or parents in implementing the intervention. Ongoing coaching specifically is found to increase teachers' ability to implement social-behavioral interventions for children, and performance feedback appears to be a critical activity for effective coaching (M. Stormont et al., 2015). Consultants can use performance feedback to provide information to consultees about whether implementation is complete or incomplete (Noell et al., 2014), and this strategy is particularly effective when the information is provided as visually as a graph instead of verbally provided (Noell et al., 2005). This problem-solving process is intended to increase consultees' ability to address issues that come up in the future (Macklem & Kalinsky, 2000).

Behavioral Consultation has been studied through both single-case design studies as well as between-group designs (for a review see Sheridan, 1996). Behavioral Consultation targets frequently include child behavior and/or academic skills, as well as consultee skills, attitudes, or behaviors. Behavioral consultation typically results in positive gains towards identified targets and is rated as acceptable by teachers and parents (Sheridan et al., 1996). Behavioral Consultation was revised as Conjoint Behavioral Consultation in the past decade, and a small number of randomized controlled trials have been conducted to test its impact and are discussed below.



Conjoint Behavioral Consultation (CBC, Sheridan & Kratochwill, 2008) is an evolution of Behavioral Consultation and utilizes the same problem-solving framework; however, it includes both teachers and parents as consultees. CBC has many common goals to BC and ECMHC, and additionally focuses on developing or strengthening a positive relationship between caregivers at school and home. There have been two large RCTs of CBC. One study of CBC included 207 children in kindergarten through third grade who were identified by their teachers as in need of intervention for classroom disruptive behaviors. Children included in the CBC group had decreased disruptive behaviors across home and school compared to those children in the control group (Sheridan et al. 2012, 2013). For school-related outcomes, positive change to the parent-teacher relationship mediated the association between treatment condition and decreased disruptive behaviors.

The second randomized trial of CBC (Sheridan et al., 2017) was conducted in a rural setting where children display higher rates of disruptive behavior, but mental health services are less available. Kindergarten through third grade teachers (N=152) were randomly assigned to CBC or a control group. After identifying all eligible children through teacher nomination, up to three children in each classroom were randomly selected to participate in the study (N=267). This study found positive effects of CBC on teachers report of student's school problems, and observational measures of on-task and off-task behavior, appropriate social behaviors, and motor movements. Teachers in the intervention condition reported significantly higher use of appropriate classroom management strategies; this same increase was also seen in observed rates of positive

attention and positive consequences. In the CBC condition, teachers' significant increase in their use of positive teacher practices was found to be significantly mediated by their use of competent problem solving as measured by self-report.

There have been additional smaller studies using CBC, including one in the ECE setting (Sheridan et al., 2006). In the quasi-experimental study in the early childhood setting, 48 children age 6 and younger were recruited at various ECE sites. This study found positive effects on child behavior across both the home and school setting through observations conducted by teachers and parents, as well as consultants. Teachers and parents generally reported that their goals were met and that they found the treatment acceptable.

Behavioral Consultation and CBC are both theoretically driven, empirically based interventions to indirectly address the issues of children through a problem-solving approach. These interventions have been able to address a variety of behavioral and academic targets in a variety of settings. It is promising that the emphasis of a problem-solving approach to address these concerns has been found to be the mechanism of change in some studies of CBC (Sheridan et al., 2017, 2018). Interestingly, similar interventions in ECE settings have mostly been contained in a parallel, but separate literature.

### ***Consultation in Early Childhood***

ECMHC intends to address the social-emotional needs of children by building the capacity of the adults and systems with whom they naturally interact (Elena Cohen & Kaufmann, 2005). Based on Bronfenbrenner's Ecological Model and Behavioral Theory

(Bronfenbrenner, 1992; Sheridan, 1997) ECMHC services can be used to address the needs of children, either as individuals or as groups, by altering their immediate environments or the systems in which those are encapsulated. In this way, ECMHC does not only address existing challenges for children, but also aims to prevent social-emotional concerns and reduce related negative outcomes. As with Behavior Consultation, ECMHC is commonly used to address teacher or parent concerns for a particular child. Though limited, the research on ECMHC is presented below.

Only one randomized controlled trial has been published looking at the effects of ECMHC in isolation (e.g., not as a part of a multi-modal intervention that also included a classroom intervention, such as *ParentCorps* or *Incredible Years*). This study (Gilliam et al., 2016) utilized data from an evaluation of Connecticut's statewide Early Childhood Consultation Partnership, which included eighty-eight classrooms and teachers randomly assigned to ECMHC or a waitlist control (Gilliam et al., 2016). Consultation procedures were manualized, and the process included classroom-based services for 4-6 hours per week, to improve behavior management for the class, as well as to address challenging behavior of two children per classroom identified for the project. The study measured overall classroom quality, as well as child behavior and risk of expulsion for the individual child participants. No differences in classroom quality between the ECMHC and control group were found at post-test. After controlling for gender and pretest scores, the ECMHC group improved significantly in comparison to the control group on domains measuring externalizing problems and ADHD symptoms (i.e., hyperactivity, restlessness/impulsivity), as well as on a composite measure of child social-emotional

concerns.

Other studies have examined the use of ECMHC as part of a package, such as trials of *Incredible Years* (Webster-Stratton et al., 2008), *ParentCorps* (Brotman et al., 2016), and *Starting Strong* (Eisenhower et al., 2016). Most similar to ECMHC, *The Chicago School Readiness Program* (CSRP, Raver et al., 2009, 2011) used the *Incredible Years* to train teachers in classroom management and to guide consultation. CSRP aims to improve teacher's ability to provide emotional support and increase classroom management. The treatment condition classrooms ( $n = 35$ ) included teacher training using the *Incredible Years* paired with weekly consultation to assist teachers in implementing new strategies in their classrooms. Consultants provided coaching for teachers to implement the strategies and engaged with them in problem-solving, as well as offered strategies for relieving stress. The comparison condition classrooms ( $n = 26$ ) were assigned a teacher aide for the same number of hours the consultant was present in the classroom to control for the effects of an extra adult presence. Children who were in classrooms that received CSRP had lower rates of internalizing and externalizing problems compared to those in the control classrooms, as well as higher scores on pre-academic skills.

While Gilliam's study (2016) shows preliminary evidence for ECMHC, the strategies cannot be reproduced because the manual is not publicly available. With regard to the CSRP, *Incredible Years* is an intensive and prescriptive program, which requires a lot of time to train both the consultant and the consultee. Multimodal universal prevention packages targeted to address the needs of children and families, such as *Incredible Years*,

are often expensive due to extensive training, material, and quality assurance. They also require additional staff to implement parts of the package that are not already embedded in the existing early childhood education setting, which creates issues for sustainability. These issues can be addressed by using a program or model more widely available to consultants, such as the Classroom Checkup (Reinke et al., 2011).

### ***The Classroom Checkup Model***

The Classroom Checkup Model (CCU) (Reinke et al., 2011) integrates principles of behavioral consultation and motivational interviewing to address classroom management challenges with teachers. As discussed earlier, consultation requires behavior change on the part of the consultee: the teacher or the parent. While the CCU is grounded in theories of behavioral and social learning theory like other classroom interventions, it also incorporates motivational interviewing (MI) to resolve ambivalence and increase teachers' motivation to engage in the consultation process and implement evidence-based classroom management strategies (Reinke et al., 2011). The Classroom Checkup process includes assessing classroom needs with a focus on integrating information from the teacher, providing feedback in MI consistent way, using a menu of intervention options, and providing ongoing coaching and feedback.

Briefly, MI has been used to increase motivation for behavior change for a variety of outcomes (Miller & Rollnick, 2012), and has shown beneficial impact in studies testing the impact of MI on substance use (Burke et al., 2003), obesity (Armstrong et al., 2011), and parenting (Stormshak et al., 2020). MI has been looked to as a way to increase teachers' motivation to implement these types of interventions and maintain them after

research or consultation activities end (Frey et al., 2011). Motivational Interviewing facilitates behavior change through developing motivation (Miller & Rollnick, 2012). Studies incorporating MI into training for school-based personnel address a range of topics from universal classroom management programs to Cognitive Behavioral Therapy for Trauma (Lyon et al., 2019; Reinke et al., 2012). Most studies are preliminary, small between group studies with randomization, open trials, and single-case designs (Frey et al., 2011).

Reinke and colleagues (2008) conducted a multiple baseline single-case design study of the Classroom Checkup model with four general education elementary school teachers. MI was embedded within the consultation to engage teachers over time by acknowledging autonomy, providing choice, and providing advice only when asked. The CCU intervention targeted teachers' use of behavior-specific praise and reprimands. The researchers also collected data regarding classroom levels of disruptive behavior as a secondary outcome. Fidelity to the CCU model was measured using checklists, as well as observer ratings of audiotapes. The CCU model resulted in increased use of praise by teachers and decreased disruptive behavior from students.

Other studies have also tested the CCU model as a part of multi-modal interventions. For example, the CCU model was used to strengthen teacher implementation of an evidence-based package that includes the social-emotional curriculum *PATHS* and the classroom management intervention *PAX* (Reinke et al., 2012). The *PATHS* curriculum aims to promote prosocial competence, emotional understanding, emotion regulation, and problem-solving skills. *PAX* is a classroom

management strategy that utilizes group contingencies to inhibit classroom behaviors that are disruptive and take away from learning. A small pilot study was conducted with eight elementary school teachers randomly assigned to one of two groups; both groups implemented *PATHS+PAX*, but one group received consultation using the CCU and the other used “coaching as usual.” Teachers receiving CCU coaching improved on multiple measures of classroom climate, whereas teachers in the control condition only improved on one measure of classroom climate. The teachers in the CCU model rated the *PATHS + PAX* intervention more positively, suggesting that CCU increased the social validity of these programs.

Pas and colleagues adopted CCU to support teachers’ implementation of a bullying detection and prevention program (Pas, Waasdorp, & Bradshaw, 2019) and tested it in an RCT of middle school teachers (n = 78) assigned to either receive the Bullying CCU intervention or serve as a treatment-as-usual control. Similar to the standard CCU, the Bullying CCU included MI strategies within the consultation procedure. Instead of classroom management, the CCU was adapted to targeted teachers’ observation of bullying and their self-reported responses to those actions. The study found a significant effect of Bullying CCU on teachers’ self-report of responding to bullying by discussing it with another staff member, reporting it to a counselor or intervening themselves. There was a nonsignificant effect of Bullying CCU on teacher’s ability to detect bullying. There was no significant effect on preventing bullying occurrences.

Independent of the CCU group, Owens et al. conducted a small between-groups

randomized trial ( $n = 58$ ) examining the use of Motivational Interviewing in behavioral consultation to increase teachers' use of classroom management strategies as a universal intervention and the use of a Daily Report Card as a targeted intervention for students with or at-risk for ADHD (Owens et al., 2017). The treatment condition included a traditional behavioral consultation problem-solving model, plus additional psychoeducational resources, enhanced performance feedback, and a MI-based interview. The comparison condition was a treatment-as-usual behavioral consultation approach. Some MI behaviors were coded and found to be used competently 66% of the time in the treatment condition, but not at all in the comparison condition. Both conditions saw significant improvements in classroom management. These results were moderated by initial skills, with teachers in the MI-enhanced consultation group increasing more than those in the comparison.

In conclusion, ECE settings may be a natural place to intervene with kids to promote factors associated with school readiness, particular social-emotional development (Atkins et al., 2016). This may be especially important for populations that show teacher-rated delays, such as children in poverty, who benefit from selective interventions such as Head Start (Bagdi & Vacca, 2005). The quality of ECE varies (Magnuson et al., 2004), and can be augmented by the use of empirically supported strategies to improve teacher-child relationships and classroom management (Korpershoek et al., 2016). A number of multi-modal programs exist and have been well-supported; these programs share common strategies and the strategies might be introduced using more cost-effective approaches such as consultation (e.g., Fox et al.,



2003; Hemmeter et al., 2016; Webster-Stratton et al., 2008; Zhai et al., 2012). There is evidence that consultation is an effective way to change teacher behaviors to improve child outcomes, with a robust evidence base in elementary schools and a small but growing evidence base in early childhood settings (Sheridan et al., 1996). Traditional consultation approaches may be especially effective when enhanced by motivational interviewing that addresses teacher ambivalence and builds motivation for behavior change (Reinke et al., 2008).

### **The Current Study**

The proposed study utilizes a single-case design to evaluate the impact of an ECMHC model using a modified version of the CCU on teachers' use of specific behaviors characteristic of high-quality classrooms (e.g., praise, opportunities to respond, and commands) (McLeod et al., 2017) in the context of Early Head Start classrooms. The proposed study will utilize a multiple participant, multiple baseline design across teacher behaviors. Secondary outcomes will also be collected: classroom climate, as well as aggregate levels of child disruptive behaviors, compliance, and engagement. This design is used to identify a relationship between intervention, the use of the CCU in an early childhood setting (referred to moving forward as EC-CCU), and the target behaviors, as well as answer questions about for whom does the intervention work.

**Research Question 1:** Does EC-CCU increase rates of teacher use of effective behaviors?

Hypothesis 1: EC-CCU will increase rates of effective behaviors.

**Research Question 2:** Does EC-CCU decrease rates of less effective behaviors?

Hypothesis 2: EC-CCU will decrease rates of teacher use of less effective behaviors.

**Research Question 3:** Does EC-CCU improve classroom climate?

Hypothesis 3: EC-CCU will improve classroom climate, specifically in the domains of emotional support and classroom organization.

**Research Question 4:** Does EC-CCU increase levels of child engagement and compliance?

Hypothesis 4: EC-CCU will increase levels of child engagement and compliance.

## **Method**

### **Participants**

#### ***Teachers***

Four Early Head Start teachers will be recruited from a large Head Start agency in Central Texas. According to a recent study with this agency, the majority of providers in this agency are Hispanic/Latinx (49.7%) or African American (28.8%), with others reporting their race/ethnicity as White (9.8%), Asian/Asian-American (3.3%), Mixed Race (2.8%), or other (3.3%). 34% of teachers reported their highest degree as a Bachelor's, 33.3% as a Child Development Certification, and 15.7% as an Associates. The average years of experience in ECE was 13.6 ( $SD = 10.26$ ).

#### ***Students***

Aggregate child behaviors for the whole classroom will also be recorded, though individual children will not be study participants. For a general description of the children served, during the 2018-2019 school year, 321 children were enrolled in EHS through this agency. The agency reported the racial demographics of all the children served (EHS and HS) as 75% White (68% Hispanic or Latino), 19% Black/African American, 3% Biracial/Multi-racial, 2% Other, and 1% Asian. 90% of students must meet federal poverty income guidelines (total income for a family of four less than \$25,100/\$26,200 for 2018 and 2020 respectively) in order for agencies to meet Head Start Performance Standards.

### **Measures**

#### ***Measures – General***

**Demographics.** The researcher will use a demographic questionnaire to define

the teacher population (e.g., age, gender, race/ethnicity, level of education, years of experience) and request student enrollment data to define the students in the classrooms of each teacher.

### ***Measures - Dependent Variables***

**Observations of Teacher and Student Behavior.** A trained observer will conduct observations of the classrooms in order to measure rates of teacher behaviors linked to positive outcomes for children (e.g., praise, opportunities to respond), behaviors that are less effective generally (i.e., reprimands) or that are less effective at high rates (i.e., commands), as well as classroom rates of student behavior. It is of note that student engagement is the main outcome of interest for Research Question 4, and it has been defined in terms of responsivity to teacher's opportunities to respond. It is adapted from the CCU's Correct Academic Response (Reinke et al., 2011) to be a better developmental fit for young children who may be experiencing school for the first time and for whom learning is mediated by their relationship with their teacher.

Operational definitions of all behaviors are included in Table 1. These behaviors have been adapted from the CCU (Reinke et al., 2011) and the Dyadic Parent-Child Coding System (DPICS, Eyberg, 2013). A study that included frequency counting similar to this system found high rates of interrater agreement ( $\kappa = .78 - .80$ ), and that the system was sensitive to intervention (Reinke et al., 2015). A study of TCIT that utilized the DPICS found moderate to excellent levels of agreement ( $\kappa = .56 - .88$ ). Observations of teacher and student behavior will be recorded using frequency counts.

**Table 1**

## Operational Definitions of Behaviors

General Behavior Praise	Positive evaluation of an activity, product, or attribute of the child without specific feedback about the student behavior. (e.g., “Awesome!”, “Good job!”)
Behavior Specific Praise	Teacher provides specific feedback about the behavior being approved. (e.g., “Thank you for sitting quietly!”) (Non-example: “Thank you”; “Great job!”)
Opportunities to Respond	Teacher uses questions or prompts (visual, verbal, gestural) that seek an active, observable, and specific response that provides evidence of engagement. (e.g., “What color is the block?”)
Direct Command	A direct command is clearly stated order, demand, or direction in declarative form. The statement must be sufficiently specific as to indicate the behavior that is expected from the child. (e.g., “Please put the blocks in the bin”) (non-example: “Will you...”, “Let’s...”)
Indirect Command	An indirect command is an order, demand, or direction for a vocal or motor behavioral response that can be interpreted as optional or implied or stated in question form. (e.g., “Let’s put the blocks away”, “Can you put the blocks away?”)
General Reprimand	Teacher indicates disapproval with specific feedback that is concise, in a normal speaking voice without harsh, critical, or sarcastic tone. (e.g., “You are speaking too loudly”) (non-example: “Stop”).
Fluent Reprimand	Teacher indicates disapproval without specific feedback that is concise, in a normal speaking voice without harsh, critical, or sarcastic tone. (e.g., “Stop”; “No”).
Harsh Reprimand	Teacher indicates disapproval using a voice louder than typical for the setting and/or using harsh, critical, or sarcastic tone. (e.g., “Thanks for not listening when I ask”).
Comply	Compliance is when a direct or indirect command is obeyed or beginning to be obeyed within the 5-second interval. If command is for a group instruction, the majority must appear to apply.
Student Engagement	Student Engagement occurs when an opportunity to respond is provided and an appropriate response is given, even if the response is delayed. If OTR is for a group response, the majority must appear to engage in the response. * (e.g., Teacher holds up blue block: “What color is the block?” Student replies: “Buh buh.”)
Disruptive Behavior	Disruptive behaviors are statements or actions of an individual student or group of students (could be predicted to) that interfere with or disrupt ongoing classroom activities for the teacher and/or 1+ peers. (e.g., negative verbal/physical interactions, noncompliance/defiance)

\*Note: This definition is adapted from Correct Academic Response. Given the developmental level of children in Early Head Start, any appropriate response will be coded as Student Engagement.

Adapted from “The Brief Classroom Interaction Observation–Revised: An Observation System to Inform and Increase Teacher Use of Universal Classroom Management Practices.” by W. M. Reinke, M. Stormont, K.C., Herman, S. Wachsmuth, & L. Newcomer, 2015, *Journal of Positive Behavior Interventions*, 17(3), p. 163 (<https://doi.org/10.1177/1098300715570640>)

**Classroom Assessment Scoring System (CLASS, La Paro et al., 2004).** The

Classroom Assessment Scoring System measures classroom quality by providing scores

in three general domains: emotional support, instructional support, and classroom organization. Head Start agencies use the CLASS as an evaluation tool for their teachers in the beginning and end of the school year. Head Start has agreed to provide these scores prior to the study and at the end as a global measure of change for the teachers involved in the study. The CLASS is an observational measure where a coder conducts 4-6 cycles of 20-minute observations and 10 minutes of coding, across three domains. Each domain has three or four dimensions which are coded using a 7-point range. Of particular interest to this study are the positive and negative climate dimensions, and the behavior management dimension. Previous studies using the CLASS in preschool settings have high rates of agreement across coders in all three domains and for the total score (Emotional Support, ICC = .81, Classroom Organization, ICC = .88, Instructional Support, ICC = .88, and total score ICC = .90). Additionally, high levels of internal consistency are reported ( $\alpha = .77$  to  $.96$ ) (Vitiello et al., 2018).

### ***Measures – Intervention Integrity***

**Fidelity to the Consultation Model.** Fidelity of the intervention will be assessed in two ways. One, the consultant will create agendas for each meeting and coaching session. While going through the consultation process, they will check off what items are completed and fill out any accompanying paperwork. The consultation materials will serve as permanent product in this way. Additionally, all coaching sessions will be audio recorded and will be coded for implementation fidelity by comparing the audio recording and permanent products with consultation agendas and fidelity checklists. This will be done by a senior member of the research team providing supervision to the consultant. A

second team member trained in the procedures but not providing consultation will double code a random subset of greater than 20% for reliability.

**Motivational Interviewing Treatment Integrity Code** (MITI 4, Moyers et al., 2016).

Because the CCU model was developed using MI in order to address barriers to behavior change, the MITI will be used in order to determine if consultation services are provided in an MI-adherent manner. The MITI 4 provides both global ratings related to clinician's skill and frequency counts for particular MI-adherent statements or questions. The MITI has been found to have fair to excellent reliability (ICC = 0.51-0.95), except for the Therapist Behavior - Emphasize Autonomy (ICC = 0.062). This will be done by a senior member of the research team providing supervision to the consultant. A second team member trained in MI and the MITI, but not providing consultation, will double code a random subset of greater than 20% for reliability.

## **Procedures**

### ***Recruitment***

Teachers will be recruited to the study through services that are provided through a service grant funded by local non-profit organization. Centers will be selected at random by the Mental Health Director at the Agency. For teachers who agree to participate in the study, the consultant will consent them at the beginning of the school year before any consultation activities begin. Teachers will be provided modest compensation for participating in the study.

### ***The EC-CCU Intervention***

The researchers adapted the CCU (Reinke et al., 2011) to design the EC-CCU for the ECE setting in order to promote positive teacher and child behaviors, taking into

account the specific developmental needs of young children. EC-CCU includes an assessment phase, a feedback meeting, and follow coaching and consultation. These activities are summarized in Table 2.

Throughout these activities, MI will be used to develop teachers’ engagement in the consultation process, as well as increase their motivation to use strategies presented by the consultant. All interactions between the consultant and the teacher will be guided by principles of MI, and the consultant will use open-ended questions, affirmations, reflections, and summaries to engage with the teacher (Miller & Rollnick, 2012). After the assessment phase, the consultant will provide menus of options to increase autonomy, design coaching activities collaboratively, and provide visual feedback to enhance transparency (Miller & Rollnick, 2012; Reinke et al., 2011).

**Table 2**

Schedule of Consultation Activities

Assessment	<ul style="list-style-type: none"> <li>• Teacher Interview</li> <li>• Classroom Ecology Checklist</li> <li>• Classroom Observations</li> </ul>
Feedback	<ul style="list-style-type: none"> <li>• Provide visual feedback</li> <li>• Teacher chooses behaviors based on menu of options</li> <li>• Consultant provides timeline of intervention</li> </ul>



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**Table 2 Continued**

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Coaching and Ongoing Activities	<ul style="list-style-type: none"><li>• Support teacher use/disuse of behaviors using coaching<ul style="list-style-type: none"><li>– Provide short didactic training</li><li>– Modeling from consultant during meeting</li><li>– Ongoing visual feedback</li><li>– Optional coaching activities</li><li>– Modeling from consultant in classroom setting</li><li>– Providing visual cues during coaching sessions or permanent reminders posted in classroom</li><li>– Games to practice use of behavior in classroom setting</li></ul></li><li>• Once threshold of behavior has been met, discontinue coaching for at least classroom observations. If use/limit of strategy is continued move on to next phase. If not, continue cycling coaching/maintenance until threshold can be maintained without coaching.</li><li>• Share feedback on success of teacher and move on to next phase is applicable</li><li>• Continue praising teacher progress on previous goals while coaching intensively related to new behavior target.</li></ul>
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### ***Consultation Procedures***

Consultation services will begin after an initial meeting with the teachers where study procedures will be explained, and consent will be obtained. The first step of the consultation model will occur simultaneous to baseline data collection by a trained observer. During the first meeting, the consultant will conduct a comprehensive assessment of teacher behaviors and classroom functioning. The consultant will conduct interviews with each teacher, code classroom behaviors analogous to those included in the study and collect teacher measures. The consultant will use this information to complete the Classroom Ecology Checklist (described below) and create a visual feedback form that will be provided to the teacher during a collaborative planning meeting. Based on the principles of MI, a menu of behavioral targets will be also be generated ideographically to address the specific needs of the classroom.

Once the assessment phase is completed and all baseline data is collected by the observer, the consultant will provide feedback to each teacher individually using the

visual feedback form and the menu of behavioral targets will be presented. Once targets are chosen, the researcher will assign the order of the behaviors informed by behavioral theory and sequences of targets in theory-driven, evidence-based interventions. Initial targets will include those that develop positive relationships between children and teachers. These behaviors are ones that teachers should use frequently (Webster-Stratton et al., 2008), such as praise and opportunities-to-respond. Later targets include those aimed at managing misbehavior, such as commands and reprimands. Consultation activities will aim to decrease total rate of commands and increase the ratio of direct commands to indirect commands, as well as decrease rates of reprimands. Teacher behaviors listed in Table 1 are presented in the order they would potentially be addressed during intervention, followed by secondary outcomes for children.

Each behavior targeted will constitute a phase and each teacher will engage in three phases of consultation. At the beginning of each phase, a brief meeting will occur during which the consultant and the teacher will discuss the target behavior. The consultant will provide a short explanation of the behavior, including the rationale and connection with child behavior.

The consultant and the teacher will collaboratively plan coaching activities. For example, the consultant may model the skill for the teacher during the meeting and offer to model again in- vivo within the classroom. During each phase, the consultant will continue to code teacher behaviors separate from the coding done for the purpose of the study (Table 1). The consultant will also provide visual performance feedback (Reinke, Stormont, Herman, & Newcomer, 2014)

Each behavior will be linked to a target frequency, based either on prior research or on a theory-driven clinical decision. A maintenance period is built into each phase. During this time, the consultant withdraws coaching and determines if additional intervention is needed to maintain desired levels of behavior change based on the clinical data collected (Kratochwill et al., 2010). Each consultation phase will end when the target frequency is maintained without coaching for three sessions conducted by consultant. The consultant will also check with the objective observer that at least five data collection points have occurred.

### ***Classroom Observations***

Classroom observations of teacher and classroom-level child behaviors will be conducted by a trained observer who will be an undergraduate research assistant that will not be providing consultation. At least five times objective observations will occur during each phase. Approximately 20% of observations will be double coded by an expert graduate student coder. Observations will be coded live using the Multi-Option Observation System for Experimental Studies (MOOSES) software on tablets. This method allows for live observations to be coded simultaneously to provide better inter-reliability information.

Classroom observations will be collected during the same time each day, based on teacher preference. Teachers will provide the researcher with a time of day that is generally problematic, or during which they would like assistance in some way. This is done to address the needs of each classroom and build motivation for teacher engagement. Observations occur during a 10-minute interval where a research assistant

will code the frequency of the behaviors described in Table 1. Observations will occur 3-4 times per week over the course of consultation. The consultant will not be present during these observations in order to minimize stimulus cues that might influence the behavior of the teacher.

### **Descriptive Data**

#### **Analyses**

Demographic descriptions of teacher participants will be provided through the responses to the questionnaire. Because single-case design relies on individual characteristics of participants, these will not be aggregated in any way. Frequencies of each behavior will be averaged across each phase for each individual participant.

#### **Coding Reliability**

Twenty percent of observations will be double-coded and interrater agreement will be calculated using ICCs. Intervention sessions will be recorded using Box Capture and coded for fidelity. *Interrater reliability* will be measured using a two-way mixed effects model, single rater, absolute-agreement (Koo & Li, 2016). ICC was chosen because the calculation breaks down components of the observed score to account for the variability in raters and in participants, as well as error. ICCs less than .50 will be interpreted as poor reliability, values between .50 and .75 will be interpreted as moderate reliability, values between .75 and .9 will be interpreted as good reliability, and values greater than .9 will be interpreted as excellent reliability (Portney & Watkins, 2009).

#### **Main Outcomes**

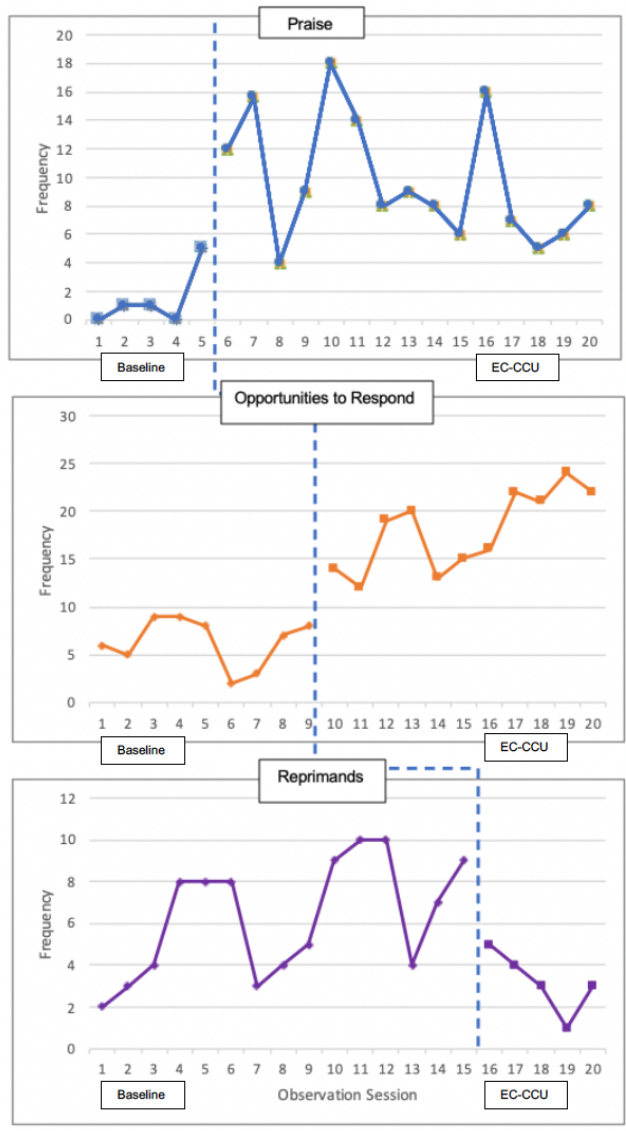
The researcher will visually plot the teacher behaviors over each phase and

overlay this with overall rates of student disruptive behaviors. A sample of these graphs can be found in Figure 1. The level of behavior will be measured by averaging the rates of occurrence in each phase. A best-fitting straight line will be fit for each phase and this will be used to identify trends in direction for each phase. The standard deviation of the best-fit line will also be calculated to determine variability.

Immediacy of effect will be analyzed by looking at the differences between the mean of three data points before and after a phase change. Immediacy of effect and overlap of data between phases will be used to determine if there is a functional relationship between consultation and the targeted behaviors.

To calculate the effect of the intervention on each behavior, a Log Response Ratio (LRR) will be calculated. LRR was chosen because of its rigor as an effect size measure to identify change in behavior measured through Single Case Design and for its application to this particular study which uses frequency counting of behaviors during 10-minute direct observation sessions. It is calculated by taking the natural log of the quotient of the mean frequency of the behavior during the baseline phase and the mean frequency of the behavior during the treatment phase (Zimmerman et al., 2018). Further, the LRR will be converted to percentage change in order to better understand the results. While there are not standards to interpret this effect size similar to Cohen's for between group designs, this will allow some comparison between teachers and between behaviors. An overall average LRR will also be calculated using the individual LRRs, the sampling variance, and the estimate of the variance across cases.

**Figure 1.** Potential Multiple Baseline Results for a Teacher



## Expected Results

**Research Question 1:** Does EC-CCU increase rates of teacher use of effective behaviors?

*Hypothesis 1:* It is expected that consultation will be effective to increase rates of positive teacher behaviors, such as praise, opportunities to respond, or precorrections. While each individual case will be different based on the teachers' idiographic needs, previous studies have shown that working with teachers or parents on these types of behaviors is effective (Lyon et al., 2009; Reinke et al., 2007). Coaching models include positive attention for these behaviors which reinforces their use by teachers. Additionally, these behaviors may be naturally reinforced for teachers by more positive interactions with students.

**Research Question 2:** Does EC-CCU decrease rates of less effective behaviors?

*Hypothesis 2:* The overall number of commands and reprimands is expected to decrease, and the ratio of direct commands to indirect commands will increase. Similar results have been found in other studies of coaching for teachers (Reinke, Stormont, Herman, Wang, et al., 2014). These results can be explained using behavioral theory, if teachers increase the rate of certain behaviors (e.g., praise or opportunities to respond), this excludes their use of the opposite behaviors (e.g., reprimands or commands) at this time. Additionally, coaching on effective commands increases the chance children will comply the first time, decreasing the total number of commands needed (Matheson & Shriver, 2005).

**Research Question 3:** Does consultation improve classroom climate?

*Hypothesis 3:* It is expected that consultation will improve classroom climate by

increasing positive teacher behaviors and decreasing less-effective behaviors. This will facilitate warmer, more sensitive classrooms as measured by the CLASS. Similar results have been found for other interventions, such as *Banking Time* (Alamos et al., 2018). While other studies of consultation have not seen these results (Gilliam et al., 2016), they focused on child-centered consultation and not classroom-level consultation. Other classroom-wide interventions targeting teacher-child relationships have been successful in improving classroom climate (Driscoll & Pianta, 2010).

**Research Question 4:** Does consultation increase levels of child engagement?

*Hypothesis 4:* Measuring child engagement appears to be a novel outcome in ECE. After introducing teacher behavior specific praise through consultation, average levels child engagement of increased in a single case design study with second grade teachers and students (Sanetti et al., 2014). Previous studies that have positive results in increasing positive teacher behaviors and classroom climate have seen positive effects on child behaviors, specifically increasing compliance and decreasing disruptive behaviors (Lyon et al., 2009; Reinke et al., 2007, 2008). Additionally, consultation focused on individual children has been shown to be effective at reducing disruptive behaviors and similar effects may be found in this study (Gilliam et al., 2016; Lyon et al., 2009). Teachers use of opportunities to respond has been associated with both time spent teaching and rates of general praise (Reinke et al., 2015), and so it is expected that students' engagement would increase with more chances to participate and positive attention for doing so.



## Discussion

### Implications

The expected findings from the proposed study would have both policy and clinical implications. ECMHC is included in almost 75% of state's policies regarding what programs should be administered by Head Start contract providers (Dunn et al., 2007). However, the content and process of ECMHC is not well defined (Perry et al., 2008), and training for consultants is not specified. If this study finds positive results, the consultation procedures used here could be used as a framework for ECMHC in Head Start settings. Implementing this intervention within systems that already exist could provide a lower cost alternative to the introduction of a larger program, such as *Incredible Years* or *Triple P*. Interventions such as this one may be more likely to be implemented and sustained because they occur in settings where children spend time naturally and that utilize providers already working in those places (Atkins et al., 2016).

These ECMHC procedures include ongoing data collection and analysis and flexible intervention targets, which allow consultants to implement the intervention with teachers with various strengths and needs (Reinke et al., 2011). Positive results of this study would indicate that the process may be useful across many teacher behaviors and would provide additional evidence of these strategies' impact on student actions, such as compliance. Positive results would also link consultation to student engagement, an important factor for school readiness. These targets could be used by future consultants, but they could include other targets if appropriately identified by assessment and

operationally defined for data analysis. Lastly, the inclusion of a maintenance phase within the intervention allows for consultants to see if the intervention “sticks” with the teacher and provide additional assistance if not. This would be important to increase the likelihood of sustained effects of consultation. The sustained effects of consultation would benefit not only the current students in the classroom, but future students as well. This is part of the rationale for consultations’ use of indirect services: to increase the capacity of teachers and caregivers use of problem-solving in order to address future concerns. By focusing on the classroom as a unit, it is hoped that EC-CCU will have an exponential benefit for children in the future.

### **Design Considerations**

This study will contribute to the small and growing literature on consultation approaches to improve child outcomes in the early childhood context, and to our knowledge will be the first to test the CCU in this setting. As prior studies incorporating MI in consultation have not measured fidelity to MI, this study will also address this limitation.

Early Head Start was chosen for this study because of the advantages of early intervention for children living in poverty, the ability of the intervention to address the developmental needs of young children, and to add to the body of scientific knowledge by working with a novel population. Early childhood interventions for underserved youth are more effective than interventions for demographically similar youth who are older, and therefore more cost efficient (Birch & Ladd, 1997; O’Connor & McCartney, 2007). IHemmeter et al. (2016) reported a range of rates of behavior problems in Head Start, varying between 23% to 33% in different studies. O’Connell, Boat, and Warner suggest

that preventative intervention may be more effective when they occur in contexts with populations with multiple risk factors, such as Head Start (O'Connell et al., 2009).

ECMHC and MI were chosen as the intervention in part to build a culturally appropriate intervention, considering contextual factors such as race and ethnicity. This model uses a strength-based approach, building on teachers' existing competencies, promoting autonomous decision-making, and augmenting teachers' strengths, instead of focusing on deficits (Green et al., 2004). In a study with child-welfare involved families, parent report of case worker's use of strength-based practices was found to be correlated with increased treatment engagement (Kemp et al., 2014). The intervention also includes MI to increase treatment engagement, as well as to facilitate collaboration between the teacher and the consultant. In the context of mental health treatment, clients that belong to racially or ethnically oppressed groups often do not agree with treatment goals or intervention strategies (Carpenter-Song et al., 2010). Utilizing MI could help mitigate negative outcomes associated with these findings, such as disengagement or dropout, by focusing on collaboration. A strength-based and collaborative approach may strengthen this intervention's acceptability and utility with a diverse population of teachers, such as those in Head Start.

Contextual factors may drive response-to-intervention patterns, which can be identified in single-case design research (Barton et al., 2016). These contextual factors help answer the questions of for whom is this intervention effective and under what conditions (Kratochwill et al., 2010). In between-group designs, these details may not be clear because the data is collapsed for analysis (Horner et al., 2005). Teachers in Head

Start come from diverse backgrounds in terms of race/ethnicity, education, and socioeconomic status. In between-group designs, this diversity may be obscured when there are not enough participants in each subgroup to power analysis. This multiple participant, multiple baseline study aims to answer the questions: for which behaviors is the CCU an effective intervention and for which teachers? Additionally, Single Case Design is the standard for consultation studies, given the idiographic nature of the target behaviors and the intervention that follows (Segool et al., 2007). The focus of standardized data collection for functional assessment and progress monitoring maps directly on the procedures necessary for well-designed single case studies (Frank & Kratochwill, 2014).

The multiple participant multiple baseline approach increases internal validity by utilizing replication across teachers and across behaviors (Kratochwill & Levin, 2014). Standards for single-case design (Kratochwill et al., 2010, 2013) indicate that there must be three demonstrations of an effect through the use of the same design and procedures. If this study occurs as described, the intervention will be demonstrated as effective on all three behaviors for each of the four participants, which meets the minimum standards outlined.

### **Limitations**

While the strengths and appropriateness of single case design has been discussed previously, there is a chance that this study will not be sufficient to meet evidence standards (Kratochwill et al., 2010). In order to meet evidence standards, the effect of the intervention must be replicated at least three times, whether within an individual case or across different ones (Horner et al., 2005). If each of these cases produce support for the

use of EC-CCU, the study is designed to provide both within-case replication, as well as inter-case replication. However, if any cases provide evidence of null or deleterious effects, more experiments will need to be done in order to provide insight about under what conditions EC-CCU would be effective. An individual intervention may not be appropriate for certain individuals. For example, for teachers who already have warm, nurturing classrooms, baseline rates of behavior using the current observation tool may show that this participant would not benefit from consultation aimed at these targets. These teachers may benefit from consultation aimed to increase the specificity of their behaviors or to address more instructional practices, which are not included in the scope of this study.

The behaviors targeted in this study were chosen based on their clinical utility. The coding system was adapted from previous research studies of CCU and Parent-Child Interaction Therapy (Lyon et al., 2009; Reinke et al., 2008). Studies using previous versions of the coding system have shown that use of these different strategies may be highly correlated. For example, Reinke et al. (2015) found rates of opportunities to respond were significantly associated with rates of general praise. This is advantageous from a coaching perspective, as increases in one effective teaching strategy might be correlated with an increase in another. However, this could affect baseline rates of behaviors attended to later in the intervention, a possible concern for the internal validity of the study.

Another limitation to consider is that the child level outcome of interest for this study, child engagement, has not been used in previous studies of consultation in ECE

and therefore psychometrics are unavailable. Studies of older children often include measures of academic engagement using partial interval recording to document on task or off task behavior (Sanetti et al., 2014). Child engagement was conceptualized here through the teacher-child relationship taking into account the developmental level. This allows the researchers to collect this information during the same observation period as teacher behaviors using frequency counting, increasing the internal validity of the study. However, other secondary variables such as child compliance and aggressive behavior typically have lower levels of agreement between observers than for other behaviors (Lyon et al., 2009; Reinke et al., 2015).

Lastly, this study does not include measures of school readiness. While the background and rationale focused on school readiness, especially social-emotional competence, this study does not include a control group, which would be necessary to meaningfully compare this distal outcome. Future research could utilize a between-group design, as well as follow up measures of important outcomes for both children and teachers. These methods may be able to identify sustained effects of consultation on global measures of classroom climate and school readiness, and could be designed with enough power to capture the small effects typical of a preventative intervention (Cuijpers, 2003).

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