Social-Emotional Development, School Readiness, Teacher–Child Interactions, and Classroom Environment

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Published online: 05 Oct 2012.

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This article investigates the effectiveness of a statewide 6-month early childhood mental health consultation (ECMHC) model on teachers' emotional support of children and classroom organization. We provide a brief historical and theoretical background of the field of ECMHC, present the logic model for our ECMHC intervention, and discuss the existing research that supports this logic model. *Research Findings:* Participants included 445 teachers from 158 child care centers statewide. The mental health consultation improved the quality of early childhood teachers' interactions (e.g., emotional support and classroom organization) with children in their care. Teachers with more experience and more than a high school degree tended to score higher on many of the Classroom Assessment Scoring System (R. C. Pianta, K. M. La Paro, & B. K. Hamre, 2008) dimensions. *Practice or Policy:* This study demonstrates that mental health consultants can partner successfully with early childhood educators and provide support that enhances classroom variables associated with high-quality care and positive child outcomes. Even with a high rate of teacher turnover (35%), significant differences were found; this demonstrates the robustness of the ECMHC model in that the effectiveness of this model was not undermined by the chronic problem of staff turnover.

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In a national survey, kindergarten teachers rated children's motivation and social-emotional skills as more important to school success than being able to read upon entering kindergarten (Boyd, Barnett, Bodrova, Leong, & Gomby, 2005). In addition, research has demonstrated that children's relationships with their child care providers play an important role in children developing a positive sense of self, including competence in the areas of social-emotional development (Bowman, Donovan, Bums, & the Committee on Early Childhood Pedagogy of the National Research Council, 2000). For an early education program to be effective in preparing children for kindergarten, it must foster and maintain positive and supportive relationships and interactions between teachers and the children in their care (Fox, Dunlap, Hemmerte, Joseph, & Strain, 2003). Identifying effective strategies to enhance teachers' capacity to promote a healthy classroom environment and healthy classroom interactions is critical to increasing child care quality and enhancing children's development.

Social-emotional competence is an important component of school readiness. *Social-emotional development* ''refers to children's growing ability to experience, regulate and express emotions; form close and secure interpersonal relationships; explore the environment and learn'' (Parlakian, 2003, p. 2). Some of the characteristics indicative of a child's competence in social-emotional development include confidence, friendliness, attentiveness, good language skills, the ability to relate to peers without being too submissive or overbearing, the ability to form meaningful relationships with teachers, persistence at challenging tasks, a willingness to give and receive support, the ability to use respectful communication, and the ability to follow instructions (National Education Goals Panel, 1999; Peth-Pierce, 2000). Social-emotional competence has been linked to success in kindergarten, to success in elementary school, and even to accomplishments in adulthood (McClelland et al., 2007; McClelland, Morrison, & Holmes, 2000; Parlakian, 2003; Peth-Pierce, 2000).

Gains in social-emotional and academic competence and school readiness are enhanced by sensitive and responsive interactions with teachers and by positive child–teacher interactions that focus on skill development (Howes et al., 2008). In other words, ''young children . . . learn more when teachers interact with them in a stimulating and emotionally supportive way'' (Mashburn et al., 2008, p. 743). This is especially true with regard to young children's development of pre-academic skills related to early literacy, language development, social competence, and task orientation (Bowman & Kagan, 2003; Mashburn et al., 2008; Pianta, 1999).

BUILDING TEACHER CAPACITY

Numerous programs offer coaching and/or consultation aimed at improving the quality of care for young children. In general, programs differ in content, scope, and focus based on the theoretical underpinnings of the field that developed the specific model. Professionals in two fields—early childhood mental health (e.g., Kids Connect[1] and Early Childhood Consultation Partnership[2]) and early childhood education (e.g., Project Great Start[3] and MyTeachingPartner[4])—have

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[1]See http://www.pffac.org/index.php?s=80&cat=33 for more information on this program.

[2]See http://www.ucfs.org/services/Community_Behavioral_Hlth/eccp.shtml for more information on this program.

[3]See http://greatstartforkids.org for more information on this program.

[4]See http://www.myteachingpartner.net for more information on this program.

developed the majority of these types of programs. Differences notwithstanding, both perspectives identify supporting and building teacher capacity as a central pathway to creating high-quality classroom environments that enhance learning and healthy child development.

Typically, early childhood mental health consultation (ECMHC) programs focus on children's social-emotional development and mental health. These programs work to help teachers support the healthy development of all children in their classroom while also focusing on children who exhibit challenging behaviors and/or mental health concerns. ECMHC models can be child focused or program focused, although most often they are a blend of the two model types (such is the case with the ECMHC model being examined in this study).

In program-focused and blended models the scope is expanded beyond the classroom to that of the center. The overall child care program is viewed as the client, and change throughout the entire center is the ultimate goal. There is an underlying belief that for teachers to maintain a classroom environment that is supportive of all children's social-emotional development the entire center must be invested in making positive change. The mental health consultant (MHC) aims to create a collaborative partnership with the teacher(s) and the director to determine the type of support and/or information the teacher(s) and center need. Although the MHC has a variety of specific activities to perform and a range of tools at his or her disposal, the order and/or frequency of the activities is not prescribed but rather determined (by the consultant, his or her supervisor, the teacher, and the center director) as the consultation unfolds. The support provided by the consultant focuses not only on teacher behaviors within the classroom but also on factors outside the classroom that may impact the teacher's behaviors (e.g., relationships between staff members, the teacher's personal or work-related stress, and/or relationships with parents).

INFANT MENTAL HEALTH (IMH) AND ECMHC

ECMHC's roots are in the field of IMH. ZERO TO THREE[5] describes *infant mental health* (or *healthy social-emotional development*) as

> the developing capacity of the child from birth to three to: experience, regulate, and express emotions; form close secure and interpersonal relationships; and explore the environment and learn—all in the context of family, community, and cultural expectations for young children.[6]

Social-emotional competence has been linked not only to success in kindergarten and elementary school but also to accomplishments in adulthood (McClelland et al., 2000, 2007; Parlakian, 2003; Peth-Pierce, 2000).

ZERO TO THREE's definition of IMH highlights the theoretical perspective within which most IMH professionals view their work, that is, a developmental, dynamic, multigenerational, and relationship-based perspective with an emphasis on prevention and resilience (Weston, 2005). IMH professionals recognize the importance of context as well as the powerful influence of relationships on child (and adult) development. One of the main pathways through which the

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[5]ZERO TO THREE is a national nonprofit organization that informs, trains, and supports professionals, policymakers, and parents in their efforts to improve the lives of infants and toddlers.

[6]This is a definition of IMH developed by ZERO TO THREE's Infant Mental Health Task Force.

IMH professional intervenes is relationships, especially the primary relationship(s) of the child (e.g., with the parent or child care provider). The IMH field recognizes that one relationship influences multiple relationships, and thus the interventionist focusing on a single relationship is simultaneously intervening at several levels (Heffron, 2000; Pawl, 2000). In addition, IMH professionals believe that in order to support IMH their role often goes beyond that of relationship building to include providing a wide range of services to families, such as concrete assistance, emotional support, developmental guidance, early relationship assessment and support, advocacy, and infant–parent psychotherapy (Lieberman, Silverman, & Pawl, 2000; Weatherston, 2000).

THE CONCEPTUAL FRAMEWORK OF ECMHC

ECMHC's conceptual framework, reflecting the field's foundations in IMH, is a combination of an ecological, developmental, and relationship perspective in which the child develops through reciprocal interactions with the multiple relationships is his or her life. Thus, changes in each relationship and/or system most immediate to the child (e.g., the classroom environment or the teacher–child relationship) have the greatest potential for benefit or harm. Consequently, the early childhood MHC strives to influence multiple system and relationship levels within the child care environment (e.g., director and staff relationships and/or parent and staff relationships) in an effort to produce the greatest positive effect on the child's social-emotional development.

Although the primary goal of ECMHC is the healthy development of the child (especially in terms of social-emotional health), it is recognized that the primary caregivers and their relationships with the child are major influences in the child's development. Thus, just as the IMH professional focuses on increasing the parents' ability to support the child, including by eliminating or decreasing the impact of any impediments to their ability to support the child (e.g., marital stress), the consultant strives to do the same with the teacher. The MHC helps the teacher to recognize that he or she bears the primary responsibility for creating a quality child care experience for the children in his or her care. Furthermore, the consultant provides the teacher with the knowledge and encouragement to create a classroom environment and teacher–child relationships that will enhance children's social-emotional and academic competence. Johnston and Brinamen (2006) stated,

> Through the relationship with the consultant, the caregiver comes to feel that her subjective experience is valued and understood, and she in turn becomes better able to value and empathize with the experiences of the children. Ultimately, the consultation's primary goal is to increase the teacher's awareness and understanding of each child's experience. (p. 26)

ECMHC efforts are growing, as described in a national survey to which 35 states and territories responded: 83% ($n = 29$) indicated that this service was available in their state, and the remaining 17% ($n = 6$) indicated that their state or territory was working on implementing it (Duran et al., 2009). As this relatively new type of service continues to expand, ''accurate, data-driven information about the components of effective consultation'' (Duran et al., 2009, p. 1) is needed. To date, published research on mental health consultation to child care programs has been very limited, typically because of a lack of long-term funding for services and a lack of financial support for systematic evaluations (Brennan, Bradley, Allen, & Perry, 2008).

The purpose of the present article is to examine change in classroom quality in the area of the social-emotional support and behavior management of children in centers participating in the Tulane University Institute of Infant and Early Childhood Mental Health's ECMHC's program.
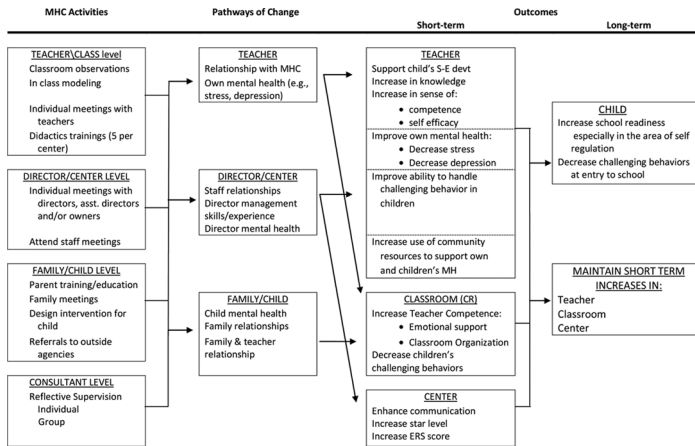
ECMHC'S LOGIC MODEL

The development of the services provided by the ECMHC consultants is based on our logic model for ECMHC intervention as depicted in Figure 1a. The first column lists the MHC activities; each box in the column represents the level at which the activity is implemented (e.g., director/center or teacher/classroom). The second column lists the pathways through which the consultant's activities may be realized. Short- and long-term outcomes are listed in the last two columns. For example, the MHC's didactic trainings (MHC activity implemented at the teacher level) may be put to use in the classroom if the teacher trusts the MHC, which could lead to the teacher better handling challenging behaviors (short-term outcome). A pathway of change in this example is the teacher's relationship with the MHC. Figure 1b presents the specific associations within the larger model that we examine in this article. In the following section, we describe the research to date on the variables in Figure 1b: MHC–teacher relationship, teacher competence, and teacher and center characteristics.

MHC–Teacher Relationship

It is through the MHC–teacher relationship that the MHC helps teachers recognize the importance of their relationships with the children for whom they care. By creating a safe relationship/partnership with teachers (and directors), the MHC helps teachers understand that a high-quality child care experience rests on the shoulders of each teacher and that the relationship the teacher forms with each child in his or her care contributes to each young child's development socially, emotionally, and cognitively.

Research on the teacher–consultant (mental health or otherwise) relationship and its association with teacher and child outcomes (e.g., teacher fidelity of program implementation or behavioral change in teacher and/or student), although descriptive in nature, indicates that supportive and cooperative partnerships lead to better teacher engagement (Domitrovich, Gest, Gill, Jones, & DeRousie, 2009). More specifically, the only published study to examine the MHC–teacher relationship contended that an MHC's ability to collaborate with teachers is the key component to successful consultation (Green, Everhart, Gordon, & Garcia Gettman, 2006). The authors concluded, ''The single most important characteristic of mental health consultants is their ability to build positive collaborative relationships with program staff members'' (Green et al., 2006, p. 142). Thus, for change to occur, a positive and trusting relationship must be established between the MHC and the teacher.

We argue that the relationship between the MHC and teacher influences the impact of ECMHC activities on teacher beliefs and behavior; this is represented in Figure 1b via arrows A and B. Prior research on the current ECMHC model (Heller et al., 2011) has demonstrated that the majority of teachers rate their relationship with their ECMHC as highly positive; the average score was 5.5 out of 6, supporting pathway A in Figure 1. Because of the limited

(a)
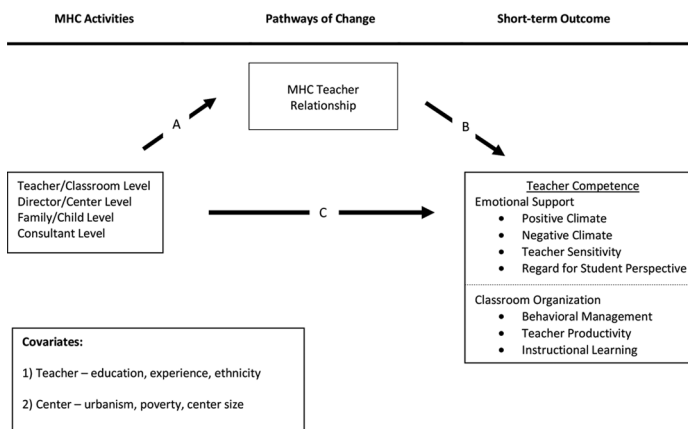
(b)

FIGURE 1 (A) Early childhood mental health consultation (ECMHC) logic model for intervention. The figure shows the intervention pathways and the short- and long-term changes that they are hypothesized to produce. Column 1 lists the activities the mental health consultant (MHC) performs over the course of the intervention and the system level in which those activities occur. Column 2 lists the three pathways through which the MHC's activities are hypothesized to have their primary effect (teacher, director/center, family/child). The arrows between Columns 1 and 2 reflect the belief that all of the MHC's activities have the potential to impact all three pathways of change; however, Box 1 in Column 1 (teacher/class level) is believed to have primary influence on Box 1 of Column 2 (teacher), and so on. The activities in the fourth box in Column 1 (consultant-level activities) are expected to influence all of the pathways to the same degree. Column 3 lists the anticipated short-term outcomes of the consultation by system level. The arrows between Columns 2 and 3 represent the outcome(s) that each of the pathways is expected to produce. Column 4 lists the long-term outcome goals of this ECMHC model. S-E = social-emotional; ERS = Environment Rating Scale. Adapted from Allen (2006). (B) ECMHC logic model pathways examined in current study. MHC activities impact the teacher's classroom behavior both directly (arrow C) and indirectly (arrows A and B). We could not examine Pathways A and B, as there was limited variability in teacher reports of the MHC–teacher relationship.

variability within the sample (the standard deviation was 0.60), it was not possible to examine pathway B. Nonetheless, we contend that the MHC–teacher relationship has an influential role and should be included in any ECMHC logic model.

Teacher Competence

Teacher competence encompasses a wide variety of teacher classroom behaviors and interactions, including classroom management abilities and knowledge, instructional knowledge and skills, and knowledge of and ability to support child development. Mental health consultation should affect those teacher behaviors that involve supporting children's social-emotional development and managing children's behavior (especially challenging behaviors). This can be assessed in one of two ways: via teacher report and direct observation of teacher classroom behavior and interactions. For the most part, ECMHC studies, both published and unpublished, have found positive changes in teachers' reports of their own competence and/or knowledge regarding children's social-emotional development following mental health consultation (Alkon, Ramler, & MacLennan, 2003; Brennan, Bradley, Allen, & Perry, 2008; Heller et al., 2011; Raver et al., 2008).

To date only one published study has assessed change in teacher competence in supporting social-emotional development via classroom observation following ECMHC (Raver et al., 2008). This study reported an increase in teachers' emotional and instructional support within Head Start classrooms after ECMHC. We hypothesize that a positive change in teacher behavioral competence will be observed in the teachers in non–Head Start centers participating in ECMHC; more specifically, we hypothesize that ECMHC will increase teachers' levels of observed competence in emotional support (of children) and classroom organization (see Figure 1b, arrow C).

Teacher Characteristics

Teacher characteristics typically considered when examining teacher behavior are level of education, length of experience, and ethnicity. Research examining teaching practices, child outcome, or professional growth has not found a strong relationship with teacher education/credentialing (Domitrovich et al., 2009; Early et al., 2006). More recently, general prevention research focusing on process goals (e.g., teacher implementation and engagement) as opposed to teacher or child outcome has found positive associations with teacher education and experience (Domitrovich et al., 2009; Downer, Locasale-Crouch, Hamre, & Pianta, 2009).

Center Characteristics

The early childhood education literature on classroom quality (including teacher–child interactions) has reported that teachers are observed to be less sensitive and exhibit lower levels of instructional quality in classrooms in which there are higher levels of poverty (i.e., in which the majority of children served are from families that earn less than 150% of the federal poverty level; Pianta et al., 2005). Similarly, research has found that children who receive government subsidies are more likely to attend lower quality centers as measured by the child:adult ratio (Maher, Frestedt, & Grace, 2008).

How these and other center characteristics influence teachers' competence in supporting children's social-emotional development has not been examined in the ECMHC literature.

In sum, research indicates that teacher/professional characteristics may affect the successful implementation (or possible outcomes) of interventions and that some center characteristics appear to play a role in the quality of care that children receive. More research is needed to better understand the potential impact of teachers' professional characteristics and center characteristics on the implementation and outcome of ECMHC. Teacher characteristics (education, experience, and ethnicity) and center characteristics (urbanism, poverty/government subsidy, and center size) are treated as covariates in our model.

CURRENT RESEARCH

The Tulane University Institute of Infant and Early Childhood Mental Health's ECMHC model has demonstrated that trained consultants can successfully implement a single standardized ECMHC model statewide (Heller et al., 2011). The program met the expectations for all four benchmarks observed: length of consultation (6 months), number of visits (10–12 visits), didactic sessions (five sessions), and developing positive relationships with teachers.

Research Question

We hypothesize that during the course of a 6-month ECMHC, preschool classrooms (defined as classrooms in which the majority of the children are 30 months and older) in child care centers that receive ECMHC will demonstrate a greater improvement than classrooms that have not yet received consultation on the following Classroom Assessment Scoring System, Pre-K (CLASS; Pianta, La Paro, & Hamre, 2008) dimensions: positive climate, negative climate, teacher sensitivity, regard for student perspective, and behavior management. Although the ECMHC model does not focus on two of the seven CLASS dimensions assessed (i.e., teacher productivity and instructional learning) we examine changes in those areas from an exploratory perspective. We speculate that positive changes in the emotional support domain (positive climate, negative climate, teacher sensitivity, and regard for student perspective dimensions) should decrease children's disruptive behaviors and allow the teacher to better manage instructional times; therefore, we believe that the teacher productivity and instructional learning dimensions will show an increase as well. Given the brevity of the intervention (6 months), it is unclear whether these changes will be evident and/or significant at the time of the postassessment. The following teacher and center characteristics are treated as covariates: teacher ethnicity, teacher education, teacher age, center size, percentage of children receiving government subsidy, and level of urbanism of the center.

METHODS

Intervention

Our ECHMC in early childhood education model is designed to assist all children in center-based care, not only those who are exhibiting behavior problems, with the goal of

improving teachers' abilities to support the healthy behavioral, social, and emotional development of all children in their care. This consultation program has three main objectives: (a) to promote the social-emotional health of young children, (b) to support teachers' promotion of healthy child development within the classroom setting, and (c) to identify and refer for treatment young children exhibiting behavioral problems and/or to plan classroom interventions for them.

One of the strengths of this model is that the consultant has the flexibility to choose which of the strategic tools to use at any given center on any given day and when, where, and how to use them. Implementation research on educational interventions has found that flexible models are more likely to be accepted and used in multiple settings (Durlak, 2010). The available tools include classroom observations, in-class modeling, individual meetings with teachers, didactic group meetings, meetings with families, the planning of specific interventions for challenging behaviors (with the parents' or legal guardian's consent), parent education, and referrals to outside agencies (e.g., speech and language evaluation, individual or family therapy, behavioral intervention in the home). By increasing teachers' understanding of how to foster healthy development, consultants enhance teachers' feelings of competence in the caregiving role (Alkon et al., 2003; Heller et al., 2011). Thus, ECMHC, in the current model, focuses on enhancing teachers' skills, increasing teachers' knowledge, and providing support in managing children who are exhibiting challenging behaviors. A prior study (Heller et al., 2011) detailed the ECMHC model used in this study.

Data Collection Procedure

Teachers were assessed before they began participating in the ECMHC program and after the 6-month program ended. We intended to recruit more centers than we could serve at one time and to assign them randomly to immediate or delayed intervention. Recruiting was slow, so we opted for a serial cohort design. All child care centers participating in Quality Start, the state's quality rating and improvement system that was being implemented statewide when the consultation program began,[7] were eligible to receive mental health consultation services. Any licensed child care center in the state, private or nonprofit, is eligible to enroll in Quality Start. Centers that received ECMHC were either those who had called to express their interest in having mental health consultation services or those that the MHCs recruited. MHCs visited centers that expressed interest in participating in order to explain the program and what would be required of them. If the director (or owner) decided to participate, he or she signed a contract that detailed both the MHC's and the center's responsibilities. The MHC stressed that participation in the research was voluntary and that the center would still receive consultation services if the center (or any staff members) opted not to participate in the research.

Preassessment data were collected up to 4 weeks prior to the first MHC visit, and postassessment data were collected within 6 weeks of the last MHC visit, with a mean of 7 months between the preassessment and postassessment visits. For both cohorts, all data were collected by trained research assistants (RAs). For inclusion in the postassessment analyses, teachers had to have

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[7]Although they are eligible to participate in Quality Start, neither Head Start nor Early Head Start centers are eligible to participle in ECMHC because they already receive government funding for mental health consultation.

been employed at the center for at least 3 months (thus experiencing at least half of the consultation); therefore, not all postassessment participants had preassessment data and vice versa. In order to retain centers with missing data, we used maximum likelihood estimation to impute missing data (see ''Statistical Analysis'' for more details). Participants received a children's book for their classroom as compensation for participating in the evaluation.

During our study period, a state-administered quality rating and improvement system was being implemented that was designed to improve the quality of child care throughout the state. As a result of this co-occurrence with the implementation of the mental health consultation program, it is possible that general quality improvements not related to our intervention might have occurred. The inclusion of two cohorts allowed us to remove these trends from the estimate of the intervention effect. Figure 2 displays several of these scenarios.

The scenario in panel A of Figure 2 depicts results if there are changes due to the intervention but not to other events. The time effect is significant, but the cohort effect is not significant. In other words, the two cohorts have the same means at preintervention, and the time effect is an estimate of the impact of the intervention. The scenario in panel B of Figure 2 depicts a naturally occurring change over time but no intervention effect; that is, the time effect and cohort effect are significant and similar. In this case, the difference between Cohort 1 postintervention and Cohort 2 preintervention is near zero and not significant. Panel C depicts both a naturally occurring change over time and an intervention effect. There is a cohort difference and a time difference. Therefore, the difference between Cohort 1 postintervention and Cohort 2 preintervention is significant but less than the time difference. Ideally, the intervention outcome variables will support the scenario depicted in panel A or C.

Participants

MHCs.   In both cohorts, all of the MHCs either were licensed mental health professionals or were working toward their license under professional supervision. On average the MHCs for both cohorts had been licensed for 5 years (range = 0–22 years). In Cohort 1, 9 consultants had been licensed less than 5 years and in Cohort 2, 13 had been licensed less than 5 years. The MHCs who did not have prior IMH training (4 of the 14 in Cohort 1 and 4 of the 16 in Cohort 2) completed a specialized training in IMH during the first year of their employment as a consultant. The IMH training was a weekly 3-hr seminar (totaling 60 hr) conducted over 6 months by the Tulane University Institute of Infant and Early Childhood Mental Health. In both cohorts four of the MHCs had prior experience in child care. Full-time MHCs served a caseload of seven centers for a 6-month period and worked with all of the classrooms at a given center, which averaged six classrooms per center.[8] In both cohorts two of the MHCs were male, and all MHCs were Caucasian.

Child care centers.   Out of the 181 child care centers that were eligible to participate in this study, 158 child care centers elected to participate. In Cohort 1, 89 centers participated. Six centers were excluded because their MHC left the program; five of those were included in the next cohort when a new MHC was hired. An additional two centers withdrew from the consultation

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[8]Three of the MHCs worked part time and carried a caseload of four centers; because of maternity and sick leave, some MHCs in Cohort 2 were off schedule.
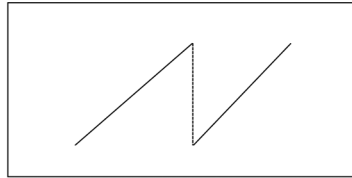
Cohort 1 pre   Cohort 1 Post &   Cohort 2
intervention   Cohort 2 pre   post interventions
                                             intervention

Note: - - - reflects the intervention effect.

Panel B. Naturally Occurring Change Over Time and No Intervention Effect
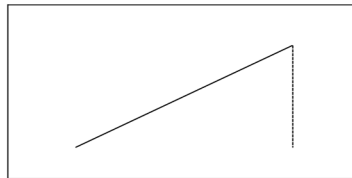
Cohort 1 pre   Cohort 1 Post &   Cohort 2
intervention   Cohort 2 pre   post intervention
                      intervention

Note: - - - - reflects naturally occurring change that is NOT due to the intervention.
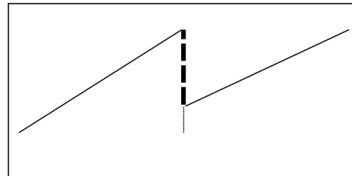
Cohort 1 pre   Cohort 1 Post &   Cohort 2
intervention   Cohort 2 pre   post intervention
                      intervention

Note:━━━ reflects intervention effect; &
      ….. reflects naturally occurring change that is NOT due to the intervention.

FIGURE 2 Depiction of the combination of an intervention effect and naturally occurring change over time on the two-cohort design. (A) Change due to intervention effect only. The dashed line reflects the intervention effect. (B) Naturally occurring change over time and no intervention effect. The dashed line reflects naturally occurring change that is *not* due to the intervention. (C) Both an intervention effect and naturally occurring change over time. The dashed line reflects the intervention effect, and the dotted line reflects naturally occurring change that is *not* due to the intervention.

program after two MHC visits: one center declined to participate in the research, and the other center terminated the teacher whose class was observed. Four centers did not have observational data collected because of procedural errors on the part of project staff; this left a total of 75 centers. Centers had an average of six classrooms (range = 2–16 rooms) and 103 children enrolled (range = 27–334 children). An average of 29% of the children in centers in Cohort 1 were receiving a state subsidy through the Child Care Assistance Program (CCAP; range = 0%–100%). The average population density of the zip code in which the center was located (i.e., the number of people per square mile) was 1,438 (range = 35–5,650).

Cohort 2, 92 centers participated in this study. Two centers decided not to continue with consultation, three centers did not have data collected because of procedural errors on the part of project staff, and four centers had staff changes (e.g., the teacher moved to a different age group), resulting in a total of 83 centers in Cohort 2. Centers had an average of five classrooms (range = 1–13 rooms) and 84 children enrolled (range = 15–337 children). An average of 45% of the children in centers in Cohort 2 were enrolled in CCAP (range = 2%–100%). The average population density of the zip code in which the center was located (i.e., the number of people per square mile) was 1,277 (range = 33–5,650).

Teachers.   There were 445 lead teachers in this study. A total of 224 lead teachers participated in Cohort 1. Lead teachers ranged in age from 20 to 67 ($M = 37$ years). Moreover, 47% of the lead teachers were Caucasian and 50% were African American. The majority (67%) of participants had more than a high school diploma (e.g., vocational school, associate's degree, or some college), with 28% having a high school degree or equivalent. In addition, 15% of the teachers had received and maintained credentialing in child development. On average the teachers had been employed at the current center for 4 years (range = less than 1 year to 33 years) and had been working in the field of child care for an average of 8 years (range = less than 1 year to 31 years). All of the teachers were female.

A total of 221 lead teachers participated in Cohort 2. The lead teachers ranged in age from 18 to 71 ($M = 36$ years). Fifty percent of the teachers were Caucasian and 46% were African American. Of these teachers, 63% had more than a high school degree, and 32% had a high school degree or equivalent. In addition, 7% of the teachers had received and maintained credentialing in child development. On average the teachers had been employed at the current center for 4 years (range = less than 1 year to 30 years) and had been employed in the field of child care for an average of 8 years (range = less than 1 year to 33 years). All of the teachers were female.

Measures

Demographic survey.   Lead teachers completed a brief demographics form that inquired about their ethnicity, education level, and age. They were also asked to report the length of time they had worked in the field of child care and at the current center. Data on center characteristics (e.g., number of classrooms, number of children enrolled, and number of teachers employed) were collected by the RA in an interview with the child care center's director. To ascertain the level of urbanism of the center, we determined the population density (i.e., the number of people per square mile) for each center based on its zip code. The percentage of children enrolled in the center who received CCAP was considered an estimate of the poverty level of the population served by the center.

CLASS (pianta et al., 2008).   In this study, the CLASS was used to assess classrooms in which the majority of children were 30 months and older. The CLASS assesses three domains of teacher functioning: emotional support, classroom organization, and instructional support. However, in this study instructional support was not assessed, as these scores were not expected to be impacted by ECMHC.

Emotional support consists of four dimensions: positive climate, negative climate, teacher sensitivity, and regard for student perspective. Positive climate reflects the teacher's level of enthusiasm, enjoyment, and respect displayed toward the children. Negative climate reflects the degree to which the teacher is irritable, punitive, or disrespectful toward the children in his or her class. Teacher sensitivity reflects the degree to which the teacher is responsive to the children's individual needs by providing comfort, reassurance, or assistance in problem solving. Regard for student perspective concerns how supportive the teacher is of encouraging students' ideas, incorporating students' ideas, and encouraging students' leadership.

Classroom organization consists of three dimensions: behavior management, productivity, and instructional learning. Behavior management concerns the teacher's ability to provide clear expectations to the children, anticipate problem behavior, and effectively redirect misbehavior. Productivity reflects the teacher's maximization of learning time and minimization of disruptions through the use of a clear routine, the use of brief transitions, and advanced preparedness for lessons. Instructional learning involves the teacher's ability to expand or scaffold student involvement, maintain student interest, and clarify learning objectives. The CLASS has shown adequate levels of validity (i.e., stability and criterion) and interrater reliability (Pianta et al., 2008).

All of the RAs were trained to reliability by one of the authors of the CLASS or a trainer certified by one of the authors. The RAs observed each classroom for 90 min, coding every 30 min so that each classroom had three scores for each of the seven CLASS dimensions. The three scores for each of the seven dimensions were averaged together to create a single score for each dimension to be used in the data analysis. A total of 25% of the classroom observations were double-coded in an effort to maintain and ensure RA reliability. As recommended in the CLASS manual (Pianta et al., 2008), interrater reliability was calculated by computing the percentage of scores within 1 point of each other. Reliability was calculated as 79% for Cohort 1 and 88% for Cohort 2 at preassessment and as 94% for Cohort 1 and 87% for Cohort 2 at the postassessment.

Study Design

We collected data from two cohorts. We collected pretest data from Cohort 1 between February 2008 and July 2008 and from Cohort 2 between August 2008 and February 2009. We collected posttest data approximately 7 months later. This quasi-experimental design is similar to Stanley and Campbell's (1966) separate sample pretest posttest design or institution cycle design. Cook and Campbell (1979) called this a cohort design.

Statistical Analysis

The data structure has three levels: center, classroom, and time. We only assessed the lead teacher in each classroom, so teacher and classroom were the same. We included random

intercepts for center and classroom. Time, cohort, and all teacher and center characteristics were treated as fixed effects. We used the xtmixed command in Stata Version 9.

To assess the impact of the intervention, we fit a series of three models for each outcome. The first model included fixed effects of time (baseline/follow-up), cohort, and Time × Cohort interaction. A significant Time × Cohort interaction would indicate that the impact of the intervention was not consistent across cohorts. If the Time × Cohort interaction was not significant, we fit a second model that included time and cohort. If cohort was not significant in the second model, we fit a third model with time as the only predictor. If the Time × Cohort interaction was significant, we analyzed the cohorts separately. We fit each model both with and without teacher and center characteristics as covariates.

Some centers had no posttest data. We conducted sensitivity analyses to determine whether including or excluding posttest data points affected the results. We used hierarchical linear modeling to analyze the data. This technique uses the method of maximum likelihood to impute missing values as part of the parameter estimation process.

As panel C of Figure 2 shows, if a naturally occurring change over time contributed to improvement in scores, the difference between follow-up and baseline scores would be an overestimate of the treatment effect. To remove the impact of this trend we subtracted the difference in baseline scores between the cohorts from the difference score.

TABLE 1
Means and Standard Deviations for the Seven Classroom Assessment Scoring System Dimension Scores

	Baseline			
	Cohort 1 (N = 144)		Cohort 2 (N = 136)	
Scale	M	SD	M	SD
Positive climate	4.98	1.12	5.15	1.18
Negative climate	1.37	0.73	1.27	0.64
Teacher sensitivity	4.59	1.05	4.98	1.11
Regard for student perspective	4.57	1.11	4.73	1.23
Behavior management	4.57	1.08	4.99	1.19
Productivity	4.53	1.21	4.79	1.23
Instructional learning	4.28	1.23	4.42	1.29
	Follow-up			
	Cohort 1 (N = 133)		Cohort 2 (N = 123)	
Scale	M	SD	M	SD
Positive climate	5.39	1.24	5.54	1.08
Negative climate	1.24	0.68	1.19	0.64
Teacher sensitivity	5.20	1.33	5.37	1.11
Regard for student perspective	5.18	1.34	5.28	1.11
Behavior management	5.30	1.32	5.28	1.18
Productivity	5.14	1.42	5.22	1.24
Instructional learning	4.82	1.52	4.85	1.44

Note nonstandard format in Table 1. Rules and coding OK as done?.

Mean CLASS Scores: Cohort 1

Mean CLASS Scores: Cohort 2

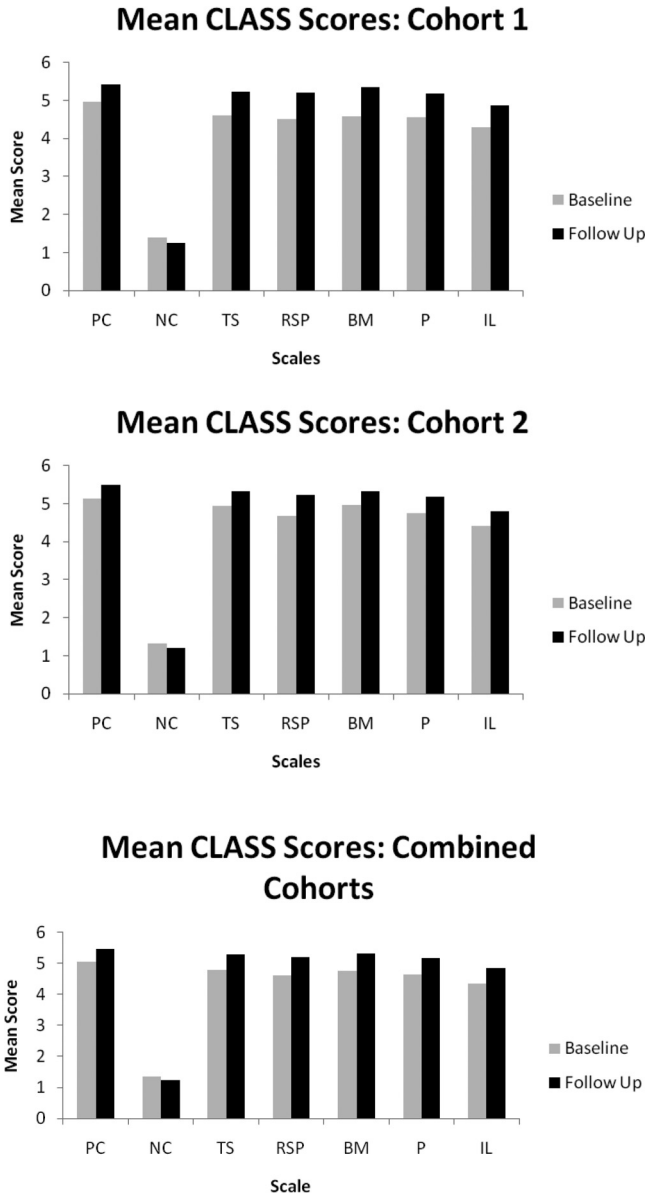**Mean CLASS Scores: Combined Cohorts**

FIGURE 3 Means for the seven Classroom Assessment Scoring System (CLASS) scale scores. PC = positive climate; NC = negative climate; TS = teacher sensitivity; RSP = regard for student perspective; BM = behavior management; P = productivity; IL = instructional learning.

RESULTS

Sample

The sample included 75 centers in Cohort 1 and 83 centers in Cohort 2. Sixteen centers in Cohort 1 and 18 centers in Cohort 2 had no posttest data. We conducted the analyses both with and without these centers. The resulting models were almost identical. We present the results that included all of the centers.

Change in CLASS Dimensions

Table 1 shows the means on the CLASS dimensions at baseline and at follow-up. There was improvement between baseline and follow-up on all seven dimensions (note that negative climate is reverse-scored, and therefore the decrease observed demonstrates improvement). There was also some evidence of a naturally occurring change over time not due to the ECMHC intervention (i.e., six of seven CLASS dimension means were observed to be higher for Cohort 1 at baseline and negative climate, the seventh dimension, lower). See Table 1 and Figure 3 for the CLASS dimension means.

Table 2 shows the proportion of variance explained by child care center and by classroom for each of the CLASS dimensions. For most of the dimensions, center differences explained about 20% of the variance in scores, whereas classrooms within centers explained less than 10% of the total variance.

Table 3 shows the coefficients for the fixed effects in the models developed to assess classroom change over the course of the intervention. The results shown are for models with child care center and classroom random intercepts. Center and classroom covariates included the following: ethnicity, teacher education, center size, population density, and percent CCAP. Results were similar for models with random intercepts for centers only and are not shown.

For all seven of the dimensions, there was a significant time effect in the expected direction (see Table 3). For three of the seven dimensions (positive climate, teacher sensitivity, and regard for student perspective), there was also a cohort effect; that is, the intervention had the same effect on both cohorts, although the cohorts started at different points (see Table 3). For behavior

TABLE 2
Proportion of Variance Explained by Center and Classroom

Scale	Proportion of Variance Explained by		
	Center	Classroom	Center and classroom
Positive climate	0.20	0.13	0.33
Negative climate	0.03	0.06	0.09
Teacher sensitivity	0.23	0.07	0.30
Regard for student perspective	0.20	0.07	0.27
Behavior management	0.13	0.08	0.19
Productivity	0.11	0.18	0.29
Instructional learning	0.15	0.11	0.26

TABLE 3
Models Developed to Assess the Impact of Treatment

Positive Climate

Fixed Effects	Model 1			Model 2			Model 3		
	Coefficient	*z*	*p*	*Coefficient*	*z*	*p*	*Coefficient*	*z*	*p*
Time	0.40	3.41	<.001	0.41	4.77	<.001			
Cohort	0.25	1.72	.09	0.27	2.00	.05			
Time × Cohort	0.02	0.16	.90						
Constant	4.36			4.36					

Significant covariates: center size (coefficient = .004, $z = 3.62$, $p < .001$).

Negative Climate

Fixed Effects	Model 1			Model 2			Model 3		
	Coefficient	*z*	*p*	*Coefficient*	*z*	*p*	*Coefficient*	*z*	*p*
Time	−0.15	−1.70	.07	−0.13	−2.16	.03	−0.13	−2.18	.03
Cohort	−0.11	−1.28	.20	−0.10	−1.34	.19			
Time × Cohort	0.04	0.32	.75						
Constant	1.48			1.47			1.43		

Significant covariates: none.

Teacher Sensitivity

Fixed Effects	Model 1			Model 2			Model 3		
	Coefficient	*z*	*p*	*Coefficient*	*z*	*p*	*Coefficient*	*z*	*p*
Time	0.56	4.81	<.001	0.51	5.91	<.001			
Cohort	0.42	2.93	.003	0.37	2.96	.003			
Time × Cohort	−0.12	−0.69	.491						
Constant	3.96			3.98					

Significant covariates: teacher experience (coefficient = .014, $z = 2.11$, $p < .05$), center size (coefficient = .004, $z = 4.13$, $p < .001$), population density (coefficient = −.0001, $z = −3.07$, $p < .01$).

Regard for Student Perspective

Fixed Effects	Model 1			Model 2			Model 3		
	Coefficient	*z*	*p*	*Coefficient*	*z*	*p*	*Coefficient*	*z*	*P*
Time	0.63	5.15	<.001	0.62	6.96	<.001			
Cohort	0.28	1.80	.07	0.28	1.98	.05			
Time × Cohort	−0.02	−0.07	.95						
Constant	3.76			3.76					

Significant covariates: teacher experience (coefficient = .016, $z = 2.36$, $p < .05$), center size (coefficient = −.003, $z = 3.25$, $p < .01$), population density (coefficient = −.0001, $z = −2.00$, $p < .05$).

TABLE 3
Continued

| | Behavior Management | | | | | | | | |
| | Model 1 | | | Model 2 | | | Model 3 | | |
Fixed Effects	Coefficient	z	p	Coefficient	z	p	Coefficient	z	p
Time	0.72	5.55	<.001						
Cohort	0.45	3.21	.001						
Time × Cohort	−0.43	−2.28	.02						
Constant	3.98								

Significant covariates: teacher education (coefficient = .292, $z = 2.64$, $p < .01$), teacher experience (coefficient = .018, $z = 2.47$, $p < .01$), center size (coefficient = .003, $z = 3.78$, $p < .001$), population density (coefficient = −.0001, $z = −3.24$, $p < .001$).

| | Productivity | | | | | | | | |
| | Model 2 | | | Model 3 | | | Model 3 | | |
Fixed Effects	Coefficient	z	p	Coefficient	z	p	Coefficient	z	p
Time	0.56	4.19	<.001	0.49	5.00	<.001	0.49	5.00	<.001
Cohort	0.27	1.80	.07	0.22	1.64	.10			
Time × Cohort	−0.15	−0.76	.45						
Constant	3.99			4.01			4.08		

Significant covariates: teacher education (coefficient = .269, $z = 2.25$, $p < .05$), teacher experience (coefficient = .024, $z = 3.18$, $p < .001$), center size (coefficient = .002, $z = 2.79$, $p < .05$), population density (coefficient = −.0001, $z = −2.99$, $p < .01$).

| | Instructional Learning | | | | | | | | |
| | Model 1 | | | Model 2 | | | Model 3 | | |
Fixed Effects	Coefficient	z	p	Coefficient	z	p	Coefficient	z	p
Time	0.48	3.44	<.001	0.44	4.30	<.001	0.44	4.31	<.001
Cohort	0.20	1.14	.25	0.16	1.08	.28			
Time × Cohort	−0.08	−0.42	.68						
Constant	3.64			3.66			3.72		

Significant covariates: teacher education (coefficient = .299, $z = 2.37$, $p < .05$), teacher experience (coefficient = .027, $z = 3.28$, $p < .001$), center size (coefficient = .003, $z = 2.50$, $p < .05$), population density (coefficient = −.0001, $z = −2.21$, $p < .05$).
Note. The following covariates were included in each model: ethnicity, teacher education, received teacher credentials, teacher experience, center size, population density, and percentage of children in the Child Care Assistance Program. Only the significant covariates for each dimension are reported.

management, there was a significant interaction effect (see Table 3). In other words, both cohorts improved over time; however, they changed in different amounts. The intervention effect was larger for Cohort 1 ($z = 5.42$, $p < .001$) than for Cohort 2 ($z = 2.04$, $p = .042$). When the three models were computed without the covariates, the results were similar; therefore, they are not shown.

TABLE 4
Change Adjusted for Differences Due to Naturally Occurring Change

Dimension	Covariates Not Included in Model			Covariates Included in Model		
	Adjusted Difference[a]	z	p	Adjusted Difference[a]	z	p
Positive climate	0.27	3.21	<.001	0.17	1.98	<.05
Negative climate	−0.05	−0.89	ns	−0.04	0.50	ns
Teacher sensitivity	0.31	3.73	<.001	0.14	1.17	ns
Regard for student perspective	0.50	5.68	<.001	0.34	3.82	<.001
Behavior management	—	—	—	—	—	—
Productivity	0.45	4.74	<.001	0.27	2.08	<.05
Instructional learning	0.46	4.60	<.001	0.28	2.80	<.01

[a]The adjusted difference can also be referred to as the adjusted effect size.

Of the seven covariates included in the models, only four were significant in any model, and each of the four covariates (center size, teacher experience, population density, and teacher education) was significant on two to five of the seven CLASS dimensions (see Table 3). Teachers with more experience and more than a high school degree tended to score higher on many of the CLASS dimensions. Centers that were larger or from less densely populated (i.e., nonurban) areas also tended to score higher on many of the CLASS dimensions (see Table 3).

We conducted post hoc tests to determine whether the change between baseline and follow-up remained significant after we removed the impact of the naturally occurring change over time. Table 4 shows the adjusted differences and their significance. The change remained significant for four of the six dimensions when covariates were included in the model: positive climate, regard for student perspective, productivity, and instructional learning. When covariates were not included in the analysis, the change remained significant for five of the six dimensions: positive climate, teacher sensitivity, regard for student perspective, productivity, and instructional learning. The adjusted change could not be computed for behavior management because of the significant interaction effect (see Table 3, Model 3, for behavior management).

DISCUSSION

This study adds to the growing body of literature demonstrating that, with support, teachers can change their behaviors in ways that improve child development outcomes (Domitrovich et al., 2009; Downer et al., 2009; Kinzie et al., 2006; Landry, Anthony, Swank, & Monseques-Bailey, 2009; Raver et al., 2008). This study demonstrates not only that Tulane University Institute of Infant and Early Childhood Mental Health's ECMHC program is associated with enhanced teacher–child classroom interactions but that these improvements can occur within a relatively short period of time (6 months). Prior findings that without intervention classrooms deteriorate over the course of the school year (Raver et al., 2008) add support to the importance of our finding that classrooms increased in competence across the school year.

Overall, the results supported pathway C in our proposed logic model (see Figure 1b) that participation in ECMHC is associated with improved levels of observed teacher competence. This finding was true for all seven of the CLASS dimensions studied—the five that were hypothesized to be impacted as well as the two dimensions that were not a central focus of

our ECMHC program (teacher productivity and instructional learning). In other words, the ECMHC intervention, which is aimed at enhancing teacher interactions specifically to support children's social-emotional development, has the added benefit of impacting teachers' behaviors in the more cognitive-focused areas of teacher behavior and classroom management.

All of the seven CLASS dimensions assessed showed similar levels of change when we controlled for potential confounding variables (e.g., teacher experience or the percentage of children at the center who were receiving government subsidy). Teachers with more experience and education were observed to have higher CLASS scores; however, this same group of teachers also demonstrated the same degree of change in CLASS dimension scores from pre- to postassessment as teachers with less experience or education. This pattern differs from prior research, which has found an association between teacher education/experience and teacher implementation and engagement in intervention programs (Domitrovich et al., 2009; Downer et al., 2009). A similar pattern was observed for larger centers and centers from less densely populated (i.e., nonurban) areas. These centers scored higher on the CLASS scales; however, the degree of change was not different from other centers. Unlike in prior research (Maher et al., 2008; Pianta et al., 2005), poverty level (as assessed by the proportion of students receiving government assistance) did not impact the CLASS scores or degree of change. Regardless of teacher and/or or center characteristics, this ECMHC model demonstrates robustness in its ability to support change within classrooms. The flexibility inherent in this model, which allows MHCs to craft individualized consultation plans within the framework of a structured model, may have contributed to this success.

It is important to note that an essential aspect of this ECMHC model is the time and attention focused on supporting the professional development of teachers. MHCs spent approximately 6 hr every other week for 6 months at each center,[9] which is a total of 72 hr. On average, more than 60% of the MHCs' time is spent working with teachers in their classrooms, and an additional 20% of their time is spent providing trainings outside of the classroom (e.g., didactic or clock hour training). Moreover, a great deal of attention is given to ensure quality and fidelity of the model implementation (Heller et al., 2011).

There were also some unexpected findings in this study. We noted an intriguing trend on all seven of the CLASS dimensions assessed. Cohort 2 scored higher than Cohort 1 at both time periods; however, only four dimensions (positive climate, teacher sensitivity, regard for student perspective, and behavior management) were significantly different between the two cohorts and only at the baseline assessment. One possible reason for this finding is that during the study period many state-level changes (e.g., implementation of a rating and improvement system, technical assistance support, tax credits for quality care) were aimed at enhancing center and teacher quality. It would be reasonable to assume that over time the variables assessed by the CLASS would be positively impacted by the state focusing its resources on enhancing child care quality.

Compared to the other CLASS dimensions, the behavior management dimension exhibited a different trend. As with the other six dimensions, behavior management was higher at both time periods for Cohort 2; however, for Cohort 2, behavior management demonstrated less change than Cohort 1. This outcome may reflect something specific to Cohort 2 that could be related

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[9]We have realized that with larger centers more visits are needed to give adequate attention to all of the teachers. Thus, when centers have eight or more classrooms, extra visits are added based on discussions between the MHC and his or her supervisor.

to the state's increased focus on and support of child care quality. Despite the difference in the amount of change, Cohort 1's postassessment average of 5.30 and Cohort 2's postassessment average of 5.28 were almost identical. Perhaps the current level of ECMHC training can only increase behavior management to a specific level without booster sessions or more intensive training. This hypothesis is supported to some extent by MHCs' experiences with repeat consultations. Centers who have participated in the ECMHC program are allowed to receive another 6 months of consultation after a year has passed from the end of their first consultation period. On an anecdotal level, we have found that at centers receiving repeat ECMHC, the MHCs are able to go into more depth with teachers on the topics covered in the initial consultation. Perhaps teachers are more open to examining their behavior management skills once they have become comfortable with the MHC and know what to expect from the consultation process. Future research should examine the impact on the CLASS dimension of behavior management after such repeat consultation. Regardless, it is noteworthy that the ECMHC program impacted both cohorts on this dimension in the expected positive direction.

Another unexpected cohort difference was that Cohort 1 had on average larger centers than Cohort 2 ($M = 127$ vs. $M = 106$ children, respectively). This could be an important factor, as we observed that ECMHC tended to have a greater impact on large centers. However, controlling for size simply lowers the means for Cohort 1 and raises those of Cohort 2, mimicking the trend of Cohort 2 scoring higher than Cohort 1. Despite this finding, center size did not impact the level of change; that is, regardless of size, centers improved across the seven dimensions over the course of the intervention.

Finally, even when covariates were included in the model, all but one dimension (teacher sensitivity) remained significant, albeit the adjusted treatment effects were smaller (see Table 4). It is possible that the teacher sensitivity dimension is somewhat more resistant to change in that this scale reflects not only a teacher's ability to address problems as they arise and comfort students but also his or her ongoing ability to anticipate problems and consistently match his or her responsiveness to the students' needs.

Mechanisms of Change

More research is needed to better understand how to bring about changes in child care center classrooms. Prior research has reported an association between center participation in an ECMHC program and higher levels of teachers' sense of competence and self-efficacy (Alkon et al., 2003; Brennan et al., 2008; Heller et al., 2011; Raver et al., 2008); ECMHC is also associated with positive changes in teacher classroom behavior, as demonstrated in this study and prior research (Raver et al., 2008). It is unclear whether these variables (teacher attitude/belief belief and teacher behavior) change simultaneously or whether change in one variable impacts or supports change in the other variable. For example, increases in a teacher's level of self-efficacy may lead to positive changes in his or her classroom behaviors, or increases in a teacher's self-efficacy may occur after he or she has learned more skillful classroom practices.

The MHC–teacher relationship has also been argued to be a mechanism of change. Green and colleagues (2006) contended that a positive MHC–teacher relationship was necessary for change to occur. Although we were unable to examine the MHC–teacher relationship impact on other variables (because of lack of variability), the theoretical underpinnings of our model are grounded in the importance of relationships to exact change in a system.

Another variable that could serve as a mechanism of change is the center climate (e.g., staff relationships, director's management skills, and/or director–staff relationships). We did not assess this directly, although it is represented in the logic model (see Figure 1a). It is interesting that some of the results of this study provide preliminary support for the assertion that center climate serves as a mechanism of change, as center differences accounted for twice as much variance in CLASS scores as did classrooms within the center.

Limitations

One possible threat to the validity of the findings is maturation, meaning that the classroom environment could improve as a teacher and students get to know one another. Cohort 1 began in February (typically midyear) and Cohort 2 began in August (often the beginning of the school year). Thus, if maturation had affected the scores, we would have seen a Cohort × Time interaction (Campbell & Stanley, 1966; Cook & Campbell, 1979). With the exception of behavior management, our results were consistent across cohorts. We can be relatively confident that increased familiarity did not cause the observed changes. For the CLASS dimension of behavior management, Cohort 2 was observed to have higher scores at the preassessment. The reason for the difference between the two cohorts at pretest is unclear; however, both cohorts improved significantly from pre- to posttest.

Although having a more standard control group was the original intention of this study we were unable to recruit a wait-list control group. A statewide quality rating and improvement system was beginning, and centers were focused on this process and hesitant to overextend themselves. Fortunately, we were able to use multiple cohorts, as detailed previously, in a method analogous to using a wait-list control group. We believe that this methodology addresses the weaknesses of a single-group design.

Another limitation is that the RAs were not fully blind to treatment status. Although RAs were not informed of the treatment status of the centers, teachers often referred to the project or asked questions of the RA regarding consultation (e.g., ''What exactly does an MHC do?'' or ''Our MHC was a big help. When will she come back?''). These types of questions made it difficult to mask treatment status. Despite this difficulty, RAs were not informed of the intervention content or procedures and did not know the extent of each teacher's participation.

Implications for Practice

This study demonstrates that MHCs can partner successfully with early childhood educators and provide support that enhances classroom variables associated with high-quality care and positive child outcomes. The majority of the CLASS dimensions studied, with the exception of instructional learning, increased from the 4-point to the 5-point range. Although an increase of 1 point may not seem considerable, research on the CLASS indicates the existence of a quality threshold. Research findings from a national sample of preschool classrooms (Burchinal, Vandergrift, Pianta, & Mashburn, 2010) indicated that some child outcome variables did not improve when quality, as assessed by the CLASS, fell below a 4. Furthermore, when the quality of the environment reached above a 5, changes in child social behaviors (e.g., decreased behavior problems and increased social competence) were detected. It is notable that once that threshold was

reached, improvements in child outcomes did not level off but rather continued to increase as classroom quality increased. Taking this into account, we argue that a 1-point increase at the upper end of a dimension may be associated with enhanced child outcomes. This indicates that classroom or teacher supports, such as our ECMHC program, that are associated with movement from the lower end of the CLASS dimensions to the higher end of the CLASS dimensions, no matter how small, may have benefit for children's functioning on many levels.

Many child care centers struggle with high rates of teacher turnover. There are strategies to increase teacher retention, and this is often an area of focus during ECMHC; however, we did not assess the impact of the ECMHC program on the rate of teacher turnover. Although all of the classrooms in participating centers had pre- and postassessments, teacher turnover was high between the assessments. Only 35% of the assessed classrooms had the same teacher at both preassessment and postassessment. To ensure that all teachers at postassessment had participated in at least half of the consultation, we agreed that a teacher had to have been at the center for at least 3 months of the 6-month consultation period to be assessed. Even with this high rate of teacher turnover, significant differences between the two time periods were demonstrated. It is also noteworthy that, even when center and teacher characteristics (i.e., teacher ethnicity, teacher education, teacher credentials, teacher experience, center size, population density, and child poverty) were controlled, all seven CLASS dimensions showed levels of change similar to those found when these covariates were not controlled (see Table 4). This further demonstrates the robustness of the ECMHC model in that the effectiveness was not undermined by the chronic problem of staff turnover in child care settings.

Future Research Directions

Several important questions remain unanswered. For example, how long can change in teacher–child interaction and teacher sensitivity be maintained? Specifically, are teachers able to continue to function at a higher level of quality after the consultation ends, or do they return to their prior level of functioning? It is also unclear whether a longer consultation period or a higher intensity consultation period (e.g., weekly instead of biweekly) would lead to improved results, such as a higher level of functioning or the ability to maintain increases for a longer period of time after the consultation ends. In addition, more research examining which variables function as mechanisms of change and how those variables interact with each other is needed. At the consultant level, it will be important to determine which specific MHC activities contribute to which teacher, classroom, and center or program outcomes (see the pathways in Figure 1a).

The measures used to assess teacher emotional support and classroom organization were global measures; that is, they assessed how a teacher behaved with a group of children. Measures that assess teachers' behavior with specific target children, how those children's characteristics influence teachers' behavior, and how the consultation influences specific relationships would be informative to the field. Finally, how any of the above questions regarding consultation influence child outcome variables would be very beneficial knowledge for the early childhood education field.

CONCLUSION

This study demonstrates that a statewide, short-term (6-month) mental health consultation model improved the child care environment through enhanced teacher–child interactions. The ECMHC

enhanced teacher behavior in areas specifically related to children's social-emotional development (e.g., regard for student perspective) as well as enhanced teachers' more academic behaviors (e.g., instructional learning). Prior research has demonstrated that without intervention teacher behavior in these areas deteriorates across the school year (Raver et al., 2008). This intervention not only prevented deterioration across the school year but was associated with an increase in quality. Given the significant teacher turnover that occurred during the consultation period, these data support the idea that programmatic change is possible within an early childhood setting even when teachers are not employed for the entire intervention period (6 months). This lends credence to our model's approach, which targets positive teacher interactions with children at a program level as a pathway to enhance young children's social-emotional competence. It is hoped that this increase will subsequently support children's school readiness. The increase in the quality of care that can be supported through an ECMHC program makes this type of consultation an optimal tool for enhancing the child care environment and overall child development.

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